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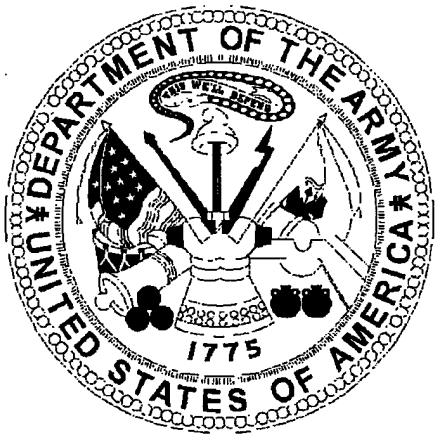
Supporting Data FY 2001 Budget Estimate
Submitted to Congress - February 2000

DESCRIPTIVE SUMMARIES OF THE



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RESEARCH, DEVELOPMENT, TEST AND EVALUATION

Army Appropriation, Budget Activities 4 and 5

Department of the Army
Office of the Secretary of the Army (Financial Management and Comptroller)

"READINESS THROUGH MODERNIZATION"

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VOLUME II

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DESCRIPTIVE SUMMARIES FOR PROGRAM ELEMENTS OF THE RESEARCH, DEVELOPMENT, TEST AND EVALUATION, ARMY FY 2001 FEBRUARY 2000

VOLUME II
Budget Activities 4 and 5

Department of the Army
Office of the Assistant Secretary of the Army (Financial Management and Comptroller)

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FY 2001 RDT&E, ARMY
PROGRAM ELEMENT DESCRIPTIVE SUMMARIES

INTRODUCTION AND EXPLANATION OF CONTENTS

1. General. This section has been prepared for the purpose of providing information concerning the Army Research, Development, Test and Evaluation program. The Descriptive Summaries are comprised of R-2 (Army RDT&E Budget Item Justification – Program Element level), R-2A (Army RDT&E Budget Item Justification – project level) and R-3 (Army RDT&E Cost Analysis) Exhibits which provide narrative information on all RDT&E program elements and projects for the FY 1999, 2000 and 2001 time period.

2. Relationship of the FY 2001 Budget Submission to the FY 2000/2001 Budget submitted to Congress. This paragraph provides a list of program elements restructured, transitioned, or established to provide specific program identification.

A. Program Element Restructures. Explanations for these changes can be found in the narrative sections of the Program Element R-2/R-3 Exhibits.

OLD PE/PROJECT	NEW PROJECT TITLE	NEW PE/PROJECT
0601104A/H59	Institute for Creative Technology	0601104A/J08
0602308A/C90	Modeling & Simulation for Training and Design	0602308A/D02
0602618A/H80	Robotics Technology	0602618A/H03
0602720A/895	Pollution Prevention Technology	0603728A/025
0603005A/440	Future Combat Vehicle	0602601A/HH7
Transfer from OMA	Army Distance Learning Program	0605013A/087
Transfer from OMA	SIDPERS-3	0605013A/099
Transfer from OMA	Transportation Coordinator's Automated Information for Movement System II	0605013A/137
Transfer from OMA	Installation Support Module (ISM)	0605013A/184
Transfer from OMA	Army Recruiting Information Support System	0605013A/185
Transfer from OMA	Medical Communications for Combat Casualty Care	0605013A/193

A. Program Element Restructures. (Continued)

OLD PE/PROJECT	NEW PROJECT TITLE	NEW PE/PROJECT
Transfer from OMA	Horizontal Technology Integration (HTI)	0605013A/196
Transfer from OMA	TACMIS	0605013A/252
Transfer from OMA	PM Global Combat Support System – Army Core	0605013A/286
Transfer from OMA	Joint Computer-Aided Acquisition and Logistics Support (JCALS)	0605013A/299
Transfer from OMA	STACOMP	0605013A/316
0708610A (OMA PE)	Army High Performance Computing	0605803A/731
0604280A/152 (BA 3 – FY 1999 only)	Joint Tactical Radio System	0603280A/155
0604802A/D134	Objective Individual Combat Weapon	0603802A/DAS3
0604802A/695	XM982 Projectile	0604814A/708
0604802A/613	Mortar Systems	0603802A/AS4
0603606A/683	Anti-Personnel Landmine Alternatives	0604808A/434
0604808A/434	Anti-Personnel Landmine Alternative (Mixed Systems)	0604808A/443
Transfer from OMA	Global Combat Support System – Army	0303141A/083

B. FY 2001 Developmental Transitions.

FROM PE/PROJECT	PROJECT TITLE	TO PE/PROJECT
0601104A/H59	Modeling & Simulation for Training and Design	0602308A/D02
0603619A/005	Mine Systems – Engineering Development	0604808A/016

C. Establishment of New FY 2001 Program Elements/Projects. One major system new start is associated with the New Army Transformation and is denoted by a diamond. Minor new initiatives for FY 2001, in addition to Congressionally directed initiatives for FY 2000, are shown below with asterisks. The remaining programs listed are outyear initiatives or restructures beyond FY 2000 or were previously funded from other Defense appropriations.

TITLE	PE/PROJECT
Effects Control System	0203726A/324
Global Combat Support System – Army*	0303141A/083
Information Dominance Center – TIARA*	0305128A/H13
Joint Technology Center System Integration Lab*	0305204A/123
Science Base Emerging Infectious Diseases*	0601102A/S20
Counter Terrorism Program*	0601104A/J07
Institute for Creative Technology*	0601104A/J08
Aero-Propulsion Technology*	0602303A/223
Tactical High Energy Laser Technology	0602307A/042
Future Combat Vehicle	0602601A/HH7
21st Century Truck (T21)*	0602601A/T21
Optical Spectroscopy*	0602622A/556
Corrosion Measurement and Control Project*	0602720A/959
Watervliet Arsenal Pollution Projects*	0602720A/960
Vessel Plating Technology*	0602720A/961
Range Safety Technology Demo*	0602720A/F28
Phyto-Remediation in Arid Lands*	0602720A/F29
Polynitroxylated Hemoglobin*	0602787A/962
National Medical Testbed*	0602787A/963
Informatics-Based Medical Emergency Decision (IMED) Tools*	0602787A/964
Dye Targeted Laser Fusion*	0602787A/967
Eye Research*	0602787A/965
Blood Research*	0602787A/966
Synchronization-Based High Energy Radiation Beam Cancer Detection*	0602787A/968
Emerging Infectious Diseases	0602787A/997
Force Project Logistics	0603001A/545
Biosystems Technology*	0603001A/557
Combat Id for Dismounted Soldiers (CIDS)*	0603001A/J51

C. Establishment of New FY 2001 Program Elements/Projects. (Continued)

TITLE	PE/PROJECT
Telemedicine Testbed	0603002A/800
Alcoholism Research*	0603002A/969
Enzymatic Wound Disinfectant*	0603002A/970
HIV Research*	0603002A/971
Laser Vision Correction*	0603002A/972
Recombinant Vaccine Research*	0603002A/973
Smart Aortic Research*	0603002A/974
Protection Against Emerging Infectious Diseases*	0603002A/975
Warhead and Energetics Center of Excellence*	0603004A/244
Robotic Ground Systems*	0603005A/515
Abrams Engine*	0603005A/532
Technology Transfer Center*	0603005A/533
Mobile Parts Hospital*	0603005A/539
Improved HMMWV Research*	0603005A/540
Breast Cancer Stamp	0603002A/945
Medium Armored Vehicle Development◆	0603653A/C03
Collaborative Telemaintenance*	0603772A/285
Tactical Simulation Interface Unit (TSIU)*	0603308A/979
Shoulder-Launched Multipurpose Assault Weapon*	0603802A/066
Objective Individual Combat Weapon (OICW)	0603802A/AS3
Combat Trauma Patient Simulation*	0603807A/853
Modernized Hellfire	0604329A/013
Lightweight Laser Designator Rangefinder Upgrades	0604710A/L76
Horizontal Technology Integration for Tactical Lasers	0604710A/L77
Embedded Diagnostics/Prognostics Development	0604746A/L66
Tactical Exploitation System (TES) (TIARA)	0604766A/957
Aviation Combined Arms Tactical Trainer – WRAP	0604780A/585
Anti-Personnel Landmine Alternatives*	0604808A/434
Anti-Personnel Landmine Alternative (Mixed Systems)*	0604808A/443
Common Software	0604818A/334
Line-of-Sight Anti-Tank (LOSAT) Missile	0604819A/046
Paladin/FAASV	0604854A/516

Future Direct Support Weapon 0604854A/523

C. Establishment of New FY 2001 Program Elements/Projects. (Continued)

TITLE	PE/PROJECT
Army Distance Learning Program*	0605013A/087
SIDPERS-3*	0605013A/099
Transportation Coordinators' Automated Information for Movement System II*	0605013A/137
Installation Support Modules (ISM)*	0605013A/184
Army Recruiting Information Support System*	0605013A/185
Medical Communications For Combat Casualty Care*	0605013A/193
Horizontal Technology Integration (HTI)*	0605013A/196
TACMIS*	0605013A/252
PM Global Combat Support System-Army Core*	0605013A/286
Joint Computer-Aided Acquisition and Logistics Support (JCALS)*	0605013A/299
STACOMP*	0605013A/316
Force XXI Experimentation	0605326A/312
Army Explosives Safety Management	0605805A/858
Acquisition Pollution Prevention	0605857A/031

D. FY 2001 programs for which funding was shown in the FY 2000/2001 President's Budget Submit (February 1999), but which are no longer funded.

PE/PROJECT	TITLE	BRIEF EXPLANATION
0203726A/2ET	AFATDS Operational Test	ACAT category changed from ACAT I to ACAT II – funds transferred to 0605712A/001
0203802A/689	ATACMS Block IIIB	Program terminated
0602787A/845	Bone Disease Research Program	Program completed
0602308A/636	Army After Next (AAN) Applied Research	Program terminated
0602720A/895	Pollution Prevention	Restructured to PE 0603728A/02
0604802A/134	Objective Individual Combat Weapon	Funds transferred BA 4 PE 0603802A/AS3 to support the PDDR phase rather than EMD.
0603004A/L94	Electric Gun System Demo	Demonstration program delayed until FY 2006
0603313A/380	Multi-Platform Launcher	Program terminated
0603313A/493	Rapid Force Projection Demo	ACTD Completed

D. FY 2001 programs for which funding was shown in the FY 2000/2001 President's Budget Submit (February 1999), but which are no longer funded (continued).

PE/PROJECT	TITLE	BRIEF EXPLANATION
0604321A/2FT	ASAS Operational Test	ACAT category changed from ACAT I to ACAT II – funds transferred to 0605712A/001
0604645A/022	FSV-Engineering Development	Program terminated in support of the Army Transformation
0604649A/G25	M1 Breacher Development	Program terminated in support of the Army Transformation
0604768A/686	ATACMS Block IIA	Program terminated in support of the Army Transformation
0708045A/E31	National Defense Center for Environmental Excellence (NDCEE)	Funds transferred to BA 4 PE 0603779A/035 as per Congressional direction.

3. Classification. This document contains no classified data. Classified/Special Access Programs which are submitted offline are listed below.

0203735A/DC64
0203808A
0301359A
0602104A
0602122A
0602601A/C84
0602786A/AC60
0603003A/D391
0603005A/DC62/DC66
0603009A
0603017A
0603020A
0603122A
0603322A
0603710A/DC65/ DC67
0603851A
0604328A

Exhibit R-1

Department of the Army
FY 2001 RDT&E Program

Summary

Date: Feb 2000

	Thousands of Dollars		
	FY 1999	FY 2000	FY 2001
Summary Recap of Budget Activities			
Basic Research	176,737	204,407	200,988
Applied Research	612,641	790,919	602,489
Advanced Technology Development	633,601	684,393	490,905
Demonstration and Validation	488,701	475,627	661,451
Engineering and Manufacturing Development	1,247,140	1,503,189	1,770,357
RDT&E Management Support	1,262,886	739,294	696,943
Operational Systems Development	609,064	827,439	837,213
Total Research Development Test & Eval Army	5,030,770	5,225,268	5,260,346

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Department of the Army
FY 2001 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test & Eval Army

Date: Feb 2000

Line No	Program Element Number	Item	Act	Thousands of Dollars FY 1999	FY 2000	FY 2001
1	0601101A	IN-HOUSE LABORATORY INDEPENDENT RESEARCH	1	12,139	14,119	14,459
2	0601102A	DEFENSE RESEARCH SCIENCES	1	122,255	125,918	132,164
3	0601104A	UNIVERSITY AND INDUSTRY RESEARCH CENTERS	1	42,343	64,370	54,365
	Basic Research			176,737	204,407	200,988
4	0602104A	TRACTOR ROSE	2	0	6,743	0
5	0602105A	MATERIALS TECHNOLOGY	2	12,867	16,266	11,557
6	0602120A	SENSORS AND ELECTRONIC SURVIVABILITY	2	16,334	24,850	20,722
7	0602122A	TRACTOR HIP	2	11,603	9,210	7,226
8	0602211A	AVIATION TECHNOLOGY	2	23,854	30,048	31,080
9	0602270A	EW TECHNOLOGY	2	15,569	17,402	17,310
10	0602303A	MISSILE TECHNOLOGY	2	29,234	47,939	47,183
11	0602307A	ADVANCED WEAPONS TECHNOLOGY	2	0	0	993
12	0602308A	ADVANCED CONCEPTS AND SIMULATION	2	20,917	29,677	30,479
13	0602601A	COMBAT VEHICLE AND AUTOMOTIVE TECHNOLOGY	2	38,139	54,776	63,589
14	0602618A	BALLISTICS TECHNOLOGY	2	26,839	42,017	49,750
15	0602622A	CHEMICAL, SMOKE AND EQUIP DEFEATING TECHNOLOG	2	4,660	4,953	3,530
16	0602623A	JOINT SERVICE SMALL ARMS PROGRAM	2	5,008	5,161	5,415
17	0602624A	WEAPONS AND MUNITIONS TECHNOLOGY	2	28,185	36,521	33,761
18	0602705A	ELECTRONICS AND ELECTRONIC DEVICES	2	25,004	36,812	23,869
19	0602709A	NIGHT VISION TECHNOLOGY	2	18,341	20,021	20,465
20	0602712A	COUNTERMINE SYSTEMS DEVELOPMENT	2	10,265	14,380	12,386
21	0602716A	HUMAN FACTORS ENGINEERING TECHNOLOGY	2	16,204	19,681	15,786
22	0602720A	ENVIRONMENTAL QUALITY TECHNOLOGY	2	62,208	78,905	13,994
23	0602782A	COMMAND, CONTROL, COMMUNICATIONS TECHNOLOGY	2	21,597	19,519	23,314
24	0602783A	COMPUTER AND SOFTWARE TECHNOLOGY	2	3,777	5,173	3,987
25	0602784A	MILITARY ENGINEERING TECHNOLOGY	2	51,203	47,639	42,344
26	0602785A	MANPOWER/PERSONNEL/TRAINING TECHNOLOGY	2	8,249	12,005	11,869
27	0602786A	WARFIGHTER TECHNOLOGY	2	18,075	25,831	24,659
28	0602787A	MEDICAL TECHNOLOGY	2	134,002	174,199	75,729
29	0602789A	ARMY ARTIFICIAL INTELLIGENCE TECHNOLOGY	2	1,119	1,267	1,338
30	0602805A	DUAL USE SCIENCE & TECHNOLOGY PROGRAM	2	9,388	9,924	10,154
	Applied Research			612,641	790,919	602,489

Department of the Army
FY 2001 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test & Eval Army

Date: Feb 2000

Line No	Program Element Number	Item	Act	Thousands of Dollars FY 1999	FY 2000	FY 2001
31	0603001A	WARFIGHTER ADVANCED TECHNOLOGY	3	30,322	44,831	15,469
32	0603002A	MEDICAL ADVANCED TECHNOLOGY	3	223,999	73,252	16,512
33	0603003A	AVIATION ADVANCED TECHNOLOGY	3	43,509	33,921	28,810
34	0603004A	WEAPONS AND MUNITIONS ADVANCED TECHNOLOGY	3	24,049	58,042	29,738
35	0603005A	COMBAT VEHICLE AND AUTOMATIVE ADVANCED TECH	3	58,706	130,525	148,114
36	0603006A	COMMAND, CONTROL, COMM ADVANCED TECHNOLOGY	3	22,892	27,612	21,505
37	0603007A	MANPOWER, PERSONNEL AND TRAINING ADV TECH	3	2,869	4,981	3,072
38	0603009A	TRACTOR HIKE	3	10,391	12,469	12,217
39	0603013A	TRACTOR DIRT	3	40	0	0
40	0603017A	TRACTOR RED	3	4,420	4,549	984
41	0603020A	TRACTOR ROSE	3	2,427	11,070	10,892
42	0603105A	MILITARY HIV RESEARCH	3	5,497	5,931	5,889
43	0603122A	TRACTOR HIP	3	0	2,414	980
44	0603238A	AIR DEFENSE/PRECISION STRIKE TECHNOLOGY	3	10,236	24,435	21,307
45	0603270A	EW TECHNOLOGY	3	10,911	16,060	15,359
46	0603280A	JOINT TACTICAL RADIO SYSTEM	3	9,405	0	0
47	0603313A	MISSILE AND ROCKET ADVANCED TECHNOLOGY	3	59,366	51,188	25,107
48	0603322A	TRACTOR GEM	3	4,175	2,648	3,083
49	0603606A	LANDMINE WARFARE AND BARRIER ADV TECHNOLOGY	3	22,651	47,117	20,894
50	0603607A	JOINT SERVICE SMALL ARMS PROGRAM	3	12,532	8,760	4,469
51	0603654A	LINE-OF-SIGHT TECHNOLOGY DEMO	3	15,126	37,845	50,727
52	0603710A	NIGHT VISION ADVANCED TECHNOLOGY	3	25,402	42,262	33,341
53	0603728A	ENVIRONMENTAL QUALITY TECHNOLOGY DEVELOPMENT	3	0	1,327	1,616
54	0603734A	MILITARY ENGINEERING ADVANCED TECHNOLOGY	3	16,270	15,762	5,207
55	0603772A	ADV TACTICAL COMPUTER SCIENCE & SENSOR TECH	3	18,406	27,392	15,613
		Advanced Technology Development		633,601	684,393	490,905
56	0603308A	ARMY MISSILE DEFENSE SYSTEMS INTEGRATION	4	37,929	61,528	12,573
57	0603619A	LANDMINE WARFARE AND BARRIER - ADV DEV	4	7,802	10,934	22,803
58	0603639A	ARMAMENT ENHANCEMENT INITIATIVE	4	37,302	56,286	30,139
59	0603653A	ADVANCED TANK ARMAMENT SYSTEM	4	8,464	1,922	118,139
60	0603713A	ARMY DATA DISTRIBUTION SYSTEM	4	16,084	10	17
61	0603747A	SOLDIER SUPPORT AND SURVIVABILITY	4	7,594	12,719	13,574
62	0603774A	NIGHT VISION SYSTEMS ADVANCED DEVELOPMENT	4	2,240	3,164	10,968

Department of the Army
FY 2001 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test & Eval Army

Date: Feb 2000

Line No	Program Element Number	Item	Act	Thousands of Dollars FY 1999	FY 2000	FY 2001
63	0603779A	ENVIRONMENTAL QUALITY TECHNOLOGY	4	0	0	4,897
64	0603790A	NATO RESEARCH AND DEVELOPMENT (H)	4	3,843	1,858	1,920
65	0603801A	AVIATION - ADV DEV	4	10,996	8,655	5,848
66	0603802A	WEAPONS AND MUNITIONS - ADV DEV	4	0	4,681	28,679
67	0603804A	LOGISTICS AND ENGINEER EQUIPMENT - ADV DEV	4	21,337	8,428	6,317
68	0603805A	CBT SERVICE SUPPORT CONTROL SYS EVAL & ANALYS	4	14,312	11,017	13,753
69	0603807A	MEDICAL SYSTEMS - ADV DEV	4	11,205	16,566	15,259
70	0603851A	TRACTOR EARL	4	915	1,079	979
71	0603854A	ARTILLERY SYSTEMS DEMONSTRATION/VALIDATION	4	300,429	266,158	355,309
72	0603856A	SCAMP BLOCK II (SPACE)	4	7,449	10,622	20,277
73	0603889A	COUNTERDRUG R&D PROJECTS	4	800	0	0
		Demonstration and Validation		488,701	475,627	661,451
74	0604201A	AIRCRAFT AVIONICS	5	15,027	6,324	42,280
75	0604220A	ARMED, DEPLOY OH-58D	5	0	0	532
76	0604223A	COMANCHE	5	352,217	463,124	614,041
77	0604270A	EW DEVELOPMENT	5	77,557	80,019	61,056
78	0604280A	JOINT TACTICAL RADIO SYSTEM	5	0	36,520	62,218
79	0604321A	ALL SOURCE ANALYSIS SYSTEM	5	35,246	53,248	44,084
80	0604328A	TRACTOR EARL	5	1,834	2,826	2,916
81	0604329A	MODERNIZED HELLFIRE	5	0	0	4,969
82	0604601A	INFANTRY SUPPORT WEAPONS	5	0	0	2
83	0604604A	MEDIUM TACTICAL VEHICLES	5	0	1,958	1,959
84	0604609A	SMOKE, OBSCURANT AND TARGET DEFEATING SYS-ED	5	659	913	3,461
85	0604611A	JAVELIN (AWWS-M)	5	3,996	489	490
86	0604619A	LANDMINE WARFARE	5	23,825	13,218	15,902
87	0604622A	FAMILY OF HEAVY TACTICAL VEHICLES	5	7,992	1,373	0
88	0604633A	AIR TRAFFIC CONTROL	5	1,550	4,911	2,026
89	0604641A	TACTICAL UNMANNED GROUND VEHICLE	5	2,528	4,905	0
90	0604642A	LIGHT TACTICLE WHEELED VEHICLE	5	0	7,441	9,893
91	0604645A	ARMORED SYSTEMS MODERNIZATION (ASM)-ENG DEV	5	4,259	2,877	2,200
92	0604649A	ENGINEER MOBILITY EQUIPMENT DEVELOPMENT	5	69,044	57,880	0
93	0604710A	NIGHT VISION SYSTEMS - ENG DEV	5	19,490	38,266	32,574
94	0604713A	COMBAT FEEDING, CLOTHING, AND EQUIPMENT	5	62,500	60,600	86,321

Department of the Army
FY 2001 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test & Eval Army

Date: Feb 2000

Line No	Program Element Number	Item	Act	Thousands of Dollars FY 1999	FY 2000	FY 2001
95	0604715A	NON-SYSTEM TRAINING DEVICES - ENG DEV	5	67,515	72,529	73,295
96	0604716A	TERRAIN INFORMATION - ENG DEV	5	6,320	5,308	6,082
97	0604726A	INTEGRATED METEOROLOGICAL SUPPORT SYSTEM	5	1,901	2,301	1,771
98	0604739A	JTT/CIBS-M (TIARA)	5	4,192	4,519	6,060
99	0604741A	AIR DEFENSE C2I - ENG DEV	5	13,033	7,943	16,462
100	0604746A	AUTOMATIC TEST EQUIPMENT DEVELOPMENT	5	9,423	16,063	12,956
101	0604760A	DISTRIBUTIVE INTERACTIVE SIMULATIONS ENG DEV	5	2,634	7,605	20,689
102	0604766A	TAC EXPLOIT NAT CAP (TENCAP)-EMD (TIARA)	5	42,025	71,879	57,419
103	0604768A	BRILLIANT ANTI-ARMOR SUBMUNITION(BAT)	5	131,940	142,753	96,102
104	0604770A	JOINT SURVEILLANCE/TARGET ATTACK RADAR SYSTEM	5	5,316	25,676	17,898
105	0604778A	POSITIONING SYS DEVEL (SPACE)	5	365	439	2,420
106	0604780A	COMBINED ARMS TACTICAL TRAINER (CATT)	5	21,644	19,775	18,498
107	0604801A	AVIATION - ENG DEV	5	11,056	13,439	7,104
108	0604802A	WEAPONS AND MUNITIONS - ENG DEV	5	39,650	68,464	22,505
109	0604804A	LOGISTICS & ENGINEER EQUIPMENT - ENG DEV	5	26,620	22,844	20,457
110	0604805A	COMMAND, CONTROL, COMMUNICATIONS SYSTEMS - ED	5	19,618	23,836	49,316
111	0604807A	MEDICAL MATERIEL/MED BIO DEFENSE EQUIPMENT ED	5	5,160	9,636	6,318
112	0604808A	LANDMINE WARFARE/BARRIER - ENG DEV	5	37,467	29,893	69,584
113	0604814A	SENSE AND DESTROY ARMOR - ENG DEV	5	30,305	24,128	52,848
114	0604817A	COMBAT IDENTIFICATION	5	15,520	8,566	5,362
115	0604818A	ARMY TACTICAL COMM & CONT HARDWARE & SOFTWARE	5	33,993	38,970	33,420
116	0604819A	LINE-OF-SIGHT ANIT-TANK MISSILE (LOSAT)	5	0	0	26,800
117	0604820A	RADAR DEVELOPMENT	5	6,708	5,089	8,429
118	0604823A	FIREFINDER	5	19,601	39,860	37,363
119	0604824A	COSSI	5	16,351	0	0
120	0604854A	ARTILLERY SYSTEMS - ENGINEERING DEVELOPMENT	5	1,059	4,782	20,105
121	0605013A	ARMY INFORMATION TECHNOLOGY DEVELOPMENT	5	0	0	94,170
		Engineering and Manufacturing Development		1,247,140	1,503,189	1,770,357
122	0604256A	THREAT SIMULATOR DEVELOPMENT	6	12,354	19,683	13,901
123	0604258A	TARGET SYSTEMS DEVELOPMENT	6	12,379	13,298	13,346
124	0604759A	MAJOR TEST & EVALUATION INVESTMENT	6	35,551	39,095	44,019
125	0605103A	RAND ARROYO CENTER	6	16,812	17,523	19,872
126	0605301A	ARMY KWAJALEIN ATOLL	6	127,470	139,322	153,326

Department of the Army
FY 2001 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test & Eval Army

Date: Feb 2000

Line No	Program Element Number	Item	Act	Thousands of Dollars FY 1999	FY 2000	FY 2001
127	0605326A	CONCEPTS EXPERIMENTATION	6	16,954	20,785	15,410
128	0605502A	SMALL BUS INV RSCH/SMALL BUS TECH PILOT PROG	6	112,204	0	0
129	0605601A	ARMY TEST RANGES AND FACILITIES	6	120,024	146,485	119,657
130	0605602A	ARMY TECHNOLOGY & SUSTAINING INSTRUMENTATION	6	41,726	31,439	33,156
131	0605604A	SURVIVABILITY/LETHALITY ANALYSIS	6	33,341	34,892	27,248
132	0605605A	DOD HIGH ENERGY LASER SYS TEST FAC (HELSTF)	6	23,131	30,803	14,521
133	0605606A	AIRCRAFT CERTIFICATION	6	2,878	3,010	3,200
134	0605702A	METEOROLOGICAL SUPPORT TO RDT&E ACTIVITIES	6	6,539	6,823	6,927
135	0605706A	MATERIEL SYSTEMS ANALYSIS	6	9,557	8,783	8,737
136	0605709A	EXPLOITATION OF FOREIGN ITEMS	6	3,882	4,112	3,582
137	0605712A	SUPPORT OF OPERATIONAL TESTING	6	64,312	68,659	71,079
138	0605716A	ARMY EVALUATION CENTER	6	26,248	24,163	26,337
139	0605801A	PROGRAMWIDE ACTIVITIES	6	67,210	64,014	73,811
140	0605803A	TECHNICAL INFORMATION ACTIVITIES	6	19,252	15,859	26,749
141	0605805A	MUNITIONS STANDARDZION EFFECTIVENESS & SAFETY	6	10,616	18,800	11,276
142	0605853A	ENVIRONMENTAL CONSERVATION	6	3,117	0	0
143	0605854A	POLLUTION PREVENTION	6	9,427	0	0
144	0605856A	ENVIRONMENTAL COMPLIANCE-RDT&E	6	51,522	4,000	0
145	0605857A	ACQUISITION POLLUTION PREVENTION	6	0	0	5,418
146	0605876A	MINOR CONSTUCTION (RPM) - RDTE	6	4,049	0	0
147	0605878A	MAINTENANCE AND REPAIR (RPM) - RDTE	6	90,568	0	0
148	0605879A	REAL PROPERTY SERVICES (RPS)	6	85,645	0	0
149	0605896A	BASE OPERATIONS-RDT&E	6	233,611	0	0
150	0605898A	MANAGEMENT HEADQUARTERS (RSCH & DEVELOPMENT)	6	21,983	27,746	5,371
151	0909999A	CLOSED ACCOUNT ADJUSTMENT	6	524	0	0
		RDT&E Management Support		1,262,886	739,294	696,943
152	0603778A	MLRS PRODUCT IMPROVEMENT PROGRAM	7	25,083	66,595	59,523
153	0102419A	JOINT LAND ATTACK CRUISE MISSILE DEFENSE (JLENS)	7	12,638	24,722	24,996
154	0203610A	EMERGENCY PREPAREDNESS TRAINING	7	15,000	6,000	0
155	0203726A	ADV FIELD ARTILLERY TACTICAL DATA SYSTEM	7	34,569	40,860	36,816
156	0203735A	COMBAT VEHICLE IMPROVEMENT PROGRAMS	7	89,010	83,271	99,423
157	0203740A	MANEUVER CONTROL SYSTEM	7	28,720	45,776	48,910
158	0203744A	AIRCRAFT MODIFICATIONS/PRODUCT IMPROV PROGRAM	7	23,577	80,786	95,829

Department of the Army
FY 2001 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test & Eval Army

Date: Feb 2000

Line No	Program Element Number	Item	Act	Thousands of Dollars FY 1999	FY 2000	FY 2001
159	0203752A	AIRCRAFT ENGINE COMPONENT IMPROVEMENT PROGRAM	7	6,543	3,859	2,929
160	0203758A	DIGITIZATION	7	40,056	29,941	29,671
161	0203759A	FORCE XXI BATTLE CMD, BRIGADE & BELOW	7	56,328	65,176	63,601
162	0203761A	FORCE XXI WARFIGHTING RAPID ACQUISITION PGM	7	0	36,621	6,021
163	0203801A	MISSILE/AIR DEFENSE PRODUCT IMPRV PROGRAM	7	14,452	32,211	12,365
164	0203802A	OTHER MISSILE PRODUCT IMPROVEMENT PROGRAMS	7	1,201	17,687	64,418
165	0203808A	TRACTOR CARD	7	3,780	3,869	3,837
166	0208010A	JOINT TACTICAL COMMUNICATIONS PROG (TRI-TAC)	7	34,086	18,293	38,926
167	0208053A	JOINT TACTICAL GRD STATION (TIARA)	7	11,576	27,849	6,267
168	0301359A	SPECIAL ARMY PROGRAM	7	9,479	18,796	5,215
169	0303140A	INFORMATION SYSTEMS SECURITY PROGRAM	7	14,650	15,247	8,140
170	0303141A	GLOBAL COMBAT SUPPORT SYSTEM - ARMY	7	0	0	71,955
171	0303142A	SATCOM GROUND ENVIRO (SPACE)	7	50,648	35,958	43,229
172	0303150A	ARMY GLOBAL C2 SYS	7	17,455	11,542	14,234
173	0305114A	TRAFFIC CNTL/APPROACH/LANDING SYS (JPALS)	7	0	0	783
174	0305128A	SECURITY AND INTELLIGENCE ACTIVITIES	7	899	6,866	0
175	0305204A	TACTICAL UNMANNED AERIAL VEHICLE	7	50,189	43,087	29,427
176	0305206A	AIRBORNE RECONNAISSANCE ADVANCED DEVELOPMENT	7	7,224	4,895	4,898
177	0305208A	DISTRIBUTED COMMON GROUND SYSTEMS	7	8,585	8,004	7,894
178	0708045A	MANUFACTURING TECHNOLOGY	7	50,532	99,528	57,906
179	1001018A	NATO JSTARS - TIARA	7	2,784	0	0
		Operational Systems Development		609,064	827,439	837,213
		Total Research Development Test & Eval Army		5,030,770	5,225,268	5,260,346

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10	0602303A	Missile Technology	123
11	0602307A	Advanced Weapons Technology	129
12	0602308A	Advanced Concepts and Simulations	131
13	0602601A	Combat Vehicle and Automotive Technology	139
14	0602618A	Ballistics Technology	157
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57	0603619A	Landmine Warfare and Barrier - Advanced Development	515
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60	0603713A	Army Data Distribution System	543
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Sensors and Electronic Survivability	0602120A	95
Smoke, Obscurant and Target Defeating System - Engineering Development	0604609A	737
Soldier Support and Survivability	0603747A	553
Support of Operational Testing	0605712A	1253
Survivability/Lethality Analysis	0605604A	1223
Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)	0604766A	911
Tactical Unmanned Aerial Vehicles	0305204A	1505
Tactical Unmanned Ground Vehicle	0604641A	759
Tank and Medium Caliber Ammunition	0603639A	523
Target Systems Development	0604258A	1179
Technical Information Activities	0605803A	1269
Terrain Information - Engineering Development (TIARA)	0604716A	849
Threat Simulator Development	0604256A	1175
University and Industry Research Centers	0601104A	67
Warfighter Advanced Technology	0603001A	333
Warfighter Technology	0602786A	275
Weapons and Munitions - Advanced Development	0603802A	597
Weapons and Munitions - Engineering Development	0604802A	959
Weapons and Munitions Advanced Technology	0603004A	389
Weapons and Munitions Technology	0602624A	173

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603308A Army Missile Defense Systems Integration

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	37929	61528	12573	15760	16411	21955	22272	Continuing	Continuing
D979 Tactical Simulation Interface Unit (TSIU)	1445	0	0	0	0	0	0	0	1445
D988 Range Upgrades	4816	0	0	0	0	0	0	0	4816
D989 Nautilus/THEL	12038	18618	0	0	0	0	0	0	30656
D990 Space and Missile Defense (SMD) Integration	2983	28900	3398	3566	3847	9145	9158	Continuing	Continuing
D997 Space and Missile Defense Battlelab (SMDBL)	16647	14010	9175	12194	12564	12810	13114	Continuing	Continuing

A. Mission Description and Budget Item Justification: HQDA General Order No. 5, 1 March 1998, designated the US Army Space and Missile Defense Command (USASMDC), the specified proponent for space and National Missile Defense (NMD) and the operational integrator for Theater Missile Defense (TMD). In response to this designation, the Missile Defense Battle Integration Center (MDBIC) and other existing USASMDC elements were reorganized and merged to form the Space and Missile Defense Battle Lab (SMDBL). The SMDBL is chartered to develop warfighting concepts, focus military science and technology research, and conduct warfighting experiments. The reorganization also created the Force Development and Integration Center (FDIC), a major support element of USASMDC. This project funds the FDIC, which was created to execute the specified proponency role of the USASMDC. The FDIC develops space and NMD solutions to Doctrine, Training, Leader Development, Organization, Materiel, and Soldiers (DTLOMS) and executes their implementation. This project funds the production of requirements for hardware and software solutions, the interfaces with technology development, and the development of operational and system architectures for Space, NMD and TMD. In addition, this project funds analysis and experimentation designed to integrate the pillars of TMD (active defense, passive defense, attack operations, and battle management/command, control, communications, computers, and intelligence functions) and to input Army TMD requirements into Joint forums. This program also supports Aviation and Artillery attack operation systems and passive missile defense materiel solutions.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603308A Army Missile Defense Systems Integration

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	38957	12353	12580
Appropriated Value	39240	63553	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-283		
b. SBIR / STTR	-874		
c. Omnibus or Other Above Threshold Reductions		-236	
d. Below Threshold Reprogramming	+2	-1000	
e. Rescissions	-156	-789	
Adjustments to Budget Years Since FY 2000/2001 PB			-7
Current Budget Submit (FY 2001 PB)	37929	61528	12573

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603308A Army Missile Defense Systems Integration

PROJECT: D979

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D979 Tactical Simulation Interface Unit (TSIU)	1445	0	0	0	0	0	0	0	1445

A. Mission Description and Budget Item Justification: As the Army moves toward digitization, Force XXI and beyond, many command and control functions that were once done by grease pencil and map overlays have been replaced by automated, computer controlled workstations. Until only recently, training soldiers on their workstations with realistic simulations was not possible. The Tactical Simulation Interface Unit (TSIU) bridges the gap between the simulation environments and command and control systems by interfacing with simulations compliant with the Institute of Electrical, Electronic Engineer (IEEE) standards governing the use of Distributed Interactive Simulations. The TSIU is a computer "black box" which interfaces, processes, and routes computer-generated simulations to the appropriate Command, Control, Communications, Computers, and Intelligence (C4I) systems. The C41 operator then inputs orders from his workstation, causing the process to be reversed and the simulation to respond accordingly. The TSIU provides the hardware to permit "human in the loop" training to take place using simulations on tactical workstations. The program was accepted as a Warfighter Rapid Acquisition Program (WRAP) initiative, permitting a rapid acquisition of the system to take place.

FY 1999 Accomplishments:

- 1445 Developed and prepared documentation, standards, qualifications, and other requirements taking the TSIU from the research laboratory to an acquisition program. Defined and documented message protocols, linking simulations for aviation, artillery fires, Unmanned Aerial Vehicles, and air defense to tactical message formats, including: Variable Message Format; U.S. Messages Test Format; Moving Target Indicator and Position; Tactical Data Link-B (TADIL-B), Tactical Information Broadcast Services (TBIS), TRAP Data Dissemination (TDDS); Secure Comm Data Link (SCDL); and FAAD Data Link (FDL).

Total 1445

FY 2000 Planned Program: Project not funded in FY 2000

FY 2001 Planned Program: Project not funded in FY 2001

C. Acquisition Strategy: Not applicable

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603308A Army Missile Defense Systems Integration

PROJECT: D979

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Format Definition	1-3 Qtr						
Documentation	2nd Qtr						
Build 1 Dev	4th Qtr						
One SAF Integration	3rd Qtr						

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603308A Army Missile Defense Systems Integration

PROJECT: D988

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D988 Range Upgrades	4816	0	0	0	0	0	0	0	4816

A. Mission Description and Budget Item Justification: Project D988 funds completed range upgrades in support of Atmospheric Interceptor Technology flight tests. In late 1999, the U.S. Army Space and Missile Defense Command participated in the second of two flights from Kodiak Island, Alaska, designed to provide an opportunity for demonstrating various elements potentially suitable for incorporation into a ballistic missile defense system. The flight is a follow-on to the successful missile defense risk reduction flight conducted from Vandenberg Air Force Base, California, on November 5, 1997, and the ballistic missile defense demonstration flight conducted from Kodiak Launch Complex, Alaska, on November 5,1998.

FY 1999 Accomplishments:

- 4816 Support of test infrastructure upgrades for flight tests involving Atmospheric Interceptor Technology (AIT) interceptor components at the Kodiak Launch Complex on Kodiak Island, AK.

Total 4816

FY 2000 Planned Program: Project not funded in FY 2000

FY 2001 Planned Program: Project not funded in FY 2001

C. Acquisition Strategy: Not applicable beyond FY99.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2004	FY 2005
Initiate long-lead & fabrication	2nd Qtr							
Complete fabrication/integration	4th Qtr							

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603308A Army Missile Defense Systems Integration

PROJECT: D989

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D989 Nautilus/THEL	12038	18618	0	0	0	0	0	0	30656

A. **Mission Description and Justification:** Project D989 funds continue the Tactical High Energy Laser (THEL) Advanced Concept Technology Demonstration (ACTD) and field testing at the High Energy Laser Systems Test Facility (HELSTF). The THEL ACTD is a joint U.S./Israel program to design, fabricate, and test a tactical-sized THEL demonstrator to evaluate the effectiveness of high energy lasers (HELs) to defeat the threat posed by Katyusha and similar short range artillery rockets. The THEL ACTD is an integration effort that supports the active defense pillar of Theater Missile Defense. The Radar Power Technology will develop technology for lighter, smaller, and more fuel efficient radar systems. Acoustic Technology Research will Develop and demonstrate the benefit of acoustic technologies employed on the surface or on airborne platforms to detect and assist in classification of high priority targets and cruise missiles.

FY 1999 Accomplishments:

•	12038	Continued THEL integration and field testing at HELSTF.
Total	12038	

FY 2000 Planned Program:

•	9545	Completion of the THEL system demonstration test and evaluation at HELSTF.
•	3818	Radar Power Technology – demonstrate use of distributed power to drive radar sub-array; demonstrate S/N improvement based on advanced signal processing.
•	3818	Acoustic Technology Research – Develop experimental hardware and software. Conduct field test for signature characterization. Develop concept for elevated acoustic sensor system to detect stealthy battlefield threats. Develop concept for low frequency acoustic detection system.
•	909	Family of Systems Simulators
•	528	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	18618	

C. **Acquisition Strategy:** On 18 Jun 99, the THEL contract was restructured to provide a cost sharing arrangement where the US pays 25%, Israel pays 25%, and TRW pays 50% of the cost until the THEL system successfully shoots down a rocket.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603308A Army Missile Defense Systems Integration

PROJECT: D989

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2004	FY 2005
Initiate Long Leads & Fabrication								
Complete Fabrication/Integration	2nd Qtr							
Complete TRW THEL ACTD Testing	4th Qtr							
Complete HELSTF Field Testing		3rd Qtr						

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603308A Army Missile Defense Systems Integration

PROJECT: D990

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D990 Space and Missile Defense (SMD) Integration	2983	28900	3398	3566	3847	9145	9158	Continuing	Continuing

A. **Mission Description and Justification:** HQDA General Order No. 5, 1 March 1998, designated the US Army Space and Missile Defense Command (USASMDC), the specified proponent for space and National Missile Defense (NMD) and the operational integrator for Theater Missile Defense (TMD). In response to this designation, the existing USASMDC elements were reorganized and merged to form the Force Development and Integration Center (FDIC). This project funds the FDIC, a major support element of USASMDC, created to execute the specified proponency role of USASMDC by developing space and NMD solutions to Doctrine, Training, Leader Development, Organization, Materiel, and Soldiers (DTLOMS) and execute their implementation. This project funds the production of requirements for hardware and software solutions, interfaces with technology development, and development of operational and system architectures for Space, NMD and TMD. In addition, this project funds analysis and experimentation designed to integrate the pillars of TMD (active defense, passive defense, attack operations, and battle management/command, control, communications, computers, and intelligence functions) and to input Army TMD requirements into Joint forums. These inter-pillar and intra-pillar products, required to accomplish the integrated TMD mission, exceed the scope of other programs. This program also supports Aviation and Artillery attack operation systems and passive missile defense materiel solutions. The Microelectromechanical System (MEMS) program will develop generic packaging technologies applicable to a wide array of MEMS structures and applications. The program will define and demonstrate these packaging technologies on a MEMS monitoring system for space and missile defense applications. The MSI program will demonstrate the enhanced detection of weapons of mass destruction using miniature sensor designs and rapid methods.

FY 1999 Accomplishments:

- 2983 Developed and published FM 40-1 (JTAGS Operations), TP 525-91 (TMD Integrating Concept) and Theater Missile Defense (TMD) Master Plan. Developed and established the Army Space Master Plan, the Functional Area (FA) 40, Space Operations Officer Personnel Proponency Office and began developing the FA 40 Training Course. Participated as Army Lead in Joint TAMD and JMAA processes. Completed the NMD ORD.

Total 2983

FY 2000 Planned Program:

- 3116 Space and Missile Defense - Plan, develop, and execute concepts and DTLOMS solutions for Space and NMD. Represent users of space and NMD in development of operational and training requirements and test and evaluation to include SBIRS, M3P/JTAGS and space control capabilities. Lead Army's efforts in Joint Theater Missile Defense (JTMD) architecture development. Expand Space and TMD Master Plans to the 2010 time frame. Sponsor exploration of future space and missile defense warfighting efforts. As the FA 40 personnel proponent, ensure that the Army's Space Operations Officers are thoroughly trained and assigned effectively to meet the needs of Joint and Army commanders.
- 6223 Microelectromechanical System - Define opportunities for MEMS packaging. Initiate tasks in development of packaging demonstration.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603308A Army Missile Defense Systems Integration PROJECT D990

FY 2000 Planned Program: (continued)

•	1915	Aero-acoustics Instrumentation Technology – Test facility development; high frequency sensor development; and composite structure dynamic pressure instrumentation.
•	2872	Missile System Integration - Demonstrate a field portable device for detection; complete design of miniaturized sensor; complete rapid spectral analysis method.
•	14073	Missile Defense Flight Experiment Support – Support flight test experiment in the FY 01 flight from the Kodiak Launch complex.
•	701	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	28900	

FY 2001 Planned Program:

•	3398	Space and Missile Defense - Increase FDIC's efforts to plan, develop, and execute concepts and DTLOMS solutions for Space and NMD. Represent users of space and NMD in development of operational and training requirements and test and evaluation to include SBIRS, M3P/JTAGS and space control capabilities. Lead Army's efforts in developing and executing Joint Theater Missile Defense (JTMD) architecture. Expand Space and TMD Master Plans beyond the 2010 time frame. Sponsor exploration of future space and missile defense warfighting efforts. As the personnel proponent for space operations officers, ensure that the Army's Space Operations Officers (FA 40) are thoroughly trained and assigned effectively to meet the needs of commanders.
Total	3398	

B. Other Program Funding Summary: There are no other related efforts.

C. Acquisition Strategy: Program is continuous. Various performers will conduct planned accomplishments.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2004	FY 2005
Continue development/synchronization of space and NMD DTLOM solutions & TMD integration, & execute personnel proponency responsibilities.	1-4 Qtrs	1-4 Qtrs	1-4 Qtrs	1-4 Qtrs	1-4 Qtrs	1-4 Qtrs	1-4 Qtrs	1-4 Qtrs

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603308A Army Missile Defense Systems Integration

PROJECT: D990

I. Product Development: Not applicable

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Govt Support and Support Contracts	MIPR CPFF, VAR	Various, VA	5350	2983		28900		3398		Cont	Cont	
Subtotal Support Costs:			5350	2983		28900		3398		Cont	Cont	

III. Test and Evaluation: Not applicable

IV. Management Services: Not applicable

Project Total Cost:			5350	2983		28900		3398		Cont	Cont	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603308A Army Missile Defense Systems Integration

PROJECT: D997

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D997 Space and Missile Defense Battlelab (SMDBL)	16647	14010	9175	12194	12564	12810	13114	Continuing	Continuing

A. **Mission Description and Justification:** Project D997 funds the development of warfighting concepts, focuses military science and technology research, and conducts warfighting experiments, within the Space and Missile Defense Battlelab (SMDBL), (formerly the Missile Defense Battle Integration Center (SMDBIC). The project will provide users and materiel developer results from experimentation programs, operational analyses, and synthetic battlefield models, simulations, and tools for integrating missile defense and space assets and supporting requirement development activities. The mission of the SMDBL is to integrate space and missile defense into Force XXI/ joint and combined operations through the planning, execution, and analysis of warfighting experiments and technology demonstrations in order to examine advanced concepts and technology which enhance the Commander's capability to fight and win on the 21st century battlefield. This type integration, experimentation, analysis of space and missile defense is not done elsewhere in the Army.

FY 1999 Accomplishments:

- 8938 Conducted experimentation for the following: Army Experiment; III Corps Warfighter Experiment; U. S. Army Central Command Deep Operations Coordination Cell Exercise; Joint Project Optic Windmill; Northern Edge 99; Joint Task Force Exercise; Roving Sands; Ulchi Focus Lens; Battle Command Reengineering experiment; No Horizons Exp; Weather Army Battle Command System Integration; Meteorological Automated Sensor & Transceivers Evaluation; Silent Lightening; and Force Warning Exp. Deployed weather satellite workstation to Albania; developed SMDC Experimentation Campaign Plan, linking Army and Joint Exp. Campaign Plans; developed experiment plans for the Discoverer II Program.
- 950 Completed additional development of the Synthetic Battlefield Environment, to include various interfaces to enhance the realism and fidelity of missile defense training, exercises, and testing. Provided enhancements to the Synthetic Battlefield Center (SBC) to support both customer and internally funded exercises, and warfighter tactical workstation stimulation testing.
- 4816 Conducted stand alone training events, incorporating advanced missile defense hardware/software products linking simulations to tactical workstations, and further enhanced After Action Review (AAR) capabilities for Experiments, Exercises, Training and Analysis. Developed Fire Support Simulation Tools (FSST) and the Digital Battle Staff Trainer (DBST). Developed and field tested prototype simulation and training tools including ARCTIC; Tactical Simulation Interface Unit (TSIU) and the STALKER. "Fly away package" for 32nd AAMDC modernization.
- 1205 Performed space and missile defense studies and analyses, including Space Control Map Exercise DTLOMS solutions for a space threat in the 2010 timeframe; Space Mission Area Analysis; Joint Theater & Air Missile Defense (JTAMD) related analysis; analyses of advanced concepts & technologies. Incorporated existing testbeds and migrated to the DOD's High-level Architecture. Provided modeling, simulation and advanced visualization capabilities for battle lab experiments, trainers, material developers and other decision-makers.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603308A Army Missile Defense Systems Integration
	PROJECT D997

FY 1999 Accomplishments: (continued)

•	738	Established "space" site in Warfighter Simulation (WARSIM) Functional Description of the Battlespace; completed testing for One Semi-automated forces (SAF) beta code; established plan to develop a space & missile defense models & simulation investment strategy; initiated incorporation of space functionality into Battle Command Training Program.
Total	16647	

FY 2000 Planned Program:

•	5957	Plan, develop, and execute SMDBL experiments in coordination with TRADOC requirements and procedures. Experiments directly involved in Joint Contingency Force Advanced Warfighter Experiment (AWE) - Tactical Weather – IMETS; Space-Based Forced Warning; Eagle Vision II; and Enroute Mission Planning and Rehearsal System (EMPRS) and Army Space Exploitation Demonstration Program/Army Battle Control System Integration. In addition, Total Defender Experiment; No Horizons Experiment; Black & White Integration Phase I; Army Experimental Campaign Plan; and Battlefield Command Reengineering Initiative Experiment Phase I.
•	5038	Plan, develop, execute SMDBL participation on Army/Joint Exercise and Training events, to include Strike Force, Fire Simulation Support Tools, Digital Battle Simulation Tool Follow-On, and Optic Windmill 00. Also provides for Tactical Simulation Integration Unit (TSIU) IV &V and TSIU High Level Architecture compliance.
•	1570	Model and simulation infrastructure to support experimentation, exercise and training, and analysis programs. Includes mgmt of M&S domains, continuation of M&S investment strategy, incorporate space and missile defense functionality in BCTP events; include space and missile defense in the Joint Warfighting Simulation (JWARS), WARSIM functional description of the battlefield (FDB).
•	1155	Operational analysis support to space and missile defense experiment programs and support to other SMDC and Army programs requiring operational analysis, including establishment of capability to conduct analysis of the impacts of space-based sensors in an approved Army simulation; analysis of military utility of space-based radar and spectral imagery; form federation between EADSIM and Fire Support Simulation (FIRESIM) to simultaneously conduct analysis of active defense and attack operations.
•	290	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	14010	

FY 2001 Planned Program:

•	3783	Conduct Missile Defense Integration & Experiments and Exercises – Theater Missile Defense Coordination Cell Exercise; Northern Edge; Fire Simulations Support Tools Digital Battlefield Sustainment Trainer; Foal Eagle; Fleet Battle; No Horizons Phase II; Medium Combat Brigade Army Warfighter Experiment; Hardware/Software Integration Center upgrade/enhancements.
•	3563	Conduct Space Experimentation & Exercises – Battle Command Reengineering Initiative (BCRI); Enroute Mission Planning & Rehearsal System (EMPRS) Phase II; Light Forces Battle Command Advanced Concept Technology Demonstration.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000	
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603308A Army Missile Defense Systems Integration	PROJECT D997

FY 2001 Planned Program: (continued)

•	1829	Develop Models, Simulations, and Assessment Tools -- Enhancements to Joint Simulations (JSIMs), Warfighter Simulation (WARSIM); maintain modeling and simulation infrastructure for experiments, exercises and analysis programs.
Total	9175	

B. Other Program Funding Summary: There are no other related efforts.

C. Acquisition Strategy: Program is continuous. Contracts/Tasks Orders are in place for obligation. Various performers will conduct planned accomplishments.

D. Schedule Profile: Program is continuous. Various performers will conduct planned accomplishments

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603308A Army Missile Defense Systems Integration

PROJECT: D997

I. Product Development: Not applicable

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 2000 Award Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
b. Experiments, Exercises, Enhancements, Maintenance, analysis	CPAF/CPFF	Various, AL & CO	28254	12166		9210		4675		Cont	54305	
c. Govt Support and Support Contracts	MIPR	Various, AL & CO	9000	4481		4800		4500		Cont	22781	
Subtotal Support Costs:			37254	16647		14010		9175			77086	

III. Test and Evaluation: Not applicable

IV. Management Services: Not applicable

Project Total Cost:			37254	16647		14010		9175			77086	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603619A Landmine Warfare and Barrier - Advanced Development

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	7802	10934	22803	30773	8222	4851	7888	Continuing	Continuing
D005 Landmine Advanced Development	1100	4068	12761	11376	0	0	0	Continuing	Continuing
D606 Countermine/Barrier Advanced Development	6702	6866	10042	19397	8222	4851	7888	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program element provides for advanced development of new mine and countermine systems by prototyping modern munitions technology, advanced development sensors, logic networks, fuzes, power sources, warhead components and modules into complete systems. It provides for advanced development of the Intelligent Combat Outpost (Raptor) which will significantly enhance minefield effectiveness through coordinated attack/tactics and elimination of overwatch forces. It also provides for the initiation and/or continuation of advanced development of the Handheld Stand-off Minefield Detection System (HSTAMIDS), and Ground Stand-off Minefield Detection System (GSTAMIDS).

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	6707	4099	19832
Appropriated Value	6778	11099	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-71		
b. SBIR/STTR	-178		
c. Omnibus or other above threshold reduction		-46	
d. Below threshold reprogramming	+1299		
e. Rescissions	-26	-119	
Adjustments to Budget Years Since FY 2000/2001 PB			+2971
Current Budget Submit (FY 2001 PB)	7802	10934	22803

Change Summary Explanation: Funding - FY 1999: The 1299 increase is the net o f a 2700 below threshold reprogramming from PE63619 D005 to PE64619/D088, Wide Area Munition (WAM) and a 3999 reprogramming from PE 64808/D415 to D606 for continuation of HSTAMIDS Program Definition and Risk Reduction (PDRR) effort.

FY 2001: Increase (+2971) to support Ground Stand-off Minefield Detection System (GSTAMIDS) development; system inflation

Schedule: Raptor program restructured, PDRR phase completion extended from 4Q00 to 4Q02.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE: February 2000
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603619A Landmine Warfare and Barrier - Advanced Development / PROJECT: D005

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D005 Landmine Advanced Development	1100	4068	12761	11376	0	0	0	Continuing	Continuing

A. **Mission Description and Justification:** Intelligent Combat Outpost (Raptor) will improve the capability of smart mines/munitions used by the United States Army enhances the effectiveness of current and future mines/munitions by providing real time targeting data, increase situational awareness, and coordinate attack capabilities while eliminating the need for overwatch forces.

FY 1999 Accomplishments:

•	320	Developed MS I documentation
•	500	Developed Seismic/Acoustic Model
•	180	Prepared for participation in Army Warfighting Experiment and continued Simulator development
•	100	Prepared acquisition package
Total	1100	

FY 2000 Planned Program:

•	400	Conduct Source Selection Evaluation Board
•	1000	Conduct study of WAM to Gateway interface requirements and develop Interface Control Document
•	2209	Initiate sub-system component development for PDRR demonstration
•	350	Complete simulation development
•	109	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	4068	

FY 2001 Planned Program:

•	10591	Continue design/development of Raptor system components: gateway, overwatch sensor, control station, communications
•	910	Initiate fabrication and assembly of 5 sets of Raptor hardware for PDRR test
•	880	Conduct contractor design test and simulation
•	380	Initiate trainer design
Total	12761	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY **4 - Demonstration and Validation**	PE NUMBER AND TITLE **0603619A Landmine Warfare and Barrier - Advanced Development**
	PROJECT **D005**

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE, A Budget Activity 5									
PE 0604808, Project D016, Mine Systems Engineering Development	26213	18225	0	2686	30831	49011	46694	Cont	Cont

C. **Acquisition Strategy:** For Raptor, a Sole Source PDRR contract will be awarded to Textron Defense Systems (Wide Area Munition developer). Decision to continue sole source into EMD phase or initiate a competitive solicitation will be evaluated based on PDRR phase results.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
Raptor MS I/Documentation		2Q						
Complete Eng. Dev. testing			3Q					
Complete Engineering user tests			3Q					
Raptor MS II				4Q				
Complete IOT&E						4Q		
Raptor MS III							4Q	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603619A Landmine Warfare and Barrier - Advanced Development

PROJECT: D005

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Raptor PDRR	CPIF	TBD				2434	Dec99	9549	Oct00	7970	19953	
Subtotal Product Development:						2434		9549		7970	19953	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Eng. support (Raptor)		ARDEC	541	465	Nov98	835	Oct 99	1934	Oct 00	1700	5475	
Simulation/modeling		CREEL	0	500	Nov 98	220	Oct 99	448	Oct 00	340	1508	
Other		various		62		120		300		323	805	
Subtotal Support Costs:			541	1027		1175		2682		2363	7788	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Test support (RAPTOR)		TECOM	0	0		50	Feb 00	186	Feb 01	587	823	
Subtotal Test and Evaluation:						50		186		587	823	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Program management		PM-MCD	144	73	Oct 98	300	Oct 99	344	Oct 00	456	1317	
SBIR/STTR						109					109	
Subtotal Management Services:			144	73		409		344		456	1426	

Project Total Cost:			685	1100		4068		12761		11376	29990	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603619A Landmine Warfare and Barrier - Advanced Development PROJECT D606

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D606 Countermine/Barrier Advanced Development	6702	6866	10042	19397	8222	4851	7888	Continuing	Continuing

A. **Mission Description and Justification:** This project provides for advanced development of new countermine systems by prototyping advanced sensors for evaluation of neutralizing, clearing, breaching and detection concepts which will enhance the U.S. capability in countermine warfare. The program includes the Handheld Stand-off Minefield Detection System (HSTAMIDS), Ground Stand-off Minefield Detection System (GSTAMIDS). The program provides for proof-of-principle for these systems.

FY 1999 Accomplishments:

•	3948	Designed and fabricated three (3) HSTAMIDS prototypes
•	369	Analyzed HSTAMIDS Development Test / Early User Test and Experimentation (DT/EUTE) test results
•	743	Conducted studies to improve HSTAMIDS design
•	1100	Conducted HSTAMIDS component, subsystem & system testing
•	542	Conducted GSTAMIDS Hardware/software growth studies
Total	6702	

FY 2000 Planned Program:

•	3606	Finalize development and fabrication of six HSTAMIDS prototypes
•	1150	Complete HSTAMIDS contractor system test and evaluation
•	1551	Conduct HSTAMIDS government test and evaluation
•	375	Prepare documentation for HSTAMIDS MS II
•	184	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	6866	

FY 2001 Planned Program:

•	1354	Conduct Source Selection for GSTAMIDS Block 1 PDRR
•	750	Conduct Mine system integration analysis for GSTAMIDS Block 1
•	2000	Initiate PDRR design for GSTAMIDS Block 1
•	5938	Initiate system integration for GSTAMIDS Block 1
Total	10042	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603619A Landmine Warfare and Barrier - Advanced Development PROJECT D606

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE, A Budget Activity 5									
PE 0604808A, Project D415, Mine Neutralization/ Detection	11254	11668	33246	25292	29838	17561	22395	Cont	Cont
OPA 3, A Appropriation									
E72800, APOBS		5602	6540	4961	4956				22059
R68200, HSTAMIDS						6803	6839	Cont	Cont
R68100, GSTAMIDS				10189	15931	11528	0	Cont	Cont
M80100, IVMMD	3726								15878
S11500, ASTAMIDS					6036				6095

C. Acquisition Strategy: : For HSTAMIDS, competing contractors (2) competitively selected for PDRR phase which will lead to a down select for the EMD phase. GSTAMIDS will leverage the Vehicle Mounted Mine Detector ATD effort with two competitively selected contractors for a total of five competing contractors in PDRR. One contractor will continue into EMD. Successful EMD contractors will be awarded initial production contract (sole source) with multiple option year buys.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2004	FY 2005
GSTAMIDS Block 0 MS II	1Q*							
GSTAMIDS Block 0 MS III			4Q					
GSTAMIDS Block I MS I**		4Q						
GSTAMIDS Block I MS II				4Q				
GSTAMIDS Block I MS III								4Q
HSTAMIDS MS II			1Q					
HSTAMIDS MS III					4Q			

*Denotes a completed milestone

**MS I will be conducted upon completion of tech base (PE63606/608) effort.

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603619A Landmine Warfare and Barrier - Advanced Development

PROJECT: D606

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
GSTAMIDS PDRR	CPIF	Coleman Research	764	106	Nov98	0		0		0	870	870
GSTAMIDS PDRR	CPIF	Computer Devices of Canada	891	54	Nov98	0		0		0	945	945
GSTAMIDS PDRR	CPIF	GDE	0	138	Nov98					0	138	138
GSTAMIDS PDRR	CPIF	EG&G	0	86	Nov98					0	86	86
GSTAMIDS PDRR	CPIF	GEO Centers	0	138						0	138	138
HSTAMIDS PDRR	CPIF	Coleman Research	4441	2206	Nov98	3482	Jan00			0	10129	10129
HSTAMIDS PDRR	CPIF	GDE	7895	291	Nov98					0	8186	8186
HSTAMIDS PDRR	CPIF	Various	0	1570	Jan99	200	Jan00			0	1770	1770
GSTAMIDS Block 1	CPIF	TBD				0		8088	Dec 00	Cont	Cont	8088
Subtotal Product Development:			13991	4589		3682		8088		Cont	Cont	30360

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
GSTAMIDS Eng. Support		NVESD/CECOM	760			0		0		0	760	
GSTAMIDS Eng. Support		OGA(misc.)	530	17	Oct98					0	547	
HSTAMIDS Eng. Support		NVESD/CECOM	2618	700	Oct98	600				0	3918	
HSTAMIDS Eng. Support		OGA (Misc.)	79	711	various	500				0	1290	
GSTAMIDS Blk 1 Eng. Spt		NVESD/CECOM				0		600	Dec 00	Cont	Cont	
Subtotal Support Costs:			3987	1428		1100		600		Cont	Cont	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
.GSTAMIDS Test support		TECOM	1406	0		0		0		0	1406	
HSTAMIDS Test Support		TECOM	973	545	Feb99	1600		0		0	3118	
Subtotal Test and Evaluation:			2379	545		1600					4524	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603619A Landmine Warfare and Barrier - Advanced Development

PROJECT: D606

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Prog Mgmt GSTAMIDS		PM-MCD	250	14	Oct98	0		0		0	264	
Prog Mgmt GSTAMIDS	CPIF	Various	662			0		0		0	662	
Prog Mgmt HSTAMIDS		PM-MCD	365	126	Oct98	300				0	791	
Prog Mgmt HSTAMIDS	CPIF	Various	706							0	706	
Prog Mgmt GSTAMIDS Blk 1		PM-MCD				0		1354	Oct 00	Cont	Cont	
SBIR /STTR						184					184	
Subtotal Management Services:			1983	140		484		1354		Cont	Cont	
Project Total Cost:			22340	6702		6866		10042		Cont	Cont	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603639A Tank and Medium Caliber Ammunition

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	37302	56286	30139	24056	48704	27332	30472	Continuing	Continuing
D643 Tank Ammunition	20448	36668	30139	24056	48704	27332	30472	Continuing	Continuing
D656 X-ROD	16854	19618	0	0	0	0	0	0	191651

A. Mission Description and Budget Item Justification: The Tank and Medium Caliber Ammunition (TMA) program is a comprehensive development to rapidly field advanced tank, medium caliber and other direct fire ammunition and ensure the continued overmatch lethality of the U.S. maneuver force, despite rapid worldwide development of armored vehicle protection technologies. The TMA program identifies promising technology efforts and uses competitive developments and streamlined acquisition procedures to achieve this goal. Current developments are in the areas of kinetic energy, training ammunition, and smart extended range munitions for existing and future weapons platforms. To date, four rounds of tank ammunition have completed development and entered production. All ammunition development funds within this program element (PE) are managed to facilitate transitions between phases, avoid administrative delays and to focus resources on the most promising areas.

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	35784	36937	42511
Appropriated Value	36026	56937	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-242		
b. SBIR / STTR	-926		
c. Omnibus or Other Above Threshold Reductions		-228	
d. Below Threshold Reprogramming	+2588		
e. Rescissions	-144	-423	
Adjustments to Budget Years Since FY 2000/2001 PB			-12372
Current Budget Submit (FY 2001 PB)	37302	56286	30139

Change Summary Explanation: Funding - FY2001: D643 funds realigned (-12200) to support higher priority requirements.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)			DATE: February 2000
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603639A Tank and Medium Caliber Ammunition		PROJECT: D643

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D643 Tank Ammunition	20448	36668	30139	24056	48704	27332	30472	Continuing	Continuing

A. **Mission Description and Justification:** This project provides for the development of all tank ammunition with the exception of the Tank Extended Range Munitions-Kinetic Energy (TERM-KE) formerly known as X-ROD. Providing lethal 120mm munitions is essential in maintaining the overmatch capabilities of the Abrams tank. This point is particularly important since the Army may retain the Abrams Tank for at least the next 20 to 25 years. Ammunition improvements will provide the lethality superiority. The focus of the project is first on the development and production of the M829E3 Kinetic Energy (KE) cartridge. KE cartridges provide the primary anti-tank capability for the armor force. The M829E3 will defeat the growing threat of explosive reactive armor that is increasingly effective against KE penetrators. Additionally, the eventual production of the M829E3 will be critical in maintaining the Depleted Uranium (DU) industrial base. The Army is also developing trainers for the M829E3, and the M830A1 Multi-Purpose Anti-Tank (MPAT) cartridge. The trainers are required since the current trainers, the M865 and M831A1, do not have the required range, flight or physical characteristics to adequately simulate modern tactical tank ammunition and tactical rounds are never used in training. The Army also has a requirement for an Objective Kinetic Energy (OKE) Cartridge for future targets and is in the process of finalizing the requirements for the Tank Extended Range Munitions (TERM). TERM will be capable of engaging targets at extended ranges, either line of sight or beyond line of sight, either autonomously or in conjunction with the Future Scout and Cavalry System (FSCS) and/or any other medium caliber weapon systems. Depending on warfighting and affordability considerations, either TERM or the OKE will begin PDRR development in FY02. The OKE or TERM will defeat advanced active protection systems at extended ranges and be substantially more accurate than current tank ammunition.

FY 1999 Accomplishments:

- 5550 Baselined propellant optimization for M829E3
- 6896 Optimization of cartridge configuration for M829E3
- 6169 Baselined penetrator configuration for M829E3
- 538 STAFF program termination
- 1295 Initiate risk reduction alternative propellant for M829E3

Total 20448

FY 2000 Planned Program:

- 13817 Finalization of cartridge configuration for M829E3
- 5464 Test optimized design for M829E3
- 6535 Conduct producibility improvements for M829E3
- 2000 MPAT Trainer Projectile optimization, propellant development and producibility
- 900 Continued risk reduction alternative propellant for M829E3

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603639A Tank and Medium Caliber Ammunition
	PROJECT D643

FY 2000 Planned Program: (continued)

- 7000 Initiate LRKE Trainer Development
- 952 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs

Total 36668

FY 2001 Planned Program:

- 15089 Complete build of Production Qualification Test (PQT) Hardware for M829E3
- 6750 Initiate testing of PQT hardware for M829E3
- 5400 Finalize Producibility Improvements for M829E3
- 900 Complete risk reduction alternative propellant for M829E3
- 2000 MPAT Trainer design and producibility completion; procure propulsion PQT components

Total 30139

B. Other Program Funding Summary Procurement Ammunition, Army	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
E73300-M831/M831A1 120mm Heat Tank Trainer	58276	32367	48477	47925	48725	48021	47976	Cont	Cont
E73400-M865 120mm KE Tank Trainer	122816	85352	101512	100907	100872	93341	93253	Cont	Cont
E78001-M829A2/E3 120mm Tank KE	14609	31387	0	37385	35569	35496	35413	Cont	Cont
E78007-M830A1 120mm Tank MPAT	10916	14713	0	0	0	0	0	0	547153
E08210-M919 25mm KE (Bradley)	20623	30285	23650	0	0	0	0	0	242069

C. **Acquisition Strategy: M829E3, MPAT and Long Range KE Trainers, TERM/OKE and STAFF** These projects have used a streamlined acquisition strategy since inception. Keeping costs low is paramount while meeting schedule requirements. Integrated Product Teams (IPTs) are being used. A development system contractor, Alliant Techsystems, was selected to develop the M829E3 using a performance specification. Long Range Trainers will be developed using performance specifications and system contractors. Operational Requirements Documents (ORDs) have been approved for M829E3, the two Trainers and Objective Kinetic Energy (OKE). The STAFF closeout occurred in 3QFY99.

D. Schedule Profile	FY1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
M829E3							
Select penetrator	4Q*						
Optimize propellant configuration	1Q-4Q*	1Q*-2Q					

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603639A Tank and Medium Caliber Ammunition

PROJECT: D643

D. Schedule Profile	FY1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Optimize Cartridge Integration		1Q*-4Q					
Test Penetrator vs. Target Suite	2Q-4Q*	1Q*-4Q					
Design Freeze			1Q				
Build Production Qualification Hardware			1Q-4Q				
Begin Production Qualification Test (PQT)			3Q				
Low Rate Production Decision			4Q				
Complete PQT				3Q			
Conduct Initial Operational Test and Evaluation (IOT&E)				2Q-4Q			
Type Classification – Standard					1Q		
Initial Operational Capability					3Q		
STAFF							
Negotiate/Settle Program Termination with Contractor	3Q*						
LONG RANGE KE TRAINER							
Long Range Kinetic Energy (LRKE) Trainer Concept Studies Complete	4Q*						
Manufacture/Design Prototype Test		1Q-4Q	1Q-4Q				
Award Engineering Manufacturing Development (EMD) Contract					1Q		
Optimize Configuration					1Q-3Q		
Design Freeze					3Q		
Build Production Qualification Testing (PQT) hardware					3Q-4Q	1Q	
LRKE PQT						2Q-4Q	1Q
Operational Test							2Q-3Q
LRKE TC-Standard							3Q

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603639A Tank and Medium Caliber Ammunition

PROJECT: D643

D. Schedule Profile	FY1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
MPAT TRAINER							
Projectile Optimization		1Q*-3Q					
Propellant Development		1Q*-4Q	1Q-2Q				
Contractor projectile producibility/cost reduction		3Q-4Q	1Q-3Q				
Cartridge Design Freeze			3Q				
Procure PQT propellant/propulsion components			3Q-4Q	1Q			
Procure "other" PQT components/LAP				1Q-4Q			
Procure user test quantity					1Q-2Q		
Test PQT					1Q-3Q		
User Test					3Q		
Type Classify					4Q		
TERM/OBJECTIVE KE							
Milestone I				3Q			
Award PDRR Contracts				3Q			
Preliminary Design Review					1Q		
Critical Design Review						1Q	
Component Demonstrations					1Q-4Q	1Q-4Q	
Demonstrate Integrated Design							1Q-4Q
Milestone II							4Q
Award EMD Contract							4Q

*Completed milestone

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603639A Tank and Medium Caliber Ammunition

PROJECT: D643

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Alliant Techsystems(STAFF)	C-CPFF	ATK Hopkins, MN	35985	538	Sep 90					Cont	Cont	
b. Alliant Techsystems (M829E3)	SS-CPFF	ATK Hopkins, MN	12870	11845	Aug 98	13304		13590		Cont	Cont	
c. ARDEC	MIPR	Picatinny Arsenal, NJ	18662	1334		3312		3500		Cont	Cont	
d. Army Research Lab	MIPR	Aberdeen PG, MD	14653	1051		1195		1596		Cont	Cont	
e. Batelle Northwest Lab	MIPR	Richmond, WA	2000	985		725		428		Cont	Cont	
f. LRKE Trainer	C-CPFF	Unknown				7000				Cont	Cont	
g. MPAT Trainer	C-CPFF	Unknown				2000		2000		Cont	Cont	
h. Rheinmettal	SS-FFP	Germany		1200	Sep 99	900		900		Cont	Cont	
i. Miscellaneous	MIPR	Multiple		365		350		300		Cont	Cont	
Subtotal Product Development:			84170	17318		28786		22314		Cont	Cont	

Remark: Army Research Lab and ARDEC Engineering include M829E3 and OKE/TERM, MPAT Trainer and LR-KE Trainer

II. Support Costs: Not applicable

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. YPG, APG	MIPR	Yuma AZ/APG, MD	6947	960		2830		4500		Cont	Cont	
b. Army Research Lab	MIPR	Aberdeen PG, MD	2400	1385		2280		1500		Cont	Cont	
c. Miscellaneous	MIPR	Multiple	10984	311		400		325		Cont	Cont	
Subtotal Test and Evaluation:			20331	2656		5510		6325		Cont	Cont	

Remark: Testing includes all testing needed to support M829E3 and OKE/TERM, MPAT Trainer and LR-KE Trainer

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603639A Tank and Medium Caliber Ammunition

PROJECT: D643

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PM-TMAS	MIPR	Picatinny Arsenal, NJ	7120	374		1290		1300		Cont	Cont	
b. Miscellaneous	MIPR	Multiple		100		130		200		Cont	Cont	
c. SBIR/STTR						952					952	
Subtotal Management Services:			7120	474		2372		1500		Cont	Cont	

Remark: - Management Services also includes data line/contract costs to support Contractor Integrated Technical Information Services (CITIS) for M829E3.
- Management is considered continuous from the earliest portions of the AEI Program until the Abrams Tank Fleet does not need further ammunition improvements.

Project Total Cost:	111621	20448		36668		30139		Cont	Cont	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603639A Tank and Medium Caliber Ammunition — PROJECT: D656

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D656 X-ROD	16854	19618	0	0	0	0	0	0	191651

A. Mission Description and Budget Item Justification: The X-Rod, now known as the Tank Extended Range Munitions – Kinetic Energy (TERM-KE) is a 120mm tank ammunition development effort which will use a standard kinetic energy penetrator, a rocket motor and a dual mode semi-active laser/millimeter wave radar fire-and-forget guidance. The TERM-KE will provide greater hit probability at extended ranges, both line of sight and beyond line of sight, increasing kill probability and expanding the Maneuver Task Force Commander's battle space. The TERM-KE is one of two concepts being evaluated in the generic TERM Science and Technology Objective (STO) which is scheduled to down select to a single source in FY02.

FY 1999 Accomplishments:

•	5232	System analysis and system design
•	3655	Lethality demonstration
•	4462	Dual Mode Sensor demonstration
•	3505	Met Unguided All-Up-Round (UAUR) Exit Criteria
Total	16854	

FY 2000 Planned Program:

•	10390	System analysis and system design
•	1900	Lethality testing
•	2300	Seeker Captive Flight Test
•	4500	Ignition/Propulsion Test
•	528	Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	19618	

FY 2001 Planned Program: Project not funded in FY 2001

B. Other Program Funding Source: Not applicable

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603639A Tank and Medium Caliber Ammunition — PROJECT: D656

C. **Acquisition Strategy:** This program uses a streamlined acquisition strategy. The program is in the Concept Exploration phase. A unique system contracting strategy to prove out innovative component technologies was instituted at inception of the program. A modified Integrated Product Team is being used to leverage the expertise of both the Army and the contractor, Alliant Techsystems. The Army terminated the X-Rod Program in FY96 for affordability reasons. The TERM-KE program has continued through congressional plus-ups. The current program is developing one of the Tank Extended Range Munition (TERM) candidates.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Interior ballistics exit criteria met	*2Q						
Lethality demonstrations	*2Q-3Q						
System Functional Review	*2Q						
Dual Mode Seeker Demo	*3Q						
Exterior Ballistics Exit Criteria Met	*4Q						
Preliminary Design Review		1Q-2Q					
Lethality Test		3Q					
Seeker Captive Flight Test		4Q					
Ignition/Propulsion Test		4Q					

* Completed milestone

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603639A Tank and Medium Caliber Ammunition

PROJECT: D656

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Alliant Techsystems	SS-CPFF	Clearwater, FL	122253	12450	Sep 87	16500				0	151203	
b. ARDEC	MIPR	Picatinny Arsenal, NJ	24777	1100		1000				0	26877	
Subtotal Product Development:			147030	13550		17500					178080	

II. Support Costs: Not Applicable.

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. YPG,ATC	MIPR	Yuma AZ/APG, MD	1600	250		0				0	1850	
b. Army Research Lab	MIPR	Aberdeen PG, MD	2800	540		575				0	3915	
c. TECOM	MIPR	Huntsville, AL	0	150		150				0	300	
d. Miscellaneous	MIPR	Multiple	1536	1464		215				0	3215	
Subtotal Test and Evaluation:			5936	2404		940					9280	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PM/TMAS	MIPR	Picatinny Arsenal, NJ	2143	440		650				0	3233	
b. SBIR/STTR				460		528				0	988	
Subtotal Management Services:			2143	900		1178					4221	

Project Total Cost:			155109	16854		19618					191581	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603653A Advanced Tank Armament System

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	8464	1922	118139	177609	83194	8759	8739	Continuing	Continuing
DB99 Tank and Medium Caliber Armaments	8464	1922	8816	8791	8780	8759	8739	Continuing	Continuing
DC03 Medium Armored Vehicle Development*	0	0	109323	168818	74414	0	0	0	352555

*A separate Program Element will be established for the Medium Armored Vehicle Development program. FY 2002 and 2003 funding presently in project DC03 will be realigned to the new PE.

A. Mission Description and Budget Item Justification: This PE supports development of the Advanced Tank Armament System (ATAS) and Family of Medium Armored Vehicles (MAV). The ATAS program develops leap-ahead lethality improvements for tank and medium caliber armored systems and other direct fire systems. ATAS provides gun and fire control technologies that address current materiel needs as well as reductions in Operation & Support (O&S) costs. It provides the assured lethality technology upgrades for legacy systems as well as future platforms to defeat the increasingly more capable armored vehicles of potential adversaries. ATAS develops and combines maturing technology and demonstrates the combined improvements on specific weapon platforms such as Abrams, Bradley, Future Scout and Cavalry System (FSCS), Medium Armored Vehicles, etc. This leverages the technology across platforms and saves RDTE funding for these programs.

An immediate need exists for a MAV equipped C-130 transportable Brigade Combat Team (BCT), capable of deployment to anywhere on the globe in a combat ready configuration. A dynamic asymmetric threat environment demands full spectrum, strategically responsive, agile and dominant land forces. Immediate response by a lethal, versatile, tactically agile joint force capable of operational maneuver once in the Area of Operations is essential to fulfilling the Warfighting needs of the National Command Authority. The MAV equipped BCT is this force. This project will fund the RDT&E tasks necessary to field the MAV as part of the BCT.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603653A Advanced Tank Armament System

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	8867	1937	8870
Appropriated Value	8928	1937	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-61		
b. SBIR / STTR	-227		
c. Omnibus or Other Above Threshold Reductions		-8	
d. Below Threshold Reprogramming	-140		
e. Rescissions	-36	-7	
Adjustments to Budget Years Since FY 2000/2001 PB			-731
New Army Transformation Adjustment		TBD	+110000
Current Budget Submit (FY 2001 PB)	8464	1922	118139

Change Summary Explanation: FY2001 Funding – Project DC03 was created and funded to reflect the New Army Transformation.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603653A Advanced Tank Armament System

PROJECT: DB99

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DB99 Tank and Medium Caliber Armaments	8464	1922	8816	8791	8780	8759	8739	Continuing	Continuing

A. **Mission Description and Budget Item Justification:** The program develops leap-ahead lethality improvements for tank and medium caliber armored systems and other direct fire systems. ATAS provides gun and fire control technologies that address current materiel needs as well as reductions in Operation & Support (O&S) costs. It provides the assured lethality technology upgrades for legacy systems as well as future platforms to defeat the increasingly more capable threat armored vehicles.

ATAS develops and combines maturing technology and demonstrates the combined improvements on specific weapon platforms such as Abrams, Bradley, Future Scout and Cavalry System (FSCS), Medium Armored Vehicles, etc. This leverages the technology across platforms and saves RDTE funding for programs such as the FSCS and the Medium Armored Vehicles of the Medium Brigade Combat Team.

In conjunction with the Marine Corps and the Project Manager for the Abrams Tank, the program will complete the demonstration of an Automatic Target Tracker (ATT) for the Abrams tank in FY00. The ATT increases the tank crew's ability to quickly kill battlefield targets by providing the ability to lock-on and automatically track targets. This automatic lock-on and tracking ability will also reduce gunner training time and associated O&S costs. Completion of the ATT Demonstration was rescheduled to include Marine Corps requirements. Electronic Muzzle Reference Sensor (EMRS) testing for the Abrams tank will finish in FY00. If successful, the EMRS will eliminate the current radioactive tritium light source (and associated environmental issues and O&S costs) in the existing Muzzle Reference Sensor.

The program is investigating a German developed gun tube as a potential lethality improvement to the Abrams tank. This long barrel 120mm-gun tube, the L55, is currently being fielded in the German Leopard-2A6 tank. This gun tube will expand the battlespace of the Abrams by allowing the tank crew to kill increasingly more lethal enemy tanks at extended ranges. Watervliet Arsenal (New York) is fabricating the U.S. version called the M256E1. This will be completed in FY01.

Also in FY01, potential improvements leveraging available medium caliber technologies will be investigated to improve the Bradley Infantry Fighting Vehicle.

Advanced fire control gun/turret drive and stabilization systems are also being developed to control the longer gun tube to meet U.S. requirements. Both the US and German versions will be tested, integrated and demonstrated in an M1A2 Abrams tank. The associated fire control and integration developments can also applied to the current M256 gun to improve fire-on-the-move capability and to prevent the gun tube from impacting the ground while the vehicle is moving cross country.

In future years, improved bore coatings and better gun tube manufacturing and straightening techniques will be developed to reduce gun tube life cycle costs and enable the development of more advanced ammunition in the future. Together with other Army organizations, the program is planning the development of Abrams fire control system improvements to allow it to kill enemy targets at much longer ranges with the Tank Extended Range Munitions. A fire control demonstration of an improved position-locating device, coordinate processing software, target data sets and communication processes is planned.

FY 1999 Accomplishments:

•	2550	Completed long gun (L55/M256E1) hardware fabrication & testing
•	2450	Completed stabilization/fire control system component fabrication & test for L55/M256E1
•	2000	Continued turret integration of L55/M256E1
•	1464	Demonstrated & tested of L55/M256E1
Total	8464	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603653A Advanced Tank Armament System
	PROJECT DB99

FY 2000 Planned Program:

•	400	Begin L55/ M256E1gun barrels & mounting hardware testing
•	440	Begin L55/M256E1 hardware & software modifications testing
•	500	Begin L55/ M25E1 tank integration
•	400	Complete Automatic Target Tracker testing and transfer equipment to FSCS
•	130	Complete Electronic Muzzle Reference Sensor testing
•	52	Small Business Innovative Research/Small Business Technology Transfer Program (SBIR/STTR)
Total	1922	

FY 2001 Planned Program:

•	2200	Complete L55/M256E1 gun barrel testing
•	3200	Complete L55/M256E1 hardware & software integration including M256 work
•	200	Begin Medium Caliber Testing and Evaluation
•	3216	Complete L55/M256E1 M1A2 demonstration
Total	8816	

B. Other Program Funding Summary: Not applicable

C. Acquisition Strategy: The technologies in Tank & Medium Caliber Armaments will be demonstrated then transferred to PM Abrams, PM-FSCS and other weapon platform PMs for further technological development and will flow into the next major upgrade or Engineering Change Proposal (ECP) to the current Abrams tank. Several contractors and government agencies are used to develop or integrate existing technologies.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Complete turret modification design	1Q*						
Procure L55 gun barrels	3Q*						
Fabricate M256E1 gun barrels	4Q*						
Complete sub-component test	4Q*						
L55/M256E1 gun barrel testing		1Q*-4Q	1Q				
Complete Auto Target Tracker Demonstration		2Q**					
Transfer Components to FSCS program		2Q*					
L55/M256E1 hardware & software testing		2Q-4Q	1Q				
Complete EMRS testing		3Q					
L55/M256E1 tank integration		3Q-4Q	1Q-2Q				

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE: February 2000
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603653A Advanced Tank Armament System — PROJECT: DB99

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
L55/M256E1 tank testing			3Q-4Q				
Initiate Medium Caliber Gun Testing and Evaluation			3Q-4Q				
Tantalum Coating Development				1Q-4Q	1Q-4Q	1Q-4Q	
TERM Fire Control Development				1Q-4Q	1Q-3Q		
Straightening Development				2Q-4Q	1Q-4Q		
TERM Fire Control Demonstration					4Q		
Begin M1A2 SEP Fire Control Integration					1Q		
Firing of Straightened & Coated Tubes							1Q-4Q

*Completed milestone
** Moved to include USMC requirements

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603653A Advanced Tank Armament System

PROJECT: DB99

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. M256E1	MIPR	Benet Labs, Watervliet, NY Gov	5686	1300		300		1246		Cont	Cont	
b. L55 Gun Tubes	SS & FP	Rheinmetall, Ratingen, GE		750	Dec 1998	250		475		Cont	Cont	
c. M1A2 Integration	SS & CPFF	GDLS, Sterling Heights, MI	1970	1900	Jul 1998	200		2225		Cont	Cont	
d. Fire Control Development	CPFF	Raytheon (TI) Systems, Dallas, Texas	16826	2400	Sep 1990	300		150		Cont	Cont	
e. Fire Control Development	MIPR	ARDEC, Picatinny Arsenal, NJ	500	335		300		120		Cont	Cont	
f. EMRS	MIPR	ARDEC, Picatinny Arsenal, NJ	457	200						Cont	Cont	
g. ATT	MIPR	Multiple	271	200						Cont	Cont	
h. Misc	MIPR	Multiple	652	130		130		100		Cont	Cont	
Subtotal Product Development:			26362	7215		1480		4316		Cont	Cont	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ATT	MIPR	ATC, APG, MD	200	200						Cont	Cont	
b. M256E1 & L55 Testing	MIPR	ATC, APG, MD		500		270		3500		Cont	Cont	
c. Medium Caliber Evaluation and Testing	MIPR	ATC, APG, MD						200		Cont	Cont	
Subtotal Support Costs:			200	700		270		3700		Cont	Cont	

III. Test and Evaluation: Not applicable

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603653A Advanced Tank Armament System

PROJECT: DB99

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Management	MIPR	PM-TMAS	535	549		120		800		Cont	Cont	
b. SBIR/STTR						52					52	
Subtotal Management Services:			535	549		172		800		Cont	Cont	
Project Total Cost:			27097	8464		1922		8816		Cont	Cont	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603653A Advanced Tank Armament System

PROJECT: DC03

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DC03 Medium Armored Vehicle Development*	0	0	109323	168818	74414	0	0	0	352555

*A separate Program Element will be established for the Medium Armored Vehicle Development program. FY 2002 and 2003 funding presently in project DC03 will be realigned to the new PE.

A. Mission Description and Budget Item Justification: This Project (DC03) supports the development of the Family of Medium Armored Vehicles (MAV). An immediate need exists for a Medium Armored Vehicle equipped C-130 transportable Brigade Combat Team (BCT), capable of deployment to anywhere on the globe in a combat ready configuration. A dynamic asymmetric threat and operational environment demands full spectrum, strategically responsive, agile and dominant land forces. Immediate response by a lethal, versatile, tactically agile joint force capable of operational maneuver once in the Area of Operations is essential to fulfilling the Warfighting needs of the National Command Authority. The MAV-equipped BCT is this force. The MAV family includes the following planned systems: Infantry Carrier, Mobile Gun System, Reconnaissance Vehicle, Antitank Guided Missile Vehicle (ATGM), Command and Control/TOC Vehicle, Mortar Carrier, Self-Propelled Howitzer, Engineer Vehicle, Striker/Fire Support Team Vehicle, Nuclear, Biological and Chemical (NBC) Reconnaissance Vehicle, Medical Evacuation/Medical Treatment Vehicle, and Recovery Vehicle. The use of a common platform/common chassis design reduces requirements for repair parts and logistics support in the area of operations. RDTE funding will be used in the short term to address obsolescence and integration issues, to make corrections to vehicle design and for systems design for the interim vehicle. In the mid-term, RDTE funding will be used to design/incorporate fixes for unit identified deficiencies and desired changes, for systems improvements such as digitization, and for system capability enhancements.

FY 1999 Accomplishments: Project not funded in FY 1999

FY 2000 Planned Program: New Army Transformation funding for FY 2000 has yet to be determined.

FY 2001 Planned Program:

- 83645 Continue design/refinement of MAV variants
- 20542 Systems Testing
- 5136 Program Management

Total 109323

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
PA, WTCV, G85100 MAV		TBD	537077	107242	898141	853373	1036619	Cont'd	Cont'd

C. Acquisition Strategy: In October 1999, the Army leadership announced a vision of the future. This vision includes a Brigade structure and organization which is crucial to the Army's strategic responsiveness goals of deploying from the CONUS base to the global theater of operation one Brigade within 96 hours, one Division within 120 hours, and five Divisions within 30 days. TACOM is taking action to achieve this vision for the Army via accelerated procurement of the family of Medium Armored

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603653A Advanced Tank Armament System PROJECT DC03

Vehicles. An RFP will be developed by the end of 2nd Quarter FY00, with a planned contract award in 4th Quarter FY00. Contractors will present their concept for the Brigade Combat Team (BCT). It is currently planned that contract(s) will be awarded for the family of Medium Armored Vehicle Systems to equip the new brigade organization. It is anticipated that the solution to meeting the Program Objective may include the acquisition of: off-the-shelf equipment, non-developmental items, traditional development, systems' integrator (multiple ground combat vehicle and sustainment solutions), systems' integrator (vehicle and non-vehicle solutions; complete brigade support), or a mix of the aforementioned staggered over time and across variants, or other solutions.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
Release of Draft Solicitation		1Q00								
Final Receipt of White Paper Comments		2Q00								
Release of Formal Request for Proposals		2Q00								
Receipt of Proposals		3Q00								
Contract Award		4Q00								
First Unit Equipped			2Q01							

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603653A Advanced Tank Armament System

PROJECT: DC03

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. MAV Development	TBD	Unknown	NA	TBD	Jun 00	74862	Nov 00	184601	259463	259463
b. Other Contracts	Various	Unknown	NA	TBD	Unk	418	Nov 00	1031	1449	1449
c. GFM	Requisition					8365	Oct 00	20626	28991	28991
Subtotal Product Development:						83645		206258	289903	289903

Remark: MAV Development supports all 12 MAV variants.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Other Gov't Agencies	MIPR	TACOM, Warren, MI Various	0	TBD	Unk	4108	Oct 00	8420	12528	12528
Subtotal Support Costs:						4108		8420	12528	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
System Testing	MIPR	ATEC, APG, MD	0	0	NA	20542	Oct 00	26450	46992	46992
Subtotal Test and Evaluation:						20542		26450	46992	46992

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PMO Support	NA	TACOM, Warren, MI	0	TBD	TBD	925	Oct 00	1894	2819	2819
b. Contractor PM Support	CP	Unknown	0	TBD	TBD	103	Oct 00	210	313	313
Subtotal Management Services:						1028		2104	3132	

Project Total Cost:						109323		243232	352555	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603713A Army Data Distribution System

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	16084	10	17	24	33	41	49	6000	Continuing
D370 PJH-PLRS/JTIDS Hybrid	10168	10	17	24	33	41	49	6000	Continuing
D385 JTIDS (LINK 16)	5916	0	0	0	0	0	0	0	5916

A. Mission Description and Justification The Army Data Distribution System (ADDS) consists of the Near-Term Digital Radio System (NTDRS) and the Joint Tactical Information Distribution System (JTIDS)/Multifunctional Information Distribution System (MIDS) programs. The NTDRS program maximizes the use of non-development item (NDI) and commercial off-the-shelf (COTS) hardware and software. The program provides greatly enhanced data capacities at Tactical Operation Centers. NTDRS will provide the Army's Tactical Internet Tactical Operation Center to Tactical Operation Center (TOC-to-TOC) data distribution from Battalion to Brigade and for all mobile TOC platforms from division and below in the First Digitized Division and may serve as proof of concept leading to the integration of the NTDRS waveform/ network into the JTRS program. The Joint Tactical Information Distribution System (JTIDS) / Multifunctional Information Distribution System (MIDS), LINK-16 program is a joint/international program representing all services and allied force requirements with the purpose of complying with the ASD/C3I policy establishing Link-16 as the DOD primary tactical datalink for C2I and to acquire a digital information system for tactical interoperability and situation awareness. Currently the Army uses LINK-16 terminals in Air Defense platforms to control air and missile defense weapon engagement operations. This Program Element, Project D370 also provides support to the Joint Contingency Force (JCF) Exercise in FY2000.

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	15162	10	17
Appropriated Value	15281	10	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-119		
b. SBIR / STTR	-393		
c. Omnibus or Other Above Threshold Increases	+179		
d. Below Threshold Reprogramming	+1196		
e. Rescissions			
f. Inflation decrements	-60		
Adjustments to Budget Years Since FY 2000/2001 PB			
Current Budget Submit (FY 2001 PB)	16084	10	17

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603713A Army Data Distribution System — PROJECT: D370

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D370 PJH-PLRS/JTIDS Hybrid	10168	10	17	24	33	41	49	6000	Continuing

A. **Mission Description and Justification:** The Near-Term Digital Radio System (NTDRS) provides the Army's Tactical Internet TOC-to-TOC communication function for the First Digitized Division. In order to allow the NTDRS to evolve and make maximum use of technology insertion, NTDRS is based on an open architecture. The project will provide reliable, real time, secure, jam-resistant data communications and position location capabilities to the soldier and to his unit commander and may serve as the proof of concept leading to the integration of the NTDRS waveform/ network into the JTRS program. This Program Element, Project D370 also provides support to the Joint Contingency Force (JCF) Exercise in FY2000.

FY 1999 Accomplishments:

•	8486	Product Development – Engineering
•	60	Support Costs – Integration and Logistics
•	719	Test and Evaluation
•	903	Management Services – Program/Contractor Support
Total	10168	

FY 2000 Planned Program:

•	10	NTDRS Logistics Support
		The balance of FY2000 NTDRS efforts are funded under PE 0604805A, Project D615.
Total	10	

FY 2001 Planned Program:

•	17	NTDRS Logistics Support
Total	17	

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE, 0604805A, D615*	0	4867	28542	79171	42117	62831	48317	80000	345905

* Funding in FY00 is to complete NTDRS program. Funding in FY2001-2005 is for the JTRS-Army program.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603713A Army Data Distribution System / PROJECT: D370

C. **Acquisition Strategy:** The NTDRS program maximizes the use of non-developmental item (NDI) and commercial off-the-shelf (COTS) hardware and software. An RDT&E contract was awarded competitively in January 1996. The NTDRS was successfully tested at the Division XXI AWE in November 1997, Electronic Proving Ground (EPG) (Field Test I) in February 1998, and FBCB2 LUT in August 1998. In FY1999 NTDRS was successfully tested at EPG in Feb/Mar 1999 and participated in other experimental exercises, such as the Navy/USMC Urban Warrior and Navy Fleet Battle Experiment Echo. NTDRS successfully provided TOC-to-TOC data communications capability at the NTC-99-05 rotation in March 1999. This is the first digital data network to enable the ATCCS hosts to intercommunicate between Brigade and Battalion and fight the battle-on-the-move, covering a geographical area of over 1800 square kilometers using only 19 radios for the NTC-99-05. In FY2000 the NTDRS will participate in the FBCB2 Field Test II and Limited User Test to provide the Army's Tactical Internet TOC-TOC data communications. The NTDRS will also participate in the Joint Contingency Force (JCF) Army Warfighting Experiment (AWE) to provide TOC to TOC data communications in 4QFY2000. In FY 1999/2000 NTDRS will complete design and testing efforts before planned distribution to the FDD in late FY 2000 for continued experimentation purposes, and may serve as a proof of concept for wideband waveform development in support of the JTRS program.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
NTDRS EPG Field Test II	2Q						
NTDRS FBCB2 FDT&E/LUTII		3Q					
NTDRS EPG FIELD TEST III		3/4Q					
NTDRS Participation in ABCS SE 00-01/02		1/4Q					
NTDRS JCF Army Warfighting Experiment		4Q					
NTDRS Complete FDD Deployment		4Q					

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603713A Army Data Distribution System

PROJECT: D370

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. NTDRS Engineering Development/Hardware Manufacturing *	C/CPIF/FFP /TM	ITT, Ft. Wayne	33914	7410	1-4Q						41324	41688
b. NTDRS/NMT/ Antenna**	MISC	MISC	510	276	1-4Q						786	
c. INC NAV Upgrade for Tactical Internet Range – JCF*	C/T&M	ITT Ft. Wayne	0	800	4Q						800	800
Subtotal Product Development:			34424	8486							42910	

Remark.

* Includes $174K for Y2K and $440 for Joint Contingency Force (JCF) efforts.

** This entry includes $146K for JCF efforts.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. NTDRS Frequency Network	MISC	MISC	207								207	
b. System Integration NDTRS	MIPR	C2SID		60	3Q						60	
c. NTDRS Logistics	TBD	TBD				10	TBD	17	TBD		27	
Subtotal Support Costs:			207	60		10		17			294	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603713A Army Data Distribution System

PROJECT: D370

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. NTDRS Field Testing*	MIPR	EPG, Ft. Huachuca	3395	719	1-4Q						4114	
b. Misc. NTDRS Test Support	MIPR	TEXCOM	1								1	
c. Misc. NTDRS Test Support	MIPR	NTC	8								8	
Subtotal Test and Evaluation:			3404	719							4123	

Remark: * This entry includes $5K for Y2K testing.

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. NTDRS Program Support*	MIPR	Ft. Monmouth, NJ	3085	735	1-4Q						3820	
b. NTDRS Contractor Program Support	MIPR	MISC.	144	168	1-4Q						312	144
Subtotal Management Services:			3229	903							4132	

Remark: MIDS funding prior to FY1999 is contained in D370. FY1999 MIDS efforts are funded in D385.

Project Total Cost:			41264	10168		10		17			51459	

*This entry includes $14K JCF Funding

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)			DATE: February 2000
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603713A Army Data Distribution System		PROJECT: D385

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D385 JTIDS (LINK 16)	5916	0	0	0	0	0	0	0	5916

A. Mission Description and Justification: The Joint Tactical Information Distribution (JTIDS)/Multifunctional Information Distribution System (MIDS)/LINK-16 portion of the ADDS program provides a joint and allied interoperable LINK-16 tactical digital data and voice comm link among air, ground surface and subsurface platforms. LINK-16 is the DoD directed standard for tactical communications of all processed data and is DoD's primary tactical data link for C2I. Link-16 supports the Army's Theater Air and Missile Defense Engagement Operations. The Army intends to migrate to the Multifunctional Information Distribution System (MIDS) through investment in an Army variant of that multi-national terminal.

FY 1999 Accomplishments:

- 246 Product Development
- 1777 Support Costs
- 1710 Testing and Evaluation
- 2183 Management Services – Program, Logistics Support

Total 5916

FY 2000 Planned Program: Project not funded in FY2000.

FY 2001 Planned Program: Project not funded in FY2001. Future MIDS efforts will be funded under BMDO funding lines.

B. Other Program Funding Summary: Procurement funding resides at BMDO/platform level.

C. Acquisition Strategy: The Multifunctional Information Distribution System (MIDS) program is a Navy managed joint services development program currently viewed as an eventual low cost replacement for parts of the Joint Tactical Information Distribution System (JTIDS) family of high speed data terminals. In FY1999/2000 MIDS will continue developmental and Limited User testing to support a projected FY2000 LRIP Decision and FY2000 LRIP award. FY1999 funding will be utilized in FY2000 to continue program and test efforts until LRIP award. There is no MIDS RDTE funding after FY1999.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603713A Army Data Distribution System
	PROJECT D385

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
JTIDS Class 2M FRP Delivery	2Q						

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603713A Army Data Distribution System

PROJECT: D385

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. JTC & Host Integration/cables	MIPR	MISC		93	*						93	
b. High Thruput/Demo		IPO		153	*						153	
Subtotal Product Dev:				246							246	

Remark: MIDS funding prior to FY1999 is contained in D370. FY1999 MIDS efforts are funded in D385.
* Awards made in FY99 and 1QFY00

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. System Engineering Support	C/TBD	LOGICON, NJ		236	**						236	
b. Software Support	C/FP	MITRE		895	*						895	
c. System Engineering	C/FP	LEAR/SIEGLER		109	**						109	
d. Software Support	MIPR	CECOM		350	**						350	
e. NET/TPF Planning	MIPR	CECOM		167	**						167	
f. System Support	MIPR	ARL/SLAD		20	*						20	
Subtotal Support Costs:				1777							1777	

Remark: MIDS funding prior to FY1999 is contained in D370. FY1999 MIDS efforts are funded in D385.
* Award that were made in 1QFY99 and 1QFY00
** Awards that will be made in 1Q/2QFY00

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603713A Army Data Distribution System

PROJECT: D385

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. LUT	MIPR	OPTEC, Ft. Bliss		1273	4Q						1273	
b. EPG Test Witnessing	MIPR	EPG		255	*						255	
c. MIDS Test	MIPR	OEC		73	3Q						73	
d. LCUS for Test	PWD	PM, CHS		109	4Q						109	
Subtotal Test and Evaluation:				1710							1710	

Remark: MIDS funding prior to FY1999 is contained in D370. FY1999 MIDS efforts are funded in D385.

* Obligated in FY99 and 1QFY00

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Support	MIPR	CECOM Ft.Monmouth		2011	*						2011	
b. Log/Tech Spt	C/FP	TRACOR, NJ		50	*						50	
c. Miscellaneous (TVL/Office supplies)	Various	PM TRCS		122	*						122	
Subtotal Management Services:				2183							2183	

Remark: MIDS funding prior to FY1999 is contained in D370.

* Multiple award dates in FY99/00.

Project Total Cost:				5916							5916	

Remark: MIDS funding prior to FY1999 is contained in D370. A portion of the FY1999 MIDS funding will be utilized in FY2000 to continue program and test efforts until LRIP award.

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603747A Soldier Support and Survivability

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	7594	12719	13574	17415	20395	22414	22299	Continuing	Continuing
DC09 Soldier Support Equipment	1450	5564	6703	8878	11858	13040	13202	Continuing	Continuing
D669 Clothing and Eqiupment	3645	4058	3491	4809	4849	5502	5223	Continuing	Continuing
D610 Food Advanced Development	2499	3097	3380	3728	3688	3872	3874	Continuing	Continuing

A. Mission Description and Budget Item Justification: Provide advanced development for unit/organizational equipment, improved individual clothing and equipment, airdrop equipment, rigid wall and fabric shelters, food and field service equipment which will enhance soldier battlefield effectiveness, survivability, sustainment and quality of life. Program element supports advanced development of a new generation of field service support items and shelters, including collective protection and shelter heaters for unit/organizational use to enhance the quality of life of field soldiers and the ability to project forces to Spartan environments. Program Element (PE) also supports advanced development of individual clothing and equipment items to lighten the soldier's load and incorporate protection against chemical and biological agents, thermal nuclear flash, ballistic threats, visual and electronic detection and environmental hazards. Program Element also supports advanced development of food, packaging, and food service equipment systems to reduce food service logistics for all four services, lighten the warfighter's load, and increase fuel efficiency and to improve or replace existing systems. PE also supports the development of air delivery equipment (personal and cargo) to improve Army force projection capabilities, increase warfighter safety and support national security objectives.

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	7522	12804	13642
Appropriated Value	7581	12804	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-59		
b. SBIR / STTR	-135		
c. Omnibus or Other Above Threshold Reductions		-46	
d. Below Threshold Reprogramming	+237		
e. Rescissions	-30	-39	
Adjustments to Budget Years Since FY 2000/2001 PB			-68
Current Budget Submit (FY 2001 PB)	7594	12719	13574

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603747A Soldier Support and Survivability PROJECT DC09

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
DC09 Soldier Support Equipment	1450	5564	6703	8878	11858	13040	13202	Continuing	Continuing

A. **Mission Description and Justification:** Develop and field soft shelters, showers, latrines, heaters, mortuary affairs, organizational equipment and other combat service support equipment to improve unit sustainability and combat effectiveness. Conduct demonstration and validation of aerial delivery systems for equipment and personnel, with emphasis on reduced incidence of injuries, improved safety and accuracy, and increased survivability of aircraft, equipment, and personnel. Develop a family of tactical rigid wall shelters, which enhances soldier survivability and sustainability of command, control, communications and intelligence. Shelters provide highly mobile, joint service platforms for the digitization of the battlefield, housing many critical vehicle-mounted battlefield systems, medical critical care in a Chemical/Biological (C/B) environment and high tech maintenance.

FY 1999 Accomplishments:

•	241	Prepared solicitation for production contract and conducted test and evaluation of the Maturing Theater Latrines candidates, select best design.
•	792	Awarded R&D contract for Rapid Inflation System for the Aviation Maintenance Shelter.
•	282	Completed market investigation for the Modular Deck System.
•	135	Conducted market investigation for candidate Mortuary Affairs Remains Kit.
Total	1450	

FY 2000 Planned Program:

•	1533	Terminate existing Advanced Tactical Parachute System R&D contract. Conduct a Jump-off for new R&D ATPS Contract.
•	597	Complete operational testing; award LRIP Contract and Type Classify the Ejection Parachute Jettison System.
•	1461	Conduct system and feasibility testing for the Dual Row Airdrop System.
•	962	Conduct developmental testing of Dual Row Airdrop System.
•	862	Complete production verification testing for the Type III (2.5 Ton truck/LMTV) and Type IV (5 Ton Truck/MTV) Cargo Bed Cover variants, build LRIP items, and initiate field evaluation. Conduct First Article Testing for Cargo Bed Cover Type III and Type IV variants. Complete Milestone III and field evaluation for Cargo Bed Cover Type III and Type IV variants.
•	149	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program
Total	5564	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603747A Soldier Support and Survivability
	PROJECT DC09

FY 2001 Planned Program:

- 3261 Conduct Operational Test for the Dual Row Airdrop System.
- 523 Begin concept exploration and conduct market investigation for the Enhanced Container Delivery System.
- 193 Conduct contract solicitation and technical evaluations for FY02 production contract and Type Classify the Follow-on-Latrine.
- 697 Conduct Market Investigation, prepare documentation and award contract for prototype procurement for the Integrated Forward Area Remains Kit.
- 1536 Transition Cargo Bed Covers Type III (2.5 Ton Truck/LMTV) and Type IV (5 Ton Truck/MTV) variants into full production. Award LRIP contract for Cargo Bed Covers for High Mobility Trailer Variants.
- 493 Conduct Market Survey for the EPJS – Heavy. Perform Concept Testing on the EPJS – Heavy.

Total 6703

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE, 0604713.DC40, Unit/Organizational Equipment	1555	4511	5871	9197	12488	13965	14299	Cont	Cont
M82701, Laundry Advance System	7121	7880	12580	13224	18902	7161		Cont	Cont
M82703, Containerized Self-Service Laundry		976						Cont	976
M82704, Containerized Shower		946		1258	1158	1231		Cont	4593
M82706, Follow-On Latrine				905	664	870		Cont	2439
MA7801, Advanced Tactical Parachute System					27894			Cont	27894
MA7802, Extraction Parachute Jettison Device		2381						Cont	2381
MA7805, Universal Static Line		976	3971					Cont	4947
MA8061, Lightweight Maintenance Enclosure		3690	1999	5613	6708	6424	6418	Cont	30852

C. **Acquisition Strategy:** Accelerate product development and testing which transition to Engineering and Manufacturing Development and/or Production.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Conduct Test and Evaluation on Maturing Theater Latrine prototypes	3Q*						
Award R&D Contract for Rapid Inflation System for the Aviation Maintenance Shelter	3Q*						
Conduct Market Investigation for the Modular Deck System	2Q*						
Conduct Market Investigation for the Mortuary Affairs Remains Kit	4Q*						

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603747A Soldier Support and Survivability

PROJECT: DC09

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Conduct Feasibility and System testing for the Dual Row Airdrop System	4Q						
Complete Operational Testing for the Extraction Parachute Jettison System		1Q					
Type Classify the Extraction Parachute Jettison System		3Q					
Complete Production Verification for the Type III and Type IV Cargo Bed Cover variants		3Q					
Conduct First Article Testing for the Type III and Type IV Cargo Bed Cover variants		3Q					
Conduct MS I/II for the Type III and Type IV Cargo Bed Cover variants		4Q					
Complete Developmental Testing for Dual Row Airdrop System		4Q					
Conduct Operational Testing for the Dual Row Airdrop System			2Q				
Type Classify the Follow-on-Latrine			1Q				
Award R&D Contract for the Integrated Forward Area Remains Kit			2Q				
Complete MS III for the Type III and Type IV Cargo Bed Cover variants			3Q				
Award LRIP contract for Cargo Bed Cover High Mobility Trailer variant			2Q				

*Denotes a completed milestone

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603747A Soldier Support and Survivability

PROJECT: DC09

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. SSCOM	In-House	NRDEC	13072	373		352		630		Cont.	14427	Cont.
b. Contracts	Various	Various	8078	714	Various	849	Various	1498	Various	Cont.	11139	Cont.
Subtotal Product Development:			21150	1087		1201		2128			25566	

II. Support Costs: Not Applicable

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TECOM/OEC	MIPR	Various	2750	123	Various	0	Various	4300	Various	Cont.	7173	Cont.
Subtotal Test and Evaluation:			2750	123				4300			7173	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Various	In-House	PM-Soldier Support,	1621	240		4214		275		Cont.	6499	Cont.
b. Various	In-House	SSCOM	192								192	
c. STTR/SBIR						149						
Subtotal Management Services:			1813	240		4363		275			6691	

Project Total Cost:			25713	1450		5564		6703			39430	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2AExhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603747A Soldier Support and Survivability PROJECT D669

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D669 Clothing and Eqiupment	3645	4058	3491	4809	4849	5502	5223	Continuing	Continuing

A. **Mission Description and Budget Item Justification:** Use state-of-the-art technology to develop improved tactical and non-tactical clothing and individual equipment to enhance the lethality, survivability, sustainability, and mobility of the individual soldier.

FY 1999 Accomplishments:

•	873	Completed market survey, prepared solicitation documentation, and procured test items for the Cold Weather Canteen
•	2114	Completed source selection, defined competitive range, and awarded contract for Military Eye Protection System (MEPS)
•	206	Completed market survey and initiated operational testing for the Interim Combat Boot
•	5	Completed testing on the Improved Intermediate Cold/Wet Boot (ICWB) with Phase Change Insulation. Based on results, program was terminated
•	447	Conducted In-house engineering support services, computer services; conducted technical and program reviews
Total	3645	

FY 2000 Planned Program:

•	208	Obtain Milestone I/II approval, award contract for test items, and initiate developmental testing/operational testing for the Advanced Bomb Suit
•	2520	Define non-laser lens configuration and prescription lens corrections for goggles and spectacles, initial prototype testing, and complete study on laser lenses for Military Eye Protection System (MEPS)
•	573	Complete developmental testing/operational testing and type classify the Cold Weather Canteen
•	282	Obtain Milestone I/II approval and solicitation release and evaluation for the Fighting Position Revetment
•	139	Complete operational testing and provide results to the Army Uniform Board (AUB) on the Interim Combat Boot
•	230	In-house engineering support services, computer services, conduct technical and program reviews
•	106	Small Business Innovative Research/Small Business Technology Transfer Program
Total	4058	

FY 2001 Planned Program:

•	240	Continue developmental testing/operational testing on the Advanced Bomb Suit
•	714	Award contract and conduct preliminary selection testing for the Fighting Position Revetment
•	2156	Procure prototypes, complete development testing/operational testing, and complete evaluations for Military Eye Protection System (MEPS)
•	381	In-house engineering support services, computer services, conduct technical and program reviews
Total	3491	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603747A Soldier Support and Survivability
	PROJECT D669

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE, 0604713.DL40, Clothing and Equipment	4121	3505	4266	4542	4558	5126	5114	Cont	Cont
OMA, 121017, Central Funding and Fielding	48130	88467	79590	90013	73401	80941	113533	Cont	Cont

C. **Acquisition Strategy:** Developments transition to engineering and manufacturing development (EMD) followed by transition to production. However, when developments are sufficiently mature for some items, they can be type classified and transitioned to production.

D. Schedule Profile	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
Life Cycle Systems Review	2&4Q*	2&4Q*	2*&4Q	2&4Q	2&4Q	2&4Q	2&4Q	2&4Q	2&4Q	2&4Q

*Denotes a completed milestone

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603747A Soldier Support and Survivability

PROJECT: D669

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a.	MIPR	SBCCOM, Natick MA		420		908		1631			2959	Con't
b.	Contracts	Various		2718	Various	2624	TBD	475	TBD		5817	Con't
Subtotal Product Development:				3138		3532		2106			8776	

Remark: Product development costs vary annually depending on the number and a type of programs being evaluated.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a.	MIPR	LOGSA, AL		50		50		50			150	Con't
b.	Contract	Various						205			205	Con't
Subtotal Support Costs:				50		50		255			355	

Remark: Support costs can vary annually depending on the number and types of items we are evaluating.

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a.	MIPR	ATEC				140		730			870	
b.	MIPR	OFIG, MA		10							10	
Subtotal Test and Evaluation:				10		140		730			880	

Remark: Testing costs vary annually by item.

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a.	In-House	PM-Soldier, VA		447		230		400			1077	
b. SIBR/STTR						106					106	
Subtotal Management Services:				447		336		400			1183	

Remark: Management services costs vary annually depending on the number and a type of programs being evaluated.

Project Total Cost:				3645		4058		3491			11194	

Remark: *Based on the number of years Clothing and Individual Equipment programs have been in existence, it is impossible to capture all prior year costs.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603747A Soldier Support and Survivability PROJECT D610

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D610 Food Advanced Development	2499	3097	3380	3728	3688	3872	3874	Continuing	Continuing

A. Mission Description and Justification: The project funds the development of Joint Service Food/Food Service Equipment to improve individual combat effectiveness and reduce logistics burden and Operation & Support (O&S) costs of subsistence support for service personnel. Enhance rations by increasing quality, acceptability and variety. Develop multi-fuel, rapidly deployable field food service equipment to support combat, humanitarian missions and operations-other-than-war. Improve equipment to enhance safety in food service, utilize battlefield fuel and decrease fuel and water requirements. Program is reviewed and validated twice annually by the Department of Defense (DoD) Food and Nutrition Research and Engineering Board as part of the Joint Service Food Program. Additionally, the project will, conduct advanced development of improved subsistence and subsistence support items to enhance soldier effectiveness and quality of life in all four Services as part of an integrated DoD Food Research, Development, Test, Evaluation and Engineering (RDTE&E) program.

FY 1999 Accomplishments:

•	205	Prepared design concept for Air Force all electric field kitchen system to meet specific deployment requirements of the Air Expeditionary Force.
•	392	Evaluated emerging food service equipment technologies and food processes for direct shipboard application to reduce life cycle costs.
•	120	Investigated hand sinks, evaluated new tray pack heater, griddle coatings and heat shields for use with fielded food service equipment.
•	222	Terminated storage studies/demonstrations of glass coated polymeric tray due to deterioration of glass coating in retorting. Identified self-assembling silica nano-fillers to be used to optimize polymeric tray and ensure long term storage stability of group rations.
•	581	Continued to identify and conduct user testing of improvements for individual and group ration systems. Transitioned selected heat and serve ration components and Meals Ready to Eat (MRE) improvements, increasing menu variety and acceptance. Developed prototype lightweight minimal "B" ration system to meet specific Air Force requirements. Developed prototype module of Arctic and Medical group rations for all services.
•	296	Completed field tests in different environments to establish effectiveness of selected performance enhancing ration components (PERCs) and supplements, demonstrated overall productivity and suitability of PERCs-based rations and transitioned to procurement.
•	267	Completed Phase II of MRE ration redesign for nutritional optimization and logistical parameters. Reported all findings to Joint Services Operational Ration Forum and Food Nutrition Research and Engineering Board.
•	416	Developed a baseline on which to design future "on demand" feeding systems to reduce logistical burden.
Total	2499	

FY 2000 Planned Program:

•	110	Develop, fabricate and evaluate improvements to field feeding systems as required by the services and incorporate changes to support ongoing and future procurements.
•	459	Develop shipboard applications for state-of-the-art food service equipment technologies and pre-prepared foods.
•	372	Conduct design reviews of Air Force all electric field kitchen system and procures long lead items.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603747A Soldier Support and Survivability
	PROJECT D610

FY 2000 Planned Program: (continued)

•	134	Complete design and field testing of lightweight minimal "B" ration for the Air Force.
•	665	Continue advanced development of ration components and conduct user testing of improvements for individual and group ration systems. Transition selected heat and serve ration components and Meals Ready to Eat (MRE) items.
•	424	Develop ration delivery prototype, which incorporates on demand feeding concepts.
•	238	Initiate polymeric tray optimization efforts, focusing on "drop-in" technology enhancements to the current tray structure in order to ensure storage stability, oven ability, etc.
•	217	Conduct detailed analysis of accelerated storage data for operational rations to establish a baseline of information, which will be used to develop a predictive model.
•	146	Develop a management decision document that allows leaders to incorporate conceptual and quantitative variables in decision process prior to development of new special purpose rations.
•	284	Conduct Market Investigation and requirements development for the Battlefield Kitchen to replace the Mobile Kitchen Trailer. Prepare solicitation for combined R&D and Production Contract.
•	48	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program
Total	3097	

FY 2001 Planned Program:

•	113	Develop, fabricate and evaluate improvements to field feeding systems as required by the services and incorporate changes to support ongoing and future procurements
•	407	Continue assessment of new food technology and food service equipment technologies and complete shipboard evaluations.
•	436	Complete fabrication and conduct DT/OT of Air Force all electric field kitchen system.
•	207	Develop a Marine Corps 8x8x10 refrigerated ISO container to improve efficiency and reduce weight to cube ratio and maintenance requirements.
•	813	Continue improvement of individual and group rations and conduct field test of transitioning technologies to include irradiated foods, high frequency processed items, and innovative packaging systems.
•	429	Conduct field demonstration of the efficiency of an alternative ration delivery prototype.
•	285	Complete investigation of mono layer/high impact alternates to current polymeric tray. Initiate Technical Tests of prototype trays.
•	520	Design Battlefield Kitchen to replace the Mobile Kitchen Trailer. Initiate fabrication of prototypes.
•	170	Conduct storage studies of microbiological and sensory evaluations on operational ration components to correlate with baseline date.
Total	3380	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603747A Soldier Support and Survivability

PROJECT: D610

B. Other Program Funding Summary:	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE, 0604713.D548, Military Subsistence System	1194	1620	1747	1856	1863	1979	1976	Cont	Cont
OPA3, M65803, Kitchen, Containerized, Field	7337	7032	6133	5609	7501	6975	6562	Cont	Cont
OPA 3, M65802, Sanitation Center, Field Feeding		658	4364	2398	7403	7606	7721	Cont	Cont
M65801, Refrigeration Equipment	5060	927	1479	922	2359	2504	2518		

C. **Acquisition Strategy:** Project development transition to Engineering and Manufacturing Development and procurement.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Transitioned selected heat and serve ration components and MRE improvements	3Q*						
Completed field tests of selected performance enhancing ration components (PERCs).	3Q*						
Terminated storage studies/demonstrations of glass coated polymeric tray. Explore Nano-fillers	3Q*						
Completed MRE ration redesign for nutritional optimization and logistical parameters.	3Q*						
Conduct Market Investigation of concept to replace MKT		3Q					
Develop shipboard applications for state-of-the-art food service equipment.		3Q					
Develop decision document to support for new special purpose rations		4Q					
Complete design and field testing of lightweight minimal "B" ration.		3Q					
Design and fabricate a Battlefield Kitchen Prototype			3Q				
Conduct DT/OT of Air Force all electric field kitchen system			3Q				

*Denotes a completed milestone

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603747A Soldier Support and Survivability

PROJECT: D610

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. SSCOM	In-House		14882	849		1440		1560		Cont.	18731	Cont.
b. Contracts	Various		4128	969	Various	976	Various	1084	Various	Cont.	7157	Cont.
Subtotal Product Development:			19010	1818		2416		2644			25888	

II. Support Costs: There are no efforts associated with the delivery of any of a fully integrated system that are in direct support of this project and essential to the development, training, operation, and maintenance of systems in this project.

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TECOM/OEC	MIPR	Various	1696	526		526		569		Cont.	3317	Cont
Subtotal Test and Evaluation:			1696	526		526		569			3317	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Project Ofc Management	In-House	SSCOM	1115	155		107		167		Cont.	1592	Cont.
b. STTR/SIBR						48						
Subtotal Management Services:			1115	155		155		167			1592	

Project Total Cost:			21821	2499		3097		3380			30797	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603774A Night Vision Systems - Advanced Development PROJECT D131

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D131 Night Vision Systems Advanced Development	2240	3164	10968	12698	11677	5373	5339	Continuing	Continuing

A. Mission Description and Justification: The key objective of this program is to demonstrate and validate improvements to Night Vision Electro-Optic devices/systems for acquisition and engagement of enemy targets at maximum weapon system ranges under degraded battlefield/weather conditions and in countermeasure environments. This project provides the funding necessary to implement advances for product improvement or horizontal technology integration (HTI) to upgrade current capabilities in the future. The efforts are centered around development of improved electro-optic sensors, countermeasures and laser systems capabilities for the individual soldiers and combat vehicles to meet stated Army deficiencies such as fratricide reduction.

This project also provides for Program Definition and Risk Reduction (PDRR) of Prophet Unmanned Aerial Vehicle (UAV). Prophet UAV will replace currently deployed divisional assets. This will be the Division and Armored Cavalry Regiment Commanders principal SIGINT and Electronic Warfare (EW) System. It will be designed to support Army XXI and beyond. Prophet will provide the Tactical Commander with an enhanced capability for situational awareness, electronic Intelligence Preparation of the Battlefield (IPB), battlespace visualization, target development, and force protection throughout the division's width and depths as defined in Army XXI. The Prophet system will interface with the division and armored cavalry Analysis Control Element's (ACE) All Source Analysis System (ASAS) as well as the maneuver brigade Analysis Control Team's (ACT) Common Ground Station (CGS) and/or ASAS-Remote Work Stations (ASAS-RWS) providing near-real-time (NRT) digital inputs to the common operating picture (COP).

The Prophet System components will include a ground-sensor, an air sensor and a control facility. Key operational (and doctrinal) features will be the remote control of airborne sensors and electronic mapping of the enemy's communications and radar systems in the Division's Area of Operations. The Prophet System will also rapidly generate information to identify critical enemy nodes (emitters), and then develop locations that assist in targeting by EW or by division assets. The Prophet System is needed to counter the communications technology revolution and the current worldwide threat; and to support the current Army mission, doctrine, priorities, and requirements.

FY01 funding supports the Program Definition and Risk Reduction (PDRR) phase for Prophet UAV. The Prophet UAV EMD efforts are covered under PE/Project 64270/L12.

FY 1999 Accomplishments:

- 510 Completed development of backside illumination laser protection for HTI SGF ground "B" Kit to be integrated into M2A3, M3A3, M1A2 SEP, and LRAS3.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603774A Night Vision Systems - Advanced Development PROJECT D131

- 25 Completed Interface Control Document (ICD) and connectors for Automatic Target Recognition/Automatic Target Cueing (ATR/ATC) interface capability with SGF "B" kit.

FY 1999 Accomplishments: (continued)

- 1337 Initiated and completed sight level demonstration of improved FLIR capabilities (one test unit).
- 200 Developed HTI Laser designs.
- 168 Completed development and demonstrated Sensor Risk Reduction Project (SR2P) Testbed for the Future Scout Cavalry System (FSCS) (one test unit).

Total 2240

FY 2000 Planned Program:

- 1292 Develop frontside illumination laser protection and advanced capabilities (i.e., local area processing and frame integration) for high performance systems, such as HTI SGF (five test units).
- 893 Demonstrate Automatic Target Recognition/Automatic Target Cueing capabilities on LRAS3 (one test unit).
- 706 Continue HTI Laser activities including design, component solid models, and system fit tests.
- 188 Continue demonstration of Sensor Risk Reduction Project (SR2P) Testbed with emphasis on user evaluation activities at Fort Hood and Hunter Liggett (two test units).
- 85 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Program.

Total 3164

FY 2001 Planned Program:

- 1456 Develop HTI SGF optical and performance capability improvements.
- 1326 Demonstrate sensor fusion [e.g. I2/thermal and DTV (Day TV)] in a combat vehicle/platform (LRAS3 and/or TUAV) (two test units).
- 1186 Develop advanced processing capability for SGF "B" Kit (improve low contrast).
- 1450 Funds will be used in support of the New Army Transformation and to prepare for and Conduct SSEB to award PDRR contract for Prophet UAV.
- 5550 Funds will be used in support of the New Army Transformation and to award PDRR Contract for Prophet UAV.

Total 10968

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603774A Night Vision Systems - Advanced Development PROJECT D131

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	2664	3188	4036
Appropriated Value	2681	3188	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-17		
b. SBIR / STTR	-71		
c. Omnibus or Other Above Threshold Reduction		-13	
d. Below Threshold Reprogramming	-343		
e. Rescissions	-10	-11	
Adjustments to Budget Years Since FY 2000/2001 PB			
New Army Transformation Adjustment		TBD	+6932
Current Budget Submit (FY 2001 PB)	2240	3164	10968

Changes Summary Explanation: Funding - FY2001: Funding in FY01 project D131 was adjusted to reflect the New Army Transformation.

C. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
PE 0602709A/Night Vision and Electro-Optical Technology RDTE, A Budget Activity 2	18341	20021	20465	20574	20341	21503	22887	Continue	Continue
PE 0603710A/Night Vision Advanced Development RDTE, A Budget Activity 3	25402	42262	33341	37741	37026	32905	32340	Continue	Continue
PE 0604710A/Night Vision Devices Engineering Development RDTE, A Budget Activity 5	19490	38266	32574	33948	24179	19355	18879	Continue	Continue
PE 0203735A/ Abrams (D330) and Bradley (D371) A-Kit Development RDTE, A Budget Activity 7	57787	24777	0	0	0	9419	24503	Continue	Continue
OPA2 K38300 LRAS3 "A" & "B" Kit	0	42030	46156	44361	49809	51140	51085	Continue	Continue
WTCV G80717 M2A3/M3A3 Bradley "B" Kit	39617	45276	59904	61679	49850	52914	55887	Continue	Continue
WTCV GA0750 Abrams Upgrade "A" & "B" Kit	91631	65196	54210	52122	33590	7648	0	0	388697
WTCV GA0730 M1A2 SEP "A" & "B" Kit	0	0	16652	28895	40518	41109	41105	Continue	Continue

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603774A Night Vision Systems - Advanced Development
	PROJECT D131

C. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE (PE 64270 L12) – (includes Prophet Ground funding in FY99 thru FY03)	11668	21775	4985	1997	29764	19822	44575	Continue	Continue
RDTE Budget Activity 7 DCP PE 030885G, Prophet (Ground and UAV)	13523	11804	11578	14381	11475	10184	10572	Continue	Continue

D. Acquisition Strategy: The advances and improvements for Second Generation FLIR (SGF) and HTI Laser activities utilize various cost reimbursement development contracts that were and will continue to be competitively awarded using best value source selection procedures.

Prophet UAV PDRR phase will be a Single Development Effort and is expected to be a competitive award.

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Developed laser protection for vehicles	1-4Q						
Designed ATR/ATC capability/interface with Aviation and Ground B Kit	2-4Q						
Initiated/Demonstrated improved FLIR Capabilities (Test)	1-4Q						
Developed HTI Laser design	1-4Q						
Develop and test fit for HTI Laser components		1-4Q					
Develop and Demo Laser Protection for high performance systems		1-4Q					
Integrate and Demonstrate improved FLIR ATR/ATC Capabilities		1-4Q					
Develop & demonstrate SR2P Testbed for FSCS	1-4Q	1-4Q					
Develop advanced system level optical and performance improvements			1-4Q	1-4Q			
Demonstrate Sensor Fusion			1-3Q				
Develop Advanced processing capability			1-4Q	1-4Q			
Develop & Demonstrate Advanced capabilities for Staring Arrays (e.g. HTI SGF)					1-4Q	1-4Q	1-4Q

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603774A Night Vision Systems - Advanced Development

PROJECT: D131

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Develop & Demonstrate Laser Protection for Advanced Staring Arrays (e.g. HTI SGF)					1-4Q	1-4Q	1-4Q
Begin Prophet UAV PDRR			1Q				
Prophet UAV Demo					3Q		
Milestone II Decision for Prophet UAV					4Q		
Begin EMD of Prophet UAV						1Q	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603774A Night Vision Systems - Advanced Development

PROJECT: D131

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Laser Protection	C/CP, MIPR	DRS, Dallas TX SBRC, Santa Barbara, CA; NVESD	405			1040	2Q	1326	1-2Q	Continue	Continue	Continue
b. SR2P	MIPR	NVESD	450	168	1Q	143	2Q				761	761
c. FLIR Develop/Integrate	Various	Various	541	1397	1Q						1938	
d. HTI Laser Design	C/CP	Raytheon, Dallas, TX		200	4Q	598	2Q				798	798
e. ATR/ATC Activities	MIPR	Various	0			756	2Q				756	756
f. Sensor Fusion Activities	C/CP	To Be Selected	0					734	1Q	Continue	Continue	Continue
g. Advanced Processing Activities for SGF 'B' Kit	C/CP	To Be Selected	0					1047	2Q	Continue	Continue	Continue
h. Award PDRR Contract for Prophet UAV	TBD	TBD	0					5550	1Q	Continue	Continue	Continue
i. SBIR/STTR						85					85	
Subtotal Product Development:			1396	1765		2622		8657		Continue	Continue	Continue

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Matrix Support	MIPR	Various	139	174	1Q	232	1Q-4Q	301	1Q	Continue	Continue	
b. Matrix Support	MIPR	HQ, CECOM						700	1Q	Continue	Continue	
c. Engineering Support	FFP	CACI, Falls Church VA						300	1Q	Continue	Continue	
Subtotal Support Costs:			139	174		232		1301		Continue	Continue	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603774A Night Vision Systems - Advanced Development

PROJECT: D131

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Multispectral Eval	MIPR	WSMR	308	0							308	
b. FLIR Demos and Evals	MIPR	Various	275	277	1Q	284	2Q				836	
c. Sensor Fusion Evals	MIPR	To Be Selected						533	1Q	Continue	Continue	
Subtotal Test and Evaluation:			583	277		284		533		Continue	Continue	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Management		PM-NV/RSTA, Ft. Belvoir, VA	34	24	1Q	26	1Q	27	1Q	Continue	Continue	
b. Program Management		PM, Signals Warfare						450	1Q	Continue	Continue	
Subtotal Management Services:			34	24		26		477		Continue	Continue	

Project Total Cost:			2152	2240		3164		10968		Continue	Continue	

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)			DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603779A Environmental Quality Technology - Dem/Val		PROJECT D035

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D035 National Defense Center for Environmental Excellence (NDCEE)	0	0	4897	4883	4878	0	0	0	14658

A. **Mission Description and Justification:** This Congressionally mandated project is managed by the Army on behalf of the Office of the Deputy Under Secretary of Defense for Environmental Security (DUSD-ES). The mission of the NDCEE is four-fold: (1) Demonstrate and export new environmentally-acceptable technology to the industrial base; (2) train the industrial base on the use of the new technology; (3) perform research and development, where necessary, to mature a new technology prior to demonstrating and exporting the new technology to the industrial base and (4) assist DoD in technology transfer. The NDCEE, which is located in Johnstown, Pennsylvania, has the goal of resolving the environmental technology and management requirements of the DoD community and commercial industrial base. The primary in-house development agency is the U.S. Army Materiel Command's Armament Research, Development, and Engineering Center, Picatinny Arsenal, NJ.

The NDCEE has positioned itself as a critical resource for the Deputy Under Secretary of Defense for Environmental Security for environmental management and technology validation and integration. Major programs supported by the Center include the Joint Group on Acquisition Pollution Prevention, Toxics Reduction Investment & Management (TRIM), environmental cost accounting standards development supporting the DOD sustainment community and the DoD fuel cell program.

FY 1999 Accomplishments: Program funded in 0708045A, project E31 in FY 1999.

FY 2000 Planned Program: An internal reprogramming action is in progress to transfer $4.8M from PE 0708045A/project E31 to this PE/project for execution.

FY 2001 Planned Program:

- 4897 - Support the needs of Army/DOD pollution prevention.
  - Maintain Environmental Technology Facility and continue demonstration of environmentally acceptable technologies.
  - Support pollution prevention efforts in acquisition.
  - Evaluate and transition as appropriate sustainable manufacturing technologies such as structural composite materials produced from renewable sources.
  - Increase capabilities in modeling using existing capabilities in visualization and 3D modeling.
  - Investigate and transition next generation finishing and coatings removal technologies.
  - Increase emphasis on water treatment and DOD-specific waste stream recovery and treatment.

Total 4897

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603779A Environmental Quality Technology - Dem/Val
	PROJECT D035

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	0	0	0
Appropriated Value	0		
Adjustments to Appropriated Value			
a. a. Congressional General Reductions			
b. b. SBIR / STTR			
c. c. Omnibus or Other Above Threshold Reductions			
d. d. Below Threshold Reprogramming			
e. e. Rescissions			
Adjustments to Budget Years Since FY 2000/2001 PB		0	+4897
Current Budget Submit (FY 2001 PB)	0	0	4897

Change Summary Explanation: Funding – FY 2001: Program transferred to budget activity 4 (0603779A) from budget activity 7 (0708045A) as per Congressional direction in the National Defense Authorization Act for FY 1999.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603790A NATO Research & Development / PROJECT: D691

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D691 NATO Research and Development	3843	1858	1920	8594	8810	8973	9191	Continuing	Continuing

A. Mission Description and Justification: This program implements the provisions of Title 10 U.S. Code, Section 2350a, Cooperative Research and Development (R&D) Projects: Allied Countries. The objective is to improve, through the application of emerging technologies, the conventional defense capabilities of the United States, the North Atlantic Treaty Organization (NATO), and U.S. major non-NATO allies. This program element only funds the U.S. equitable share of the cooperative R&D project spent in the U.S. Projects are implemented with the allied partners through international agreements which define the scope, cost and work sharing arrangements, management, contracting, security, data protection and third party transfers. By technology sharing the program jointly develops equipment with our allies to improve operational efforts by achieving multi-national force compatibility through the use of similar equipment and improved interfaces. Funds support all the R&D costs including the identification of cooperative opportunities and administration of the program. All funds are used to pay for the U.S. work share in the United States at U.S. Government and U.S. contractor's facilities. This program focuses on international cooperative technology demonstration, validation, and interoperability of the Battlefield Combat Identification System, Force XXI Battle Command Brigade & Below (FBCB2)/Appliqué Systems, Adaptive Digital Beamforming for THAAD radars, helicopter helmet mounted displays, military network switching, Patriot Tactical Operations Center, improved combat vehicle propulsion, missile seeker electronic countermeasures, eyesafe laser radar, artillery command and control, standoff chemical detectors, kinetic energy penetrators, and signal jamming subsystems. The final program will be reported separately as required by 10 USC 2350a(f).

FY 1999 Accomplishments:

- 2357 **Fighting Vehicle Propulsion Technology using Ceramic Materials (Partner: Japan):** Continued to develop, test and characterize advance materials including ceramics, high temperature combustion optimization, low heat rejection technology, and advanced friction and wear phenomena.
- 345 **Focal Plane Array Countermeasures (FPACM) (Partner: United Kingdom):** Characterized and assessed advanced focal plane array missile seekers and develop electronic countermeasures (ECM) to defeat them through simulation, modeling and lab testing.
- 500 **Cooperative Eyesafe Laser Project (CELRAP) (Partner: Japan):** Continued to develop a joint performance specification for a multifunctional, eyesafe laser radar for range finding, target profiling, obstacle avoidance, range and terrain mapping. Continued fabricating subsystems and brassboard.
- 400 **Combat Identification (CI) Interoperability Demonstration (Partners: France, Germany, United Kingdom):** Developed a NATO STANAG for CI based upon the Battlefield Combat Identification System (BCIS) and the completed interoperability trials of prototype systems in Munster, GE.
- 150 **Adaptive Beamforming Technology (ABFT) for Wide Band Phased Array Radars (Partner: United Kingdom):** Completed ABFT technology insertion program for THAAD Radar objective system, beamforming algorithms, hardware and software modifications. Published final point design.
- 91 **Report to Congress:** Pursuant to 10 USC 2350a, prepared and provided to USD(A&T) the Army section of the 1999 Report to Congress on the International Cooperative Research and Development Program

Total 3843

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603790A NATO Research & Development / PROJECT: D691

FY 2000 Planned Program:

•	950	**Command and Control (C2) Systems Interoperability Program (C2SIP) (Partners: Germany, France, United Kingdom):** Continue integration work from Battlefield Interoperability Program (BIP), Quadrilateral Interoperability Program (QIP), and the Army Tactical Command & Control Information System (ATCCIS) into an Advance Technology Demonstration (ATD) to achieve NATO levels four (messaging) & five (database) interoperability. This program will transition into the Multilateral Interoperability Program (MIP) in FY 2000.
•	790	**Laser Stand-off Chemical Detector (LSCD) (Partner: France):** Continue development of technology that will allow U.S. troops to detect, identify, and quantify chemical agents from a distance by employment of the preferred doctrine of contamination avoidance.
•	68	**Report to Congress:** Pursuant to 10 USC 2350a, prepare and provide to USD(A&T) the Army section of the 2000 Report to Congress on the International Cooperative Research and Development Program.
•	50	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	1858	

FY 2001 Planned Program:

•	1840	**Multilateral Interoperability Program (MIP) (Partners: Germany, France, United Kingdom, Canada, Italy):** Continue integration work from the Command and Control Systems Interoperability Program (C2SIP) into an Advanced Concept Technology Demonstration (ACTD) to achieve NATO levels four (messaging) & five (database) interoperability and also extends the effort into a sustainable program to incorporate lessons learned into national systems. Extends participation to include Canada and Italy.
•	80	**Report to Congress:** Pursuant to 10 USC 2350a, prepare and provide to USD(A&T) the Army section of the 2001 Report to Congress on the International Cooperative Research and Development Program.
Total	1920	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603790A NATO Research & Development / PROJECT: D691

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	4132	1872	1971
Appropriated Value	4161	1872	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-29		
b. SBIR / STTR	-109		
c. Omnibus or Other Above Threshold Reduction		-8	
d. Below Threshold Reprogramming	-162		
e. Rescissions	-18	-6	
Adjustments to Budget Years Since FY 2000/2001 PB			-51
Current Budget Submit (FY 2001 PB)	3843	1858	1920

C. **Other Program Funding Summary:** None

D. **Acquisition Strategy:** All projects are test or technical demonstrations to feed into potential new requirements or as product improvements (such as the Adaptive Beamforming Technology insertion project), or to introduce interoperability into existing systems (such as the Combat Identification project).

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Combat Identification Interoperability							
Conclude MOU Amendment	1QTR						
Complete NATO Staff Requirement	4QTR						
Complete NATO STANAG for CI			2QTR				
Command & Control Interoperability / MIP							
Conclude MIP MOU		2QTR					
Complete C2SIP ATCD				4QTR			
Complete Integration into MCS				4QTR			
Fighting Vehicle Propulsion Technology							
Preliminary Engine Analysis Complete	3QTR						
Materials Characterization/Test Complete	3QTR						
Combustion Test and Analysis Complete		2QTR					
Complete Developmental Tests			2QTR				

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603790A NATO Research & Development

PROJECT: D691

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Focal Plane Array Countermeasures							
Complete Software Simulations	3QTR						
Develop CM Model		4QTR					
Complete Testing of CM Model			2QTR				
Cooperative Eyesafe Laser Project							
Complete Development Testing	4QTR						
Complete Early Operational Testing		3QTR					
Adaptive Beamforming Technology							
Final Design	2QTR						
Final Report	3QTR						
Laser Standoff Chemical Detector							
Complete Analysis of Spectral Properties	3QTR						
Begin Laser Prototype Development	4QTR						
Complete Development Testing			3QTR				

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603790A NATO Research & Development

PROJECT: D691

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Command & Control Systems	CPFF	CSC Ft Washington, PA	15050	500		0		0		0	15550	18028
b. Combat Identification Systems	CPAF	TRW Redondo Bch, CA	3893	400		0		0		0	4293	3993
c. Command & Control Systems	CPFF	Madentech Shrewsbury, NJ	1600	100		0		0		0	1700	2050
d. Algorithm Development	CPFF	Georgia Tech Atlanta, GA	7820	75		0		0		0	7895	8120
e. Sensors	CPFF	Dynetics Huntsville, AL	450	75		0		0		0	525	850
f. Software	FFRDC	Mitre Boston, MA	300	100		100		100		400	1000	1000
g. High Temperature Lubricant Research	CPFF	Wayne State Univ Detroit, MI	1600	200		0		0		0	1800	1800
h. Combustion Research	CPFF	Rutgers Univ Brunswick, NJ	900	200		0		0		0	1100	1100
i. Software Development	CPFF	SRI Menlo Park , CA	1350	100		100		100		400	2050	2050
j. Diesel Engine Research	CPFF	Detroit Diesel Allison Detroit, MI	1000	811		0		0		0	1811	2000
k. Software Development	CPFF	Nichols Research Huntsville, AL	732	132		100		100		200	1264	1232
l. MIP Follow-on	CPFF	TBD	0	0		858		930			1788	
Subtotal Product Development:			34695	2693		1158		1230		1000	40776	53841

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603790A NATO Research & Development

PROJECT: D691

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Engineering	MIPR	CECOM Ft. Monmouth, NJ	400	100		150		140		400	1190	
b. Engineering	MIPR	TACOM Warren, MI	400	100		0		0		0	500	
c. Logistics	MIPR	ICPA APG, MD	481	100		100		100		400	1181	
d. Logistics	MIPR	LOGSA Huntsville, AL	150	50		50		50		600	900	
e. Engineering	MIPR	AMCOM Huntsville, AL	130	100		0		0		0	230	
Subtotal Support Costs:			1561	450		300		290		1400	4001	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Independent Evaluations	MIPR	AMSAA APG, MD	400	100		50		50		300	900	
b. Software Validation	MIPR	CECOM Ft Monmouth, NJ	300	100		50		50		300	800	
c. System Testing	MIPR	Army Research Lab, APG, MD	300	0		0		0		0	300	
d. System Testing	MIPR	TECOM APG, MD	500	100		50		50		1760	2460	
Subtotal Test and Evaluation:			1500	300		150		150		2360	4460	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603790A NATO Research & Development

PROJECT: D691

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Project Management	MIPR	PEO C3S Ft. Monmouth, NJ	600	50		100		100		600	1450	
b. Project Management	MIPR	TACOM Warren, MI	400	100		0		0		0	500	
c. Project Management	MIPR	PEO IEW Ft. Monmouth, NJ	500	100		0		0		0	600	
d. Project Management	MIPR	CBDCOM Edgewood Ars, MD	300	50		100		100		330	880	
e. Project Management	MIPR	Army Research Lab, APG, MD	200	0		0		0		0	200	
f. Project Management	MIPR	Army Research Lab, WSMR, NM	400	50		0		0		0	450	
g. Project Management	MIPR	CECOM Ft. Belvoir, VA	500	50		50		50		380	1030	
h. Project Management	MIPR	AMCOM Redstone Ars, AL	550	0		0		0		0	550	
Subtotal Management Services:			3450	400		250		250		1310	5660	
Project Total Cost:			41206	3843		1858		1920		6070	54897	53841

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603801A Aviation - Advanced Development

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	10996	8655	5848	9071	9402	10204	10290	Continuing	Continuing
DB32 Advanced Maintenance Concepts and Equipment	2495	2972	3034	3421	3541	3788	3883	Continuing	Continuing
DB33 Cargo Handling and Mission Support Equipment	2296	2740	2814	2985	3191	3496	3495	Continuing	Continuing
DB45 Aircrew Integrated Systems - Advanced Development	6205	2943	0	2665	2670	2920	2912	Continuing	Continuing

A. Mission Description and Budget Item Justification: This PE provides advanced development aviation support of tactical programs associated with air mobility, advanced maintenance concepts and equipment, and Aircrew Integrated Systems (ACIS).

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	11404	5746	5870
Appropriated Value	11487	8746	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-83		
b. SBIR / STTR	-256		
c. Omnibus or Other Above Threshold Reductions		-31	
d. Below Threshold Reprogramming	-108		
e. Rescissions	-44	-60	
Adjustments to Budget Years Since FY 2000/2001 PB			-22
Current Budget Submit (FY 2001 PB)	10996	8655	5848

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)			DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603801A Aviation - Advanced Development		PROJECT DB32

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DB32 Advanced Maintenance Concepts and Equipment	2495	2972	3034	3421	3541	3788	3883	Continuing	Continuing

A. **Mission Description and Budget Item Justification:** This project enhances utilization of current and future aircraft by improving the efficiency of maintenance and servicing operations by validating new maintenance concepts to improve man machine interface, enhance aircraft maintenance processes and reduce operation and support costs. Included in the project are Digitized Aviation Logistics (DAL) elements such as: Portable Maintenance Aids (PMA), database management software, on-board diagnostics, health/usage monitoring systems, trending analysis, automated data collection and migration, business process reengineering, software integration, and support infrastructure analysis.

FY 1999 Planned Program:

- 175 Completed development and demonstration of Aircrew Maintenance Interface Debriefing System (AMIDS). Demonstrated system for Apache PMO and performed an implementation study for including AMIDS functionality in the Longbow Integrated Maintenance Support System (LIMSS).
- 40 Performed Cost/Benefit analysis on Structural Usage Monitoring System (SUMS) for the MH-47E based upon information gathered during system demonstration.
- 25 Monitored Small Business Innovative Research (SBIR) programs focused on applying acoustic monitoring to the diagnosis of aircraft mechanical system faults.
- 550 Initiated development of a Structural Usage Monitoring System (SUMS) for the Apache Longbow. This system analyzes flight regime and aircraft configuration information to calculate component usage. Detailed requirements have been defined and preliminary design has begun.
- 225 Initiated development of a system for collecting and analyzing data available from the Full Authority Digital Electronic Control (FADEC) on the T55-GA-714 engine. Defined detailed requirements and began preliminary design. Program Name: Aviation Diagnostic & Engine Prognostic Technology (ADEPT).
- 400 Defined plan for demonstrating the use of Automated Identification Technology (AIT) in the Army aviation maintenance process. Effort included technology survey, coordination with other DoD organizations, and detailed program planning.
- 1080 Initiated effort to define, develop, and demonstrate a seamless information system that allows information to flow from on-board aircraft systems, through electronic diagnostic tools, into the larger logistics information system. Effort included assembling a team of Government and industry personnel to define a unit level information system architecture and to define future information requirements for PMs, manufacturers and materiel managers.

Total 2495

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603801A Aviation - Advanced Development
	PROJECT DB32

FY 2000 Planned Program:

•	1115	Longbow SUMS: complete preliminary and detailed designs, develop software algorithms, and begin field data collection and analysis.
•	550	ADEPT: complete preliminary and detailed designs, develop software for data collection and trending, begin field data collection and analysis.
•	450	Define standardized maintenance decision support tools for use by unit level personnel.
•	661	Begin development of unit level seamless information system.
•	132	Support AMCOM Automated Identification Technology demonstration effort.
	64	Small Business Innovative Research/Small Business Technology Transfer Program (SBIR/STTR)
Total	2972	

FY 2001 Planned Program:

•	502	Longbow SUMS: complete field demonstration and present results to Apache PM.
•	650	ADEPT: complete field demonstration and present results to Chinook PM.
•	150	Continue to support AMCOM demonstration of Automated Identification Technology for use in helicopter maintenance processes. Prepare for application to the Longbow Apache.
•	1088	Continue development of unit level seamless information system by interfacing existing digital information systems and automating maintenance record keeping and support processes.
•	644	Begin development and demonstration of maintenance decision support tools for use by unit level personnel.
Total	3034	

B. Other Program Funding Summary: None

C. Acquisition Strategy: This project is an aggregate of advanced maintenance concepts-related projects. While the detailed acquisition strategy varies from project to project, the general strategy for each individual project is to complete the development effort through Government test (developmental and operational). Program documentation for milestone decision is prepared, as appropriate, concurrently with the development effort in preparation for program transition to the organization responsible for production and fielding.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Longbow SUMS									
Define System and Develop Methodology	3Qtr								
Develop Algorithms		2Qtr							
Demonstrate			1Qtr						
ADEPT									
Define System and Develop Methodology	3Qtr								
Develop Algorithms		3Qtr							

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603801A Aviation - Advanced Development

PROJECT: DB32

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Demonstrate			4Qtr						
Digital Aviation Logistics Prototype									
Maintenance AIT Application									
Define System and Methodology	3Qtr								
Work Implementation Issues		2Qtr							
Preliminary Demonstration		3Qtr							
Enhanced Demonstrations			2Qtr						
Single-Point Data Access									
Define Unit Level Architecture	3Qtr								
Develop Interfaces		2Qtr							
Interface Demonstration		4Qtr							
Enhanced Demonstrations			2Qtr						
Maintenance Decision Support Tools									
Define Automated Phase Maint. Tool		2Qtr							
Develop Tools			2Qtr						
Demonstrate Tools			4Qtr						
Maintenance Information Analysis Tools				2Qtr					
Unified Demonstration of Seamless System				2Qtr					
Development of Diagnostic / Prognostics Tools				2Qtr					

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603801A Aviation - Advanced Development

PROJECT: DB32

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Longbow SUMS	SS/CPFF	The Boeing Company, Mesa, AZ	0	765	3rd Qtr	1115	1st Qtr	502	1st Qtr		2382	1800
b. ADEPT	CA/CR	Allied Signal, Tempe, AZ	0	225	3rd Qtr	550	1st Qtr	650	1st Qtr		1425	1150
c. AIT Maint. Application	PO/FFP	Intermec, Everett, WA	0	425	3rd Qtr	132	2nd Qtr	150	2nd Qtr		707	600
d. Single-Point Data Access	CA/CR	Rita, Easton, MD	0	1080	3rd Qtr	661	2nd Qtr	1088	2nd Qtr		2829	2400
e. Maint. Decision Support Tools	CA/CR	Rita, Easton, MD	0	0		450	1st Qtr	644	2nd Qtr	850	1944	1700
f. SBIR/STTR						64					64	
g. OSD Withhold												250
Subtotal Product Development:				2495		2972		3034		850	9351	

II. Support Costs: None

III. Test and Evaluation: None

IV. Management Services: None

Project Total Cost:				2495		2972		3034		850	9351	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)			DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603801A Aviation - Advanced Development		PROJECT DB33

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DB33 Cargo Handling and Mission Support Equipment	2296	2740	2814	2985	3191	3496	3495	Continuing	Continuing

A. **Mission Description and Budget Item Justification:** This project develops equipment, practices, and procedures for the operational improvement of planning, loading, transport, and off-loading of helicopter cargo in all-weather, around the clock combat scenarios. It also replaces obsolete and insupportable ground support equipment with new and standardized multi-output equipment compatible with all Army aircraft models; develops rapid battle repair procedures and tools to speed the return of aircraft to combat ready status; and develops new equipment for aerial recovery of damaged aircraft.

FY 1999 Planned Program:

•	706	Completed the expert engine/aircraft-interface diagnostic databases, and initiated development of ATEDS for the force modernized fleet
•	555	Identified performance requirements and initiated design of replacement for Aviation Ground Power Unit (AGPU) to meet the needs of the force modernized fleet
•	260	Complete preliminary design of objective CANDID system, identifying hardware, software, and packaging requirements
•	216	Completed installation of ACHS in National Guard aircraft. Initiated system upgrades to a production configuration
•	243	Initiate effort to detect, characterize, treat, and prevent hidden corrosion in aircraft structures; building on detection capability being developed under the CANDID effort and the Navy's ongoing treatment and prevention activities
•	266	Completed fabrication, tested and accepted non-compliant system (ACDS). Initiated additional testing of prototype to clarify requirements.
•	50	Completed CMEP power electronics, completed vehicle installation kit, installed in vehicle, and test
Total	2296	

FY 2000 Planned Program:

•	329	Develop and execute an acquisition strategy to identify source that meets the Army ACDS requirement. Conduct laboratory tests
•	514	Complete detail design of CANDID hardware and software, and fabricate 3 prototype systems
•	561	Completed fabrication and test AGPU replacement prototype system. Initiate fabrication of 2 additional prototypes and initiate field tests
•	285	Resolve interface issues with ACHS and internal fuel tanks. complete system upgrades to a production configuration. Conduct qualification testing of ACHS subsystems.
•	605	Complete detail design of ATEDS hardware and software and initiate fabrication of prototype hardware. Initiate field demo.
•	389	Identify corrosion causing parameters and develop algorithm to calculate degree of corrosion development, initiate detail design efforts of corrosion environment monitoring system.
	57	Small Business Innovative Research/Small Business Technology Transfer Program (SBIR/STTR)
Total	2740	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603801A Aviation - Advanced Development
	PROJECT DB33

FY 2001 Planned Program:

- 262 Conduct field testing of prototype CANDID systems and develop product/performance specification for follow on procurement
- 777 Complete field tests and develop production acquisition strategy for AGPU replacement.
- 425 Expand ACHS I efforts to meet identified deficiencies through initiation of additional technology development (ACHS II) in the areas of remote external cargo monitoring, high capacity external cargo winches, and automated weight and balance subsystems
- 787 Complete fabrication of ATEDS prototypes and complete field evaluation
- 348 Complete detail design efforts, fabricate corrosive environment monitoring system and conduct field evaluation.
- 215 Conduct field tests of ADCS

Total 2814

B. Other Program Funding Summary: None

C. Acquisition Strategy: This project is an aggregate of advanced mission support and cargo handling concepts-related projects. While the detailed acquisition strategy varies from project to project, the general strategy for each individual project is to complete the development effort through Government test (developmental and operational). Program documentation for milestone decisions is prepared, as appropriate, concurrently with the development effort in preparation for program transition to the organization responsible for production and fielding.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Contact Maintenance Electrical Power (CMEP)							
Preliminary Design Review							
Detailed Design Review	2Qtr						
Fabrication (1)	3Qtr						
Test	4Qtr						
Aviation Turbine Engine Diagnostic Sys (ATEDS)							
Complete database development	2 Qtr						
Preliminary Design Review	4 Qtr						
Detailed Design Review		3Qtr					
Fabrication (3)		4 Qtr					
Test			4Qtr				
Aircraft Cleaning and Deicing System (ACDS)							
Fabrication (1)	2Qtr						
Test	2Qtr						
Identify source		1Qtr					

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603801A Aviation - Advanced Development

PROJECT: DB33

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Design review		2Qtr					
Fabrication		3Qtr					
Test	4Qtr						
Field test		4Qtr					
Develop production strategy			1Qtr				
Computer Aided Nondestructive Inspection and Disposition (CANDID) System							
Preliminary Design Review	4Qtr						
Detailed Design Review		2Qtr					
Fabrication (3)			1Qtr				
Test			2Qtr				
AGPU Replacement							
Preliminary Design Review	3Qtr						
Detailed Design Review	4Qtr						
Fabrication (1)		1Qtr					
Test		2Qtr					
Fabrication (2)		4Qtr					
Field Test			2Qtr				
Advanced Cargo Handling System (ACHS)							
Phase I Test							
Phase 2 Preliminary Design Review			4 Qtr				
Phase 2 Detailed Design				4 Qtr			
Fabrication (1)					4 Qtr		
Test						4 Qtr	
Corrosion Environment Monitoring System							
Preliminary Design Review	3Qtr						
Detailed Design Review		1Qtr					
Fabrication		2Qtr					
Test		4Qtr					
Low Observable Battle Damage Repair (LOBDR)							
Preliminary Design Review		4Qtr					
Detailed Design Review			4Qtr				

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603801A Aviation - Advanced Development

PROJECT: DB33

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Fabrication				4Qtr			
Test					4Qtr		
Stress/Fatigue Identification							
Complete Stress ID Survey		1Qtr					
Preliminary Design Review			1Qtr				
Detailed Design Review			2Qtr				
Test			4Qtr				
Advanced Lightweight GPU							
Preliminary Design Review				4Qtr			
Detailed Design Review					2Qtr		
Fabrication (3)					4Qtr		
Test						1Qtr	
Environmentally Friendly Deicing Technologies							
Market research and identify			3Qtr				
Develop prototype system				2Qtr			
Fabricate and field trials					1Qtr		
Contact Maintenance Air Compressor							
Develop prototype				3Qtr			
Fabricate & field trials					2Qtr		

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603801A Aviation - Advanced Development

PROJECT: DB33

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. CMEP	PO	In-House	165	50						0	215	
b. ATEDS	C/CPFF	AlliedSignal, Phoenix, AZ; Allison, Indian-apolis, IN; Sikorsky, Stratford, CT	1256	856	1st Qtr	605	1st Qtr	585	1st Qtr	0	3302	1754
c. ACDS	C/CPFF	Centech, Arlington VA	254	266	3rd Qtr	329	1st Qtr	160	1st Qtr	0	1009	220
d. CANDID	SS/CPFF	Boeing, Mesa AZ	628	210	2nd Qtr	514	2nd Qtr	195	2nd Qtr	0	1547	750
e. AGPU Replacement	C/CPFF	Rome Labs, Rome, NY	0	505	2nd Qtr	561	1st Qtr	575	1st Qtr	0	1641	1500
f. ACHS	C/CPFF	In-House, TBD	911	216	2nd Qtr	285	2nd Qtr	316	2nd Qtr	0	1728	700
g. CEM (Corrosive Envmt Mtr)	CA	Honeywell, Minneapolis, MN	0	193	3rd Qtr	389	1st Qtr	259	1st Qtr	1019	1860	2081
h. LOBDR	C/CPFF	TBD				0	3rd Qtr	450	2nd Qtr	1000	1450	1342
i. Stress/Fatigue ID	C/CPFF	TBD				0	3rd Qtr	106	2nd Qtr		106	
j. Adv Ltwt GPU	C/CPFF	TBD										
k. EnvFriendly Deicing	C/CPFF	TBD						168	1st Qtr		168	
l. SBIR/STTR						57					57	
m. Cont. Maint Air Comp	C/CPFF	TBD										
Subtotal Product Development:			3214	2296		2740		2814		2019	13083	8347

II. Support Costs: None

III. Test and Evaluation: None

IV. Management Services: None

Project Total Cost:			3214	2296		2740		2814		2019	13083	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603801A Aviation - Advanced Development / PROJECT: DB45

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
DB45 Aircrew Integrated Systems - Advanced Development	6205	2943	0	2665	2670	2920	2912	Continuing	Continuing

A. Mission Description and Budget Item Justification: **Project DB45 – Aircrew Integrated Systems (ACIS) Advanced Development:** This project provides advanced development for those systems and items of equipment that are unique and necessary to the sustainment, survivability, and performance of Army aircrews and troops on the future integrated battlefield and related training missions. Advanced development programs will focus on the development and evaluation of emerging technologies and the adaptation of commercial and nondevelopmental items (NDI) to military requirements. The Air Warrior (AW) program will provide the aircrew with a systems approach to chemical and biological (CB) protection, noise protection, microclimatic conditioning, crash and post-crash survivability, concealment and environmental protection, ballistic protection, night vision capability, heads-up displays, directed energy eye protection, and flame/heat protection. The AW design will improve overall aircrew mission performance, aircrew comfort, aircrew and aircrew station interface, safety, and survivability. The Aircrew Integrated Common Helmet (AICH) program (an Air Warrior program component) is the major information management, control, and aircraft interface for the aviator. The AICH incorporates a helmet mounted display, utilizing Comanche compatible optics and electronics with the advanced HGU-56/P helmet. The Virtual Retinal Display (VRD) development effort evaluates VRD technology for incorporation into helmet mounted displays of Army aircrews. The Virtual Cockpit Optimization Program (VCOP) demonstrates an integrated system providing pilots with improved intuitiveness, sense of awareness, overall aircrew mission performance, aircrew and aircrew station interface, safety, and survivability by providing the pilot with augmented visionics, three-dimensional audio improvements, and visual data regarding aircraft systems status and operation, threat warnings, and improved transition and training of pilots who must operate a number of different aircraft platforms during different missions. This project in this Program Element does not duplicate any aircraft platform program efforts. Both joint and service independent efforts continue to be pursued under the scope of this project.

FY 1999 Accomplishments:

•	2408	Completed basic Air Warrior PDRR effort, and begin studies of emerging technologies for insertion into the basic Air Warrior ensemble
•	3797	Began Virtual Cockpit Optimization Program (VCOP) PDRR effort
Total	6205	

FY 2000 Planned Program:

•	2864	Continue Virtual Cockpit Optimization Program (VCOP) PDRR effort
•	79	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	2943	

FY 2001 Planned Program: Project not funded in FY 2001

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603801A Aviation - Advanced Development
	PROJECT DB45

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE, A Budget Activity 5 PE 0604801A Project DC45 (Aircrew Integrated Systems – EMD)	11056	13439	7104	2254	2274	2561	2577	Cont	Cont
Aircraft Procurement, Army (APA) SSN AZ3110 Aircrew Integrated Systems which represents the Entire APA program for ACIS	8972	17167	3490	22193	34072	56619	56535	Cont	Cont

C. **Acquisition Strategy:** DB45 – An Air Warrior Program Definition and Risk Reduction development contract was awarded in FY 97 to perform a functional requirements analysis and consider user requirements and available technologies to optimize recommended alternatives within the constraints of cost as an independent variable. The Air Warrior basic ensemble program was approved to proceed into an engineering manufacturing development system life cycle phase in 1st Quarter, FY 1999. Currently, a combined government and contractor team is developing Air Warrior improvements and integrating those components into a basic Air Warrior ensemble that will be integrated with the force modernization aircraft. Prototypes will be developed that represent the basic Air Warrior ensemble for test and evaluation. The Air Warrior aircraft platform specific nonrecurring production engineering will begin during FY 02 in preparation for basic ensemble production, aircraft integration, and fielding. Through a combined government and contractor team, the Virtual Cockpit Optimization Program Definition and Risk Reduction effort will investigate and demonstrate how a future rotary wing crewstation could be crafted to deal effectively with information overload on the digital battlefield.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Air Warrior Milestone II approved	1Qtr						
EMD for Air Warrior basic ensemble	4Qtr	4Qtr	4Qtr	4Qtr			
Development of Technical Insertion Plan	4Qtr						
Air Warrior Preliminary Design Review		3Qtr					
Critical Design Review and initial Prototype Development		4Qtr					
Air Warrior System Test (Development/Qualification)			1Qtr				
Begin Air Warrior nonrecurring production engineering integration into aircraft platforms				1Qtr			
Continuous evaluation, test and insertion of new technologies as Air Warrior product improvements				4Qtr	4Qtr	4Qtr	4Qtr
Air Warrior basic ensemble Milestone III					1Qtr		
Production of the basic Air Warrior ensemble and aircraft platform specific integration components during FY2002 through outyears					1Qtr	4Qtr	4Qtr

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603801A Aviation - Advanced Development

PROJECT: DB45

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Air Warrior basic ensemble IOC						1Qtr	
Production of Air Warrior ensemble product improvements as emerging technologies can be inserted during FY 2003 through outyears						4Qtr	4Qtr
Virtual Cockpit Optimization Program (VCOP) components study in (APEX) simulator	4Qtr	4Qtr					

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603802A Weapons and Munitions - Advanced Development

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	0	4681	28679	10148	8844	0	0	0	52352
D066 Shoulder-Launched Multipurpose Assault Weapon	0	2943	0	0	0	0	0	0	2943
DAS2 Small Arms Improvement	0	1738	2793	1424	1040	0	0	0	6995
DAS3 Objective Individual Combat Weapon	0	0	25886	1985	0	0	0	0	27871
DAS4 Mortar Systems	0	0	0	6739	7804	0	0	0	14543

A. Mission Description and Justification: This project element addresses the modernization of existing Small Arms Weapon systems. This program provides funds to develop existing and emerging technology to enhance lethality, target acquisition, fire control, training effectiveness and reliability for small arms weapon systems and munitions. It also supports development of the Objective Individual Combat Weapon (OICW) which represents the next generation individual soldier's weapon and provides the soldier with significant increases in individual weapon performance. In addition, it supports development of the Shoulder-Launched Multipurpose Assault Weapon in FY01 and the Mortar Systems in FY02 and FY03.

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	0	1751	2810
Appropriated Value		4751	
Adjustments to Appropriated Value			
a. Congressional General Reductions			
b. SBIR / STTR			
c. Omnibus or Other Above Threshold Reductions		-19	
d. Below Threshold Reprogramming			
e. Rescissions		-51	
Adjustments to Budget Years Since FY 2000/2001 PB			+25869
Current Budget Submit (FY 2001 PB)	0	4681	28679

Change Summary Explanation: FY01 Funding - Funds were realigned from PE 064802A/D134 to PE 063802A/DAS3 to conduct PDRR efforts (+25886).

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE: February 2000
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603802A Weapons and Munitions - Advanced Development
	PROJECT: D066

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D066 Shoulder-Launched Multipurpose Assault Weapon	0	2943	0	0	0	0	0	0	2943

A. **Mission Description and Budget Item Justification:** The Bunker Defeat Munition (BDM) Shoulder-launched Multipurpose Assault Weapon – Disposable (SMAW-D) is being acquired to meet an urgent FORSCOM requirement to fill the "Bunker Buster" void in the Army inventory. The system is effective against various targets including earth and timber bunkers, masonry walls and light armored vehicles at ranges of 15-500 meters. Currently, the system cannot be fired from enclosed spaces. This effort will be to determine the feasibility of adapting the SMAW-CS (Confined Space) propulsion concept developed by Talley Defense Systems, Mesa, AZ, for the U.S. Marine Corps to the SMAW-D. The USMC program has been continually funded since FY 1997.

FY 1999 Accomplishments: Project not funded in FY 1999.

FY 2000 Planned Program:

•	375	Conduct feasibility study adapting SMAW-CS to BDM CS
•	218	Initiate engineering analysis and support
•	175	Component testing and evaluation
•	50	Conduct modeling and simulation
•	500	Fabricate prototypes
•	671	Continue feasibility study
•	150	Conduct limited test and evaluation
•	725	Continue to provide engineering support and analysis
•	79	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	2943	

FY 2001 Planned Program: Project not funded in FY01.

B. Other Program Funding Source: Not applicable.

C. **Acquisition Strategy:** The BDM SMAW-D was Type Classified Limited Procurement in 4QFY94 and was Full Materiel Released in 1QFY00. A sole source Firm Fixed Price contract will be awarded to the contractor to conduct a feasibility study to adapt USMC Confined Space technology to the BDM resulting in a product improved version which would be able to be fired from enclosed spaces. Additional funding would be required to qualify the system and provide for Type Classification.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603802A Weapons and Munitions - Advanced Development PROJECT D066

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
Initiate BDM CS Study		2Q						
Conclude Feasibility Study			4Q					

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603802A Weapons and Munitions - Advanced Development

PROJECT: D066

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Concept Study	FFP	Talley Defense Systems	0	2000	Mar00	0		0	2000	
Subtotal Product Development:				2000					2000	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Engineering Support		ARDEC	0	743	Feb00	0		0	743	
Subtotal Support Costs:				743					743	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Test Support		TECOM	0	200	Feb00	0		0	200	
Subtotal Test and Evaluation:				200					200	

IV. Management Services: Not applicable.

Total Project Cost:				2943					2943	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603802A Weapons and Munitions - Advanced Development PROJECT DAS2

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
DAS2 Small Arms Improvement	0	1738	2793	1424	1040	0	0	0	6995

A. Mission Description and Budget Item Justification: This project element addresses the modernization of existing Small Arms Weapon systems. This program provides funds to develop existing and emerging technology to enhance lethality, target acquisition, fire control, training effectiveness and reliability for small arms weapon systems and munitions. Current small arms include a variety of personal defense weapons (.38 caliber, .45 caliber; 9mm), individual weapons (5.56mm), crew-served weapons (5.56mm-40mm) and related equipment such as fire control, training devices, hand grenades and ammunition. Current efforts focus on improvements to the M249 Squad Automatic Weapon, M16/M4 Rifle, M203 Grenade Launcher, MK19 Grenade Machine Gun and M240B Medium Machine Gun and hand grenades.

FY 1999 Planned Program: Project not funded in FY 1999

FY 2000 Planned Program:

M249 MG Barrel Life Extension Program

- 50 Concept Definition/Market Survey/Concept Evaluation
- 50 Requirements Definition and Specification
- 150 Feasibility Study
- 50 Evaluation of Study

M203 Upgrade

- 103 Technical Assessments
- 137 Trade-off Analysis
- 80 Define Work Packages
- 46 Competitive Contractor Selections

M249 Low Cost Training Ammo

- 50 Market/Survey/Program Documentation
- 50 Procurement Package
- 50 Source Selection
- 250 Contract Award
- 50 Design Prototype

M240 Weight Reduction

- 59 Establish Parameters

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603802A Weapons and Munitions - Advanced Development PROJECT DAS2

FY 2000 Planned Program: (continued)

•	73	Survey Materials
•	136	Award R&D Contract
•	77	Trade Off Analysis
		Family Of Light Weight Hand Grenades
•	75	Prepare Concussion/Mini-Frag Grenades Program Documentation
•	25	Conduct Market Survey
•	75	Prepare Procurement Package – Concussion/Mini-Frag Grenades Concept Development
•	55	Procurement Admin Lead Time (PALT)
•	47	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	1738	

FY 2001 Planned Program:

•		**M203 Upgrade**
•	250	Design/Fabricate Hardware (Contract Awards)
•	403	Design/Fabricate Hardware
•	200	Test and Evaluate Hardware
•		**M249 Low Cost Training Ammo**
•	40	Develop and Fabricate Prototype
•	150	Conduct Proof of Principle Test
•	60	Prepare Tech Assessment
•	60	Prepare Temp and Acq Strategy
•	100	Requirements Review
•	150	Prepare Perf Spec/Final Report
•	40	Milestone I/II Package
•		**M240 Weight Reduction**
•	521	Fabricate Prototypes
•	99	Test and Evaluate
•		**Family Of Light Weight Hand Grenades**
•	360	Award Concussion/Mini-Frag Grenades Concept Development Contract
•	120	Design and Fabricate Prototype
•	190	Proof of Principle Testing

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603802A Weapons and Munitions - Advanced Development
	PROJECT DAS2

FY 2001 Planned Program: (continued)

- 50 Final Report

Total 2793

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE 0604802A, Project DAS1			410	966	3853	6395	5385	10110	27119

Remarks: Funding here reflects only those programs starting in project DAS2 and continuing into project DAS1. It does not include projects starting in DASl.

C. **Acquisition Strategy:** Primary strategy is to make technical assessments, trade-off analysis, formulate and refine designs, test and evaluate items, and make determinations as to whether the item should be transitioned into Engineering Development.

D. Schedule Profile	FY 2000	FY2001	FY2002	FY2003	FY2004	FY2005
M249 MG Barrel Life Extension Program						
Concept Definition	1Qtr					
Market Survey	1-2Qtr					
Concept Evaluation	2-3Qtr					
Requirement Definition & Specification	3Qtr					
Feasibility Study	3-4Qtr					
Evaluation of Study (Use of FY2000 c/o)		1Qtr				
M203 Upgrade						
Technical Assessments	2Qtr					
Trade-off Analysis	2-3Qtr					
Define Work Packages	3Qtr					
Competitive Contractor Selections	4Qtr	1Qtr				
Contract Award (s)		1Qtr				
Design/Fabricate Hardware	4Qtr	1-4Qtr	1Qtr			
Test & Evaluate Hardware		1-4Qtr	1Qtr			
Finalize Prototype			2-3Qtr			
System Demo			4Qtr			
Update EMD Program Plan			3Qtr			
Prepare/Staff IPR Package			4Qtr			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603802A Weapons and Munitions - Advanced Development

PROJECT: DAS2

D. Schedule Profile	FY 2000	FY2001	FY2002	FY2003	FY2004	FY2005
M249 Low Cost Training Ammo						
Market Survey/Program Documentation	1Qtr					
Procurement Package	1-2Qtr					
Source Selection	3Qtr					
Contract Award	4Qtr					
Design and Fabricate Prototype		1Qtr				
Testing		2Qtr				
Proof of Principle Demonstration		3-4Qtr				
Final Report		4Qtr				
M240 Weight Reduction						
Establish Parameters	1-2Qtr					
Survey Materials	2Qtr					
Award Contract	3Qtr					
Trade Off Analysis	3Qtr					
Fabricate Prototypes	4Qtr					
Experimentation/Preliminary Test		1-4Qtr				
Fabricate New Prototypes			2Qtr			
Test			3Qtr			
Rebuild			4Qtr			
Demo/Report			4Qtr			
Family Of Light Weight Hand Grenade*						
Prepare C/M-F Grenades Program Documentation	1Qtr					
Conduct Market Survey	1Qtr					
Prepare Proc Pkg – C/M-F Grenades Con Dev	2-3Qtr					
Procurement Admin Lead Time (PALT)	3-4Qtr					
Award C/M-F Grenades Concept Dev Contract		1Qtr				
Design and Fabricate Prototype		1-3Qtr				
Proof of Principle Testing		3-4Qtr				
Final Report		4Qtr				
Prepare O/S Grenades Program Documentation			1Qtr			
Conduct Market Survey for O/S Grenades			1Qtr			
Prepare Procurement Package – O/S Concept Dev			2-3Qtr			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603802A Weapons and Munitions - Advanced Development

PROJECT: DAS2

D. Schedule Profile	FY 2000	FY2001	FY2002	FY2003	FY2004	FY2005
Procurement Admin Lead Time (PALT)			3-4Qtr			
Award Concept Development Contract for O/S			4Qtr	1Qtr		
O/S Grenade Design and Fabricate Prototype				1-3Qtr		
O/S Grenades Proof of Principle Testing				3-4Qtr		
O/S Grenades Final Report				4Qtr		
MK19 Self Destruct Cartridge						
Market Survey/Program Documentation				1Qtr		
Procurement Package				1-2Qtr		
Source Selection				3Qtr		
Contract Award				4Qtr		
Design and Fabricate Prototype					1-2Qtr	
Testing					3-4Qtr	
Final Report					4Qtr	

*C/M-F – Concussion/Mini-Frag Grenades

*O/S – Obscuration/signaling Grenades

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603802A Weapons and Munitions - Advanced Development

PROJECT: DAS2

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Hardware Development	TBD	TBD		500	Multi	885	Multi	835	2220	
Subtotal Product Development:				500		885		835	2220	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Development Support	MIPR	ARDEC		981	Multi	1333	Multi	1131	3445	
b. ILS Support	MIPR	ACALA		10	Multi	10	Multi	10	30	
Subtotal Support Costs:				991		1343		1141	3475	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Testing	MIPR	ARDEC/ATC		30	Multi	290	Multi	285	605	
b. SBRR/STRR				47					47	
Subtotal Test and Evaluation:				77		290		285	652	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Mgt	ALLOT	OPMSA		140	Multi	235	Multi	171	546	
b. TDY	ALLOT	OPMSA		30	Multi	40	Multi	32	102	
Subtotal Management Services:				170		275		203	648	

Project Total Cost:				1738		2793		2464	6995	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603802A Weapons and Munitions - Advanced Development
	PROJECT DAS3

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
DAS3 Objective Individual Combat Weapon	0	0	25886	1985	0	0	0	0	27871

A. Mission Description and Budget Item Justification: Objective Individual Combat Weapon (OICW) –The OICW, which represents the next generation individual soldier's weapon, will provide the soldier with significant increases in individual weapon performance. The resulting improvement in overall combat effectiveness will include; hit probability, range, lethality, cost per kill, combat load, man/machine interface, sustainability and logistics. The OICW will replace selected M16 rifles, the M4 series carbine and the rifle mounted M203 40mm grenade launcher; as well as night vision devices and laser range-finders.

FY 1999 Planned Program: Project not funded in FY 1999

FY 2000 Planned Program: Project not funded in FY 2000
Note: OICW will enter Advanced Development in FY00; 14701 is being reprogrammed from PE:0604802A D134 to PE: 0603802A DAS3.

FY 2001 Planned Program:

- 13512 Contract – Ammo/Fuze Development
- 12374 Contract – Weapon/Fire Control Development

Total 25886

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
Ammo, E92000 Obj Family of Weapons						2431	2429	139000	143860
RDT&E, PE: 0604802A, D134 OICW		14701	0	25513	22238	19340	14999	1000	97791

C. Acquisition Strategy: The OICW has been demonstrated in an Advanced Technology Demonstration (ATD) in FY 1999. Based on the results of the ATD and the requirements of the final Operational Requirements Document (ORD) for the OICW system, a decision was made to enter the Program Definition & Risk Reduction (PD&RR) phase rather than Engineering and Manufacturing Development (EMD) in FY00. This PD&RR phase (PE: 0603802A DAS3) will be a simulation based acquisition phase which utilizes modeling and simulation while developing, building and testing only the key high technology necessary to conduct Cost as an Independent Variable (CAIV) trade-offs at Milestone II. This phase will produce a near final design for the OICW, as well as, the simulations which will form the basis of the trainers. The PD&RR phase will continue into FY2002. The EMD phase (PE: 0604802A D134) which begins in FY2002 will complete the final design, development and validation of the training simulators and complete the Developmental, Operational, and Live Fire Tests necessary to reach Milestone III in FY06. The FY2000 funding is currently being realigned to conform with this strategy.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603802A Weapons and Munitions - Advanced Development

PROJECT: DAS3

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Contract Preparation		*					
Ammo/Fuze Development		*	1-3 Qtr				
Weapon/Fire Control Development		*	1-3 Qtr				
Quality Design & Build							
Developmental Technical Testing			1-4 Qtr				
Developmental Operational Evaluation			3-4 Qtr	1 Qtr			

* FY2000 is currently being reprogrammed to Advanced Development PE 0603802A DAS3 from PE 0604802A D134. The advanced development will be executed in FY2000 through the beginning of FY2002.

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603802A Weapons and Munitions - Advanced Development

PROJECT: DAS3

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
b. Hardware Development	TBD	Contractor TBD		*		18818	TBD	716	19534	19534
Subtotal Product Development:						18818		716	19534	19534

* FY2000 is currently being reprogrammed to Advanced Development PE 0603802A DAS3 from PE 0604802A D134.
The OICW Advanced Development will be executed in FY2000 through the beginning of FY2002.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
c. Development Support	MIPR	Multiple		*		2062	Multi		2062	
d. ILS Support	MIPR	Multiple		*		100			100	
c. Training and Sims	MIPR	Multiple		*		2964		200	3164	
Subtotal Support Costs:						5126		200	5326	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
c. Developmental Technical Testing	MIPR	ATEC				282			282	
d. Developmental Operational Evaluation	MIPR	ATEC				680		270	950	
Subtotal Test and Evaluation:						962		270	1232	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
c. Program Mgt	ALLOT	PMSA		*		960		779	1739	
d. Travel				*		20		20	40	
Subtotal Management Services:						980		799	1779	

Project Total Cost:						25886		1985	27871	

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603804A Logistics and Engineering Equipment - Advanced Development

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	21337	8428	6317	6503	6712	9144	9218	Continuing	Continuing
DG10 Advanced Tactical Power Sources - Advanced Development	177	197	218	468	466	534	532	Continuing	Continuing
DG11 Advanced Electrical Energy Concepts - Advanced Development	1303	988	726	607	1038	639	639	Continuing	Continuing
DG14 Materials Handling Equipment Advanced Development	95	105	188	199	194	195	195	Continuing	Continuing
DK39 Water, Maintenance, Environmental Equipment - Advanced Development	3125	1908	688	907	903	1458	1452	Continuing	Continuing
DK41 Petroleum Distribution Equipment - Advanced Development	781	862	2195	2318	2320	2491	2487	Continuing	Continuing
D266 Airdrop Equipment Advanced Development*	4419	0	0	0	0	0	0	Continuing	Continuing
D428 Rigidwall Shelter Advanced Development*	860	0	0	0	0	0	0	Continuing	Continuing
D526 Marine Oriented Logistics Equipment Advanced Development	10577	4368	2302	2004	1791	3827	3913	Continuing	Continuing

*Note: Projects D266 and D428 were moved to PE 0603747A beginning in FY2000.

A. Mission Description and Justification: This program supports advanced development of new and improved technologies for combat support and combat service support equipment essential to sustaining combat operations. Advancements in airdrop, rigid wall shelters, watercraft, bridging, electric power generators and batteries, potable water, environmental control and petroleum equipment are necessary to improve safety and increase the tactical mobility, operational capability, lethality and survivability on the digital battlefield of the first to fight; and to provide for greater sustainment of all combat forces while reducing the logistics support burden.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY **4 - Demonstration and Validation**	PE NUMBER AND TITLE **0603804A Logistics and Engineering Equipment - Advanced Development**

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	18845	6514	6265
Appropriated Value	18978	8514	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-133		
b. SBIR / STTR	-449		
c. Omnibus or Other Above Threshold Reductions		-35	
d. Below Threshold Reprogramming	+3017		
e. Rescissions	-76	-51	
Adjustments to Budget Years Since FY 2000/2001 PB			+52
Current Budget Submit (FY 2001 PB)	21337	8428	6317

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development PROJECT DG10

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DG10 Advanced Tactical Power Sources - Advanced Development	177	197	218	468	466	534	532	Continuing	Continuing

A. Mission Description and Justification This program develops advanced tactical power sources to improve soldier mobility, sustainability, and survivability. This is the only project that bridges the gap between science and technology and full scale production of new higher energy density, lower cost, all-weather batteries/energy conversion systems to satisfy the unique tactical and logistical requirements of portable electronic battlefield equipment. This effort also includes state-of-art measuring and indicating circuitry as well as safety protection circuitry. Superior battery charging and analyzing equipment required to meet unique requirements are also included.

FY 1999 Accomplishments:

•	137	Designed and developed conformal battery packaging for Standard Family of Rechargeable Lithium Batteries.(Quantity 6)
•	40	Conducted field tests and prepared specifications for thin, conformal rechargeable battery family.
Total	177	

FY 2000 Planned Program:

•	149	Design and develop fast-charge rechargeable lithium ion polymer batteries for Command, Control, Communications, Computer, Intelligence & Information Warfare (C4IW2) applications. (Quantity 10)
•	43	Demonstrate proof of principle prototype of higher power polymer batteries. (Quantity 10)
•	5	Small Business Innovative Research program.
Total	197	

FY 2001 Planned Program:

•	171	Develop and test hybrid lithium ion polymer batteries. (Quantity 4)
•	47	Test proof of principle batteries using forward field chargers. (Quantity 4)
Total	218	

B. Other Program Funding Summary: None

C. Acquisition Strategy: Complete development and transition to production.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development PROJECT DG10

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Design/develop conformal battery packaging for Standard Family of Rechargeable Lithium Batteries.	4Q*						
Conduct field tests and prepare specifications for thin, conformal rechargeable battery family.	4Q*						
Demonstrate proof of principal prototype higher power polymer batteries.		1Q-4Q					
Demonstrate hybrid lithium ion polymer batteries for pulse C4I2W applications.			1Q-3Q				
Test proof of principal hybrid lithium ion polymer batteries using forward field chargers.			4Q				
Demonstrate advanced high power solid polymer electrolytes in prototype cells.				1Q-4Q			
Develop lightweight, low temperature capable, high power rechargeable lithium solid polymer cells and batteries.					1Q-4Q		
Develop and demonstrate very low temperature rechargeable lithium solid polymer cells and batteries.						1Q-4Q	
Develop and test ultra lightweight, high energy density all plastic lithium cells and batteries.							1Q-4Q

*Milestone Completed

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603804A Logistics and Engineering Equipment - Advanced Development

PROJECT: DG11

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DG11 Advanced Electrical Energy Concepts - Advanced Development	1303	988	726	607	1038	639	639	Continuing	Continuing

A. Mission Description and Budget Item Justification: This project provides advanced development for electrical energy devices to improve soldier mobility, readiness and survivability. This project supports initiatives which will lead to tactical electric power procurements in diesel powered generators and power units/power plants rated at 3-920 kilowatts (kW) with higher efficiency, lighter weight, easier maintainability and higher reliability.

FY 1999 Accomplishments:

- 662 Procured and began evaluation of permanent magnet generators, associated electronics and other subsystems for 5-60kW generator sets.
- 641 Initiated testing of components and subsystems for 5-60kW generator sets.

Total 1303

FY 2000 Planned Program:

- 380 Complete test and evaluation of commercial components/subsystems for 5-60kW generator sets.
- 528 Complete system designs for fabrication of proof of concept systems for 5-60kW generator sets.
- 56 Initiate fabrication of prototypes per system designs. (Quantity 4)
- 24 Small Business Innovative Research/Small Business Technology Transfer programs.

Total 988

FY 2001 Planned Program:

- 176 Complete 5-60kW generator prototypes. (Quantity: 4)
- 550 Begin test and evaluation of prototype systems.

Total 726

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDT&E:PE0604804A, D194 Engine Driven Generators	4702	7892	5124	2980	2481	1514	1516	Cont	Cont
OPA 3, MA9800 Generators and Associated Equipment	65552	79589	85886	58856	70697	67084	58678	Cont	Cont

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development PROJECT DG11

C. **Acquisition Strategy:** Complete advanced development and transition to engineering development and production.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Initiated component and subsystem testing	3Q*						
Design and initiate fabrication of prototypes		2Q					
Complete component and subsystem testing		4Q					
Complete system prototypes			3Q				
Begin test & evaluation of prototypes			3Q				
Complete testing system prototypes				4Q			
Initiate Advanced Combustion Enhancement (ACE) Program for 2-60kW					1Q		
Procure commercial component and fabricate sub-assemblies from ACE program						1Q	
Test ACE on military systems (2-60kW)							1Q

* Milestone Completed

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development
	PROJECT DG14

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DG14 Materials Handling Equipment Advanced Development	95	105	188	199	194	195	195	Continuing	Continuing

A. Mission Description and Justification: Working with both the user and industry, this program stays abreast of current needs and available technologies to be integrated into military Materials Handling Equipment (MHE). Categories of MHE include warehouse forklifts, cranes and tow tractors, rough terrain forklifts, container handlers and cranes as well as ancillary equipment. This program develops selected technologies and transitions to procurement a series of Material Handling Equipment items.

FY 1999 Accomplishments:

•	33	Conducted market investigation for electric forklifts and rough terrain container crane (RTCC) spreader bars.
•	32	Converted MHE military specifications to performance specifications.
•	30	Conducted market investigation to reassess All Terrain Lifting Army System (ATLAS) design requirement for FY01 followon buy.
Total	95	

FY 2000 Planned Program:

•	33	Initiate preparation of acquisition package for 50k Rough Terrain Forklift (RTFL).
•	33	Conduct market investigations for Container Handling Equipment.
•	36	Investigate productivity enhancements to existing military variable reach forklifts.
•	3	Small Business Innovative Research program.
Total	105	

FY 2001 Planned Program:

•	64	Conduct market investigation to assist in defining the performance characteristics of Container Handling Equipment and Materials Handling Equipment.
•	60	Perform engineering investigation of new technologies which will increase the performance capabilities of existing MHE to meet unique military requirements.
•	64	Develop program documentation and performance specifications to reflect data obtained during Market Investigation Efforts.
Total	188	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development PROJECT DG14

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE, 0604804.DH14, Logistics Support Equip.	3741	102	595	593	591	592	591	Cont.	Cont.
OPA 3, M41200, Truck Fork Lift, DE, PT, RT	20416	0	40031	43083	45227	15996	15731	Cont.	Cont.
OPA 3, M41800, All Terrain Lifting Army System	18805	23469	24407	29931	29791	30073	28462	Cont.	Cont.
OPA 3, X00900, Rough Terrain Container Crane	1124	10883	2056					Cont.	Cont.

C. **Acquisition Strategy:** RDTE Logistics Support Equipment – Competitive source selection for prototype equipment. Rough Terrain Container Handler (RTCH) – Competitive prototype and sole source procurement using NDI integration of commercial components. ATLAS – The current contract was a competitive award; FY01 new start to be sole source. Rough Terrain Container Crane (RTCC) – Sole source procurement to original manufacturer. Items less than $5M – Competitive procurements of various MHE.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Market Investigation	1Q-3Q*	1Q-3Q	1Q-3Q	1Q-3Q	1Q-3Q	1Q-3Q	1Q-3Q
Performance Specs	2Q-4Q*	2Q-4Q	2Q-4Q	1Q-3Q	1Q-3Q	1Q-3Q	1Q-3Q
Pre-award contract efforts	1Q-3Q*	1Q-3Q	1Q-3Q	1Q-3Q	1Q-3Q	1Q-3Q	1Q-3Q

*Milestone completed

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603804A Logistics and Engineering Equipment - Advanced Development

PROJECT: DK39

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DK39 Water, Maintenance, Environmental Equipment - Advanced Development	3125	1908	688	907	903	1458	1452	Continuing	Continuing

A. Mission Description and Justification: Develop and demonstrate the potential of prototype equipment to satisfy water purification, maintenance, and environmental control requirements. Beginning in FY01, Project DK 39 includes only environmental equipment advanced development.

FY 1999 Accomplishments:

•	150	Completed development effort for large heater.
•	300	Awarded development contract for 18,000 BTUH vertical air conditioner
•	94	Evaluated CO2 components for air conditioners.
•	100	Investigated commercial technology applicable to Small Diesel Heaters (60K-100K BTUH).
•	900	Conducted Production Qualification Test /Early User Test on the Lightweight Water Purifier (LWP) prototypes.
•	100	Prepared a Milestone III (TC Generic) In-Process Review on the Lightweight Water Purifier (LWP).
•	50	Conducted Operational Assessment of Packaged Water System (PWS).
•	150	Prepared LWP Production Contract Solicitation
•	250	Awarded LWP EMD Contract Increment.
•	141	Conducted Reverse Osmosis removal studies for industrial and NBC contaminants.
•	412	Evaluated commercial water treatment components for use in the 600 Reverse Osmosis Water Purification Unit (ROWPU) and 3000 ROWPU rebuys.
•	50	Prepared Packaged Water System (PWS) performance specification.
•	200	Performed environmental assessments on water purification systems
•	228	Performed ROWPU wastewater treatment demonstration
Total	3125	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development
	PROJECT DK39

FY 2000 Planned Program:

- 245 Award development contract for 9,000 BTUH Environmental Control Unit (ECU)
- 304 Award development contract for prototype automotive CO2 ECU
- 750 Award LWP contract increment.
- 509 Perform LWP technical testing.
- 50 Program management and general support.
- 50 Small Business Innovative Research/Small Business Technology Transfer programs.

Total 1908

FY 2001 Planned Program:

- 350 Award development contract for prototype absorption ECU
- 338 Award development contract for prototype shelter CO2 ECU

Total 688

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA3, MF9000 Control Unit, Environmental	6057	5955	6348	7051	16541	8933	8923	Cont.	Cont.

C. **Acquisition Strategy:** Develop ECU/Heater Performance Descriptions based on development technology investigations and transfer to Procurement for competitive production contract awards.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Developed 18K Vertical ECU prototypes	2Q*						
Develop 9K ECU prototype		1Q-2Q					
Investigate Automotive CO2 technology		1Q-4Q					
Investigate absorption ECU technology			1Q-4Q				
Develop tactical shelter CO2 ECU prototype			1Q-4Q				
Award EMD contract for prototype LWPs	4Q*						
Design and fabricate prototype LWPs.		2Q-3Q					
Conduct LWP PQT/EUT.		4Q	1Q				
Prepare LWP production contract package.		3Q-4Q	1Q-2Q				

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development PROJECT DK39

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Complete LWP MS III Decision Review			2Q				
Complete LWP MS III TC Generic			2Q				
Water Purification Components Program		1Q-4Q					
Conduct evaluation of commercial wastewater minimization treatment systems for water purification units.		3Q-4Q					

* Milestone Complete

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development
	PROJECT DK41

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DK41 Petroleum Distribution Equipment - Advanced Development	781	862	2195	2318	2320	2491	2487	Continuing	Continuing

A. **Mission Description and Justification:** Develop and demonstrate the potential of prototype equipment to satisfy petroleum distribution requirements.

FY 1999 Accomplishments:

- 180 Prepared Petroleum Quality Surveillance Laboratory (PQSL) performance specification and conducted market investigations.
- 101 Developed PQSL virtual prototype & model to evaluate physical layout alternatives.
- 283 Program management and general support.
- 217 Completed cost/benefit analysis to identify Petroleum and Water System (PAWS) equipment to be automated/digitized, and recommended implementation strategy.

Total 781

FY 2000 Planned Program:

- 470 Award contract for automated/digitized PAWS prototypes (Quantity 1).
- 100 Conduct fabric tank material testing.
- 219 Prepare PQSL program management documentation and conduct Milestone I/II In-Process Review.
- 50 Program management and general support.
- 23 Small Business Innovative Research/Small Business Technology Transfer programs.

Total 862

FY 2001 Planned Program:

- 527 Test and evaluate automated/digitized PAWS equipment.
- 400 Conduct evaluation of improved storage and distribution equipment in support of Medium Brigade.
- 200 Conduct economic and feasibility analyses for waste minimization for water purification units.
- 300 Purchase/lease prototype waste minimization equipment for water purification units.
- 368 Prepare LWP IPR package and production contract.
- 300 Conduct LWP testing
- 100 Program management and general support.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development
	PROJECT DK41

Total 2195

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE, 0604804.DL41, Fuels and Equipment Engineering Development	1024	5288	6338	7285	5492	4594	4025	Cont	Cont
OPA 3, R05100, Water Purification Systems		10352	40727	40259	45291	21889	22140	Cont	Cont
OPA 3, R67500, Petroleum Quality Analysis System (PQAS)			5305	4660	3352				13317
OPA 3, M733300, Petroleum Quality Surveillance Lab (PQSL)				2920	37106	2452	2566		45044

C. **Acquisition Strategy:** Develop engineering prototypes or select Non-Developmental Item based on market surveys and proposals from industry.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Completed identification of PAWS to be automated/digitized.	4Q*						
Completed PQSL market investigation and prepared system specification.	4Q*						
Conduct fabric tank material testing.		3Q					
Prepare PQSL PMD and conduct MS I/II IPR.		2Q-4Q					
Award contract for automated/digitized PAWS prototypes.		2Q					
Water Purification Components Program			1Q-4Q	1Q-4Q			
Digitized Water Quality and Quantity Surveillance		2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q		
Test and evaluate automated/digitized PAWS.			2Q-4Q				
Complete evaluation of equipment for Medium Brigade			4Q				
Conduct LWP MS III (TC Generic)			3Q				
Test prototype water treatment equipment			3Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Develop life cycle cost model for water treatment equipment			2Q-4Q				
Develop brassboard advanced fuel quality analysis sensors.				1Q-4Q	1Q-4Q		
Develop Advanced POL Decontamination Technology for AAN.					3Q-4Q	1Q-4Q	
Develop AAN SARS Robotic Refueling.						2Q-4Q	1Q-4Q

* Milestone Complete

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603804A Logistics and Engineering Equipment - Advanced Development

PROJECT: DK41

I. Product Development	Contract Method & Type	Performing Activity & Location	Total Pys Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PQSL	In-House	TARDEC		280	Dec 98	169	Dec 99				449	
b. PAWS Digitization	CPFF	SAIC		200	Mar 99	216	Mar 00				416	
c. PAWS Digitization	In-House	TARDEC				50		177			227	
d. Improved Tanks/Drums	In-house	TARDEC						300			300	
e. LWP	In-House	TARDEC						168			168	
f. Water Treatment	In-House	TARDEC						100			100	
g. Water Treatment Components P/O Lease	TBD							100	Jan 01		100	
Subtotal Product Development:				480		435		845			1760	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PAWS Digitization	In-House	TACOM		169		23					192	
b. PQSL	In-House	TACOM		132	Nov 99	50	Nov 00	50	Nov 01		232	
c. LWP	In-House	TACOM						100	Nov 01		100	
Subtotal Support Costs:				301		73		150			524	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PAWS Digitization	In-House	TACOM				100	Nov 99	250	Nov 00		350	
b. Fabric tank materials	MIPR	ARL				77	Feb 00				77	
c. LWP	MIPR	TECOM						200	Nov 00		200	
d. Water Treatment components	In-House	TARDEC						150			150	
Subtotal Test and Evaluation:						177		600			777	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603804A Logistics and Engineering Equipment - Advanced Development

PROJECT: DK41

IV. Management & Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a.	In-House	TACOM				100	Nov 99	250	Nov 00		350	
e. Fabric tank materials	MIPR	ARL				77	Feb 00				77	
f. LWP	MIPR	TECOM						200	Nov 00		200	
g. Water Treatment components	In-House	TARDEC						150			150	
Subtotal Test and Evaluation:						177		600			777	
Project Total Cost:				781		862		2195			3838	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development PROJECT D266

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D266 Airdrop Equipment Advanced Development*	4419	0	0	0	0	0	0	Continuing	Continuing

*Note: Project D266 was moved to PE 0603747A beginning in FY2000.

A. **Mission Description and Justification:** Conduct demonstration and validation of aerial delivery systems for equipment and personnel, with emphasis on reduced incidence of injuries, improved safety and accuracy, and increased survivability of aircraft, equipment, and personnel.

FY 1999 Accomplishments:

- 1325 Conducted Design Validation of Advanced Tactical Parachute System.
- 700 Procured Extraction Parachute Jettison System test items; Conducted Technical Feasibility Testing; Modified test items
- 150 Conducted Milestone I/II for the Extraction Parachute Jettison System.
- 750 Conducted Developmental Testing for Extraction Parachute Jettison System; obtained interim tri-service hazard classification for pyrotechnic device and completed Safety of Flight Testing and Electromagnetic Interference Testing.
- 314 Initiated Dual Row Airdrop System effort. Conducted Market Investigation and initiated procurement of test items.
- 538 Conducted planning for Component and System Feasibility Testing for Dual Row Airdrop System.
- 642 Conducted Dual Row Airdrop System Component Testing.

Total 4419

FY 2000 Planned Program: Moved to PE 0603747A/DC09

FY 2001 Planned Program: Moved to PE 0603747A/DC09

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE, 0604804.D279 Airdrop Equipment Engineering Development	3230	0	0	0	0	0	0	0	4767

C. **Acquisition Strategy:** Rapid development through the acquisition lifecycle, capitalizing on all opportunities to accelerate development, production and fielding.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development
	PROJECT D266

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY2005
EPJD Component Development and Performance Validation	1Q*						
EPJD Developmental Testing	4Q*						

* Milestone Completed

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603804A Logistics and Engineering Equipment - Advanced Development

PROJECT: D428

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D428 Rigidwall Shelter Advanced Development*	860	0	0	0	0	0	0	Continuing	Continuing

*Note: Project D428 was moved to PE 0603747A beginning in FY2000.

A. Mission Description and Justification: Develop a family of tactical rigid wall shelters which enhances soldier survivability and sustainability of command, control, communications and intelligence. Shelters provide highly mobile, joint service platforms for the digitization of the battlefield, housing many critical vehicle-mounted battlefield systems, medical critical care in a Chemical/Biological (C/B) environment and high tech maintenance.

FY 1999 Accomplishments:

- 860 Combined 5 Ton Cargo Bed Cover program with 2.5 Ton Truck Cargo Bed Cover LRIP contract phase. (Accelerated 5 Ton Truck program). Completed fabrication of test prototypes, conducted limited Technical Feasibility Testing and completed development for 5 Ton Truck Cargo Bed Cover Variant. Completed Milestone I/II for 2.5 Ton/LMTV and 5 Ton/MTV Truck Cargo Bed Cover Variants. Prepared solicitation and awarded LRIP/Production contract for Cargo Bed Cover type III (2.5 Ton/LMTV) and type IV (5 Ton/MTV) variants, initiated production of LRIP items for Production Verification Testing.

Total 860

FY 2000 Planned Program: Moved to PE 0603747A/DC09

FY 2001 Planned Program: Moved to PE 0603747A/DC09

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE, 0604804.D429, Rigidwall Shelter Engineering Development	899	0	0	0	0	0	0	0	2311

C. Acquisition Strategy: Product development and testing to support Engineering and Manufacturing Development.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE: February 2000
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603804A Logistics and Engineering Equipment - Advanced Development / PROJECT: D428

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Comp	To Comp
Complete MS I/II for 2½ Ton Truck CBC Variant.	2Q*								
Award LRIP Contract for 2½ Ton Truck CBC Variant	2Q*								
Complete Development and Testing of 5 Ton Truck CBC Variant	4Q*								

*Milestone Complete

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development PROJECT D526

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D526 Marine Oriented Logistics Equipment Advanced Development	10577	4368	2302	2004	1791	3827	3913	Continuing	Continuing

A. Mission Description and Justification: Provides funds for the advanced development and definition of equipment in support of the Army's Logistics-Over-The-Shore (LOTS), In-theatre Port Control, and Intercoastal/Riverine Logistics missions. FY 99 funds supported Army's share of the Joint Modular Lighterage System (JMLS). This program, managed jointly with the Navy, will improve cargo offload speed under normal sea states and allow for successful offload under challenging sea state conditions. These efforts will significantly improve operational capability and flexibility. Funds permit efforts to develop joint plans and materiel in conjunction with the Navy and Marines, truly integrating Logistics Over The Shore (LOTS) capabilities. Project funds are also serving to support conceptual development of the Rapidly Installed Breakwater (RIB). This project will also assist the Army to conduct LOTS exercises under adverse sea state conditions. Together, these efforts will extend capabilities of the joint Army/Navy LOTS program, and allow the Army to proceed with deployment of forces under less than ideal sea and weather conditions. For 00 this project also includes $2M for the Real Time Automatic Cargo Container Tracking & Control System (RTACTCS). RTACTCS is being implemented in Seattle Terminal 5, operated by APL (American President Lines). Its purpose is to track all containers and chassis entering/exiting the Terminal by truck, containers entering/exiting the Terminal by rail, and all containers entering/exiting Terminal by sea. The continuous spotting and tracking of containers is accomplished as a transparent by-product of normal work-in-process of container handling procedures. In addition, the FY 00 Program initiates the definition of the Port Communications and Control Center (PCCC). The center will track and direct the progress of vessel movements and loading/unloading during LOTS operations. The PCCC program will provide for the safe and efficient management of Army and Joint Port Operations during deployment of forces; both under degraded/non-existent port conditions and in adequate port facilities. FY 00 efforts will also focus on the planned Theatre Logistics Vessel (TLV). The TLV will operate at much greater speeds than current Army Watercraft, thus greatly improving the speed of Army combat mobilization in theatre. The FY 01 program will begin advanced development and limited prototyping to define program parameters and performance characteristics for the Landing Craft Utility (LCU) 2000 Extended Service Program (ESP). Efforts in the outyears will include a Watercraft Operations and Support (O&S) cost reduction study to identify specific cost-effective efforts which can be undertaken to improve the Army's O&S posture within the watercraft fleet. The study will examine areas such as Fuel Management, Lubrication, Paints, Maintenance Frequencies & Procedures, etc.

FY 1999 Accomplishments:

- 1477 Completed conceptual development of the Rapidly Installed Breakwater (RIB).
- 9100 Continued joint program with Navy to develop Sea State 3 Capable Causeways/Lighterage (JMLS)

Total 10577

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development PROJECT D526

FY 2000 Planned Program:

- 2000 Real Time Automatic Cargo Container Tracking & Control System (RTACTCS) development & prototyping.
- 1566 Continuation of Rapidly Installed Breakwater System (RIBS) design.
- 500 Theatre Logistics Vessel (TLV) design
- 184 Port Communications and Control Center (PCCC)– Advanced Development
- 118 Small Business Innovative Research/Small Business Technology Transfer programs.

Total 4368

FY 2001 Planned Program:

- 600 Completion of Rapidly Installed Breakwater System (RIBS) initial design
- 1202 Theatre Logistics Vessel (TLV) design
- 500 Landing Craft Utility, Parameters and Performance Characteristics for ESP/Upgrade

Total 2302

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE, 0604804A, D461, Marine Oriented Logistics, Engineering Development	1964	4266	1447	1207	2695	2759	2823	Cont.	Cont.
OPA 3, M32400, Floating Crane, 100-250 Ton	15216	0	0	0	0	0	0	Cont.	Cont.
OPA 3, M44500, Pusher Tug, Small	8476	8909	0	0	0	0	0	34988.	Cont.
OPA 3, R97500, Causeway Systems	16856	16669	17227	12601	12751	14034	13912	Cont.	Cont.
OPA 3, M11200, Logistic Support Vessel (LSV)	0	18844	0	21198	28994	0	0	Cont.	Cont.
OPA 3, M11201, Logistic Support Vessel (ESP)	0	0	6638	5943	12954	0	0	Cont.	Cont.
OPA 3, M34200, Landing Craft Utility 2000	0	0	0	0	0	20060	20151	Cont.	Cont.

C. **Acquisition Strategy:** Support for the Joint Modular Lighterage System (JMLS) is being undertaken with the Navy PM and executed through Navy contract and in-house vehicles. RIB: Engineering work is being accomplished by the Corps of Engineers Waterways Experiment Station (WES) (current developers). However, programmatic documentation for the RIB is being undertaken via competitive contract. PCCC Advanced Development & Prototyping will be undertaken through competitive contract. The current Watercraft Communications, Electronics, & Navigation (CEN) Equipment contractor is Conley & Associates. Navy in-house and contract expertise would be available as well. TLV and LCU efforts will be conducted primarily with the Naval Surface Warfare Center (NSWC). NSWC can call on both in-house and contract resources (based on workload and expertise) to cover Army requirements.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development PROJECT D526

D. Schedule Profile	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 200
Joint Modular Lighterage System			2Q-4Q						
Conceptual Development of the RIBS.			2Q-3Q	2Q-3Q	2Q-3Q				
(RTACTCS) development & prototyping.				2Q-4Q					
PCCC– Advanced Development & Prototyping				2Q					
Theatre Logistics Vessel Concept Development				2Q-3Q	2Q-3Q	2Q-3Q			
LCU Parameters and Performance Characteristics					2Q-4Q				
Operations & Support Cost Reduction Study							2Q-4Q		
128' Large Tug Extended Service Program								2Q-4Q	
New Large Tug							2Q-3Q	2Q-4Q	
UNDS/Safety Equipment								2Q-4Q	2Q-3Q

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603804A Logistics and Engineering Equipment - Advanced Development

PROJECT: D526

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Modern Technologies Corp. (MTC)	SS-FP	Warren, MI		97	Apr	114	Apr			Cont.	211	
b. Navy (NSWC)	MIPR	Suffolk, VA				299	May	2173	Dec	Cont.	2472	
c. Navy (PM JMLS)	MIPR	Hueneme, CA		8796	Mar					Cont.	8796	
d. COE (WES)	MIPR	Vicksburg, MS		1291	Mar	1213	Dec			Cont.	2504	
e. Now Solutions Inc	Unk	Seattle, WA				1950	Unk				1950	
Subtotal Product Development:				10184		3576		2173			15933	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TACOM IMMC	MIPR	Warren, MI		58	Feb	53	Oct	31	Oct	Cont.	142	
b. Other	MIPR	various		55	Apr	120					175	
Subtotal Support Costs:				113		173		31			317	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DTC/ATC	MIPR	ATC, MD		50	Feb	101	May	15	May	Cont.	166	
Subtotal Test and Evaluation:				50		101		15			166	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603804A Logistics and Engineering Equipment - Advanced Development

PROJECT: D526

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Watercraft Systems Mgt. Ofc/TARDEC	N/A	TACOM, Warren, MI		230	Jan	350	Oct	83	Oct		663	
b. CECOM	N/A	CECOM, Monmouth, NJ				50					50	
c. SBIR/STTR						118					118	
Subtotal Management Services:				230		518		83			813	
Project Total Cost:				10577		4368		2302			17247	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603805A Combat Service Support Control Systems Evaluation and Analysis

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	14312	11017	13753	8657	8751	8942	8929	8200	217281
D091 Combat Service Support Control System	12590	11017	13753	8657	8751	8942	8929	8200	210577
D246 Tactical Communications System-Advanced Development	1722	0	0	0	0	0	0	0	6704

A. **Mission Description and Budget Item Justification:** Project D091: The Combat Service Support Control System is an automated command and control (C2) system that supports the CSS component of the Army Battle Command System (ABCS), and provides a critical logistical C2 capability for the Army's Force XXI. It will automate the current manual processes of force level planning and decision-making for commanders and their staffs. Project D246, Tactical Communications System – Demonstration Validation, provided for insertion of selected proven communications technology.

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	14056	11062	8839
Appropriated Value	14353	11062	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-297		
b. SBIR / STTR	-357		
c. Omnibus or Other Above Threshold Reductions	+194	-45	
d. Below Threshold Reprogramming	+475		
e. Rescissions	-56		
Adjustments to Budget Years Since FY 2000/2001 PB			+4914
Current Budget Submit (FY 2001 PB)	14312	11017	13753

Change Summary Explanation: Funding - FY 2001 funds increased (+4914) to support Force XXI software enhancements.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603805A Combat Service Support Control Systems Evaluation and Analysis PROJECT D091

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D091 Combat Service Support Control System	12590	11017	13753	8657	8751	8942	8929	8200	210577

A. **Mission Description and Justification:** **Project D091, Combat Service Support (CSS) Control System**. The Combat Service Support Control System is an automated command and control (C2) system that supports the CSS component of the Army Battle Command System (ABCS), and provides a critical logistical C2 capability for the Army's Force XXI. It will automate the current manual processes of force level planning and decision-making for commanders and their staffs. CSSCS interoperates both vertically, within the CSS Battlefield Functional Area (BFA), as well as horizontally with the other BFAs; namely, Fire Support, Maneuver Control, Intelligence/Electronic Warfare, and Air Defense. CSSCS implements functionally through use of Common Hardware and Software (CHS), Common Operating Environment (COE), reuse software, and unique application software.

FY 1999 Accomplishments:

- 9175 Completed Version 4.1
- 965 Continued Version 5 development
- 875 Conducted Version 4 continuous evaluation activities
- 1575 Prepared for and conducted Army Warfighting Experiments, implemented FDD enhancements and achieved initial web based technologies

Total 12590

FY 2000 Planned Program:

- 5580 Continue Version 5 development
- 2390 Prepare for and conduct Army Warfighting Experiments and achieve First Digitized Division IOC, transition to web based technologies and continue migration to DII COE
- 2750 Continue Version 4 development
- 297 Small Business Innovative Research/ Small Business Technology Transfer (SBIR/STTR) programs

Total 11017

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603805A Combat Service Support Control Systems Evaluation and Analysis PROJECT D091

FY 2001 Planned Program:

- 10478 Continue Version 5 development
- 1300 Prepare for and conduct Army Warfighting Experiments and work towards First Digitized Corps
- 775 Conduct Version 5 continuous evaluation activities
- 600 Continue software enhancements based on CINC feedback on operational deployments (i.e., Bosnia, Central America, etc)
- 600 Complete Version 4 Development

Total 13753

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
Procurement, OPA 2 (W34600)	9223	19830	27411	25102	24930	24757	23057	49852	227112
Spares (BS9706)	164	165	0	0	0	0	0	5755	7639

C. **Acquisition Strategy:** Acquisition strategy is to pursue a spiral development process, with program development structured to evolve over five versions. Versions 1 and 2 served as proof of principle, and provided initial division level CSS functional capability on common hardware. Version 3 was built on the capabilities of the previous versions and provided an Initial Operational Capability at Division and Corps level, to include initial horizontal interoperability with ABCS systems. Version 4 extends CSSCS to EAC, as well as provides added capabilities at Echelons Corps and Below (ECB). Version 5, the objective CSSCS software, will provide remaining ECB functionality, and extend CSSCS capabilities to joint, allied and coalition forces. TRW is the software development contractor. Lockheed Martin Corporation (LMC) provides training support. Hardware is procured from the Common Hardware/Software-2 (CHS-2) contract with GD-CS.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
V4 Continuous Evaluation	1-4Q*	1-3Q					
V4 Technical Test		3Q					
Complete V4			1Q				
Incremental SW Build Releases		3Q	3Q	3Q	3Q	3Q	
Develop V5		1-4Q					
First Digitized Division (FDD) IOC		4Q					
Incremental Software Build Releases			3Q	3Q	3Q		
V5 Technical Test					3-4Q		
V5 Operational Test						4Q	
First Digitized Corps (FDC) IOC						4Q	
First Digitized Corps Test							1Q

*Milestone Complete

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603805A Combat Service Support Control Systems Evaluation and Analysis

PROJECT: D091

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TRW	T&M	Carson, CA	85191	7769	1/2 Qtr	6607	1/2 Qtr	9535	1st Qtr		109102	110000
b. Lockheed Martin	CPAF	Springfield, VA	4744	929	1 Nov 98	875	1st Qtr	925	1st Qtr	4375	11848	20500
c. COE/Common Spt	MIPR	Various	5290	776	1/2 Qtr	550	1/2 Qtr	675	1/2 Qtr	2750	10041	
d. TBD			0	0		0		0		20128	20128	
e. GFE	FFP	Various	3601	0						2000	5601	
f. SBIR/STTR						297					297	
Subtotal Product Development:			98826	9474		8329		11135		29253	157017	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. CECOM	MIPR	Ft. Monmouth/Belvoir	1600	213	1 Dec 98	203	1st Qtr	250	1st Qtr	1075	3341	
b. SDC-LEE	MIPR	Ft. Lee	550	0		0		0		0	550	
c. SDC-HUACHUCA	MIPR	Ft. Huachuca, AZ	971	408	1 Nov 98	380	1 Nov 99	131	1 Nov 00	1500	3390	
d. EER	MIPR	McLean, VA	5054	1400	1/2 Qtr	1330	1/2 Qtr	1380	1/2 Qtr	6650	15814	
e. LMI			775	300	1 Jan 99	275	2nd Qtr	325	1st Qtr	1375	3050	
Subtotal Support Costs:			8950	2321		2188		2086		10600	26145	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. GOVT	MIPR	Various	5112	350	1/2 Qtr	113	1/2 Qtr	82	1/2 Qtr	1750	7407	
b. EPG	MIPR	Various	833	145	1 Nov 98	75	1 Nov 99	100	1 Nov 00	500	1653	
c. OPTEC	MIPR	Various	1578	0		0		0		0	1578	
Subtotal Test and Evaluation:			7523	495		188		182		2250	10638	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603805A Combat Service Support Control Systems Evaluation and Analysis

PROJECT: D091

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PM CSSCS	N/A	Ft. Belvoir, VA	14150	300	1 Dec 98	312	1st Qtr	350	1st Qtr	1665	16777	
Subtotal Management Services:			14150	300		312		350		1665	16777	
Project Total Cost:			129449	12590		11017		13753		43768	210577	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY **4 - Demonstration and Validation**	PE NUMBER AND TITLE **0603805A Combat Service Support Control Systems Evaluation and Analysis** PROJECT **D246**

COST *(In Thousands)*	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D246 Tactical Communications System-Advanced Development	1722	0	0	0	0	0	0	0	6704

A. Mission Description and Budget Item Justification: This project validated the new Tactical Internet capability required for Force XXI. It provided definition; integration and testing of a mix of mature and prototype products which are used to develop a Tactical Internet capability. The Tactical Internet will be the primary data communications infrastructure at Corps and below for Force XXI and will revolve around interconnecting a mix of existing (e.g.: SINCGARS, SINCGARS SIP, EPLRS, MSE TPN, ETC) and emerging communications devices using gateways and routers. Gateways will also provide the link to strategic levels. This capability will result in the tactical equivalent of the Information Highway and will support key battlefield functional areas to include logistics reporting, telemedicine, etc. The Tactical Internet (TI) will use and leverage commercial network standards and products. The *"Internet Protocol "* (IP) suite will be used to provide seamless communications with the capability to dynamically route data to hosts. It was designed to facilitate technology insertion. The focus of this project was to reduce the technical risk by assembling, integrating, and testing the Tactical Internet components prior to TF XXI, Division XXI, and Corps XXI and beyond. New services and components will be added and tested as required for each iteration leading up to Force XXI. Note: Funding for this project has been transferred to PE/Proj. 0604805/D629, beginning in FY2000.

FY 1999 Accomplishments:

- 402 Integrated new applications and data services for the Tactical Internet (TI). Demonstrated advanced architectural concepts for the TI beyond the First Digitized Division (FDD)
- 619 Evaluated emerging Internet protocols for use in the TI. Supported the Tactical Internet for FDD fielding.
- 246 Supported Advanced Technology Demonstrations (ATD) including C2 Protect.
- 455 Conducted airborne demo of latest NTDR capabilities, using new video equipment. Procured emerging technologies in video/multimedia equipment. Demonstrated networking capabilities of Handheld Multimedia Terminal in airborne platform.

Total 1722

FY 2000 Planned Program: Project has been transferred to PE/Proj. 0604805/D629.

FY 2001 Planned Program: Pproject has been transferred to PE/Proj. 0604805/D629

B. Other Program Funding Summary: Not Applicable.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603805A Combat Service Support Control Systems Evaluation and Analysis PROJECT D246

C. **Acquisition Strategy:** The objective of this program is to validate new TI Capabilities required for Force XXI. In FY97, laboratory integration testing was conducted to reduce risk for Task Force XXI AWE. Similar laboratory testing was performed in FY98 for Division XXI and for the FBCB2 Limited User Test (LUT). In FY99 new services and components will be added and tested to validate critical technologies for Force XXI beyond FDD.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2004	FY 2005
System Integration	4Q*							
Demonstration Range Extension	4Q*							
Address Architecture Issue	4Q*							
Integrate Network Services	4Q*							
Laboratory Testing	4Q*							
System Integration	4Q*							
Video Demonstration	4Q*							

*Milestone Complete

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603805A Combat Service Support Control Systems Evaluation and Analysis

PROJECT: D246

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Systems Engineering	PO	CECOM RDEC, Ft. Monmouth, NJ	3966	1297	01/01/99						5263	
b. Contract Services												
1)	C-T&M AF	CSC/BAH	485	90	05/13/99						575	
2)	C-T&M Rqmts	C3I	270	135	08/28/98						405	
3)	C-T&M IDIQ	TAMSCO	105	150	05/19/98						255	
4)	C-T&M PSLA	LSI	150	50	08/01/99						200	
Subtotal Product Development:			4976	1722							6698	

Remarks:

NOTES:

Performing Activity & Location

CSC/BAH- Computer Science Corporation, support contractor Booz, Allen & Hamilton – Eatontown, NJ
C3I – C3I Systems Group Inc, Award date 8/28/98 with 3 option years- Tinton Falls, NJ
TAMSCO – TAMSCO Inc, Award date 5/19/98 with 5 options years- Calverton, MD
LSI – Lear Sigler Inc, Lakehurst, NJ

Contract Method and Type

C-T&M – Competitive, Time and Materials
-AF- Award Fee
-Rqmts-Requirements
-IDIQ-Indefinite Delivery Indefinite Quantity
-PSLA- Purchase Service Labor Agreement

II. Support Costs: Not applicable

III. Test and Evaluation: Not applicable

V. Management Services: Not applicable

Project Total Cost:	4976	1722							6698	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603807A Medical Systems - Advanced Development

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	11205	16566	15259	14669	11281	10009	11037	Continuing	Continuing
D808 DoD Drug and Vaccine-Advanced Development	3559	5121	4635	4060	5062	5098	5097	Continuing	Continuing
D811 Military HIV Vaccine and Drug-Advanced Development	3340	2669	5751	4665	657	137	161	Continuing	Continuing
D836 Combat Medical Materiel-Advanced Development	3480	3974	4017	4186	4007	3973	4008	Continuing	Continuing
D837 Soldier System Protection-Advanced Development	826	878	856	1758	1555	801	1771	Continuing	Continuing
D853 Combat Trauma Patient Simulator	0	3924	0	0	0	0	0	0	3924

A. Mission Description and Justification: This program element (PE) funds the advanced development (AD) of medical materiel necessary to field an effective capability for counteracting infectious diseases, treating, diagnosing and evacuating combat casualties, and developing operational medical drugs and materiels. The PE funds AD of systems for medical protection against naturally occurring diseases and human immunodeficiency virus (HIV). This includes development and initial human testing of vaccines, prophylactics, and therapeutic drugs. Additionally, the PE supports AD of field medical equipment and drugs essential for combat casualty care on all battlefields and military operations other than war. Systems include resuscitators, blood substitutes, advanced sensors and diagnostic algorithms, field x-ray, field production of medical grade oxygen, intensive care delivery platforms and litters, and hemostatic dressing. The PE also funds AD of systems that provide enhancement of or protection against physiological and psychological factors affecting cognitive and physical performance imposed by military systems, combat operations or the environment. This program is primarily managed by the U.S. Army Medical Research and Materiel Command.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY **4 - Demonstration and Validation**	PE NUMBER AND TITLE **0603807A Medical Systems - Advanced Development**

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	11329	12723	12235
Appropriated Value	11414		
Adjustments to Appropriated Value			
a. Congressional General Reductions	-85		
b. SBIR / STTR	-243		
c. Omnibus or Other Above Threshold Adjustments			
d. Below Threshold Reprogramming	165		
e. Rescissions	-46		
Adjustments to Budget Years Since FY 2000/2001 PB			+3096
Current Budget Submit (FY 2001 PB)	11205	16566	15259

Change Summary Explanation: Funding – FY 2001: Funds realigned from 0604807A, project 812, Military HIV Vaccines and Drug Development to 0603807A, project 811, Military HIV Vaccines and Drug Development. This action was necessary to align dollars to the stage of HIV research and in anticipation of an HIV vaccine to reach the final stages of the acquisition process.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development PROJECT D808

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D808 DoD Drug and Vaccine-Advanced Development	3559	5121	4635	4060	5062	5098	5097	Continuing	Continuing

A. **Mission Description and Justification:** This project funds program definition and risk reduction of candidate medical countermeasures such as vaccines and drugs through safety, immunogenicity, and small-scale efficacy testing in volunteers against naturally occurring infectious diseases of mission-degrading or mission-aborting potential. Work performed in laboratories and among troop populations is directed to prevention, diagnosis, and treatment of viral, bacterial, and parasitic disease to prevent casualties, sustain operational performance, and minimize deaths and disability of armed forces during military operations. Some major contractors are Southern Research Institute, Birmingham AL; South Florida Research Institute, Miami, FL; Institute of Biology for the Army, Rio de Janeiro, Brazil; and Kenya Medical Research Institute, Nairobi, Kenya.

FY 1999 Accomplishments:

•	1834	Completed Phase 2 clinical trial of RTS,S (TRAP) malaria vaccine.
•	3	Filed an Investigational New Drug application for the reformulated liquid *Leishmania* skin test antigen.
•	92	Conducted Phase 1 study with reformulated *Leishmania* skin test antigen.
•	142	Continued Phase 2 safety and efficacy field trial for Paromomycin topical antileishmanial cream in Colombia.
•	274	Started first year of Phase 1/2 safety and immunogenicity field trial for *Shigella flexneri* vaccine in Bangladesh.
•	142	Completed Phase 1 safety study for *Shigella flexneri* vaccine in Bangladesh.
•	50	Conducted Milestone (MS) I In-Process Review (IPR) for the hepatitis E vaccine program.
•	368	Completed dose ranging study (Ghana) for long-term prophylaxis for Tafenoquine, an antimalarial drug.
•	67	Conducted a meeting with the Food and Drug Administration (FDA): Endorsed a "fast track" drug development application for Tafenoquine.
•	587	Initiated 2-year rat carcinogenicity study for Tafenoquine.
Total	3559	

FY 2000 Planned Program:

•	892	Conduct Phase 1 study to refine dose regimen for RTS,S (TRAP) malaria vaccine.
•	148	Complete Phase 2 safety and immunogenicity field trial for Paromomycin topical antileishmanial cream in Colombia.
•	30	Conduct market survey for co-development partner for Paromomycin topical antileishmanial cream.
•	132	Initiate Phase 2 efficacy field trial for Paromomycin topical antileishmanial cream in France.
•	82	Start program for clinical diagnostic assay for *Leishmania*.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development PROJECT D808

- 491 Continue Phase 1/2 safety and efficacy field trials for *Shigella flexneri* vaccine in Bangladesh.

FY 2000 Planned Program: (continued)

- 55 Complete Phase 1b clinical trials in Nepal for the hepatitis E vaccine program.
- 801 Initiate Phase 2 clinical trials in Nepal for the hepatitis E vaccine program.
- 50 Conduct a MS II for Tafenoquine antimalarial drug.
- 50 Conduct a MS I IPR for the dengue tetravalent vaccine program.
- 445 Initiate development of human challenge model for the clinical evaluation of the efficacy of dengue tetravalent vaccines.
- 219 Initiate sequencing and cloning of dengue types 2, 3, and 4 monovalent vaccines.
- 50 Conduct a MS I IPR for the dengue rapid diagnostic program.
- 207 Conduct a MS I IPR and initiate lethal ovitrap for dengue vectors program.
- 50 Conduct a MS I IPR for rapid detection of *Plasmodium* infection in mosquitoes program.
- 50 Start scrub typhus diagnostic kit program.
- 436 Conduct a MS I IPR and initiate a program for camouflage face paint with insect repellent and reduced infrared signature.
- 407 Conduct a MS I IPR and initiate malaria rapid diagnostic device program.
- 50 Conduct a MS I IPR on artelinic acid, an antimalarial drug.
- 182 Prepare Investigational New Drug application submission on artelinic acid.
- 182 Initiate Phase 1 safety trials on artelinic acid.
- 112 Small Business Innovative Research/Small Business Technology Transfer Research Programs.

Total 5121

FY 2001 Planned Program:

- 50 Complete Phase 1 study to refine dose regimen for RTS,S malaria vaccine.
- 124 Conduct Phase 2 efficacy study on *Leishmania* skin test antigen.
- 50 Complete Phase 2 efficacy field trial for Paromomycin topical antileishmanial cream in France.
- 193 Conduct developmental testing of prototype clinical diagnostic assay for *Leishmania*.
- 50 Complete Phase 1/2 safety and immunogenicity field trials for *Shigella flexneri* vaccine in Bangladesh.
- 308 Conduct expanded Phase 2 safety and efficacy field trial for *Shigella flexneri* vaccine in Bangladesh.
- 50 Conduct a MS II IPR for *Shigella flexneri* vaccine.
- 772 Complete the Phase 2 clinical trial in Nepal for the hepatitis E vaccine program.
- 418 Start Phase 2 field trials for dengue tetravalent vaccine.
- 215 Conduct developmental testing of prototype dengue rapid diagnostic device.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development PROJECT D808

- 104 Continue lethal ovitrap for dengue vectors development program.

FY 2001 Planned Program: (continued)

- 50 Complete development of human challenge model for the clinical evaluation of the efficacy of dengue tetravalent vaccines.
- 173 Complete sequencing and cloning of dengue types 2, 3, and 4 monovalent vaccines.
- 76 Continue developmental testing of a prototype kit for the rapid detection of *Plasmodium* infected mosquitoes and conduct a MS II IPR.
- 465 Conduct developmental testing of prototype scrub typhus diagnostic device.
- 215 Conduct developmental testing and a MS II IPR of camouflage face paint with insect repellent and reduced infrared signature.
- 50 Conduct a MS II IPR for camouflage face paint with insect repellent and reduced IR signature.
- 325 Conduct developmental testing and a MS II IPR of prototype malaria rapid diagnostic device.
- 174 Continue Phase 1 safety trials on artelinic acid, an antimalarial drug.
- 174 Initiate Phase 2 efficacy trial on artelinic acid.
- 52 Advertise for Cooperative Research and Development Agreement partner on artelinic acid.
- 290 Start first year of Phase 1/2 safety and immunogenicity field trials for *Shigella sonnei* vaccine.
- 50 Conduct a MS I IPR for *Shigella sonnei* vaccine.
- 207 Conduct a MS I IPR and initiate Japanese encephalitis vaccine (improved) program.

Total 4635

B. Other Program Funding Summary: Not applicable.

C. Acquisition Strategy: Test and evaluate in-house and commercially developed products in extensive government-managed clinical trials to gather data required for FDA licensure.

D. Schedule Profile	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
RTS,S malaria vaccine							MS II 1QTR		
Leishmania Skin Test						MS II 1QTR			
Camouflage face paint				MS I 1QTR	MS II 4QTR				
Artelinic acid				MS I 3QTR			MS II 1QTR		

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development PROJECT D808

D. Schedule Profile	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Shigella flexneri					MS II 3QTR				
Paromomycin							MS II 1QTR		
Tafenoquine antimalarial				MS II 2QTR					
Dengue rapid diagnostic device				MS I 4QTR			MS II 4QTR		
Hepatitis E vaccine			MS I 4QTR			MS II 3QTR			
Dengue tetravalent vaccine				MS I 2QTR		MS II 3QTR			
Malaria Rapid Diagnostic Device				MS I 1QTR	MS II 4QTR				
Lethal ovitrap for dengue-infected mosquitoes				MS I 3QTR					
Detection of *Plasmodium* infected mosquitoes				MS I 4QTR	MS II 4QTR				
Shigella sonnei vaccine					MS I 2QTR				
Japanese encephalitis vaccine (improved)					MS I 2QTR		MS II 2QTR		
Scrub typhus diagnostic device				MS I 2QTR		MS II 4QTR			
Clinical diagnostic assay for Leishmania				MS I 4QTR					

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603807A Medical Systems - Advanced Development

PROJECT: D808

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. No product/contract costs greater than $1M individually			204	286		412		373		Continue	1275	
b. Subtotal Product Development:			204	286		412		373			1275	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. No product/contract costs greater than $1M individually			103	179		259		233		Continue	774	
b. Subtotal Support Costs:			103	179		259		233			774	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. No product/contract costs greater than $1M individually			1278	2236		3214		2913		Continue	9641	
b. Subtotal Test and Evaluation:			1278	2236		3214		2913			9641	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603807A Medical Systems - Advanced Development

PROJECT: D811

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. No product/contract costs greater than $1M individually			478	858		1236		1116		Continue	3688	
b. Subtotal Management Services:			478	858		1236		1116			3688	
Project Total Cost:			2063	3559		5121		4635			15378	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE: February 2000
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603807A Medical Systems - Advanced Development
	PROJECT: D811

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D811 Military HIV Vaccine and Drug-Advanced Development	3340	2669	5751	4665	657	137	161	Continuing	Continuing

A. Mission Description and Justification: This project funds Congressionally mandated, militarily relevant human immunodeficiency virus (HIV) research for demonstration and validation of candidate vaccines and drugs through safety, immunogenicity, and small-scale efficacy testing and behavioral intervention in volunteers. Efforts are directed to answer militarily unique needs affecting manning, mobilization, and deployment.

FY 1999 Accomplishments:

•	3340	Conducted Phase 2 efficacy field trials for GP120 recombinant protein HIV vaccine.
Total	3340	

FY 2000 Planned Program:

•	1825	Conduct first year of Phase 2 downselection study of GP120 and GP160 recombinant protein HIV vaccines.
•	50	Conduct a MS I/II IPR for GP120 recombinant protein HIV vaccine.
•	50	Conduct a MS I IPR for GP160.
•	672	Conduct dose ranging study for GP120 recombinant protein HIV vaccine.
•	72	Small Business Innovative Research/Small Business Technology Transfer Research Programs.
Total	2669	

FY 2001 Planned Program:

•	5751	Continue Phase 2 downselection study of GP120 and GP160 recombinant protein HIV vaccines.
Total	5751	

B. Other Program Funding Summary: Not applicable.

C. Acquisition Strategy: Test and evaluate commercially developed vaccine candidates in government-managed trials.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development PROJECT D811

D. Schedule Profile	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
GP120 recombinant protein HIV vaccine					MS I/II 1QTR					
GP160 HIV vaccine					MS I 1QTR		MS II 1QTR			
Combined HIV Vaccine								MS I 1QTR		

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603807A Medical Systems - Advanced Development

PROJECT: D811

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Product Development			3340	2669		5751		Continue	11760	
Subtotal Product Development:			3340	2669		5751		Continue	11760	

II. Support Costs: Not applicable

III. Test and Evaluation: Not applicable

IV. Management Services: Not applicable

Project Total Cost:			3340	2669		5751		Continue	11760	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development PROJECT D836

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D836 Combat Medical Materiel-Advanced Development	3480	3974	4017	4186	4007	3973	4008	Continuing	Continuing

A. Mission Description and Justification: The project supports advanced development of new and improved systems essential for battlefield casualty care, patient transport and evacuation, and return to duty in support of special contingency and conventional force operations. Primary civilian contractors are University of Illinois, Chicago, IL; United Defense Limited Partnership, San Jose, CA; Mission Medical; American Red Cross; and Northrup Grumman.

FY 1999 Accomplishments:

- 2036 Evaluated Armored Medical Evacuation Vehicle (AMEV) in National Training Center Rotation 99-05 and conducted a Milestone (MS) I/II In-Process Review (IPR).
- 290 Developed prototype Warrior Medic variant system and conducted a MS 0/I IPR.
- 126 Initiated protocol for Food and Drug Administration (FDA) approval process of Thawed Blood Processing System (TBPS), finalized design of device, and fabricated two prototypes in accordance with FDA current Good Manufacturing Practices (cGMP) procedures.
- 823 Established Acquisition Plan for Hemostatic Dressing and conducted animal model trials on nine prototype dressings, furnished by potential corporate partners, to select dressings, which will be further developed.
- 28 Continued technology watch and evaluation of Ceramic Oxygen Generator technologies.
- 139 Continued development and refinement of Critical Care System for Trauma and Transport (CSTAT) device to include air worthiness certification.
- 38 Constructed lightweight litter using advanced composite materials.

Total 3480

FY 2000 Planned Program:

- 1671 Complete Engineering and Manufacturing Development (EMD) vehicle and conduct Limited User Test for AMEV.
- 62 Conduct technology cost-benefit trade-off analysis, a MS I/II IPR, and initiate formal acquisition program for CSTAT device.
- 326 Complete Warrior Medic variant design and qualification testing.
- 1058 Complete animal model evaluation, conduct a MS I IPR, and secure commercial partner for product development of the Hemostatic Dressing.
- 120 Conduct a MS I/II for TBPS and complete in vitro and in vivo testing necessary for FDA approval.
- 326 Initiate development of Next Generation Jet Injector for needle-less injection of drugs and vaccines.
- 104 Complete user testing of Special Operations Resuscitation and Surgical Station and preparation of the technical data package.
- 97 Initiate Ceramic Oxygen Generation development program to develop a lightweight, high purity oxygen generator for field use.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development PROJECT D836

FY 2000 Planned Program: (continued)

- 52 Evaluate the use of commercial Medical Waste Disposal Systems in field military hospitals.
- 77 Conduct a MS 0/I IPR and initiate advanced development efforts for a 10-week red blood cell storage solution.
- 81 Small Business Innovative Research/Small Business Technology Transfer Research Programs.

Total 3974

FY 2001 Planned Program:

- 240 Conduct operational testing and a MS III IPR for the CSTAT device.
- 404 Conduct development tests of the Next Generation Jet Injector and a MS I IPR.
- 227 Prepare initial operational test and evaluation for Warrior Medic program.
- 65 Prepare documentation for FDA submission for TBPS.
- 1500 Begin low rate initial production and conduct production qualification test for AMEV.
- 1200 Continue safety and efficacy trials for Hemostatic Dressing, initiate human trials using elective surgery, and conduct an MS II.
- 112 Continue development of the Ceramic Oxygen Generation System to include testing potential product for durability in the field medical environment and conduct a MS I IPR.
- 74 Complete user testing of a Field Medical Waste Disposal System.
- 120 Complete FDA-required in vivo and in vitro testing of a solution capable of maintaining viable red blood cells for a 10-week period.
- 75 Conduct an MS II IPR for 10-week Blood

Total 4017

B. Other Program Funding Summary: Not applicable.

C. Acquisition Strategy: Evaluate commercially developed materiel in government-managed tests for hardening or other modification.

D. Schedule Profile	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Warrior Medic				MS 0/I 4QTR				MS II/III 1QTR		
CSTAT					MS I/II 3QTR	MS III 4QTR				
Hemostatic Dressing					MS I 2QTR	MS II 4QTR				

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE: February 2000
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603807A Medical Systems - Advanced Development
	PROJECT: D836

D. Schedule Profile	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
AMEV				MS I/II 3QTR						
Ceramic Oxygen Generator System						MS I 4QTR			MS II 3QTR	
Next Generation Jet Injector						MS I 4QTR				
10-Week Blood					MS 0/I 3QTR	MS II 4QTR				
TBPS					MS I/II 3QTR					

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603807A Medical Systems - Advanced Development

PROJECT: D836

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. AMEV	MIPR	PM Bradley, Warren, MI	1990	1010	Nov 98	1204		1300		Continue	5504	
b. No other contract exceeds $1M						200		1796			1996	
Subtotal Product Development:			1990	1010		1404		3096			7500	

II. Support Costs: No product/contract costs greater than $1M individually

III. Test and Evaluation: No product/contract costs greater than $1M individually

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. No product/contract costs greater than $1M individually			1618	2470		2570		921		Continue	7579	
Subtotal Management Services:			1618	2470		2570		921			7579	
Project Total Cost:			3608	3480		3974		4017			15079	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development PROJECT D837

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D837 Soldier System Protection-Advanced Development	826	878	856	1758	1555	801	1771	Continuing	Continuing

A. **Mission Description and Justification:** This project supports demonstration and validation of preventive medicine materiel including devices, pharmacologicals, and other tools to provide protection, sustainment, and enhancement of the physiological and psychological capabilities of soldiers in the face of combat operations under all environmental conditions. Focus is on reduction in the incidence of personnel losses due to preventable disease and non-battle injuries through development of environmental and physiological performance monitors and other preventive medicine countermeasures.

FY 1999 Accomplishments:

•	31	Provided consultation on the Warfighter Physiological Status Monitor (WPSM).
•	76	Developed required programmatic and technical documentation and conducted correspondence for Milestone (MS) 0/I In-Process Review (IPR) for Warrior Medic Program.
•	374	Developed prototype Warrior Medic variant system.
•	145	Provided system engineering support for system integration with Force XXI Battle Command – Brigade and Below (FBCB2) and Global Combat Support System (GCSS).
•	200	Prepared and released request for proposals for manufacturing of Leishmania Skin Test Antigen (LSTA).
Total	826	

FY 2000 Planned Program:

•	41	Prepare acquisition documents for a MS 0 IPR for the WPSM and continue development efforts.
•	814	Continue contract funding for required Investigational New Drug application sections and manufacturing of LSTA kits.
•	23	Small Business Innovative Research/Small Business Technology Transfer Research Programs.
Total	878	

FY 2001 Planned Program:

•	31	Continue refinement of the WPSM.
•	825	Provide for manufacture of LSTA kits for Phase 1 dose ranging safety and sensitivity clinical trial and conduct a MS II IPR. Initiate development efforts for a Drinking Water Microbiological Assay to allow rapid confirmation of contaminated drinking water
Total	856	

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BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development PROJECT D837

B. Other Program Funding Summary: Not applicable.

C. Acquisition Strategy: Test and evaluate materiel in government-managed trials to meet fielding requirements.

D. Schedule Profile	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
LSTA						MS II 4QTR				
WPSM					MS 0 1QTR					

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development	PROJECT D837

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D853 Combat Trauma Patient Simulator	0	3924	0	0	0	0	0	0	3924

A. Mission Description and Justification: By Congressional direction, the purpose of this program is to develop prototypes of and demonstrate an integrated medical simulation system that will enhance "home station" training of battlefield health care providers at the individual and unit levels.

FY 1999 Accomplishments: Project not funded in FY 1999.

FY 2000 Planned Program:

•	3818	Collaborate with STRICOM to conduct concept exploration, functional testing, evaluation, and demonstration of a medical/surgical simulation system that will enable planning and rehearsal of realistic combat casualty care procedures and ensure the skill currency of "first responders (e.g. combat medics, physician assistants)" and combat surgeons.
•	106	Small Business Innovative Research/Small Business Technology Transfer Research Programs.
Total	3924	

FY 2001 Planned Program: Continue concept exploration, functional testing, evaluation, and demonstration of a medical/surgical simulation system that will enable planning and rehearsal of realistic combat casualty care procedures and ensure the skill currency of "first responders (e.g. combat medics, physician assistants)" and combat surgeons.

B. Other Program Funding Summary: Not applicable.

C. Acquisition Strategy: Test and evaluate commercially developed vaccine candidates in government-managed trials.

D. Schedule Profile: Not applicable.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603854A Artillery Systems Advanced Development PROJECT D505

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D505 Crusader - Advanced Development	300429	266158	355309	446674	245250	0	0	0	2140620

A. Mission Description and Budget Item Justification: This program element supports the Program Definition and Risk Reduction (PDRR) efforts for the Crusader – Advanced Development Program. The Crusader system is the Army's next generation self-propelled howitzer (SPH) and artillery resupply vehicles (RSVs) designed to support Army XXI, Joint Vision 2010 and the Future Army. Crusader will have significantly increased capabilities in the areas of lethality, mobility, survivability, resupply, command and control, and sustainability by capitalizing on emerging, advanced technologies. The SPH will also achieve increased lethality levels through independent operations. The RSV will have significantly increased capabilities in the areas of resupply, mobility and survivability and will provide a single source of ammunition, fuel, propellant and other supplies for the SPH.

In consonance with the New Army Vision/Transformation, the Crusader development is being restructured to improve transportability and relevance to the Army's objective force. The focus of the revised Crusader program is to increase all modes of deployability while retaining all of its Key Performance Parameters. The revised Crusader system will be reduced in weight and volume and employ a change in resupply vehicle philosophy (an equal mix of tracked and wheeled resupply vehicles). The restructured program will leverage the successful development to date and continue development activities that support the revised Crusader concept in conjunction with concept formulation and significant weight reduction initiatives. Major subsystems and technologies remain largely unchanged, but will be repackaged. The program will remain in the Program Definition and Risk Reduction (PDRR) phase to improve deployability and relevance to the Army's objective force, and transition to Engineering and Manufacturing Development (EMD) in fiscal year 2003.

FY 1999 Accomplishments:

- 264321 Product development: Continued developmental efforts under the Crusader PDRR contract. Continued efforts in support of maturation and continue integration and risk reduction of critical technologies. Initiated long lead item buys. Initiated system prototype fabrication (SPH1/SPH2/RSV1). Completed major component fabrication and demo. Initiated integration and checkout in the Systems Integration Facility (SIF). Selected final System Integration, Assembly, Test and Checkout facility. Delivered RSV- which is the engineering development test article to be used in Automotive Performance/RAM Testing.
- 20606 Support and management: Continued project management efforts; to include scientific and engineering analysis, product development team support and engineering management services.
- 15502 Test and evaluation: Finalized EDT-A testing. Initiated testing of RSV-. Initiated Safety Certification Activity. Purchased of ammunition and propellant for program testing.

Total 300429

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603854A Artillery Systems Advanced Development PROJECT D505

FY 2000 Planned Program:

•	211648	Product Development: Redirect efforts to develop the lightweight Crusader concept under Crusader PDRR contract. Continue efforts in support of integration and risk reduction of critical technologies. Initiate development/Integration of software release 3 and integrate builds two and three. Complete Electronic Bench Top Developmental System (EBTDS). Integrated Crusader Emulator (ICE) development. Deliver 3.0 Operating System and Services (OSS). Initiate development of new Powerpack/Drive Train (PP/DT). Initiate Component Maturation/Weight reduction initiatives. Deliver SPH1 Emulator to YPG for testing.
•	36433	Support and Management: Continue project management efforts; to include engineering analysis, product development team support and engineering management activities. Continue coordination and development of MSII activities in accordance with new program approach.
•	11071	Test and Evaluation: Initiate testing of SPH1 Emulator at YPG. Conduct Survivability Risk Reduction tasks (Compartmentation, Vehicle Section Tests - VST) testing. Purchase of ammunition and propellant for program testing.
•	7006	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	266158	

FY 2001 Planned Program:

•	291239	Product Development: Continue efforts by developing Preliminary Design for lightweight Crusader concepts under Crusader PDRR contract. Continue efforts in support of integration and risk reduction of critical technologies. Checkout and test Software Release 3. Integrate/Assembly of new Powerpack/Drive Train. Initiate Survivability Risk Reduction Tasks. Continue component Maturation/Weight reduction initiatives. Configure turret and Resupply Test Stands and demonstrate system performance/performance growth.
•	40128	Support and Management: Continue project management efforts; to include engineering analysis, product development team support and engineering management activities. Continue coordination and development of MSII activities in accordance with new program approach.
•	23942	Test and Evaluation: Continue testing of SPH 1 Emulator at YPG. Purchase of ammunition and propellant for program testing.
Total	355309	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603854A Artillery Systems Advanced Development PROJECT D505

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	313526	282937	120457
Appropriated Value	317166	268137	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-3640		
b. SBIR / STTR	-11728		
c. Omnibus or Other Above Threshold Reductions			
d. Below Threshold Reprogramming	663	-1072	
e. Rescissions	-2032		
Adjustments to Budget Years Since FY 2000/2001 PB		-907	-1206
New Army Transformation Adjustment		TBD	+236058
Current Budget Submit (FY 2001 PB)	300429	266158	355309

Change Summary Explanation: Funding – FY01: Project D505 was adjusted to reflect the New Army Transformation.

C. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Comp	Total Cost
RDTE, BA5, Army, PE 0604854, D503			28	39273	227991	452583	425058	Cont	Cont
Procurement, WCTV, Army, G83500						24679	94237	Cont	Cont
Procurement, WCTV, Army, G83600						19096	76408	Cont	Cont
RDTE, BA5, Army, PE 0604854, D2KT	96		199	198	397	1190	199	Cont	Cont
Procurement, Ammo, Army, ER 8021		42601	27432	57713	77553	68091	57706	Cont	Cont
RDTE, BA5, Army, PE 0604645, D175	4259	2877	2200					0	48034
Procurement, Ammo, Army, ER 8017	1502	13951	45633	52839	53449	53487	53437	Cont	Cont

D. Acquisition Strategy: On 29 December 1994, a Sole Source-CPIF contract award was made selecting United Defense, Limited Partnership (UDLP) as the prime contractor for the PDRR phase of Crusader. General Dynamics Land Systems (Warren, MI) and General Dynamics Armament Systems (Burlington, VT) are the major sub-contractors in the areas of mobility and resupply respectively. On 19 March 1996, the Army changed the armament system for Crusader from liquid propellant (LP) to solid propellant (SP) as a consequence of cost and persistent technical problems. In June 1996, UDLP selected the government's Advanced Solid Propellant Armament system (XM297 cannon and Modular Artillery Charge System (MACS) as the basis for SP Crusader). On 6 November 1996, TACOM-ARDEC signed a Memorandum of Agreement (MOA) with UDLP establishing a unique teaming arrangement for the Government to provide engineering services to UDLP for the development of the SP

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603854A Artillery Systems Advanced Development PROJECT D505

armament system. Delay in the decision to switch from LP to SP and alignment of program activities to match fiscal profile required an adjustment in the schedule portion

of the Acquisition Program Baseline (APB). On 23 October 1997, the Office of the Secretary of Defense approved Crusader's revised APB. The revised APB leverages acquisition reform initiatives and features a single continuous objective development path. The seamless transition from PDRR to EMD eliminates inefficiencies in ramping down/up during the milestone decision. The strategy for development of the lightweight Crusader is to build on the successful development to date on major subsystems; e.g. continue development and testing of the XM297 cannon, exercise the resupply subsystem and software in the Systems Integration Facility (SIF), and continue electronics and software development. The strategy is to continue these efforts, without a break, develop weight reduction technologies and initiatives, and re-design the system with the current contractor team.

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Delivery of RSV-	4th Qtr*						
Safety Certification Activity	4th Qtr						
Delivery of SPH 1 Emulator & initiate testing		2nd Qtr					
Integrate new Powerpack/Drivetrain into RSV-			4th Qtr				
Initiate RSV- testing with new Powerpack/Drivetrain				1st Qtr			
Milestone II					3rd Qtr		
Initiate BH&T testing						2nd Qtr	
Delivery of 1st EMD Prototype							1st Qtr
Initiate PPQT testing							1st Qtr

*Milestone completed

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DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603854A Artillery Systems Advanced Development

PROJECT: D505

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Systems Contractor	SS/CPIF	UDLP, Minneapolis, MN	434289	236205	Oct-98	194993	Oct-99	282689	Oct-00	614474	1762650	
b. Systems Development Engineering	PO	ARDEC, Picatinny Arsenal, NJ	34871	18782	Oct-98	8131	Oct-99	3890	Oct-00	1441	67115	
c. Systems Development Engineering	PO	TACOM, Warren, MI	2237	876	Oct-98	814	Oct-99	837	Oct-00	1322	6086	
d. Systems Development Engineering	PO	ARL, Adelphi, MD	2676	2785	Oct-98	2025	Oct-99	1630	Oct-00	470	9586	
e. Systems Development Engineering	PO	Various OGAs	742	5048	Oct-98	4165	Oct-99	1255	Oct-00	600	11810	
f. Systems Development Engineering	Various	Various contracts	163	625	Oct-98	1520	Dec-99	938	Dec-00	0	3246	
Subtotal Product Development:			474978	264321		211648		291239		618307	1860493	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Development Support	PO	PM Crusader, Picatinny Arsenal, NJ	11816	6582	Oct-98	6993	Oct-99	7165	Oct-00	12250	44806	
b. Development Support	PO	ARDEC, Picatinny Arsenal, NJ	16767	7253	Oct-98	12474	Oct-99	10796	Oct-00	17173	64463	
c. Integrated Logistics Support	PO	RIA, Rock Island, IL	271	130	Oct-98	398	Oct-99	217	Oct-00	453	1469	
d. Development Support	PO	TACOM, Warren, MI	3971	1722	Oct-98	1636	Oct-99	1921	Oct-00	3162	12412	
e. Development Support	PO	ARL, Adelphi, MD	1950	344	Oct-98	815	Oct-99	1160	Oct-00	1515	5784	
f. Development Support	PO	Various OGAs	2171	870	Oct-98	1559	Oct-99	1423	Oct-00	1986	8009	
g. Development Support	Various	Various contracts	4501	872	Oct-98	9746	Oct-99	15386	Oct-00	8043	38548	
Subtotal Support Costs:			41447	17773		33621		38068		44582	175491	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603854A Artillery Systems Advanced Development

PROJECT: D505

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Development Test and Evaluation	PO	TECOM (YPG, AZ; CSTA, APG, MD)	2091	1844	Oct-98	5018	Oct-99	13755	Oct-00	19090	41798	
b. Ammunition and propellant	PO	Various	6029	13658	Oct-98	6053	Dec-99	10187	Dec-00	6953	42880	
Subtotal Test and Evaluation:			8120	15502		11071		23942		26043	84678	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Project Management Support	SS/FP	Vector Research, Inc., MI	739	670	Nov-98	600	Nov-99	630	Nov-00	1008	3647	
b. Project Management Support	SS/FP	System Research & Integration, Inc., VA	101	160	Nov-98	150	Nov-99	160	Nov-00	306	877	
c. Project Management Support	SS/FP	GSA, VA	130	0	-	0	-	0	-	0	130	
d. Project Management Support	SS/FP	Camber, Inc., NJ	0	150	Nov-98	240	Nov-99	100	Nov-00	0	490	
e. Project Management Support	SS/FP	SAIC, VA	0	849	Nov-98	910	Nov-99	336	Nov-00	417	2512	
f. Project Management Support	SS/FP	Robbins Gioia, VA	0	224	Nov-98	124	Nov-99	129	Nov-00	134	611	
g. Project Management Support	SS/FP	Genisys, TX	0	0	-	150	Nov-99	160	Nov-00	170	480	
h. Systems Engineering Support	SS/FP	PRC, VA	294	0	-	110	Nov-99	115	Nov-00	183	702	
i. Systems Engineering Support	SS/FP	LMI, VA	0	250	Jun-99	0	-	0	-	0	250	
j. Software Development Support	SS/FP	Mitre Corporation, VA	991	280	Nov-98	278	Nov-99	180	Nov-00	274	2003	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603854A Artillery Systems Advanced Development

PROJECT: D505

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
k. Software Development Support	SS/FP	SAIC, VA	0	250	Dec-98	250	Dec-99	250	Dec-00	500	1250	
l. SBIR/STTR	N/A	N/A	0	0	-	7006	-	0	-	0	7006	
Subtotal Management Services:			2255	2833		9818		2060		2992	19958	
Project Total Cost:			526800	300429		266158		355309		691924	2140620	

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)			DATE February 2000
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603856A SCAMP Block II (Space)		PROJECT D389

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D389 SCAMP Block II	7449	10622	20277	19867	31113	6813	7767	Continuing	Continuing

A. **Mission Description and Budget Item Justification:** **Project D389 - SCAMP Block II:** The Single Channel Anti-Jam Manportable (SCAMP) Block II Terminal is a lightweight 12 – 15 lb. manpackable satellite communications terminal to be employed by units that require range extension for command and control communications. Block II will be used by priority ground tactical users to transmit and receive intelligence, situational awareness, and command and control traffic. It will transmit in the Extremely High Frequency (EHF) band and receive in the Super High Frequency (SHF) band. SCAMP Block II will operate over MILSTAR, other MIL-STD-1582 compatible payloads, and the future Advanced EHF payload providing secure voice and data services at data rates up to 64Kbps. SCAMP Block II EHF terminal will provide direct support to the tactical warfighter mobile forces with anti-jam protection, low probability of intercept, and low probability of detection. Engineering Feasibility Efforts (EFE) began in FY96. The FY01 activities include awarding dual source Engineering and Manufacturing Development (EMD) contracts following Milestone II and continuing technology transfer from Lincoln Labs to industry.

FY 1999 Accomplishments:

•	4837	Completed Baseline 0 prototype development
•	1010	Tested, evaluated and demonstrated Baseline 0 prototype: (RDTE Test Quantity: 2).
•	1602	Commenced Baseline 1 prototype development
Total	7449	

FY 2000 Planned Program:

•	8464	Complete Baseline 1 prototype terminals: (RDTE Test Quantity: 2).
•	1178	Test, evaluate and demonstrate two Baseline 1 terminals
•	694	RFP/SSEB preparation and documentation for dual source EMD contract award
•	286	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	10622	

FY 2001 Planned Program:

•	6286	Complete Baseline 1 terminal improvements and conduct MS II decision
•	9125	Lincoln Labs and industry contract awards to develop, test and demonstrate 20 Baseline 2 terminals. RDTE Test Quantity: 20
•	4866	Initiate Baseline 2 improvements.
Total	20277	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603856A SCAMP Block II (Space)

PROJECT: D389

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	7683	10703	20402
Appropriated Value	7969	10703	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-286		
b. SBIR / STTR	-204		
c. Omnibus or Other Above Threshold Reduction		-44	
d. Below Threshold Reprogramming			
e. Rescissions	-30	-37	
Adjustments to Budget Years Since FY 2000/2001 PB			-125
Current Budget Submit (FY 2001 PB)	7449	10622	20277

C. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
Other Procurement Army 2 - SSN: BC 4110	0	0	0	0	0	46791	45172	Cont	Cont

D. Acquisition Strategy: The SCAMP Block II acquisition strategy is based upon a spiral development approach which allows for the incremental design, development and test of system requirements. Two spiral development phases are being designed, developed and tested by Lincoln Labs during the Engineering Feasibility Phase. Throughout Engineering Feasibility, Lincoln Lab design data is provided to industry through the distribution of CD ROMs. This design information is provided to encourage industry participation in the bidding process for EMD. Following MS II, two contractors will be selected to develop and test EMD terminals during two spiral development phases. Lincoln Labs will continue to work with industry during the first EMD spiral. Following Operational Testing, one of the two EMD contractors will be selected for Full Rate Production. During the Production Phase, 2333 terminals will be produced and fielded.

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Complete Baseline 0 prototype	4Q						
Test, evaluate and demonstrate prototype	4Q						
Complete Baseline 1 prototype		3Q					
Test, evaluate and demonstrate prototype		3-4Q					
Milestone II decision			1Q				
EMD partnering contract award			2Q				
Complete Baseline 2 EDM terminal				2Q			
Baseline 2 Development Test				2-3Q			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE: February 2000
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603856A SCAMP Block II (Space) — PROJECT: D389

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Complete Baseline 3 EDM terminal					3Q		
Baseline 3 Development Test					3Q		
IOTE (Baseline 3)					4Q		
Milestone III decision						1Q	
FRP award						2Q	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603856A SCAMP Block II (Space)

PROJECT: D389

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. System Development	MIPR	Lincoln Labs Lexington, MA	3383	4730	Feb 99	5523	Feb 00	8581	Feb 01	Cont	22217	
b. Other Contracts	Various	Various	1856	356		290		324		Cont	2826	
c. Govt Eng Support	MIPR	Various	416	546		794		889		Cont	2645	
d. Major Contract	C - CPAF	TBS						6330	Jan 01	Cont	6330	
Subtotal Product Development:			5655	5632		6607		16124			34018	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Labs/OGAs	MIPR	Various	61	10		590		493		Cont	1154	
b. Support Contracts	Various	Various	1065	263		522		552		Cont	2402	
c. SSEB	MIPR	Various				336					336	
Subtotal Support Costs:			1126	273		1448		1045			3892	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Test Demonstration	MIPR	Lincoln Labs Lexington, MA	1125	200		363					1688	
b. DT&E	Various	Various		210		210		1123		Cont	1543	
c. Major Contracts	C-CPAF	TBS						363		Cont	363	
d. LL DT&E	MIPR	Lincoln Labs Lexington, MA		600		605		525		Cont	1730	
Subtotal Test and Evaluation:			1125	1010		1178		2011			5324	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603856A SCAMP Block II (Space)

PROJECT: D389

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Govt Program Support	MIPR	Various	364	355		886		861		Cont	2466	
b. Support Contracts	Various	Various		179		217		236		Cont	632	
c. SBIR/STTR						286					286	
Subtotal Management Services:			364	534		1389		1097			3384	
Project Total Cost:			8270	7449		10622		20277			46618	

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)			DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604201A Aircraft Avionics		PROJECT DC97

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DC97 Aircraft Avionics	15027	6324	42280	33411	36349	25538	9859	Continuing	Continuing

A. Mission Description and Budget Item Justification: This Program Element (PE) funds the development of avionics systems required to horizontally and vertically integrate the battlefield. Tasks in this PE support research efforts in the engineering and manufacturing development phases of these systems.

The Army Airborne Command and Control System (A2C2S) is the Army's only airborne C2 system supporting corps, division, & brigade commanders. This system is critical to enhance the Battle Command Group's ability to effectively perform combat unit operations and serve as a force multiplier in Army XXI. It provides the capability to access the tactical internet to manipulate, store, manage, and analyze situational awareness information , intelligence data, mission plans, and mission progress data to support the command and control decision making process. The A2C2S will provide situational awareness and command & control hosting Army Battle Command System (ABCS) systems such as Maneuver Control System (MCS), All Source Analysis System (ASAS), Advanced Field Artillery Tactical Data System (AFATDS), and Force XXI Battle Command Brigade and Below (FBCB2). The A2C2S provides communications capability that supports deep operations and Stability Augmentation and Support Operations (SASO) with non-line-of site communications such as High Frequency (HF) and Demand Assigned Multiple Access (DAMA) Satellite Communications System Satellite Command (SATCOM). In addition, the system provides digitized battlefield communication links with joint service interoperability and enhanced fire control management with artillery, Longbow Apache, Comanche, and Joint Surveillance Target Attack Radar System (J-STARS).

The Improved Data Modem (IDM) is the key link to joining Army Aviation with the digital battlefield and provides digital communication interoperability and flexibility on a fluid battlefield. Developed as an open system architecture, the IDM takes advantage of commercially available software and hardware solutions to enforce common communications protocols and the Joint Variable Message Format (JVMF). IDM improves Army Aviation's lethality and operational tempo through the exchange of fast and accurate data-burst communications through the Army's Fire Support and Tactical Internet (TI), providing seamless communications across the digital battlefield. These RDT&E funds are required to develop and integrate IDM hardware and software interfaces for the CH-47F, embodying the Embedded Battlefield Command (EBC) software. The IDM provides a flexible, software-driven digital messaging system interoperable with existing Battlefield Operating Systems and the Joint Forces.

This PE also provides funds to design, develop, integrate, and install Army Aviation Joint Tactical Radio System (JTRS) A-Kits for the AH-64D, SOA, CH-47F, and UH-60Q/L+ aircraft platforms. The JTRS will provide affordable, high-capacity, tactical radios to meet interoperability requirements with all DOD services. The JTRS will provide an internal growth capability through an open systems architecture approach in compliance with the joint technical architecture which improves system performance at minimal cost and effort. The JTRS will provide the much needed wideband waveform capability to facilitate full tactical internet (TI) connectivity. In addition, it will decrease the size, weight, and power requirements associated with discrete legacy radios which already exceed the capability of current aircraft architectures. RDT&E funding is required for systems engineering to develop the system specification and interface control documents for aviation domain JTRS.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604201A Aircraft Avionics
	PROJECT DC97

FY 1999 Accomplishments:

•		A2C2S
•	4607	Continued significant development efforts of A2C2S Communications Subsystem
•	3054	Continued significant development of A2C2S Maneuver Commander's Environment
•	4708	Continued A2C2S Prototype Fabrication and Platform Integration
•	2296	Continued System Engineering and Logistics for A2C2S
•	147	Continued Program Management Support for the A2C2S Development
•	215	Initiated/completed Digitization Efforts for Aviation Interface Requirements
Total	15027	

FY 2000 Planned Program:

•		A2C2S
•	2080	Continue Limited Development of A2C2S Communications Subsystem
•	1168	Continue Limited A2C2S Prototype Fabrication and Platform Integration
•	818	Continue Limited System Engineering and Logistics for A2C2S
•	221	Continue Program Management Support for the A2C2S Development
•		IDM
•	644	Initiate Development of CH-47F Systems Integration Lab in Support of IDM Integration
•	1126	Initiate Development of CH-47F Detail Design Data for Wiring in Support of IDM Integration
•	96	Initiate Program Management Support for the IDM-CH-47F Integration Effort
•	171	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	6324	

FY 2001 Planned Program:

•		A2C2S
•	5675	Continue Development of A2C2S Communications Subsystem
•	889	Continue Development of A2C2S Maneuver Commander's Environment
•	3169	Continue A2C2S Prototype Fabrication and Platform Integration
•	5806	Continue System Engineering, Logistics, and Initiate Test Planning for A2C2S
•	823	Continue Program Management Support for the A2C2S Development
•		IDM
•	4609	Continue Integration and Coding of CH-47F Interface Software in Support of IDM
•	2188	Continue CH-47F Test Plans in Support of IDM Integration

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604201A Aircraft Avionics PROJECT DC97

FY 2001 Planned Program: (continued)

- 348 Continue Program Management Support for the IDM-CH-47F Integration Effort
- JTRS
- 4500 Initiate development of JTRS A-Kit for AH-64D
- 4250 Initiate current technology transfer
- 4000 Initiate development of JTRS A-Kit for UH-60Q/L+
- 5078 Initiate and conduct systems engineering supporting JTRS A-Kit development
- 945 Initiate program management support for JTRS A-Kit development

Total 42280

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	14780	6372	2990
Appropriated Value	14878	6372	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-98		
b. SBIR / STTR	-391		
c. Omnibus or Other Above Threshold Reductions		-26	
d. Below Threshold Reprogramming	+696		
e. Rescissions	-58	-22	
Adjustments to Budget Years Since FY 2000/2001 PB			+39290
Current Budget Submit (FY 2001 PB)	15027	6324	42280

Change Summary Explanation: Funding – FY 2001: Due to Army decision to defer development funding and unplanned changes in digitization initiatives, the Army increased the A2C2S program in FY 2001 by 16452. These funds will be used for the continuation of prototype hardware and software development, integration, and tests.

The IDM program received an FY 2001 increase of 4200 for platform interface software development for processing, displaying, and testing the Joint Variable Message Format messages in the CH-47F.

The FY 2001 addition of 18900 in the JTRS program was a DA plus-up to initiate design and development of the JTRS aircraft A-kits.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604201A Aircraft Avionics

PROJECT: DC97

C. Other Program Funding Summary Aircraft Procurement, Army (APA):	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
Airborne Command and Control SSN AA0710 BLIN 901029 (A2C2S portion)	0	0	0	25932	53232	49276	58056	Continue	Continue
Joint Tactical Radio System (JTRS) SSN AA0702						1938	966	Continue	Continue
Aircraft Avionics SSN AA0700, BLIN 901021 (IDM portion)	27592	16452	32494	42647	53740	35711	46882	Continue	Continue

D. Acquisition Strategy: This project is comprised of multiple systems: The A2C2S is being developed by the Naval Research Laboratory (NRL). The full production contract will be competitively awarded. The IDM EBC nonrecurring engineering and software development for CH-47F will be performed by Rockwell/Boeing. The B kits will be procured and installed during CH-47F production. JTRS A-Kit hardware, installation, and integration support will be procured from host platform vendor or competitive contractors.

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Continue Development of A2C2S Communications Subsystem	1-4Qtr	1-4Qtr	1-4Qtr	1-4Qtr			
Continue/Complete Development of A2C2S Maneuver Commander's Environment	1-4Qtr		1-4Qtr	1-4Qtr			
Continue/Complete Development of A2C2S Antenna Interface Module (AIM)							
Continue/Complete A2C2S Prototype Fabrication and Platform Integration	1-4Qtr	1-4Qtr	1-4Qtr	1-4Qtr			
Continue/Complete Engineering and Test Planning for A2C2S	1-4Qtr		1-4Qtr	1-4Qtr			
Initiate Digitization Efforts for Aviation Interface Requirements	3-4Qtr						
Initiate development of CH-47F Systems Integration Lab in support of IDM integration		1-4Qtr					
Initiate development of CH-47F detail design data for wiring in support of IDM integration		1-4Qtr					
Initiate integration and coding of CH-47F interface software in support of IDM			1-4Qtr				
Initiate CH-47F test plans in support of IDM integration			1-4Qtr				

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604201A Aircraft Avionics

PROJECT: DC97

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Initiate development of JTRS A-Kit			1-4 Qtr	1-4 Qtr	1-4 Qtr	1-4 Qtr	
Initiate and conduct JTRS A-Kit systems engineering			1-4 Qtr				
Continue/Complete development of JTRS A-Kit			1-4 Qtr	1-4 Qtr	1-4 Qtr	1-4 Qtr	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604201A Aircraft Avionics

PROJECT: DC97

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Primary System Development (A2C2S)	MIPR	Naval Research Lab Washington, DC	30148	8030	Oct 98	2566	Nov 99-Jan 00	5204	Oct 00	300	46248	46248
Ancillary/Integration Kits Development (A2C2S)	MIPR	Army Aviation Tech Dir. Ft. Eutis, VA	6591	756	Jan-Apr 99	385	Nov 99 - Jan 00	605	Oct 00	555	8892	8892
Systems Engineering (A2C2S)	MIPR	Naval Research Lab Washington, DC	16788	2270	Oct 98-Jan 99	300	Nov 99 - Jan 00	2446	Oct 00	5012	26816	26816
Systems Engineering (A2C2S)	CPFF/C	AMCOM PATS/UH-Blackhawk Spt, AL	83	202	May 99	365	Jun 00-Sept 00	500	Oct 00 - Jun 00		1150	1150
GFE (A2C2S)	MIPR	Naval Research Lab Washington, DC	578								578	578
Primary A-Kit Hardware Development (JTRS)	MIPR	AMCOM, AL						12798	Oct 00	36105	48903	48903
A-Kit Prototype Manufacturing (JTRS)	MIPR	AMCOM, AL								3864	3864	3864
Systems Engineering (JTRS)	MIPR	AMCOM, AL						5030	Oct 00	3000	8030	8030
SBIR/STTR						171					171	
Subtotal Product Development:			54188	11258		3787		26583		48836	144652	144481

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Software Development (A2C2S)	MIPR	Naval Research Lab Washington, DC	14402	2400	Oct 98	297	Nov 99 – Jan 00	3447	Oct 00	53	20599	20599
Training Development (A2C2S)	CPFF/C/	CAS, Huntsville, AL	90								90	90
Integrated Logistics Support (A2C2S)	MIPR	Naval Research Lab Washington, DC AMCOM, AL ARL, MD	889	178	Jan-Apr 99	41	Dec 99-Apr 00	2117	Oct 00	370	3595	3595

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604201A Aircraft Avionics

PROJECT: DC97

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering (A2C2S)	MIPR	SSEB, Prod Planing Army Aviation Tech Dir. Ft. Eutis, VA						300	Oct 00	700	1000	1000
Configuration Management/ Technical Data (A2C2S)	MIPR	Naval Research Lab Washington, DC	1449					270	Oct 00		1719	1719
System Logistics Support (A2C2S)	CPFF/C MIPR	AMCOM, AL	152			97	Jan 00				249	249
Technical Data (A2C2S)	CPFF/SS	Dynamics Research Corp, Andover, MA NRL, Washington DC	253	519	Oct 98						772	772
Software Integration & Testing (IDM)	CPFF/SS	Boeing, Philadelphia				1770	Mar 00	6797	Feb 01		8567	8567
Training Development (JTRS)	CPFF/C	AMCOM, AL								3081	3081	3081
Technical Data (JTRS)	CPFF/SS	AMCOM, AL								5892	5892	5892
Subtotal Support Costs:			17235	3097		2205		12931		10096	45564	45564

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation (A2C2S)	MIPR	TECOM FT. Huachuca, AZ	351			5	Jun 00	500	Oct 00	340	1196	1196
Operational Test & Evaluation (A2C2S)	MIPR	TEXCOM FT. Hood, TX	250							1300	1550	1550
Developmental Test & Evaluation (JTRS)	MIPR	TECOM								9149	9149	9149
Support Equipment (JTRS)	MIPR	TECOM								3600	3600	3600
Subtotal Test and Evaluation:			601			5		500		14389	15495	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604201A Aircraft Avionics

PROJECT: DC97

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Government Engineering Support (A2C2S)	MIPR	AMCOM, AL	402	240	Feb-Apr 99	10	Jan 00	150	Oct 00	65	867	867
Program Management Support (A2C2S)	CPFF/C MIPR	AMCOM PATS, MATRIX , AL	4095	147	Jan-Jul 99	221	Jan 00	823	Oct 00	460	5746	5746
Travel (A2C2S)	Allot	AMCOM, AL	240	70							310	310
Overhead (A2C2S)	MIPR	Naval Research Lab Washington, DC AMCOM, AL	655								655	655
Program Management Support (Digitization)	CPFF/C MIPR	AMCOM PATS, AL		215	Jun 99						215	215
Program Management Support (IDM)	MIPR	AMCOM, AL				96	Jan 00	348	Jan 01		444	444
Program Management Support (JTRS)	CPFF/C MIPR	AMCOM PATS, MATRIX, AL						945	Oct 00	3433	4378	4378
Subtotal Management Services:			5392	672		327		2266		3958	12615	
Project Total Cost:			77416	15027		6324		42280		77279	218326	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604220A Armed, Deployable OH-58D

PROJECT: D538

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D538 Kiowa Warrior Live Fire Test & Evaluation (LFT&E)	0	0	532	2335	1871	0	0	0	4738

A. Mission Description and Budget Item Justification: Provides static and dynamic Live Fire Testing and Evaluation (LFT&E) for the Kiowa Warrior aircraft's Mast Mounted Sight (MMS) and main rotor blades. Additionally, quasi-static testing will be accomplished on the rotor blades. The ballistic testing, required by Title X, US Code 2366, is agreed to by the Deputy Under Secretary of the Army, Operations Research (DUSA(OR)) and by the Director, Operational Test and Evaluation (DOTE). The intent of the Code is to correct design deficiencies before entering low-rate initial production. LFT&E has not yet been conducted on Kiowa Warrior aircraft. To complete LFT&E, a ground test vehicle (GTV) will be assembled. The GTV will consist of fully-functional but non-flightworthy airframe and engine parts. No radios, flight instruments, or working mission equipment will be installed. Mission equipment plywood mockups or empty black boxes will be incorporated. The MMS static testing will be off the GTV but the dynamic testing will require the MMS to be mounted on the GTV with engine running and blades turning. The quasi-static testing of the main rotor blades will have loads applied to blade specimens. Munitions to be tested range from 7.62mm to 30mm.

FY 1999 Accomplishments: Project not funded in FY 1999.

FY 2000 Planned Program: Project not funded in FY 2000.

FY 2001 Planned Program:

•	54	Test Planning and Analysis – Operational Test and Evaluation Center (OPTEC), Evaluation Analysis Center (EAC), and Contractors
•	44	Conduct Test – Army Research Laboratory (ARL)
•	263	Testing and Support – Bell Helicopter Textron, Inc.
•	162	Test Analysis – ARL and Others
•	9	Battle Damage Assessment – US Army Aviation Logistics School (USAALS)
Total	532	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604220A Armed, Deployable OH-58D

PROJECT: D538

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	0	0	0
Appropriated Value	0	0	
Adjustments to Appropriated Value			
a. Congressional General Reductions			
b. SBIR / STTR			
c. Omnibus or Other Above Threshold Reductions			
d. Below Threshold Reprogramming			
e. Rescissions			
Adjustments to Budget Years Since FY 2000/2001 PB			+532
Current Budget Submit (FY 2001 PB)	0	0	532

Change summary Explanation: FY01 funding increase (+532) for Live Fire Test and Evaluation (LFT&E).

C. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
APA AZ2200 – Kiowa Warrior	48721	41940	41816	42349	42286	31387	31351	Cont'd	Cont'd

D. Acquisition Strategy: Test planning and actual testing will be accomplished by Army Research Laboratories (ARL) and by Bell Helicopter Textron, Inc. Test results will be analyzed by ARL, the Operational Test and Evaluation Center (OPTEC), the Evaluation Analysis Center (EAC), and contractors. The US Army Aviation Logistics School (USAALS) will perform battle damage assessment and both Bell Helicopter and Boeing will provide support for the planning, testing and analysis efforts.

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
Test Planning – Phase I (Static shots)			1-2 Qtr	1-4 Qtr				
Conduct Test – Phase I			2-3 Qtr	1-4 Qtr				
Analyze Test Results – Phase I			3-4 Qtr	1-4 Qtr	1-4 Qtr			
Test Planning – Phase II (Dynamic shots)				4 Qtr	1-4 Qtr	1 Qtr		
Conduct Test – Phase II					3-4 Qtr	1 Qtr		
Analyze Test Results – Phase II					3-4 Qtr	1-4 Qtr		

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604223A Comanche

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	352217	463124	614041	764621	738441	762673	407979	Continuing	Continuing
DC72 T800 Engine Engineering Development (LH)	29055	33274	38619	54565	48221	41668	11203	Continuing	Continuing
D2LT Comanche Operational Test	0	49	19	716	5942	1169	4798	Continuing	Continuing
D327 Comanche	323162	429801	575403	709340	684278	719836	391978	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program element provides for the development and operational testing and evaluation of the RAH-66 Comanche and the T800 growth engine. The Comanche is a multi-mission aircraft optimized for the critical battlefield mission of tactical armed reconnaissance. It provides a globally self-deployable attack platform for light/contingency forces. Comanche provides the solution to reconnaissance deficiencies of no night/adverse weather/high/hot/stand-off capability and is a key component on the digitized battlefield in winning the information war. The Comanche is the Army's technology leader and provides significant horizontal technology transfer within the Army and DoD. Project DC72 provides for continued development and qualification of the T800 growth engine and air vehicle support for integration into the Comanche aircraft. Project D2LT includes funding for the operational testing of Comanche to include modeling and simulation accreditation for Early User Test, Limited User Test and Initial Operational Test and Evaluation. Project D327 provides for development of the airframe, mission equipment package, integration and qualification of the complete system to include training and logistic support.

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	364784	427069	565800
Appropriated Value	367823	467069	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-3039		
b. SBIR / STTR	-11504		
c. Omnibus or Other Above Threshold Reductions		-1887	
d. Below Threshold Reprogramming	+757		
e. Rescissions	-1820	-2058	
Adjustments to Budget Years Since FY 2000/2001 PB			+48241
Current Budget Submit (FY 2001 PB)	352217	463124	614041

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604223A Comanche

PROJECT: DC72

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DC72 T800 Engine Engineering Development (LH)	29055	33274	38619	54565	48221	41668	11203	Continuing	Continuing

A. Mission Description and Justification: This project includes tasks to design, develop and qualify an advanced technology engine. It provides for the continued development and qualification of the T800 growth engines and air vehicle support for integration of same into the Comanche aircraft. The growth engine is for the Army's RAH-66 Comanche and other applications.

FY 1999 Accomplishments:

- 15501 Continued growth engine development
- 9198 Continued contractor development testing
- 2001 Completed manufacturing of growth engines for flight test. Seven test articles procured to be delivered FY99 and FY00 for Comanche
- 2355 Continued engine air vehicle support

Total 29055

FY 2000 Planned Program:

- 9835 Begin Pre-Production Prototype (PPP) program air vehicle support
- 7940 Continue contractor development testing
- 14603 Productionization of T801 engine design
- 896 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) programs

Total 33274

FY 2001 Planned Program:

- 9997 Continue PPP program air vehicle support
- 9343 Continue contractor development testing
- 7153 Productionization of T801 engine design
- 12126 Begin PPP program engine manufacturing. Thirty-four engines (test articles) being procured to be delivered FY 03 and FY 04 for Comanche PPP aircraft

Total 38619

B. Other Program Funding Summary: There are no other related RDT&E or other appropriation efforts.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604223A Comanche
	PROJECT: DC72

C. **Acquisition Strategy:** Continue work with current contractor leading to FAA certification, military qualification and production.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Continue growth engine development	1-4Q						
Continue contractor development testing	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-3Q	
Continue mfg growth engines for flight test	1-4Q						
Continue engine air vehicle support	1Q						
Complete mfg of growth engines for flight test	4Q						
Begin Pre-Production Prototype (PPP) Program air vehicle support		1-4Q					
Productionization of T801 engine design		2-4Q	1-4Q	1-4Q	1-4Q	1-3Q	
Continue PPP Program air vehicle support			1-4Q	1-4Q	1-4Q	1-4Q	1-4 Q
Begin PPP engine manufacturing			1-4Q				
Continue PPP engine manufacturing				1-4Q	1-4Q	1-4Q	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604223A Comanche

PROJECT: DC72

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DAAJ09-92-C-0453	C/CPFF	LHTEC, Indiana	273965	28457	Nov 98	32970	Dec 99	38319	Dec 00	Cont	373711	Cont
b. DAAJ09-85-C-B017	C/FFP	LHTEC, Indiana	276821							0	276821	276821
c. DAAJ09-93-C-0518	C/CPFF	LHTEC, Indiana	460							0	460	460
d. DAAJ09-85-C-B019	C/FFP	AVCO, Connecticut	128526							0	128526	128526
e. Gov't Agencies	MIPR		13993	173	Qtrly	150	Qtrly	220	Qtrly		14536	
Subtotal Product Development			693765	28630		33120		38539			794054	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PATS contracts	C/FFP		96							0	96	96
b. Rail	C/FFP		2806							0	2806	2806
c. Other Contracts	Agreement		400							0	400	400
Subtotal Support Costs:			3302								3302	3302

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Government Agencies	MIPR		23052	425		154	Qtrly	80	Qtrly	Cont	23711	Cont
Subtotal Test and Evaluation:			23052	425		154		80			23711	

IV. Management Services: None

Project Total Cost:			720119	29055		33274		38619			821067	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604223A Comanche — PROJECT: D2LT

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D2LT Comanche Operational Test	0	49	19	716	5942	1169	4798	Continuing	Continuing

A. Mission Description and Justification: This project provides for progressive test requirements in support of the test and fielding of the RAH-66 Comanche helicopter. Requisite activities include Force Development Test and Experimentation (FDTE) I, II, III and IV dedicated to tactics, techniques and procedures, Electro Optical Sensor System (EOSS) Users Survey and Limited User Test (LUT) that provide operational input early in the system's life cycle, the Army Training Evaluation Program (ARTEP) and Initial Operational Test and Evaluation (IOT&E) in support of a Milestone III production decision.

FY 1999 Accomplishments: Project not funded in FY 1999

FY 2000 Planned Program:

•	29	Independent evaluation at contractor test facility in support of LUT
•	9	Support Comanche Portable Cockpit for Customer Test I
•	10	Independent evaluation assessment of Mission Equipment Package (MEP)) subcomponents at contractor sites
•	1	Small Business Innovation Research (SBIR) program
Total	49	

FY 2001 Planned Program:

•	19	Independent evaluation at contractor test facility in support of LUT
Total	19	

B. Other Program Funding Summary: There are no other related RDT&E or other appropriation efforts.

C. Acquisition Strategy: This project is for test and evaluation effort to support Comanche acquisition.

D. Schedule Profile	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Prepare for Customer Test I	2Q					
Conduct Customer Test I	3Q					
Conduct independent evaluation at contractor test facility supporting LUT	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604223A Comanche

PROJECT: D2LT

D. Schedule Profile	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Prepare for LUT			4Q	1-4Q	1-2Q	
Prepare for EOSS Users Survey			4Q	1-2Q		
Conduct EOSS Users Survey				3Q		
Prepare for FDTE II				2-3Q		
Conduct FDTE II				4Q		
Conduct LUT						3Q
Prepare for FDTE III					4Q	1Q
Conduct FDTE III						2-3Q
Prepare for FDTE IV and ARTEP						3-4Q
Prepare for IOT&E						3-4Q

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)			DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604223A Comanche		PROJECT: D327

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D327 Comanche	323162	429801	575403	709340	684278	719836	391978	Continuing	Continuing

A. **Mission Description and Justification:** The Comanche helicopter is a highly sustainable and operationally flexible armed reconnaissance light helicopter, incorporating significant reductions in personnel and support equipment, capturing the latest combat technologies and capable of accepting upgrades to meet ever-changing threats. It will dominate the battlefield in the close, deep and rear operations; provide a decisive air cavalry capability in day, night, and adverse weather. It will be operationally tailorable to regional conflicts and provide the battle commander with timely, detailed reconnaissance information and an unprecedented level of lethality.

FY 1999 Accomplishments:

- 112025 Continued Mission Equipment Package (MEP) development
- 141648 Continued PPP engineering development
- 66680 Continued development testing and flight test program for prototype #1 and conduct first flight of prototype #2
- 2809 Continued to update prototypes #1 and #2

Total 323162

FY 2000 Planned Program:

- 156496 Continue MEP development
- 178376 Continue PPP engineering development
- 73890 Continue development testing and flight test program for prototypes #1 and #2
- 3764 Continue to update prototypes #1 and #2
- 5850 Material procurement for upgrades to support aircraft #1 and #2
- 11425 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) programs

Total 429801

FY 2001 Planned Program:

- 261599 Continue MEP development
- 181211 Continue PPP engineering development
- 108470 Continue development testing and update of prototypes # 1 and 2 to support flight test
- 24123 Begin material procurement/manufacture of thirteen PPP aircraft (test articles), five development test, eight operational test aircraft

Total 575403

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604223A Comanche / PROJECT: D327

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Total Cost
APA								
A08300 Comanche					5336	181225	960069	Cont

C. **Acquisition Strategy:** Continue work with current contractor leading to Engineering and Manufacturing Development and production.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Continue MEP development	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Continue PPP Program engineering development	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Continue development testing / update of prototypes 1 & 2 to support flight test	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Conduct first flight of prototype #2	2Q						
Material procurement for upgrades to acft #1 & #2		1-4Q					
Begin material procurement/manufacture of PPP aircraft			1-4Q				
Continue manufacturing of PPP Program aircraft				1-4Q	1-4Q	1-4Q	1-2Q
Conduct development testing and flight testing of acft #3 thru 6						3-4Q	1-4Q
Complete manufacturing of PPP Program aircraft							2Q
Conduct development testing and flight testing of acft #3 thru 15							1-4Q

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604223A Comanche

PROJECT: D327

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DAAJ09-91-C-A004	C/CPIF	Boeing Sikorsky, PA	2401054	293157	Oct 98	394446	Oct 99	536903	Oct 00	Cont	3625560	Cont
b. DAAJ09-87-D-A022	C/FFP	Veridian, VA	50180	5711	Jan 99	6052	Jan 00	6400	Jan 01	Cont	68343	Cont
c. Product Development (Other Contracts)	C/T&M			126	Nov 98	200	Nov 99	300	Nov 00	Cont	626	Cont
d. Completed Contracts			370288								370288	370288
e. Gov't Agencies	MIPR			1067		900		1200			3167	
Subtotal Product Development:			2821522	300061		401598		544803			4067984	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Other Contracts	C/T&M		25470	4798		5995		6300		Cont	42563	Cont
b. Completed Contracts	C/FFP		15556								15556	15556
c. Gov't Agencies	MIPR		104076	7591		12432	Qtrly	12200	Qtrly	Cont	136299	Cont
Subtotal Support Costs:			145102	12389		18427		18500			194418	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Government Agencies	MIPR		22647	1961	Qtrly	1332	Qtrly	1500	Qtrly	Cont	27440	Cont
Subtotal Test and Evaluation:			22647	1961		1332		1500			27440	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DAAJ09-96-D-0028	C/T&M	DRC, Massachusetts	2667	1273	Jan 99	932	Jan 00	1100	Jan 01	Cont	5972	Cont
b. Other Contracts	C/T&M		323	284	Dec 98	375	Dec 99	400	Dec 00	Cont	1382	Cont
c. PMO/Gov't Agencies	MIPR			7194	Monthly	7137	Oct 99	9100	Oct 00	Cont	23431	Cont
Subtotal Management Services:			2990	8751		8444		10600			30785	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604223A Comanche

PROJECT: D327

			Total PYs Cost	FY 1999 Cost		FY 2000 Cost		FY 2001 Cost			Total Cost	
Project Total Cost:			2992261	323162		429801		575403			4320627	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	77557	80019	61056	37121	56124	42796	67546	Continuing	Continuing
D2VT Advanced Threat Infrared Countermeasures (ATIRCM)/Common Missile Warning System (CMWS) Operational Test	1210	828	0	0	0	0	0	0	2184
DL12 Prophet	11668	21775	4985	1997	29764	19822	44575	Continuing	Continuing
DL15 Army Reprogramming and Analysis Team (ARAT) - TSS	3158	0	0	0	0	0	0	0	4247
DL16 Trojan Development	1258	0	0	0	0	0	0	0	2460
DL20 Advanced Threat Infrared Countermeasures/ Common Missile Warning Systems (ATIRCM/ CMWS) Development	0	49036	41340	32007	16382	10059	10046	Continuing	Continuing
D665 Aircraft Survivability Equipment Development	60263	8380	14731	3117	9978	12915	12925	Continuing	Continuing

A. Mission Description : This program element encompasses engineering and manufacturing development for tactical electronic warfare (EW), signals warfare (SW), aircraft survivability equipment (ASE), battlefield deception, rapid software reprogramming and protection of personnel and equipment from hostile artillery. EW encompasses the development of tactical EW equipment and systems mounted in both ground and air vehicles. The systems under this program provide the Army with the capability to degrade or deny hostile forces the effective use of their communications, countermortar/counterbattery radars, surveillance radars, infrared/optical battlefield surveillance systems and electronically fused munitions. Existing Army EW systems must be replaced or upgraded to maintain their capability in the face of threat technical advancements. This program element satisfies requirements for brigade, division, corps and higher commanders to conduct electronic warfare to meet tactical and Special Electronic Mission Aircraft (SEMA) requirements, attach/scout, and assault/cargo mission requirements. Prophet provides for development of multifunction ground based and airborne intelligence and electronic warfare systems. Trojan developments will complete Proof-of-Principle R&D for specific Trojan applications in advanced threat signals processing and prototype software upgrades; high frequency (HF) algorithms for compact antenna array technology (CAAT) configured into small aperture antenna arrays; search and acquisition capabilities for unattended signal collectors; and new digital intelligence collection, processing and dissemination technology. The ARAT Project will develop, test and equip an Army wide infrastructure capable of rapidly reprogramming electronic combat software embedded in offensive and defensive weapon systems.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	86258	78603	81037
Appropriated Value	86989	80603	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-731		
b. SBIR / STTR	-2897		
c. Omnibus or Other Above Threshold Reprogrammings	+250	-304	
d. Below Threshold Reprogramming	-5596		
e. Rescissions	-458	-280	
Adjustments to Budget Years Since FY 2000/2001 PB			-19981
Current Budget Submit (FY 2001 PB)	77557	80019	61056

Change Summary Explanation: Funding - FY 2001: Funding decrease in DL12 based on restructuring of program.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: D2VT

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D2VT Advanced Threat Infrared Countermeasures (ATIRCM)/Common Missile Warning System (CMWS) Operational Test	1210	828	0	0	0	0	0	0	2184

A. Mission Description and Justification: This project supports the operational testing for the Advanced Threat Infrared Countermeasures (ATIRCM)/ Common Missile Warning System (CMWS). This project will provide active and passive Infrared Countermeasure (IRCM) protection against infrared guided weapons. The system is designed to meet operational requirements for a modular IRCM system capable of providing awareness and self-protection jamming countermeasures. The system is applicable to the AH-64D, MH-47D/E, MH-60K/L, EH-60, UH-60, and CH-47D aircraft. The program has been designated a tri-service program, with application to the Air Force and Navy aircraft.

FY 1999 Accomplishments:

•	1210	Continue ATIRCM/CMWS operational test support
Total	1210	

FY 2000 Planned Program:

•	806	Continue ATIRCM/CMWS operational test support
•	22	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	828	

FY 2001 Planned Program: Project not funded in FY 2001

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
APA, BA 4 AZ3507 ASE Infrared CM				26422	68495	112686	109967	Cont	Cont
APA, BA 2 AA0722 ATIRCM Modifications		4901		12015	11958	21087	31025	Cont	Cont

C. Acquisition Strategy: Not applicable

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Continue Operational testing for ATIRCM/CMWS	1Q-4Q	1Q-4Q					

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)			DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development		PROJECT: DL12

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
DL12 Prophet	11668	21775	4985	1997	29764	19822	44575	Continuing	Continuing

A. **Mission Description and Budget Item Justification:** This project provides for replacement of the legacy systems Trailblazer, Traffic Jam and Teammate. These systems are currently deployed as divisional assets and will be replaced with the Prophet Ground system. Prophet will be the Division and Armored Cavalry Regiment Commanders principal SIGINT and Electronic Warfare (EW) System. It will be designed to support Army XXI and beyond. Prophet will provide the Tactical Commander with an enhanced capability for situational awareness, electronic Intelligence Preparation of the Battlefield (IPB), battlespace visualization, target development, and force protection throughout the division's width and depths as defined in Army XXI. The Prophet system will interface with the division and armored cavalry Analysis Control Element's (ACE) All Source Analysis System (ASAS) as well as the maneuver brigade Analysis Control Team's (ACT) Common Ground Station (CGS) and/or ASAS-Remote Work Stations (ASAS-RWS) providing near-real-time (NRT) digital inputs to the common operating picture (COP). Tactical Commanders will receive added force protection through Prophets' capability of providing reports of intercepted voice communications to the supported units from the Prophet Ground assets. The Prophet System is needed to counter the communications technology revolution and the current worldwide threat; to support the current Army mission, doctrine, priorities, and requirements.

The Prophet Air program was redirected to a TUAV based platform as part of the new Army Transformation. The Prophet System components will include a ground-sensor, an unmanned aerial vehicle (UAV) and a control facility. They will be developed as two separate contract actions; Prophet Ground and Prophet UAV. Prophet Ground will be developed prior to Prophet UAV. In FY01, the Teammate, Traffic Jam and Trailblazer systems will begin to defield and be replaced by Prophet Ground, due to escalating Operation and Sustainment (O&S) costs and reliability concerns. Prophet Ground will include Electronic Attack (EA) and Low Probability of Intercept (LPI) capabilities. The Prophet Ground system is an integral part of the Army transformation strategy. Prophet UAV will include the remote control of airborne sensors and electronically map the enemy's communications and radar systems in the Divisions' Area of Operations. The Prophet System is required to detect, locate and identify critical enemy nodes (emitters), by EW or by divisional assets.

This PE/Project funds the Prophet Ground EMD efforts through and including FY03. FY04 and beyond, provides for the Prophet UAV EMD phase. The Prophet UAV Program Definition and Risk Reduction (PDRR) phase is covered under PE/Project 63774/131.

FY 1999 Accomplishments:

- 1155 Refurbished HMWWV for Prophet Ground
- 502 Conducted analysis of Electronic Attack (EA) and COMINT Integration into a HMMWV for Prophet Ground
- 6171 Prophet Ground Block I (COMINT) Development and Support
- 965 Conducted Threat Analyses Study for Prophet Ground and Prophet Heliborne
- 638 Conducted EA Characterization Analyses of NDI solutions for Prophet Heliborne

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development — PROJECT: DL12

- 774 Prepared for and Conduct Demonstration of COMINT subsystem for Prophet Heliborne

FY 1999 Accomplishments: (continued)

- 207 Prepared Prophet Milestone documentation.
- 857 Integration and technical tests required for participation in the Joint Contingency Force (JCF) Army Warfighting Experiment (AWE)
- 399 Y2K fixes for GBCS/MEWSS

Total 11668

FY 2000 Planned Program:

- 6900 Award EMD contract for Prophet Ground Block II Electronic Attack (EA)
- 5531 Prepare for and conduct Prophet Ground Block I/II Developmental Test (DT) and IOT&E
- 400 Conduct Risk Mitigation for Prophet Ground Block III Low Probability of Intercept (LPI)
- 1300 Participate in JCF AWE with Prophet Ground Block I (COMINT)
- 3094 Integration and technical tests required for Prophet Ground Block I/II in support of the Army Transformation Strategy
- 3999 Support the JCF AWE
- 551 Small Business Innovative Research/Small Business Technology Transfer Programs

Total 21775

FY 2001 Planned Program:

- 1210 Complete Prophet Ground Block I/II IOT&E
- 2000 Incorporate fixes as a result of Prophet Ground Block I/II IOT&E
- 275 Continue Risk Mitigation for Prophet Ground Block III (LPI)
- 1500 Continue Prophet Ground Blocks I/II support for the Army Transformation Strategy

Total 4985

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Complete	Total Cost
OPA (SSN BZ9750)	14034	9048	224	227	142	964	963	Continue	Continue
APA (SSN AB3000)	0	4872	0	0	0	0	0	0	4872
OPA (SSN BZ7326)	11969	0	9571	14871	0	14839	14823	Continue	Continue
RDTE (PE 63774 131) – Prophet UAV only	0	0	7000	8000	7000	0	0	0	22000
RDTE Budget Activity 7 DCP PE 030885G, Prophet	13523	11804	11578	14381	11475	10184	10572	Continue	Continue

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development / PROJECT: DL12

C. **Acquisition Strategy:** The Prophet Ground Acquisition Strategy is structured to optimize system capability while reducing risk and streamlining business and engineering processes. Prophet Ground consists of three Blocks: Block I, COMINT; Block II, Electronic Attack (EA); and Block III Low Probability of Intercept (LPI). Block I (COMINT) was a sole source effort which leveraged off existing COTS equipment. Block II (EA) will be awarded as a separate contract action in 2Q FY00. Block III (LPI), is expected to be a competitive award.

D. Schedule Profile		FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Begin Prophet Ground Block I EMD		4Q						
Begin Prophet Ground Block II EMD			2Q					
Prophet Ground Blocks I/II DT/IOT&E			4Q	1Q				
Milestone III Decision for Prophet Ground Blocks I/II				2Q				
Award Prophet Ground Blocks I/II Production Contract				3Q				
Milestone II Decision for Prophet Ground Block III					4Q			
Begin Prophet Ground Block III EMD						1Q		
Begin Prophet UAV EMD							1Q	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: DL12

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Y2K for GBCS/MEWSS	CPFF	LMFS, Owego, NY	0	250	2Q					0	250	250
b. Refurbish HMMWV for Prophet Ground (PG)	MIPR	Tobyhanna Army Depot, PA	0	724	3Q					0	724	724
c. EA Study for PG	CPFF	Rockwell Collins, Cedar Rapids, IA	0	315	4Q					0	315	315
d. Prophet Ground Blocks I/II integration efforts to support the Army Transformation Strategy	TBD	TBD	0			1300	3Q	1345	1Q	Continue	Continue	Continue
e. Prophet Ground Block I	CPFF	Delfin Sys Corp, Santa Clara, CA	0	1087	3Q	2500	2Q	290	1Q	Continue	Continue	Continue
f. Prophet Ground Block II	TBD	TBD	0			6224	2Q	565	1Q	Continue	Continue	Continue
g. Prophet Ground Training	MIPR	NSTO, Fort Huachuca AZ	0			500	3Q			0	500	500
h. Prophet Ground/Prophet Heliborne studies & analysis	MIPR	EPG/I2WD	0	1490	2Q					0	1490	1490
i. OSD Withhold				4353						0	4353	4353
j. JCF AWE						3999				0	3999	3999
k. SBIR/STTR						551					551	551
Subtotal Product Development:				8219		15074		2200		Continue	Continue	Continue

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Matrix Support	MIPR	HQ, CECOM		985	2Q	800	2Q	800	1Q	Continue	Continue	Continue
b. Contractor Eng & Spt (Risk Mitigation)	FFP	MITRE; McLean, VA						275	1Q	0	275	275
c. Contractor Eng & Spt	FFP	Sytex; Doylestown PA		224	2Q	370	2Q	110	1Q	Continue	Continue	Continue
d. Contractor Eng & Spt	FFP	CACI; Falls Church VA		325	4Q					Continue	Continue	Continue
Subtotal Support Costs:				1534		1170		1185		Continue	Continue	Continue

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: DL12

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Demonstrate COMINT & EA subsystems for Prophet Heliborne	MIPR	EPG/other Gov		1015	3Q					0	1015	1015
b. Participate in JCF AWE	MIPR	Various				1000	3Q			0	1000	1000
c. Conduct Prophet Ground DT/IOT&E	MIPR	Various				4031	3Q	1100	1Q	0	5131	5241
Subtotal Test and Evaluation:				1015		5031		1100			7146	4835

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Management		PM, Signals Warfare		900	2Q	500	2Q	500	1Q	Continue	Continue	Continue
Subtotal Management Services:				900		500		500		Continue	Continue	Continue

Project Total Cost:				11668		21775		4985		Continue	Continue	Continue

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development PROJECT DL20

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DL20 Advanced Threat Infrared Countermeasures/ Common Missile Warning Systems (ATIRCM/ CMWS) Development	0	49036	41340	32007	16382	10059	10046	Continuing	Continuing

A. **Mission Description and Budget Item Justification: The** ATIRCM/CMWS is a U. S. Army program to develop, test and integrate defensive infrared (IR) countermeasures capabilities into existing, current generation host platforms for more effective protection against a greater number of IR guided missile threats than afforded by currently fielded IR countermeasures. The CMWS component systems is a joint U. S. Navy, U. S. Marine Corps, and U. S. Air Force program to develop, test, and integrate common missile warning on tactical aircraft and rotorcraft for IR guided missile threat warning. The ATIRCM/CMWS is the core systems of the U. S. Army's modular Suite of Integrated Infrared Countermeasures (SIIRCM). For the Army, the current IRCM configuration for the fleet helicopters consist of the AN/ALQ-144A for the AH-64 and the UH/MH-60 and the AN/ALQ-156 missile detector and M-130 flare/chaff dispenser for the CH/MH-47. The ATIRCM/CMWS will selectively replace the AN/ALQ-144A, AN/ALQ-156 or AN/AAR-47, and the M-130. For the Navy and the Air Force, no existing equivalent systems exist.

FY 1999 Accomplishments: Project not funded in FY 1999. Funds reside in Project D665 – Aircraft Survivability Equipment Development.

FY 2000 Planned Program:

•	20720	Continue EMD contract for ATIRCM/CMWS
•	11631	Continue Development Testing for ATIRCM/CMWS
•	1300	Complete EMD for Advanced Infrared Countermeasures Munitions (AIRCMM)
•	665	Complete EMD for Advanced Visual Electro-optical Signature Suppression & Analysis (AVESSA)
•	4194	Continue Modeling & Simulation efforts for ATIRCM/CMWS
•	6864	Continue Support costs for ATIRCM/CMWS
•	2371	Continue in-house and program management administration
•	1291	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	49036	

FY 2001 Planned Program:

•	11164	Continue EMD contract for ATIRCM/CMWS
•	3000	Continue Modeling & Simulation efforts for ATIRCM/CMWS
•	1000	Initiate AVESSA P3I
•	400	Initiate AIRCMM P3I
•	14680	Complete development testing for the ATIRCM/CMWS

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development / PROJECT: DL20

FY 2001 Planned Program: (continued)

- 9017 Continue Support costs for ATIRCM/CMWS
- 2079 Continue in-house and program management administration

Total 41340

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
APA, BA 4 AZ3507 ASE Infrared CM				26422	68495	112686	109967	Cont	Cont
APA, BA 2 AA0722 ATIRCM Modifications		4901		12015	11958	21087	31025	Cont	Cont

C. **Acquisition Strategy:** EMD contract competitively awarded in FY 1995 with a LRIP decision and procurement scheduled FY 2000.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Continue ATIRCMWS EMD contract		1Q-4Q	1Q-4Q				
Complete ATIRCM/CMWS EMD contract				4Q			
Continue ATIRCM/CMWS development testing		1Q-4Q	4Q				
Complete ATIRCM/CMWS modeling & simulation		1Q-4Q	1Q-4Q				
Complete AVESSA EMD phase		4Q					
Complete AIRCMM EMD phase		4Q					
Continue Project Management Administration		1Q-4Q	1Q-4Q				
Initiate AIRCMM P3I effort			1Q-4Q				
Continue AIRCMM P3I effort				1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Initiate AVESSA P3I effort			1Q-4Q				
Continue AVESSA P3I effort				1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: DL20

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Thiokol (AIRCMM)	C/CPIF	Picatinny Arsenal, NJ				1300	Mar 00	1000	Jan 01	Cont	2300	Cont
b. Thiokol (AVESSA)	C/CPIF	Picatinny Arsenal, NJ				665	Feb 00	400	Jan 01	Cont	1065	Cont
c. Sanders (ATIRCM)	C/CPAF	CECOM, NJ				20720	Apr 00	11164	Jan 01	Cont	31884	Cont
Subtotal Product Development:						22685		12564			35249	

Remark: FY99 and prior funding included in Project D665

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Contractor Support	C/FFP	AMCOM, AL				6129	Mar 00	5000	Jan 01	Cont	11129	Cont
b. Matrix Support	MIPR	Various				4929	Quarterly	7017	Quarterly	Cont	11946	Cont
Subtotal Support Costs:						11058		12017			23075	

Remark: FY99 and prior funding included in Project D665

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. EPG support	MIPR	Ft. Huachuca, AZ				500	Quarterly	500	Quarterly	Cont	1000	Cont
b. TECOM support	MIPR	Various				2640	Quarterly	2640	Quarterly	Cont	5280	Cont
c. ATTC test support	MIPR	Fort Rucker, AL				560	Quarterly	560	Quarterly	Cont	1120	Cont
d. Sanders test support	T&M	Nashua, NH				7731	May 00	10780	Nov 00	Cont	18511	Cont
e. Neer test support	C/FFP	AMCOM, AL				200	Dec 99	200	Dec 00	Cont	400	Cont
Subtotal Test and Evaluation:						11631		14680			26311	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: DL20

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Project Management		In-House AMCOM				2371	Quarterly	2079	Quarterly	Cont	4450	Cont
b. SBIR/STR						1291					1291	
Subtotal Project Management:						3662		2079			5741	
Project Total Cost:						49036		41340			90376	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development PROJECT D665

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D665 Aircraft Survivability Equipment Development	60263	8380	14731	3117	9978	12915	12925	Continuing	Continuing

A. Mission Description and Budget Item Justification: Aircraft Survivability Equipment Development provides for the development and system integration of Aircraft Survivability Equipment (ASE) to achieve survivability, reduce vulnerability, and enhance combat effectiveness required to fulfill all Army aircraft mission requirements. Equipment developed will increase combat effectiveness and potential for mission accomplishment by reducing or eliminating the ability of threat air defense systems to detect, hit, track, damage or destroy Army aircraft. Developments respond to the approved requirement documents, test and type classification for production and fielding of ASE systems to address infrared, radar, laser and optical/electro-optical directed air defense threats. Efforts in development include new or upgraded systems to counter monopulse, millimeter wave, frequency agile, pulse doppler and continuous wave radars, passive infrared missile seekers and laser directed weapon systems. Continual adjustments are made to this program to meet the changing and evolutionary nature of technology and threat. This program has joint service applications that are coordinated through the Joint Technical Coordinating Group for Aircraft Survivability (JTCG/AS), as well as NATO applications coordinated through DOD. This project also provides the technical base for electronic warfare equipment for Apache, Blackhawk, Chinook, Comanche and Special Operations Aircraft. The Suite of Integrated Radio Frequency Countermeasures (SIRFC) and Advanced Threat Infrared Countermeasures (ATIRCM) systems are necessary to the survival of the AH-64, MH-47E, MH-60K, RC-12K, EH-60, UH-60 and CH-47D aircraft. The ATIRCM program has been designated a Tri-service program. The SIRFC is an Office of the Secretary of Defense (OSD) oversight program with high joint interest. Air Force Special Operations Command (AFSOC) selected SIRFC as CV-22 EW bus controller and sensor fusion processor. SIRFC EMD schedule is connected to the CV-22 development and test schedule and is monitored closely by US Special Operations Command (SOCOM). Both SIRFC and ATIRCM have application to the Air Force and Navy aircraft. The SIRFC system key capabilities include advanced threat radar warning advanced threat radar jammer, sensor data fusion and lightweight modular design. ATIRCM/CMWS is an integrated Infrared (IR) countermeasure system designed to bring the latest and most sophisticated state of the art technologies available for US Army aircraft to survive on the modern digital battlefield.

FY 1999 Accomplishments:

•	34448	Continued EMD of ATIRCM/CMWS
•	1438	Continued EMD of the AIRCMM
•	348	Continued EMD of the AVESSA
•	21054	Continued EMD of the SIRFC
•	2975	Continued in-house and program management administration
Total	60263	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development
	PROJECT D665

FY 2000 Planned Program:

- 7900 Continue EMD of SIRFC
- 356 Continue in-house and program management administration
- 124 Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)

Total 8380

FY 2001 Planned Program:

- 920 Continue in-house and program management administration
- 13811 Complete EMD of SIRFC

Total 14731

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
APA, BA 4 AZ3508 ASE	3036	86	0	32292	13256	13238	16021	Cont	Cont
APA, BA 2 AA0720 ASE Modifications	5419	11693	4487	14295	4755	4939	2222	Cont	Cont

C. **Acquisition Strategy:** Project is comprised of multiple programs, which have been competitively awarded.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2004	FY 2005
Continued EMD of ATIRCM/CMWS	1Q-4Q							
Continued EMD of AIRCMM	1Q-4Q							
Continued EMD contract of SIRFC	1Q-4Q							
Continued EMD of AVESSA	1Q-4Q							
Continue EMD of SIRFC		1Q-4Q						
Complete EMD of SIRFC			1Q-3Q					
Start Electro Countermeasures Enhancements				1Q-4Q	1Q-3Q	1Q-4Q	1Q-4Q	1Q-4Q

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: D665

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Thiokol (AIRCMM)	C/CPIF	Picatinny Arsenal, NJ	6182	1438	2Q FY99						7620	
a. ITT Corp (SIRFC)	C/CPAF	CECOM	43659	18900	2Q FY99	7900	1Q FY00	13811	2Q FY01		84270	
b. Sanders (ATIRCM)	C/CPAF	CECOM	41569	23606	2Q FY99						65175	
c. Various Contracts		CECOM	15364								15364	
Subtotal Product Development:			106774	43944		7900		13811			172429	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Support Cost	MIPR	CAS	2082	2082							4164	
b. Modeling & Sim	MIPR			2458							2458	
Subtotal Support Costs:			2082	4540							6622	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TECOM	MIPR		4312	2471							6783	
b. EPG	MIPR		6025	4344							10369	
c. MISC	MIPR		1521	1989							3510	
Subtotal Test and Evaluation:			11858	8804							20662	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
c. Project Management	MIPR	Various		2975		356		920			4251	
d. SBIR/STTR						124					124	
Subtotal Management Svs:				2975		480		920			4375	

Project Total Cost:	120714	60263		8380		14731			204088	

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604280A Joint Tactical Radio

PROJECT: D162

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D162 Joint Tactical Radio System	0	36520	62218	80065	65691	50917	40121	Continuing	Continuing

A. Mission Description and Justification: The mission of the Joint Tactical Radio System (JTRS) Joint Program Office (JPO) is to develop a Software Communications Architecture (SCA) and software waveforms that will enable the Services to acquire a family of affordable, scaleable, high-capacity, interoperable Line of Sight (LOS) and Beyond Line of Sight (BLOS) radios. The Army is the Executive Service for this joint program. The singular functionality of current stovepipe systems lacks the connectivity and throughput capacity to support required simultaneous networked voice, video, and data operations with low probability of intercept over multiple frequency bands. Each unique current radio system requires significant allocation of space, weight, power, and cooling on weapons systems platforms, and has a costly logistics infrastructure. These inadequacies are addressed by requirements in the JTRS Operational Requirements Document (ORD). In addition to addressing the problems associated with stovepipe radios, the JTRS program will provide a significant increase in capability while providing a solid foundation for interoperability, and for achieving network connectivity across the RF spectrum. This program element will validate the SCA through hardware and software prototypes. The building of these hardware and software prototypes, using SCA documentation, and the subsequent passing of information between the prototypes and requisite legacy systems will also provide the foundation to validate these prototypes and demonstrate interoperability with each other and with legacy systems. This program element will manage the continual evolution of the SCA, develop a set of software-based tactical waveforms, as described in the ORD, and provide a certification infrastructure for compliance testing of all hardware and software products. The program element also provides a path for advancing technology and resolving problems unique to the military environment. The open standards based SCA will provide the path for future hardware and software growth of delivered systems by allowing the Services to take advantage of advances in technology being driven by the commercial wireless communications marketplace. The overall JTRS program will provide software programmable and hardware configurable digital radio systems that demonstrate increased interoperability, flexibility and adaptability. JTRS will provide the operational forces with an upgraded communications capability for more effective battlespace management and interoperability among Command, Control, Communications, Computers and Intelligence (C4I) Systems supporting the warfighters' goal of realizing a fully digitized battlespace.

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	0	36797	68296
Appropriated Value		36797	
Adjustments to Appropriated Value			
a. Congressional General Reductions			
b. SBIR / STTR			
c. Omnibus or Other Above Threshold Reductions		- 150	
d. Below Threshold Reprogramming			
e. Rescissions		-127	
Adjustments to Budget Years Since FY 2000/2001 PB			-6078
Current Budget Submit (FY 2001 PB)	0	36520	62218

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604280A Joint Tactical Radio
	PROJECT D162

FY 1999 Accomplishments: Project funded in PE 0603280A, project D155.

FY 2000 Planned Program:

•	27329	Validate SCA, using hardware and software waveforms built to SCA documentation. Institute architecture disputes resolution process. Plan for post-MDAP decision program implementation. Conduct market survey.
•	966	Develop hardware and software waveform certification process, using existing test facilities where possible.
•	4041	Continue JPO technical support, including systems engineering, spectrum allocation and approval for use, and cryptographic engineering, in support of SCA activities.
•	3201	Continue JPO program support, including administration, program management, legal, contracting, budget execution and cost estimating activities.
•	983	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program.
Total	36520	

FY 2001 Planned Program:

•	38526	Maintain and evolve the SCA, resolve residual validation issues, begin acquisition of waveforms listed in Table 1 of JTRS ORD.
•	6817	Provide for technology advancement and problem resolution, to include areas such as multiple independent levels of security (MILS) and network security.
•	7801	Implement hardware and software waveform certification process (SCA compliance testing).
•	5545	Continue JPO technical support, including waveform development, systems engineering, spectrum allocation and approval for use, cryptographic engineering and problem resolution and support of SCA activities. Provide SCA guidance to Service program management offices.
•	3529	Continue JPO program support, including administration, program management, legal, contracting, budget execution and cost estimating activities.
Total	62218	

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE, 0603280A, D155 JTRS	13404								24445
RDTE, 0604805A, D615 JTRS Ground Domain		4867	28542	79171	42117	62831	48377	80000	347865
OPA, Army, ADDS, BU 1400/JTRS							39615	1583443	1603915

C. Acquisition Strategy: The JTRS development strategy consists of a three-Step process. Step 1 resulted in a baseline architecture definition. In Step 2, the architecture definition is being developed and validated as the Software Communications Architecture (SCA). The SCA is expected to become the Government and Industry standard for software radios. As such, it will be the basis for acquiring future Department of Defense (DoD) software radios. The validation process will use hardware prototypes and an initial set of software-based tactical waveforms. Concurrently with validation activities, the JPO will conduct a market survey, which will benchmark Industry capabilities with respect to the architecture. At the completion of these activities, a Major Defense Acquisition Program (MDAP) review will be held. Following a successful MDAP

decision, Step 3 activities will begin. The Services will perform acquisition, integration, testing, fielding and training activities. The JPO will continue to maintain and evolve the SCA, acquire waveforms listed in Table 1 of the ORD, and address technology advancement issues. The JPO will provide certification of JTRS SCA compliance for acquired systems and waveforms.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
JTRS Initial Architecture Definition Selected*	3Q						
Begin Architecture Development and Validation*		1Q					
Deliver Version 1.0 of SCA		3Q					
Prototypes and Required Waveforms Available to Begin SCA Validation		3Q					
Begin Certification Process		3Q					
Conduct Market Survey		4Q					
Complete Required SCA Validation with Waveforms and Prototypes		4Q					
Deliver Version 2.0 of SCA		4Q					
MDAP Review			1Q				
Begin Acquiring ORD Waveforms			2Q-4Q				
Continue to Acquire ORD Waveforms				1Q-4Q	1Q-4Q	1Q-4Q	
Maintain and Evolve SCA			2Q-4Q				
Continue to Maintain and Evolve SCA				1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Address Technology Advancement Issues			2Q-4Q				
Continue to Address Technology Advancement Issues				1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Provide Certification of JTRS SCA Compliance for Acquired Systems and Waveforms			2Q-4Q				
Continue to Provide Certification of JTRS SCA Compliance for Acquired Systems and Waveforms				1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

*Program funded in PE 0603280A in FY 1998/1999.

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604280A Joint Tactical Radio

PROJECT: D162

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost *	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Architecture Development, Validation, Waveform re-coding	Other Trans Agreements (OTA) ; Various	Step 1: Various (3 consortia) Step 2A: Raytheon Consortium Step 2B: TBD-Various	Step 1: 4500 Step 2A: 10500	Step 2A: 11441 Step 2B: 15523 Other Architecture-related: 1093	Step 2A:1Q Step 2B:2Q Various contracts Other:1Q	38526	2Q various contracts	Continuing	Continuing	N/A
b. Certification Infrastructure	TBD	TBD	0	1000	3Q	7801	2Q	Continuing	Continuing	N/A
c. Technology Insertion	TBD	TBD	0			6817	2Q various contracts	Continuing	Continuing	N/A
Subtotal Product Development:			15000	29057		53144				

*Funded under PE 0603280A in FY 1998/1999.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost *	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. FFRDC – MITRE and Other contracted Technical Support	FFP	Various	5752	4148	1Q	5545	1Q/2Q various contracts	Continuing	Continuing	N/A
Subtotal Support Costs:			5752	4148		5545			Continuing	

*Funded under PE 0603280A in FY 1998/1999.

III. Test and Evaluation: Not applicable.

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost *	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Support	Various	Various	3653	2332	1Q	3529	1Q/2Q various contracts	Continuing	Continuing	N/A
b. Other (SBIR/STTR)				983						
Subtotal Management Svcs:			3653	3315		3529		Continuing	Continuing	

*Funded under PE 0603280A in FY 1998/1999.

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604280A Joint Tactical Radio

PROJECT: D162

			Total PYs Cost *	FY 2000 Cost		FY 2001 Cost		Cost To Complete	Total Cost	
Project Total Cost:			24405	36520		62218		Continuing	Continuing	

*Funded under PE 0603280A in FY 1998/1999.

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604321A All Source Analysis System (TIARA)

COST (In Thousands)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	35246	53248	44084	43281	30030	31016	19820	Continuing	Continuing
DB19 ASAS Evolutionary Acquisition	27567	47338	42252	41037	27671	28485	17383	Continuing	Continuing
DB41 CI/HUMINT Software Products	5556	3646	1832	2244	2359	2531	2437	Continuing	Continuing
D2FT ASAS Operational Test	2123	2264	0	0	0	0	0	0	4387

A. Mission Description: This program element funds the development of the All Source Analysis System (ASAS) and Counterintelligence/Human Intelligence (CI/HUMINT) products. The Project Manager Intelligence Fusion provides management oversight of PM ASAS software. ASAS is the automated support system for the intelligence and electronic warfare (IEW) functional area of the Army Battle Command System (ABCS). It is a tactically deployable Automated Data Processing (ADP) system designed to support management of IEW operations and target development in battalions, brigades, armored cavalry regiments, separate brigades, divisions, corps, and echelons above corps. Counterintelligence/Human Intelligence software products are a subsystem to the ASAS and are designed to facilitate the collection, management and dissemination of counterintelligence and Human Intelligence information to the Warfighters.

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY2000/2001 PB)	33776	49684	46399
Appropriated Value	34081	53684	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-305		
b. SBIR / STTR	-846		
c. Omnibus or Other Above Threshold Reductions	+3000	-211	
d. Below Threshold Reprogramming	-548		
e. Rescissions	-136	-225	
Adjustments to Budget Years Since FY2000/2001 PB			-2315
Current Budget Submit (FY2001 PB)	35246	53248	44084

Change Summary Explanation: Funding – FY99 increase for development of CI/HUMINT Refugee Management and Tracking System (RMATS) (+3000); FY01 decrease due to Project D2FT funding being restructured to PE 0605712A.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604321A All Source Analysis System (TIARA)
	PROJECT DB19

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DB19 ASAS Evolutionary Acquisition	27567	47338	42252	41037	27671	28485	17383	Continuing	Continuing

A. Mission Description: Project DB19 - ASAS Evolutionary Acquisition: This project funds the development of the Army's only tactical intelligence fusion system. The successful execution of military operations requires a flexible and modular intelligence and targeting system that will provide tactical commanders a common view of the battlefield and a means for gaining a timely and comprehensive understanding of enemy force deployments, capabilities, and potential courses of action. The ASAS is a ground based, mobile, command and control, intelligence processing system. ASAS provides automated support to the combat commander in the areas of intelligence collection management, all-source fusion (signals intelligence, imagery intelligence, human intelligence, open source intelligence and measurements and signatures intelligence), target development and situation analysis, single source and multi-source processing, intelligence reporting, electronic warfare/countermeasures, and operational security as well as "digitized Army" automation support to the Army Battle Command System (ABCS). ASAS is providing incremental prototype software for military intelligence operations in the First Digitized Division (FDD).

FY 1999 Accomplishments:

- 21949 Continued ASAS Block II Evolutionary Acquisition EMD
  - -Completed development and testing of (RWS) V4.1, and received approval to field 1, 211 RWS's Army wide
  - -Began incorporating US Message Text Format (USMTF00) message upgrades
  - -Continued rehost and update of All Source intelligence functionality from Blk I
  - -Initiated design efforts for Block II Analysis Control Element (ACE)
  - -Upgraded Communications Control Set (CCS)
  - -Enhanced Remote Workstation (RWS) to meet evolving ABCS 6.X FDD Force XXI capabilities
  - -Completed final assessment of "Year 2000" Proof of Operation, and compliance certification
  - -Developed "ASAS-Light" battalion level software prototype
  - -Provided warfighter training, test support, and Central Technical Support Facility (CTSF) on-site field support for ABCS/FDD
  - -Developed program acquisition decision package for procurement fielding deployment and operational support of RWS
  - -Completed ASAS RWS MS III and fielding to Ft. Hood units
  - -RWS "V1" and "V4" Type Classified "Standard" (Material Release Version 4 software)
- 2435 Completed developmental testing of Block II ASAS RWS/V4
- 3183 Quantity of Test Articles: 55 RWSs and 12 ASAS Lights were procured for engineering development and operational testing

Total 27567

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604321A All Source Analysis System (TIARA)
	PROJECT DB19

FY 2000 Planned Program:

- 40783 Continue ASAS Block II Evolutionary Acquisition EMD
  - -Develop Block II Analysis Control Element (ACE)
  - -Migrate to DII COE version 4. X and resolve Level 6 DII COE waivers
  - -Enhance "ASAS Light" battalion level software prototype
  - -Complete development and development testing (OT) of ASAS Light V 1.0 and prepare of operational testing
  - -Support warfighter tests and exercises including FBCB2 Limited User Test (LUT), provide CTSF on-site field support for ABCS
  - -Develop and deliver ABCS 6.0 RWS
  - -Develop and deliver ABCS 6.1 RWS
  - -Type classify ASAS V2 "Standard" with (material release of version 6.1 software)
  - -Develop and deliver ABCS 6.2 RWS
  - -Participate in ABCS Synchronization Event Testing
  - -Began Block III pre-solicitation package
  - -Continue enhancements to Communications Control Set (CCS)
  - -Complete upgrade of MIDB
- 915 Quantity of Test Articles: up to 39 workstations will be procured for engineering development and operational testing
- 421 Conduct ASAS-Light Developmental testing and phase 1 LUT
- 4000 Continue ATLAS development
- 1219 Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)

Total 47338

FY 2001 Planned Program:

- 27664 Continue ASAS Block II Evolutionary Acquisition EMD
  - -Complete ABCS 6.2 RWS Development
  - -Participate in both phases of the ABCS Digital Capstone Exercise
  - -Develop ABCS RWS 7.x
  - -Develop ASAS Light V1.1
    - -Support warfighter tests and exercises and provide CTSF on-site support for ABCS
  - -Complete ASAS Light Milestones III
- 2435 Conduct ASAS Block II continuous Test and Evaluation
- 12153 Award ASAS Block III Evolutionary Acquisition EMD contract
  - -Complete source selection process and award ASAS Block III contract
  - -Develop the Block III ASAS applications (All Source, SIGINT, CI/Humint, MASINT, OSINT, IMINT, BDA analysis, Collection

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604321A All Source Analysis System (TIARA) / PROJECT: DB19

FY 2001 Planned Program: (continued)

Management, Electronic Warfare, auto sanitization, multi-level secure operations, enhanced collaboration tools, enhanced embedded Training)

-Develop fully structured jump capability

-Initiate system engineering analysis for migration to Level 7 DII COE

Total 42252

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA (K28801) ASAS Modules	30530	56256	66671	48047	79664	84417	64094	Cont	Cont
Spares (BS9704)	0	689	758	801	782	1061	0	Cont	Cont

C. **Acquisition Strategy:** The ASAS development program will build upon and expand the capabilities and functionality developed and produced in the ASAS Block I System including conversion to the Army Common Hardware/Software and the OSD directed Defense Information Infrastructure Common Operating Environment (DII COE) and Modernized Integrated Database (MIDB). Additional software capabilities include enhanced intelligence and command and control functionality, jump and degraded mode operations, enhanced communications, and improved reliability, supportability and survivability. Emphasizes multiple prototype deliveries and integrated test and continuous evaluation opportunities. Builds upon experience and feedback gained from the fielded ASAS and other tactical prototypes.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Block II RWS Test	1-2Q						
ABCS 6.0 Development and Integration	4Q	1-2Q					
Block II/Milestone III (RWS)	4Q						
ABCS 6.1 Development and Integration		2-4Q					
ABCS 6.2 Development		4Q	1-3Q				
ABCS 6.2 Test			4Q				
ABCS 7.0 Development and Integration				1-2Q			
ASAS Light Test		2-4Q	1-2Q				
Block II/Milestone III (ASAS Light)			3Q				
Block II FUE (FDD ACE)		4Q					
Block II Testing				3-4Q	1Q		
Block II/Milestone III (ACE)					3Q		
Block III Software Dev, Integration & Test					3-4Q	1-4Q	1-4Q

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604321A All Source Analysis System (TIARA)

PROJECT: DB19

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. System Development	CPAF	Lockheed Martin	116281	17356	1-3Q 99	32547	1-3Q 00	7263	1Q 01	Cont	173447	
b. Subsystem Development	CPFF	EWA	4314	5481	1Q 99	4000	1Q 00			0	13795	
c. Subsystem Development	GSA D.O.	AIS				2500	1Q00	3600	1Q00	Cont	6100	
d. Test Hardware	MIPR	CHS II (GFE)	5154			532	1Q 00			0	5686	
e. System Development	TBD	TBD					1-3Q 00	24110	1Q		24110	
g. SBIR/STTR						1219					1219	
Subtotal Product Development:			125749	22837		40798		34973			224357	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Contractor Spt	BPA	Sytex, Inc Vienna, VA	8202	1590	1,3Q 99	2650	1, 3Q 00	2629	1, 3Q 01	Cont	15071	
b. Gov't In House			9417	1460	1-4Q 99	2570	1-4Q 00	2530	1-4Q 01	Cont	15977	
Subtotal Support Costs:			17619	3050		5220		5159			31048	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ASAS DT	MIPR	EPG	1594	868	1Q 99	500	2Q 00	1300	1Q 01	Cont	4262	
Subtotal Test and Evaluation:			1594	868		500		1300			4262	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. FFRDC	MIPR	MITRE	5200	812	1Q 99	820	1Q 00	820	1Q 01	0	7652	
Subtotal Management Services:			5200	812		820		820			7652	

Project Total Cost:			150162	27567		47338		42252			267319	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)			DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604321A All Source Analysis System (TIARA)		PROJECT: DB41

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DB41 CI/HUMINT Software Products	5556	3646	1832	2244	2359	2531	2437	Continuing	Continuing

A. Mission Description: **Project DB41 - CI/HUMINT Management System (CHIMS):** The Counter Intelligence/Human Intelligence (CI/HUMINT) Management System (CHIMS) is the tactical CI/HUMINT subsystem of the All Source Analysis System (ASAS). It meets the automation requirements for Army tactical and strategic CI/HUMINT information collection, investigation, interrogation, operations, document exploitation, and force protection. The total CHIMS automation architecture extends from the ASAS Division and Corps Analysis and Control Element (ACE) to the individual agent/collector. The objective architecture will consist of three sub-elements: 1) ASAS CI/HUMINT Single Source (CI/HUMINT SS) workstation software will provide single source analysis and processing capability at the Corps and Division level. Incoming HUMINT and CI information will be processed to produce intelligence and maintain CI/HUMINT intelligence databases and the Common Operational Picture (COP); 2) Counter Intelligence Operations/Interrogation Operations (CI/INTG OPS) workstation provides automation and analysis capabilities to Military Intelligence units, and to the CI Staff Officer (CISO) at echelons division and above. It provides a common interface to the Defense Counterintelligence Information System (DCIIS); 3) CI/HUMINT teams require two types of automation support. The first, a Team Leader device, is the AN/PYQ-3 CI/HUMINT Automated Tool Set (CHATS). It interfaces with the ASAS Remote Workstation (RWS), CI/INTG OPS workstation and individual CI/HUMINT agents/collectors device. The second, the Individual Tactical Reporting Tool (ITRT) provides a handheld automated collection device for agent/interrogator operations. It provides automation capability to collect, manage, receive, store and export text, electronic data, and digital imagery information. It is also capable of preparing, processing and disseminating standard messages. Also within this budget activity is the Refugee Management and Tracking System (RMAT). RMATs is a Congressionally directed prototype project under the FY99 Kosovo Emergency Supplemental Appropriation.

FY 1999 Accomplishments:

•	2556	Developed and applied functionality enhancements to the CHATS developmental baseline -Data handling -Messaging -Mapping and data presentation -Communications -Interoperability enhancements -Hardware -Common hardware baseline
•	3000	Developed the Refugee Management and Tracking System (RMATS)
Total	5556	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604321A All Source Analysis System (TIARA) / PROJECT: DB41

FY 2000 Planned Program:

- 250 Develop functionality and system enhancements to the CHATS version 2 for the planned Version 3
- 651 Develop CI/HUMINT Automated Management Software (CHAMS). CHAMS is a common software baseline for use on CHATS, ITRT, and CI/INTG Opns workstation. Complete development of the ITRT Version 1 agent/interrogator device
- 224 Continue Counter Intelligence Operations/Interrogation Operations (CI/INTG OPS) workstation software and hardware baseline development
- 1000 Mature, test and hand off ASAS CI/HUMINT Single Source workstation software
- 383 Conduct system developmental and operational testing
- 20 Quantity of Test Articles: up to ten ITRTs will be procured for engineering development and operational testing
- 1019 Management services and program support for development of products
- 99 Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)

Total 3646

FY 2001 Planned Program:

- 200 Continue development of CHAMS software baseline
- 250 Continue developing functionality and system enhancements to CHATS version 2 for the planned Version 3
- 100 Complete development of the ITRT Version 2 agent/interrogator device
- 189 Continue CI/INTG OPS workstation software and hardware baseline development
- 50 Continue system developmental and operational testing support
- 20 Quantity of Test Articles: Ten enhanced capabilities hand-held computers will be procured for ITRT Version 2 engineering development and operational testing
- 30 Quantity of Test Articles: Two NT based portable computers for CI/INTG OPS workstation engineering development and testing.
- 993 Management services and program support for development of products

Total 1832

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA (BK5275) CHATS (TIARA)	3656	4078	1939	1487	9612	9869	7198	Cont	Cont
OPA (K28801) ASAS MODULES (TIARA)	30581	56256	66671	48047	79664	84417	64094	Cont	Cont

C. Acquisition Strategy:

CHAMS. The CI/HUMINT Automated Management Software (CHAMS) will be developed FY00-01 to provide a common software baseline for CHATS, ITRT, and

CI/INTG Ops workstation.

CHATS. Version 1 CHATS will be upgraded with Version 2 hardware during FY00 and FY01. This hardware upgrade will extend the life of Version 1 CHATS hardware until CHATS Version 3 is fielded. CHATS Version 3 development will commence FY00 for issue in FY03-04.
ITRT. The Version 1 ITRT will complete development and initiate issue during FY00. The ITRT is a commercial-off-the-shelf (COTS) hand-held sized automation tool capable of receiving tasking messages, preparing and transmitting CI/HUMINT reports, and disseminating digital imagery to the Team Leader CHATS. The initial issue cycle of ITRT Version 1 will continue through FY01. The first life cycle replacement for the approximately 800 ITRTs with their two year life cycle will be initiated in FY03.
CI/INTG OPS Workstation. FY00-01 will see the development of the initial hardware and software baseline for the CI/INTG OPS workstation on a NT Platform Military Intelligence unit command and control of CI/HUMINT operations. CI/INTG OPS workstation functionality will be interoperable with the ASAS Remote Workstation (RWS) version 6.2 in 4Q00, with a full functionality software baseline that meets mission requirements for both ASAS and CI/HUMINT MI unit's mid-FY02. The CI/INTG OPS Version 2 Workstation will be issued FY03-04 on CHS-II standard hardware. The CI/INTG OPS workstation will reuse significant portions of ASAS Remote Workstation software and leverage existing technology.
ASAS CI/HUMINT SS Workstation. The CI/HUMINT SS Workstation is an ASAS product that will operate within the ASAS ACE. The PM, ASAS is responsible for the ASAS ACE and the integration of the ACE single source modules. PM CHIMS is responsible for the development of the CI/HUMINT single source software module. The ASAS development schedule calls for an initial capability in 3Q00. This CHS-II standard workstation integrates HUMINT into the ASAS common operational picture.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
CHAMS Common Software Development		2Q-4Q	1Q-4Q				
CHATS Hardware/Software Upgrade	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
CI/INTG OPS Workstation development (V1)		1Q-4Q					
CI/INTG OPS Workstation development (V2)			1Q-4Q	1Q-4Q	1Q-4Q		
CI/INTG OPS Workstation test and evaluation				3Q	1Q		
CI/INTG OPS Workstation Milestone III				2Q			
CI/INTG OPS Workstation FUE					1Q		
CI/INTG OPS Workstation HW/SW upgrade		1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
ITRT operational test		3Q					
ITRT Milestone III		3Q					
ITRT FUE		4Q					
ASAS CI/HUMINT SS software development		1-4Q					
ITRT Hardware/Software upgrade			2Q	2Q	2Q	2Q	2Q
CHATS Version 3 operational test				3Q			
CHATS Version 3 Milestone III				4Q			
Refugee Management Tracking System		2Q-4Q					

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604321A All Source Analysis System (TIARA)

PROJECT: DB41

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Refugee Mgt System	BPA	EWA	0	3000							3000	
b. CHAMS Software						650	TBD	200			850	
c. CHATS Software	SS	Sterling Software Sierra Vista, AZ		1176	1Q99					0	1176	
d. CHATS Software	BPA	TBD	0			250	2Q 00	300		Cont	Cont	
e. ITRT	BPA	TBD	0	0		144	2Q 00	100	1Q01	Cont	Cont	
f. CI/INTG OPS WS	TBD	TBD	0	0		200	TBD	189	TBD	Cont	Cont	
d. Single Source	MIPR	PMO Intel Fusion McLean, VA	0	700		1000				Cont	Cont	
Subtotal Product Development:				4876		2244		789		Cont	Cont	

II. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. OEC	MIPR	EPG	0	45	1Q 99	358		45		Cont	Cont	
b. Security/Safety	MIPR	CECOM	0	5		25		5			35	
Subtotal Test and Evaluation:				50		383		50		Cont	Cont	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604321A All Source Analysis System (TIARA)

PROJECT: DB41

III. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. SETA	BPA	Logicon/Sytex McLean, VA	0	342	1Q 99	670		670		Cont	Cont	
b. Civ Labor	MIPR	PMO Intel Fusion McLean, VA	0	128	1-4Q 99	214		214		Cont	Cont	
c. Facility Support	MIPR	PMO Intel Fusion McLean, VA	0	160	2Q 99	135		109		Cont	Cont	
Subtotal Management Services:				630		1019		993		Cont	Cont	
Project Total Cost:				5556		3646		1832		Cont	Cont	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604321A All Source Analysis System (TIARA)

PROJECT: D2FT

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D2FT ASAS Operational Test	2123	2264	0	0	0	0	0	0	4387

A. Mission Description: Project D2FT - ASAS Test and Evaluation: This project finances the direct costs of planning and conducting testing and evaluation of the ASAS by the Army Test and Evaluation Command (ATEC). ASAS is an Acquisition Category (ACAT) II system with several dedicated iterations of Test and Evaluation (Technical and Operational) between FY 95 and FY 02. Testing and evaluations are conducted under conditions, as close as possible, to those encountered in actual combat with typical user troops trained to employ the system. As necessary, ATEC provides Army leadership with an evaluation of effectiveness and suitability of the system. Project D2FT is restructured from PE 0605712A.

FY 1999 Accomplishments:

- 2123 Warfighter data collection; RWS testing; test scenario development

Total 2123

FY 2000 Planned Program:

- 2204 Warfighter data collection; ASAS-Light test events; test scenario development
- 60 Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)

Total 2264

FY 2001 Planned Program: Funds moved to PE 0605712A, project 001 due to the redesignation of ASAS to ACAT II program.

B. Other Program Funding Summary: Not Applicable

C. Acquisition Strategy: Not applicable, see B19 above

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
ASAS Testing							
- Warfighter dedicated OT events	1-2Q						
- ASAS Light Test		3Q					

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604321A All Source Analysis System (TIARA)

PROJECT: D2FT

I. Product Development: None

II. Support Costs: None

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
ATEC	MIRP	IEWTD	8542	2133		2264					12929	
Subtotal Test and Evaluation:			8542	2123		2264					12929	

IV. Management Services: None

Project Total Cost:			8542	2123		2264					12929	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)			DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604329A Modernized Hellfire		PROJECT D013

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D013 Modernized HELLFIRE	0	0	4969	6951	15914	53531	74751	Continuing	Continuing

A. Mission Description and Budget Item Justification: Expanding regional power threats require evolutionary improvements to maintain effectiveness of the Hellfire missile system. The Modernized Hellfire missile will provide the Apache Attack Helicopter (AH-64) and the Comanche Reconnaissance Helicopter (RAH-66) with an enhanced fire-and-forget capability, greatly increasing weapon system effectiveness and aircraft survivability. The Modernized Hellfire will effectively engage and destroy advanced armor on the digital battlefield well into the future. The funding in FY 2001 and FY 2002 will be utilized for risk reduction and risk mitigation efforts. Risk mitigation and risk reduction will be accomplished using the latest simulation based acquisition tools and techniques. This simulation based acquisition technique will be concentrated on seekers, propulsion, warhead group and platform integration. Modernized Hellfire will enter Engineering Manufacturing Development (EMD) in FY 2003. Modernized Hellfire missile will be designed and tested to achieve the following: an enhanced fire-and-forget capability, increased range, increased survivability (both missile and platform), decreased timeline, decreased weight, decreased size, and modularity for future enhancements. Modernized Hellfire will be compatible with existing launch platforms and the RAH-66.

FY 1999 Accomplishments: Project not funded in FY 1999.

FY 2000 Planned Program: Project not funded in FY 2000.

FY 2001 Planned Program:

•	3553	Risk Reduction
•	664	Support Costs
•	214	Test and Evaluation Support
•	538	Management Services Support
Total	4969	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604329A Modernized Hellfire

PROJECT: D013

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	0	0	0
Appropriated Value			
Adjustments to Appropriated Value			
a. Congressional General Reductions			
b. SBIR / STTR			
c. Omnibus or Other Above Threshold Reductions			
d. Below Threshold Reprogramming			
e. Rescissions			
Adjustments to Budget Years Since FY 2000/2001 PB			+4969
Current Budget Submit (FY 2001 PB)	0	0	4969

Change Summary Explanation: Funding for FY 2001: Increase to fund the risk reduction and risk mitigation efforts necessary to ensure the effective transition of science and technology concepts to the Engineering Manufacturing Development (EMD) phase.

C. Other Program Funding Summary Missile Procurement Army	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
C70300 Longbow Hellfire/LBHF	343294	292851	285363	222722	184037	26117	22178	Continuing	Continuing

D. Acquisition Strategy: The Modernized Hellfire risk reduction effort will use full and open competition. U.S. Army Aviation and Missile Command (AMCOM) labs will provide assistance and technical expertise during the risk reduction effort.

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Risk Reduction			1st Qtr				
Contract Award Initial Designs			1st Qtr				
Complete Performance Modeling				3rd Qtr			
Complete Virtual Prototypes				3rd Qtr			
Complete Initial Design CAD/CAE				3rd Qtr			
Complete Simulation of System in Battlefield				4th Qtr			
EMD Modernized Hellfire					2nd Qtr		
Integration and Testing Modernized Hellfire						3rd Qtr	
Design/Test/Qual Modernized Hellfire							1st Qtr
Qualification Modernized Hellfire							3rd Qtr
Rail Flights							2nd Qtr

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604329A Modernized Hellfire

PROJECT: D013

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Risk Reduction	LC/CPFF	TBD						2715	Nov	3948	6663	
b. RDEC Spt Contracts	TBD	TBD						838	Dec	1088	1926	
Modernized HF EMD												
c. Longbow Limited Liability Company (LLLC)	LC/CPFF	TBD								260270	260270	
d. RDEC Spt Contracts	TBD	TBD								3975	3975	
Subtotal Product Development:			0	0		0		3553		269281	272834	

Remark: Includes requirements/threat definition, preliminary/detailed design, and testing in hardware-in-the-loop and missile firings.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Risk Reduction IH Gov't Support								316	Qtrly	395	711	
b. RDEC Support								348	Qtrly	418	766	
Modernized HF EMD												
c. In-House Gov't Spt										3092	3092	
d. RDEC Support										6542	6542	
Subtotal Support Costs:			0	0		0		664		10447	11111	

Remark: Includes salaries and travel for other government agencies in support of Modernized Hellfire.

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Risk Reduction Redstone Technical Test Center (RTTC) Support								214	Qtrly	457	671	
Modernized HF EMD												
b. RTTC Gov't Spt										26412	26412	
Subtotal Test and Evaluation:			0	0		0		214		26869	27083	

Remark: Includes RDEC and RTTC support for system reviews and testing, as well as support for RTTC and ARL for test assets and range support.

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604329A Modernized Hellfire

PROJECT: D013

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Risk Reduction IH Gov't Support								538	Qtrly	694	1232	
Modernized HF EMD												
b. In-House Support										15486	15486	
Subtotal Management Services:			0	0		0		538		16180	16718	

Remark: Includes salaries and travel for collocated and core personnel.

Project Total Cost:			0	0		0		4969		322777	327746	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)			DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604604A Medium Tactical Vehicles		PROJECT DH07

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DH07 Medium Tactical Vehicles	0	1958	1959	1953	1951	1946	1941	17392	29100

A. Mission Description and Budget Item Justification: This program element (PE) supports modernization of the Army's medium truck fleet. The Family of Medium Tactical Vehicles (FMTV) will replace aging M44 Series 2 1/2 ton trucks and M39 and M809 Series 5 ton trucks that are beyond their average useful life of 20-22 years. FMTV will also provide a follow-on to the M939/A2 Series 5 ton truck. FMTV is required to fill 2 ½ (LMTV) and 5 ton truck (MTV) requirements, resolve operational deficiencies and operate throughout the theater as multi-purpose transportation vehicles used by combat, combat support and combat service support units. This system is designed to be rapidly deployable worldwide and operate on primary and secondary roads, trails, and cross-country terrain in all climatic conditions. The new funds will support continuous product improvements, technological upgrades and new capabilities for FMTV. In FY00, Project DH07 funds will develop, integrate, and demonstrate a commercial type dump body to address weight and payload concerns. In FY00-02, the funds will develop, build and test a prototype FMTV 5 ton water tanker to support an approved requirement to help execute the Army's potable water support concept for Force XXI. FY00-03 will be used to fund the development of an improved survivability Cab for the safety of the soldier in the expanding role of the FMTV in the peacekeeping mission.

FY 1999 Accomplishments: Project not funded in FY 1999.

FY 2000 Planned Program:

- 1198 Water Tanker Prototype Design/Major Components Purchase. (FMTV)
- 132 Government Engineering (FMTV Water Tanker)
- 225 Cab Survivability Improvement (CSI) Threat Definition/Design Alternative Study*
- 350 Commercial Dump Body Design Alternative Study/Detail Design/Vehicle Integration/Test and Evaluation*
- 53 Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)

Total 1958

*Tasks recommended by HAC S&I Team.

FY 2001 Planned Program:

- 1256 Water Tanker Prototype build
- 203 Government Engineering (FMTV Water Tanker)
- 500 Cab Survivability Improvement (CSI) Detail Design

Total 1959

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604604A Medium Tactical Vehicles

PROJECT: DH07

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	0	1973	1971
Appropriated Value		1973	
Adjustments to Appropriated Value			
a. Congressional General Reductions			
b. SBIR / STTR			
c. Omnibus or Other Above Threshold Reduction		-8	
d. Below Threshold Reprogramming			
e. Rescissions		-7	
Adjustments to Budget Years Since FY 2000/2001 PB			-12
Current Budget Submit (FY 2001 PB)	0	1958	1959

C. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA1 Family of Medium Tactical Vehicles (D15500)	335506	424061	438256	465931	697281	681936	662889	Cont	Cont
OPA4 FMTV Initial Spares (DS1010)	81							Cont	Cont

D. Acquisition Strategy: The acquisition strategy for the FMTV Water Tanker RDT&E program is to award a sole source cost plus fixed fee contract to the current FMTV contractor. Based on test results, the water tanker will be procured as a production vehicle under a future multiyear contract for FMTV. The Cab and Dump efforts will use a current omnibus contract based on Time and Material (T&M).

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2004	FY 2005
Award Prototype Contract – Fund Design Effort (Water Tanker)		2nd Qtr						
Fund Prototype Build Effort (Water Tanker)			1st Qtr					
Development Test (Water Tanker)				1st Qtr				
Fund Contractor Test Support (Water Tanker)				1st Qtr				
Award T&M contract – Commercial Dump Body		2nd Qtr						
Award T&M contract – Cab Survive Improve (CSI)		2nd Qtr						
Fund CSI - Detail Design effort			1st Qtr					

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604604A Medium Tactical Vehicles

PROJECT: DH07

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2004	FY 2005
Fund CSI – Tech Demo Fabrication				1st Qtr				
Fund CSI – Live Fire Test/Simulation					1stQtr			

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604604A Medium Tactical Vehicles

PROJECT: DH07

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Commercial Dump Body (FMTV)	C-T&M	Camber Warren, MI				350	Mar 00				350	
b. Cab Survivability Impr. (FMTV)	C-T&M	Camber Warren, MI				225	Mar 00	500	Nov 00	1250	1975	
c. Water Tanker Prototype (FMTV)	SS-CPFF	Stewart & Stevenson, Inc. Sealy, TX				1198	Mar 00	1256	Nov 00	800	3254	
d. SBIR/STTR						53					53	
Subtotal Product Development:						1826		1756		2050	5632	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. In-house Eng		TACOM, MI				132	Mar 00	203	Oct 00		335	
b. Gov't Eng		All Other Field Act										
Subtotal Support Costs:						132		203			335	

III. Test and Evaluation: NA

IV. Management Services: Not applicable

Project Total Cost:						1958		1959		2050	5967	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604609A Smoke, Obscurant and Target Defeating System - Engineering Development

PROJECT: 200

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
200 Smoke/Obscurant System	659	913	3461	4621	7922	6888	3052	0	27516

A. Mission Description and Budget Item Justification: U.S. Forces must be able to effectively neutralize and degrade energy weapon systems and threat electro-optical systems/smart weapons that operate in the full range of the electro-magnetic spectrum. This program element supports the conduct of Engineering and Manufacturing Development (EMD) of logistically supportable, high performance smoke and obscurant agents, munitions and devices to improve the survivability of the combined arms force and complement combined weapons systems. Improvements are sought across the entire multi-spectral range from visual through infrared (IR) and millimeter wavelengths (MMW) radar for incorporation into self-protection large area and projected smoke systems. The smoke obscuration technologies supported by this program element enhance smoke systems as force multipliers.

This project supports the conduct of Engineering and Manufacturing Development (EMD) in smoke and obscurant agents, munitions, and devices to improve survivability of the combined arms force, complement combined weapons systems, and enhance force effectiveness and combat power. Funding supports (1) Motorized Dual Purpose Mechanical Smoke Generator, M56 mounted on the High Mobility Multi-Purpose Wheeled Vehicle (HMMWV), the Mechanized version (M58A1) mounted on a tracked vehicle to provide large area visual, infrared (IR) and millimeter wavelength (MMW) radar obscuration, and the new Medium Weight Armored Vehicle platform with all required obscurant capability.

FY 1999 Accomplishments:

•	200	VEESS – Integrated M6 Grenade Dischargers and Vehicle Integrated Defense System.
•	459	VEESS – Completed data collection and documentation.
Total	659	

FY 2000 Planned Program:

•	201	MMW – Prepare IPR package and conduct milestone I/II program review.
•	195	MMW – Prepare complete contract package, issue draft proposal, conduct pre-proposal conference, issue final proposal, evaluate and award contract
•	200	MMW – Conduct prototype evaluation of multiple materials against threat radars.
•	300	MMW – Award development contract and initiate prototype designs.
•	17	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) programs.
Total	913	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604609A Smoke, Obscurant and Target Defeating System - Engineering Development
	PROJECT 200

FY 2001 Planned Program:

- 1600 MMW – Continue engineering design program., including logistics/cost alternatives on candidate designs.
- 1461 MMW - Initiate assembly of engineering development and test prototype systems onto one M56 and one M58 system.
- 400 MMW – Conduct analysis of alternative methods for MMW production and storage.

Total 3461

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	701	918	2480
Appropriated Value	706	918	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-5		
b. SBIR / STTR	-19		
c. Omnibus or Other Above Threshold Reductions		-3	
d. Below Threshold Reprogramming	-19		
e. Rescissions	-4	-2	
Adjustments to Budget Years Since FY 2000/2001 PB			+981
Current Budget Submit (FY 2001 PB)	659	913	3461

Change Summary Explanation: Funding – FY 2001: Increase in support of the acceleration of the MMW Obscurant effort (+981).

C. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE,A Budget Activity 2, PE 0602622A Project A552 Smoke/Novel Effects Munitions	4660	4953	3530	3550	3580	3856	3879	Cont'd	Cont'd
RDTE,A Budget Activity 4, PE 063627A, Smoke, Obscurant and Equipment Defeating Systems					4835	12244	19324	Cont'd	Cont'd
Other Procurement Army, Activity 3, (OPA-3)									
M99103, M56 Smoke Generator	14909	6259	11369	20680	17999	25726	25629	Cont'd	Cont'd
M99107 M58 Smoke Generator	10481	3405	5585	10680	9551	12459	12446	Cont'd	Cont'd
G71300 M6 Discharger	0	3025	0	0	0	1050	1439	Cont'd	Cont'd

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604609A Smoke, Obscurant and Target Defeating System - Engineering Development PROJECT 200

D. Acquisition Strategy: Project D200 – Smoke/Obscurants: Beginning in FY 2000, the Millimeter Wave smoke generation system will be developed with the assistance of a full and open competitive contract for engineering design, construction and test of prototype systems mounted on the M56 and M58 smoke systems.

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
MMW – Milestone I/II , program Initiation		3Q					
MMW – Initiate RDTE competitive contract		4Q					
MMW – Conduct engineering design tests				3-4Q			
MMW – Initiate Pre-production Qualification test					3Q		
MMW – Complete PPQT						2Q	
MMW – Conduct Initial Operational Test						2Q	
MMW – Milestone III (System acceptance)							1Q

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604609A Smoke, Obscurant and Target Defeating System - Engineering Development

PROJECT: 200

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. VEESS	None	SBCCOM	0	559	1Q						559	
b. MMW –Hardware Dev	CPFF	To Be Determined		0		300	4Q	2680	1Q01	Cont'd	2980	Cont'd
Subtotal Product Development:				559		300		2680			3539	

Remark: The FY 2000 contract effort for MMW will include training development, ILS, and technical data.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. MMW – Environmental	In House	SBCCOM, APG, MD						100	1Q	Cont'd	100	Cont'd
and Toxicological studies												
Subtotal Support Costs:								100			100	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. MMW – Prototype evaluation	In-house	SBCCOM; APG, MD				200	3Q				200	
Subtotal Test and Evaluation:						200					200	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. VEESS – Prog Mgt Personnel	In-house	SBCCOM, APG, MD		81	1Q						81	
b. MMW – Prog Mgt Personnel	In-House	SBCCOM; APG, MD				396	1Q	631	1Q		1027	
c. MMW –Program Mgt Support	CPFF	To Be Determined						50	1Q		50	
d. STTR/SBIR				19		17					36	
Subtotal Management Services:				100		413		681			1194	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604609A Smoke, Obscurant and Target Defeating System - Engineering Development

PROJECT: 200

	Total PYs Cost	FY1999 Cost		FY 2000 Cost		FY 2001 Cost			Total Cost	
Project Total Cost:		659		913		3461			5033	

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604611A Javelin

PROJECT: D499

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D499 Javelin	3996	489	490	489	488	973	971	0	637114

A. Mission Description and Budget Item Justification: This program provides for the continuation of Engineering and Manufacturing Development (EMD) of a manportable antitank weapon system for use by the combined-arms team. The infantry must have the capability to defeat numerically superior armored forces. The present medium infantry antitank weapon is the DRAGON. The system developed within this program element will replace the DRAGON to provide enhanced lethality for the early entry force. It will have a high kill rate against all known armor threats at extended ranges under day/night, adverse weather conditions and in the presence of battlefield obscurants. This system will be hardened against countermeasures and will not require extensive training for effective employment. Active protection system developments will be considered and modifications studied to defeat these devices. This system will include software improvements to maintain lethality against evolving targets and countermeasures and increase robustness of system performance in all environments. This system will also integrate the Warhead improvement into the Baseline Main Charge Warhead (BMCW), and Counter Active Protection System (CAPS)/Tracker software, to include Land Warrior capability.

FY 1999 Accomplishments:

•	997	Program Management
•	151	Counter Active Protection System Studies
•	2655	Counter Active Protection System Generation 2 Development (Includes 24 Developmental Test Articles)
•	193	Baseline Main Charge Warhead (Procurement of 12 Live Fire Test Articles)
Total	3996	

FY 2000 Planned Program:

•	25	Program Management
•	351	Counter Active Protection System/Tracker Software
•	100	Warhead Damage Assessment Tests
•	13	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	489	

FY 2001 Planned Program:

•	25	Program Management
•	465	Counter Active Protection System/Tracker Software
Total	490	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604611A Javelin

PROJECT: D499

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	5242	493	493
Appropriated Value	5277	493	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-35		
b. SBIR / STTR	-139		
c. Omnibus or Other Above Threshold Reductions		-2	
d. Below Threshold Reprogramming	-1087		
e. Rescissions	-20	-2	
Adjustments to Budget Years Since FY 2000/2001 PB			-3
Current Budget Submit (FY 2001 PB)	3996	489	490

C. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
Missile Procurement, Army, CC0007, Javelin	337750	344616	372248	379668	213906	10639		Continuing	2709708
Missile Procurement, Army, CA0269, Javelin Spares	3712	4479	6614	7607	7801	8816	45	0	39074

D. **Acquisition Strategy:** CAPS/Tracker software is in the research and development phase, as part of a PEO Tactical Missiles Horizontal Technology Insertion (HTI) initiative. This program has broad application to other tactical missile programs.

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
CAPS Studies	2-4 Q	1-4 Q								
CAPS Generation 2 Development	3-4 Q	1-4 Q	1-4 Q							
BMCW Warhead Procurement	3 Q									
BMCW Damage Assessment Testing		1Q								

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604619A Landmine Warfare PROJECT D088

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D088 Wide Area Munition (WAM)	23825	13218	15902	18853	11897	0	0	0	329557

A. Mission Description and Budget Item Justification: The Wide Area Munition (WAM), a "smart," remotely-reprogrammable antitank weapon, provides unique control and offensive capability for a variety of missions. WAM will significantly reduce Army losses by using advanced smart munitions technology on the battlefield. The program provides for Engineering and Manufacturing Development (EMD) of the Basic WAM deployed by hand emplacement with one-way communications. The pre-planned product improvement to Basic WAM will be executed in two phases: WAM A1 will provides a two-way command and control and redeployable capability. WAM A2 will provide enhancements to the sublet and gowned platform enhancements to include Global Positioning (GPS) .

FY 1999 Accomplishments:

- 11555 Continued WAM PIP(A1) development of munition receiver, transmitter and control station interface module
- 2064 Initiated fabrication of Technical Test/Initial Operational Test and Evaluation hardware (20 systems)
- 2006 Continued System engineering
- 5700 Continued Ground Platform Module development
- 2500 Continued Control Station development/integration

Total 23825

FY 2000 Planned Program:

- 4600 InitiateWAM PIP (A1) TT/IOT&E testing
- 7162 Continue WAM PIP (A1) system engineering
- 1100 Continue system performance analysis
- 356 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs

Total 13218

FY 2001 Planned Program:

- Complete PIP (A1) TT/IOT&E 3105
- 2340 Complete Compass, GPS integration and testing for A2
- 7061 Initiate ground performance enhancement development (A2)
- 3396 Initiate sublet enhancement development (A2)

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604619A Landmine Warfare — PROJECT: D088

Total 15902

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	23036	13318	0
Appropriated Value	23189	13318	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-153		
b. SBIR / STTR	-611		
c. Omnibus or Other Above Threshold Reduction		-54	
d. Below Threshold Reprogramming	+1492		
e. Recissions	-92	-46	
Adjustments to Budget Years Since FY 2000/2001 PB			+15902
Current Budget Submit (FY 2001 PB)	23825	13218	15902

Change Summary Explanation: Funding – FY 2001: Funds (+15902) transferred from WAM production (SSN: E78100) in order to continue PIP EMD effort

C. Other Program Funding Summary Procurement of Ammunition, Army (PAA) And Other Procurement, Army (OPA)	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
WAM, E78100 (PAA)	9544	15191	7284	29206	44571	56334	56126	1428667	1686230
WAM Remote Control Unit, G01000 (OPA)	0	0	0	0	3874	3900	3896	0	11670
WAM Individual Trainer, E78103 (PAA)	0	1832	1534	0	0	0	0	0	5185
WAM Collective Trainer, E78104 (PAA)	0	0	0	1942	0	0	0	0	3868

D. Acquisition Strategy: The Basic WAM transitioned to Low Rate Production (LRP) in 3QFY96. A sole source Fixed Price Incentive Fee contract was awarded to the EMD contractor for the LRP quantity. Production buys will be included under the LRP contract as Firm Fixed Price options. A sole source Cost Plus Incentive Fee contract for EMD of an improved WAM was awarded to the Basic WAM developer in FY 1996.

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
WAM Basic Material Release		3Q						
WAM PIP (A1) TC LRP			1Q					
WAM PIP (A1) TC standard				4Q				
WAM PIP (A2) TC LRP				3Q				
WAM PIP (A2) TC Standard					4Q			

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604619A Landmine Warfare

PROJECT: D088

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
PIP EMD	CPIF	Textron	41549	18771	Oct98	8000	Oct 99	10225	Oct00	20225	98770	TBD
Basic EMD	CPIF	Textron	150614			0		0		0	150614	150614
Subtotal Product Development			192163	18771		8000		10225		20225	249292	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Engineering Support		ARDEC	23483	3212	Oct98	2700	Oct 99	3177	Oct00	6000	38572	
Engineering Support		OGA (misc)	14234	753	various	518	various	500	various	750	16755	
Subtotal Support Costs:			37717	3965		3218		3677		6750	55327	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Test Support		TECOM	11262	519	Feb99	1500	Dec 99	1500	Oct00	3000	17781	
Subtotal Test and Evaluation:			11262	519		1500		1500		3000	17781	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Program Management		PM-MCD	4649	570	Oct98	5 00	Oct 99	500	Oct00	1000	7219	
Subtotal Management Services:			4649	570		500		500		1000	7219	

Project Total Cost:			245791	23825		13218		15902		30975	329619	

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604622A Family of Heavy Tactical Vehicles

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	7992	1373	0	0	0	0	0	0	9365
D659 Family of Heavy Tactical Vehicles	963	1373	0	0	0	0	0	0	2336
DE50 Trailer Development	3371	0	0	0	0	0	0	0	3371
DE51 Forward Repair System, Heavy	3658	0	0	0	0	0	0	0	3658

A. **Mission Description and Budget Item Justification:** Program element funds various heavy tactical vehicle capabilities to support combat and combat support missions. These missions include the following: line haul, local haul, and unit resupply; and transporting water, ammo, and general cargo. FY99 Project 659 funding supports the Palletized Load System (PLS) safety enhancements. FY00 Project 659 provides funds for a PLS load handling system-compatible water distributor module for construction applications and replenishment/augmentation of fire-fighting operations. Project E50 funding supports requirements for a Trailer R&D program to demonstrate technologies that support the Army's objectives to minimize operational and support costs, while modernizing trailer systems that provide significant benefits to the Army warfighting capability. Project E50 funding also supports the Heavy Equipment Transporter System highway use Engineering & Manufacturing Development and Trailer Modernization for Fuel Transport. Project E51 funding supports Low Rate Initial Production and Testing on the Forward Repair System (FRS) Warfighter Rapid Acquisition Program.

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	8244	0	0
Appropriated Value	8300	1400	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-56		
b. SBIR / STTR	-218		
c. Omnibus or Other Above Threshold Reductions		-6	
d. Below Threshold Reprogramming			
e. Rescissions	-34	-21	
Adjustments to Budget Years Since FY 2000/2001 PB			
Current Budget Submit (FY 2001 PB)	7992	1373	0

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604622A Family of Heavy Tactical Vehicles / PROJECT: D659

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D659 Family of Heavy Tactical Vehicles	963	1373	0	0	0	0	0	0	2336

A. Mission Description and Budget Item Justification: FY00 Project 659 provides funds for a PLS load handling system-compatible water distributor module for construction applications and replenishment/augmentation of fire-fighting operations

FY 1999 Accomplishments:

- 510 Developed/Fabricated Rollover Sensor
- 408 Tested Sensor
- 45 Updated Performance Specification

Total 963

FY 2000 Planned Program:

- 685 Award EMD Contract for PLS-mounted Water Distributor Module Prototypes.
- 380 Conduct Production Qualification Test (PQT) of Module at YPG and Contractor Support of PQT.
- 271 Preparation of Technical Manuals.
- 37 Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)

Total 1373

FY 2001 Planned Program: Project not funded in FY 2001

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA1, DA0500, Family of Heavy Tactival Vehicle	191077	193427	166119	194085	380974	219881	170752	Cont	Cont

C. Acquisition Strategy: Limited RDTE followed by competitive production contract award.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604622A Family of Heavy Tactical Vehicles — PROJECT: D659

D. Schedule Profile	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Complete Purchase Decription & EMD Contract Solicitation Package for the Water Distributor Module (WDM)	2Q					
WDM Prototype Contract Award (including PQT)	3Q					
Complete PQT on WDM		3Q				
Performance Specification Complete			1Q			

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604633A Air Traffic Control PROJECT D586

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D586 Air Traffic Control	1550	4911	2026	2189	2285	2565	2659	Continuing	Continuing

A. **Mission Description and Budget Item Justification:** This program element funds continuous efforts for the development of modernized tactical and fixed base Air Traffic Control (ATC) systems that will enhance and ensure total aviation safety in both the tactical and strategic ATC domains. Primarily funds the total system integration and qualification for the Air Traffic Navigation Integration Coordination System (ATNAVICS). ATNAVICS supports the tactical aviation warfighter at remote landing zones, pickup zones and temporary fixed wing and helicopter operating/landing areas worldwide. FY 99 funds completes the EMD phase for ATNAVICS. Also funded in this program element is the development of the Mobile Tower System (MOTS), a tactical mobile tower designed to replace an antiquated and obsolete legacy system. A Non-Developmental Item (NDI), MOTS will be equipped with modernized and secure avionics to ensure highly reliable and consistent tactical aircraft communications at semipermanent landing areas. Funds for the Mobile Expeditionary Accurate Night Vision Compatible Portable Airfield Lighting System (MEANPALS) will allow PM to initiate the acquisition to procure and evaluate prototype systems. Also, funds are required for AN/ARC220 integration requirements for the Tactical Terminal Control System (TTCS).

FY 1999 Accomplishments:

ATNAVICS		
•	399	Closed out EMD phase, transition to production phase
•	1151	Conducted final operational testing
Total	1550	

FY 2000 Planned Program:

MOTS	50	Conduct Market Analysis
•	1747	Procure prototype MOTS Test Article for Developmental Testing
TTCS	106	Analyze ARC220 Integrations Requirement
MEANPALS		
•	15	Conduct Market Analysis
•	1383	Procure NDI Prototypes
•	275	Conduct Demonstration and Analysis
•	310	Modify System and Evaluate Results as Required
•	900	Integrate with Other ATC Systems
	125	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	4911	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604633A Air Traffic Control / PROJECT: D586

FY 2001 Planned Program:

MOTS

- 1813 Complete EMD phase for MOTS
- 213 Conduct Developmental/Operational Testing

Total 2026

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	1724	1981	2035
Appropriated Value	1737	4981	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-13		
b. SBIR / STTR	-38		
c. Omnibus or Other Above Threshold Reduction		-19	
d. Below Threshold Reprogramming	-130		
e. Rescissions	-6	-51	
Adjustments to Budget Years Since FY 2000/2001 PB			-9
Current Budget Submit (FY 2001 PB)	1550	4911	2026

C. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
APA AZ1710- Airfield Support Equipment	8953	13222	0	0	0	0	0		
APA AA0050 – Air Traffic Control	16843	8684	74144	74561	70312	67634	58260	Cont'd	Cont'd

D. Acquisition Strategy: ATNAVICS Developmental and Operational testing completed in FY 99. Production phase through Firm Fixed Price procurement options to commence in FY 00. Procure a MOTS prototype for design, development, and testing. Procure a MEANPALS system for demonstration/evaluation.

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
ATNAVICS Developmental and Operational Testing	2-4 Qtr						
Close out ATNAVICS EMD, Prepare for Production Phase	3-4 Qtr						
MOTS Market Analysis (State of Art Syst Solution)		1-2 Qtr					
Procure Prototype MOTS		3 Qtr					
Analyze ARC220 Integration Requirement (TTCS)		3 Qtr					

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)		DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604633A Air Traffic Control	PROJECT: D586

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Conduct MEANPALS Market Analysis		1 Qtr					
Procure MEANPALS Prototypes		3 Qtr					
Conduct MEANPALS Demonstration and Analysis		4 Qtr					
Modify MEANPALS System and Evaluate			1-2 Qtr				
Integrate MEANPALS with other ATC Systems			3 Qtr				
Complete EMD Phase for MOTS			2 Qtr				
Conduct MOTS Developmental and Operational testing			2-3 Qtr				
P3I Initiatives/Programs for Tactical Systems (ATNAVICS, Tactical Terminal Control System(TTCS) and Fixed Base Systems)				1-4 Qtr	1-4 Qtr	1-4 Qtr	1-4 Qtr

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604633A Air Traffic Control

PROJECT: D586

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ATNAVICS	CPFF	Raytheon*	26100							0	26100	26100
b. MOTS	TBD	TBD				1135	3Qtr	1318	1 Qtr	0	2453	
c. ATNAVICS GFE	Reqn	Various	392							0	392	
d. MEANPALS	FFP	AMCOM				2523				0	2523	
Subtotal Product Development:			26492			3658		1318			31468	26100

Remark: * Full address is: Raytheon Co., Raytheon Electronics Systems, 1001 Boston Post Rd., Marlborough, MA 01752

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ATNAVICS	MIPR	AMCOM/CECOM	2426	262	1-2 Qtr					0	2688	
b. MOTS	Various	Various				338	1 Qtr	345	1 Qtr	0	683	
c. MEANPALS	TBD	TBD				290					290	
d. TTCS	Various	Various				106					106	
Subtotal Support Costs:			2426	262		734		345			3767	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ATNAVICS	MIPR	TEXCOM/TECOM*		1151	1-2 Qtr					0	1151	
b. MOTS	TBD	TBD				0	1 Qtr	213	1 Qtr	0	213	
Subtotal Test and Evaluation:				1151				213			1364	

Remark: * TEXCOM is located at Fort Hood, TX. TECOM is located at Aberdeen Proving Ground, MD.

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ATNAVICS	T&M	Dynamic Rsch Corp*	988	137	1 Qtr					0	1125	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604633A Air Traffic Control

PROJECT: D586

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
b. MOTS	TBD	TBD				324	1 Qtr	150	1 Qtr	0	474	
c. MEANPALS	TBD	TBD				70					70	
d. SBIR/STTR						125					125	
Subtotal Mgt Services :			988	137		519		150			1794	
Project Total Cost:			29906	1550		4911		2026			38393	26100

Remark: * Full address is: Dynamics Research Corporation, 9238 Highway 20 , Madison, AL 35758

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604641A Tactical Unmanned Ground Vehicle

PROJECT: DE47

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DE47 Tactical Unmanned Ground Vehicle (TUGV)	2528	4905	0	0	0	0	0	0	0

A. **Mission Description and Budget Item Justification:** The Army is the lead for this joint service program. The development of a Tactical Unmanned Ground Vehicle (TUGV) is within the Family of Tactical Unmanned Vehicles (FTUV) within the OSD Joint Robotics Program. TUGV provides commanders the ability to see the battlespace while at the same time reducing soldiers' exposure during dangerous reconnaissance, surveillance, target acquisition (RSTA) and Nuclear Biological and Chemical (NBC) detection missions. Performs as a force multiplier, eliminates trickle-down combat information, reduces the "fog-of-war" and fills the brigade intelligence gap. Most importantly, the TUGV will remove brigade and battalion commanders from the bottom of the combat intelligence food chain. Unmanned systems, operating out front, provide a force multiplication capability where TUGVs report the nature of the terrain, find the enemy, locate obstacles, acquire targets, detect chemical vapors, and provide this information directly to those who need it the most –the battalion commander's battle staff. There will be at least two versions of the TUGV. A medium version, Tactical Unmanned Vehicle-Medium (TUV-M), will be developed for emerging requirements from the United States Marine Corps and U.S. Army Infantry Center for Scout/surveillance and engineer reconnaissance. Tactical Unmanned Vehicle-Light (TUV-L) will be a man-packable unit for intelligence collection and dissemination, and conducting remote/area/building reconnaissance. The platforms will include a minimum day/night audio/video, and accept a family of modular multi-sensor capabilities such as through-wall and countersniper sensors. Data will be produced in a format compatible with higher level communications architecture. This PE supports the critical transition of Defense Advanced Research Project Agency (DARPA) and Army Research Laboratory (ARL) developed technologies to the Project Manager (PM) Unmanned Ground Vehicles/Systems so that they can be assessed (maturity, supportability, operationally) during user appraisals, advanced concept technology demonstrations (ACTD) and, packaged and readied for incorporation into the TUV Engineering and Manufacturing Development (EMD) performance specifications.

FY 1999 Accomplishments:

•	1107	Concept Exploration/Design – TUV – Light/Medium participated in Military Operations in Urban Terrain (MOUT) ACTD, and Advanced Warfighting Experiments/Limited Objective Experiments (AWE/LOE).
•	619	Modeling and simulation .
•	200	Assessed Demo III technology for insertion into the FTUV specification.
•	602	Datalink Testing and fiber optic design and build.
Total	2528	

FY 2000 Planned Program:

•	4273	Integration of Haaglunds flail technology and SRS kit onto selected platform. Single test prototype for ACTD.
•	500	Mine testing in various soil types.
•	132	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	4905	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604641A Tactical Unmanned Ground Vehicle
	PROJECT DE47

FY 2001 Planned Program: Program not funded in FY 2001

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000 / 2001 PB)	2452	0	0
Appropriated Value	2468	5000	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-16		
b. SBIR / STTR	-65		
c. Omnibus or Other Above Threshold Reductions		-20	
d. Below Threshold Reprogramming	+151		
e. Rescissions	-10	-75	
Adjustments to Budget Years since FY 2000/2001 PB			
Current Budget Submit (FY 2001 PB)	2528	4905	0

Change Summary Explanation: Funding – FY 2000: Congressionally directed Viking flail effort is a second phase project to adapt Norwegian Haaglunds flail technology to an acceptable platform and to assess its potential to meet U.S. requirements. The effort involves incorporation of the Standardized Robotic System, flail integration, and evaluation in an ACTD setting.

C. **Other Program Funding Summary**: Not applicable.

D. **Acquisition Strategy:** The Joint Project Office is following a disciplined Evolutionary Acquisition strategy. This strategy requires Horizontal Technology Integration (HTI) of emerging sensors, lasers, and command and control data link technologies so that the first generation TUGV will enable soldiers to perform dangerous scout/RSTA, biological and chemical detection, and targeting missions from remote and safer locations. This program differs from traditional acquisition programs by incorporating an in-house Program Definition and Risk Reduction phase. TUV-M prototype systems are being built during this phase using state-of-the-art sensors, controlling actuators, low bandwidth communications, mission planning, and off-road navigation technologies. The program utilizes a TUGV Integrating Integrated Product Team (IIPT) approach. TUV-M Engineering and Manufacturing Development will begin with a projected Milestone II decision in FY 2000 using OSD PE 0604709D8Z (FTUV) funding. Viking acquisition will be accomplished through a two phased study, design, fabricate, and test program. Viking will be a candidate for the Joint Area Clearance ACTD in FY02.

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
ACTD Participation	3-4Q						
Demonstration Alpha (Demo III)	4Q						
Demo III IPRs/CDRs	3Q						
Participate in Demo III Communications IPT	1-4Q						
Datalink Testing	1-4Q						

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604641A Tactical Unmanned Ground Vehicle PROJECT DE47

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Viking Flail integration feasibility study		1Q					
Viking Material Procurement Decision		2Q					
Viking Phase II IPR		2Q	1Q				
Viking Hydraulic interface design/fab/install		2Q-4Q	1Q				
Viking Platform modifications		2Q-4Q	2Q				
Viking Test/Integration		4Q	1Q-3Q				

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604641A Tactical Unmanned Ground Vehicle

PROJECT: DE47

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TUV Development and Prototypes	CPFF	Various	4062								4062	
b. TUV-L ACTD	CPFF	Mesa Associates, Inc*		534	2Q						534	534
c. Viking Development	TBD	Summa Technologies*				4188	2Q				4188	
Subtotal Product Development:			4062	534		4188					8784	

*Mesa Associates, Inc., 9238 Madison Blvd., Bldg. 2, Ste. 116, Madison, AL 35758
*Summa Technologies, 140 Sparkman Drive, Huntsville, AL 35805

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TUV Spt for Dev and Prototyping	MIPR	Various	340								340	
b. Requirements Dev and TUV Support of ACTD	MIPR	USAIC, Ft. Benning, GA	85	150	3Q						235	
c. TUV Support	MOA	MRDEC, Redstone Arsenal, AL	879	318	2Q						1197	
d. SETA Support for Viking	CPFF	Uwohali, Inc*				17	2QFY96				17	
Subtotal Support Costs:			1304	468		17					1789	

*Uwohali, Inc., 4950 Research Dr., Huntsville, AL 35805

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TUV Modeling and Simulation	MOA	MRDEC, Redstone Arsenal, AL	200	619							819	
b. TUV Electromagnetic Enviro Effects Prog	MOA	RTTC, Redstone Arsenal, AL		170							170	
c. Data Link	FFP	SAIC *		187							187	
d. TUV Fiber Optic (FO) Development and Testing	MOA	MRDEC, Redstone Arsenal, AL		195							195	
e. FO ARTS Prog/Alt FO	CPFF	Morgan Research **		90							90	
f. Viking Test Support	MIPR	DTC, APG, MD				200					200	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604641A Tactical Unmanned Ground Vehicle

PROJECT: DE47

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
g. Viking Test Support	MIPR	AFRL, Tyndall AFB, FL				300					300	
Subtotal Test and Evaluation:			200	1261		500					1961	

*SAC Tech Services Div., OPN of Tech Svc CO MS44, 10260 Camput Point Dr., San Diego, CA 92121
**Morgan Research Corp, 2707 Artie SW, Huntsville, AL 35805

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Management/ Engineering	MOA	MRDEC/CAD, Redstone Arsenal, AL	265	265	2Q						530	
b. Viking Support	In-house	AMCOM, RSA, AL				200					200	
Subtotal Management Services:			265	265		200					730	

Project Total Cost:			5831	2528		4905					13264	

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604642A Light Tactical Wheeled Vehicle

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	0	7441	9893	979	0	0	0	18313	18313
DE40 High Mobility Multi-Purpose Wheeled Vehicle (HMMWV) Prototype	0	4503	7444	979	0	0	0	12926	12926
DE46 HMMWV Recapitilization Program	0	2938	2449	0	0	0	0	5387	5387

A. Mission Description and Budget Item Justification: This Program Element supports all Light Tactical Wheeled Vehicles such as the High Mobility Multi-Purpose Wheeled Vehicle (HMMWV), HMMWV Recapitilization Program and the Armored Security Vehicle (ASV). In FY 2000 through FY 2002, Project DE40 funds the RDT&E effort leading to the HMMWV A4 Block Improvement Program through technology integration into the HMMWV. Project DE46 funds the RDT&E effort for the HMMWV Recapitalization Program, which will provide operational and safety improvements to the current fleet of vehicles by component refurbishment, replacement and enhanced performance characteristics.

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	0	7498	9954
Appropriated Value	0	7498	
Adjustments to Appropriated Value			
a. Congressional General Reductions			
b. SBIR / STTR			
c. Omnibus or Other Above Threshold Reductions		-31	
d. Below Threshold Reprogramming			
e. Rescissions		-26	
Adjustments to Budget Years Since FY 2000/2001 PB			-61
Current Budget Submit (FY 2001 PB)	0	7441	9893

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604642A Light Tactical Wheeled Vehicle / PROJECT: DE40

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DE40 High Mobility Multi-Purpose Wheeled Vehicle (HMMWV) Prototype	0	4503	7444	979	0	0	0	12926	12926

A. **Mission Description and Budget Item Justification:** The HMMWV is a lightweight, high performance, four-wheel drive, air transportable and air droppable, high mobility tactical wheeled vehicle. The HMMWV consists of a basic design with several variants including Cargo/Utility, Armament Carrier, Ambulance, Shelter Carrier and Armored Armament Carrier. FY 2000 through FY 2002 funds the HMMWV A4 block improvement development effort. This effort will meet the key HMMWV ORD requirements focusing on the primary goal of restoring the mobility and reliability of the original HMMWV models at the higher payload and mission requirements of the Army Force XXI. Key performance parameters (KPP) will be addressed by the development of technologies for central tire inflation, steering gear, suspension and corrosion prevention enhancements. The effort will address changes to the Federal Motor Vehicle Safety Standards (FMVSS), including anti-lock brakes and changes to environmental requirements for the engine. The HMMWV development effort will incorporate, where appropriate, commercial light truck technology now being evaluated in National Automotive Center (NAC) programs. New commercial technology, combined with greater achievement of user requirements, will result in a block-improved HMMWV. Developmental testing in FY 2001 will be required. Testing will include reliability, availability, maintainability (RAM), environmental, and transportability.

FY 1999 Accomplishments: Project not funded in FY 1999

FY 2000 Planned Program:

•	3582	HMMWV Development Contract
•	300	Support Costs (Engineering/Quality/Matrix)
•	500	Assemble and test up to five prototype vehicles
•	121	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	4503	

FY 2001 Planned Program:

•	5044	HMMWV Development Contract
•	2100	Assemble and test up to eight prototype vehicles
•	300	Support Costs (Engineering/Quality/Matrix Support)
Total	7444	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604642A Light Tactical Wheeled Vehicle — PROJECT: DE40

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA1 Hi Mob Multi-Purp Whld Veh (HMMWV) D15400	73557	91704	110746	109145	111159	127271	127136	Cont	Cont
OPA4 Initial Spares – TSV DS1030	77	72						149	149

C. **Acquisition Strategy:** The acquisition strategy for the HMMWV is to award a prototype contract for the HMMWV block improvement and a five-year requirement type production contract.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2004	FY 2005
Award HMMWV Development		2Q00	1Q01					
Developmental Test & Evaluation			2Q01					
IPR Decision			3Q01					
Award Production Contract				2Q02				

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604642A Light Tactical Wheeled Vehicle

PROJECT: DE40

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Development Contract	SS/CPIF	AM General		3582	2Q00	5044	1Q01	829	9455	9455
b. In-House Support (TACOM)	N/A	Warren, MI		300	1Q00	300	1Q01	150	750	750
c. SIBR/STTR				121					121	121
Subtotal Product Development:				4003		5344		979	10326	10326

Remark: Development Contract includes cost of a Technical Data Package (TDP) upon completion of the R&D Phase.

II. Support Costs: Not applicable

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Developmental Testing	N/A	ATC		500	4Q00	2100	2Q01		2600	2600
Subtotal Test and Evaluation:				500	4Q00	2100			2600	2600

Remark: Testing will include RAM, environmental, transportability, and automotive testing.

IV. Management Services: Not applicable

Project Total Cost:				4503		7444		979	12926	12926

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604642A Light Tactical Wheeled Vehicle PROJECT DE46

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DE46 HMMWV Recapitilization Program	0	2938	2449	0	0	0	0	5387	5387

A. Mission Description and Budget Item Justification: The HMMWV Recapitalization Program is a remanufacture program to extend the life of the over age HMMWVs. The HMMWV fleet is experiencing increased Operation and Support (O&S) costs, excessive wear, or corrosion. These HMMWVs, which are in need of replacement/remanufacture, include the Cargo/Utility, Armament, Ambulance and Shelter Carrier. The HMMWV Recapitalization Program will provide operational and safety improvements to the current fleet of vehicles and will correct imbalances in required vs on hand quantities. The recapitalized HMMWVs will include enhanced performance characteristics. These improvements will be achieved by a combination of component remanufacture and replacement. Components, which have been improved during the evolution of the HMMWV and the Commercially Based Tactical Truck (COMBATT) demonstration of commercial technology, will be incorporated in the recapitalized vehicles where technically and economically feasible. The objective of the HMMWV Recapitalization Program is to extend the useful service life of the vehicles. In FY 2005, 60% of the HMMWV fleet will be over-aged. Technology insertion opportunities will be developed, targeted on reducing overall O&S costs and improving performance. Examples are corrosion protection, digitization requirements, data bus integration and other O&S cost drivers.

FY 1999 Accomplishments: Project not funded in FY 1999

FY 2000 Planned Program:

•	2509	Prototype contract(s)
•	350	Support Costs (engineering/quality/matrix support)
•	79	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	2938	

FY 2001 Planned Program:

•	1794	Prototype contract(s)
•	525	Test up to eighteen prototype vehicles
•	130	Support Costs (engineering/quality/matrix support)
Total	2449	

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
HMMWV Recapitalization Program (DV0230)				15453	36641	44571	44524	Cont	Cont

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604642A Light Tactical Wheeled Vehicle / PROJECT: DE46

C. **Acquisition Strategy:** The HMMWV Recapitalization program acquisition strategy consists of three parts: (1) leveraging the value of the current fleet by assessing its condition, developing rates and schedules, and completing risk assessments; (2) gaining input from industry by using a Government-prepared Statement of Objectives (SOO) to solicit contractor-prepared Scopes of Work (SOW) and proposals for award of Prototype and Test (PAT) contracts; and (3) awarding a single contract for production of recapitalized vehicles. It is the Government's plan to competitively award up to three PAT contracts based upon best value source selection procedures. This phase will use Cost as An Independent Variable (CAIV) principles to establish cost thresholds. During PAT, each contractor will be provided nine candidates HMMWV's as Government Furnished Equipment (GFE) to build six recapitalized prototype vehicles, which will undergo testing. The three contractors will be permitted to compete for award of the follow-on-production contract. The PAT test results will be considered during the best value source selection for the production contract. The production contract will be a five-year requirements type contract.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2004	FY 2005
Award Prototype Contract(s)		3Q00	1Q01					
Developmental Test & Evaluation			1Q01					
Production Contract Award				2Q02				

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604642A Light Tactical Wheeled Vehicle

PROJECT: DE46

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Prototype Contract(s)	C/CPIF	TBD		2509	3Q00	1794	1Q01		4303	4303
b. In-House Support	N/A	Warren, MI		350	1Q00	130	1Q01		480	480
c. SIBR/STTR				79					79	79
Subtotal Product Development:				2938		1924			4862	4853

Remark: Prototype contract(s) includes cost of Technical Data Package (TDP) upon completion of the R&D Phase.

II. Support Costs: Not applicable

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Test & Evaluation	N/A	ATC				525	1Q01		525	525
Subtotal Test and Evaluation:						525			525	525

IV. Management Services: Not applicable

Project Total Cost:				2938		2449			5387	5387

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604645A Armored Systems Modernization (ASM) - Engineering Development

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	4259	2877	2200	0	0	15378	24755	Continuing	Continuing
D175 Multi-Option Fuze Advanced Field Artillery System	4259	2877	2200	0	0	0	0	0	48034
D426 Advanced Colt System	0	0	0	0	0	15378	24755	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program element supports the Engineering and Manufacturing Development efforts for the Multi-Option Fuze for Artillery (MOFA). MOFA will provide proximity, time, delay, and point detonation functions for 105mm and 155mm bursting projectiles. Funds the development of the replacement system for the Striker fire support vehicle, leveraging developments in the mobile armored system and future combat vehicle. System will be compatible with the maneuver scouts for Brigade reconnaissance teams in heavy, medium and light divisions. Performs fire support planning, direction, controlling, target designation, night observation and while retaining equivalent mobility of supported units.

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	4470	2899	6064
Appropriated Value	4500	2899	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-30		
b. SBIR/STTR	-119		
c. Omnibus or Other Above Threshold Reductions		-12	
d. Below Threshold Reprogramming	-74		
e. Rescissions	-18	-10	
Adjustments to Budget Years Since FY 2000/2001 PB			-3864
Current Budget Submit (FY 2001 PB)	4259	2877	2200

Change Summary Explanation: Funding - FY 2001: Project D022 funds realigned (-3850) to PE 0603005A/project D440 in support of the Future Scout Cavalry System.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604645A Armored Systems Modernization (ASM) - Engineering Development

PROJECT: D175

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D175 Multi-Option Fuze Advanced Field Artillery System	4259	2877	2200	0	0	0	0	0	48034

A. **Mission Description and Justification** This project finances the Engineering and Manufacturing Development phase of the Multi Option Fuze Artillery (MOFA). MOFA will provide proximity, delay, time and point detonation functions for 105mm and 155mm bursting projectiles. MOFA will be inductively set. This induction set feature is critical to the automated ammunition handling capability of the Crusader 155mm self-propelled howitzer, allowing Crusader to meet rate of fire (10 rounds/min) requirements. The Portable Inductive Artillery Fuze Setter (PIAFS) is being developed to allow non-Crusader equipped artillery units to inductively set the MOFA. A Low Cost Advanced Target Sensor (LCATS) is being developed for enhanced electronic countermeasures effects.

FY 1999 Accomplishments:

•	1424	Performed Design Enhancements and Qualification Builds, XM782 (Contract Task VI), this included the cost for 500 XM782 fuzes for testing.
•	280	Began Low Cost Advanced Target Sensor (LCATS) developmental efforts.
•	1550	Portable Inductive Artillery Fuze Setter (PIAFS) advanced development and testing.
•	305	Program management and management engineering services.
•	700	Conducted XM782 MOFA Pre-Production Qualification Testing (PPQT).
Total	4259	

FY 2000 Planned Program:

•	894	Low Cost Advanced Target Sensor (LCATS) development and technology insertion.
•	320	Program management & management engineering.
•	1336	Portable Inductive Artillery Fuze Setter (PIAFS) development effort.
•	250	Conduct PIAFS testing.
•	77	Small business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs.
Total	2877	

FY 2001 Planned Program:

•	1361	Low Cost Advanced Target Sensor (LCATS) development and technology insertion
•	239	Program management and management engineering
•	600	Complete LCATS testing

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604645A Armored Systems Modernization (ASM) - Engineering Development PROJECT D175

Total 2200

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Comp	Total Cost
Procurement, Ammo, Army, ER 8017	1502	13951	45633	52839	53449	53487	53437	Cont	Cont
OPA-2, Army, AD3260		4118			4057	6918	7303	Cont	Cont
RDTE, BA4, Army, PE 0603854, D505	300429	266158	355309	446674	245250			0	2140620
RDTE, BA5, Army, PE 0604854, D503			28	39273	227991	452583	425058	Cont	Cont
Procurement, WTCV, Army, G83500						24679	94237	Cont	Cont
Procurement, WTCV, Army, G83600						19096	76408	Cont	Cont

C. **Acquisition Strategy:** Intent is to award a competitive best value (restricted to North America) contract for FY1999, FY2000 and FY2001 buys. We will have a follow-on, competitive multi-year contract beginning with the FY2002 buy. We anticipate that the Low Cost Advanced Target Sensor (LCATS) will be incorporated into the XM782 design during follow-on, competitive buy in FY2002. A sole source award will be made on the Portable Inductive Artillery Fuze Setter (PIAFS) using a FFP contract in FY2000.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
XM782 MOFA							
TC testing	3Q*						
MS III XM782		1Q					
EMD Contract Complete	2Q*						
Portable Inductive Artillery Fuze Setter (PIAFS)							
PIAFS in-house Development Complete	2Q*						
PIAFS Contract Award	3Q*						
PIAFS TC testing		3Q					
PIAFS MS III		4Q					
Low Cost Advanced Target Sensor (LCATS)							
LCATS Task VII Award		3Q					
LCATS Task VII Complete			4Q				
LCATS Insertion to Technical Data Package				1Q			

*Milestone Completed

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604645A Armored Systems Modernization (ASM) - Engineering Development

PROJECT: D175

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Primary Hardware Development	CPIF	Alliant Techsystems Hopkins, MN	21197	389	May-99	0	-	0	-	0	21586	
b. Producibility Spt.	SS-CPFF	Raytheon/TI Joint Ventures, Tewksbury, MA	1788	0	-	0	-	0	-	0	1788	
c. PIAFS Development Contract	CPIF	Alliant Techsystems Hopkins, MN	0	714	Apr-99	630	Jan-00	0	-	0	1344	
d. Engineering development		TACOM, ARDEC, Picatinny, NJ; Adelphi, MD	9232	2101	Oct-98	996	Oct-99	771	Oct-00	0	13100	
e. Low Cost Advanced Target Sensor Contracts	SS-FFP	ICS, CA University of Florida, FL	385	50	Oct-98	604	Dec-99	590	Dec-00	0	1629	
Subtotal Product Development:			32602	3254		2230		1361			39447	

II. Support Costs: Not applicable

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program testing	PO	TECOM, Yuma, AZ; APG; ARL, MD; ARDEC, NJ; HAFB	2556	700	Oct-98	250	Oct-99	600	Oct-00	0	4106	
Subtotal Test and Evaluation:			2556	700		250		600			4106	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604645A Armored Systems Modernization (ASM) - Engineering Development

PROJECT: D175

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Management and Management oversight	PO	TACOM, ARDEC, Picatinny, NJ; Adelphi, MD	3540	305	Oct-98	320	Oct-99	239	Oct-00	0	4404	
b. SBIR/STTR	N/A	N/A	0	0	-	77	-	0	-	0	77	
Subtotal Management Services:			3540	305		397		239			4481	
Project Total Cost:			38698	4259		2877		2200			48034	

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604649A Engineer Mobility Equipment Development

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	69044	57880	0	0	0	0	0	0	293731
DG25 M1 Breacher	57710	57719	0	0	0	0	0	0	194104
DG26 Heavy Assault Bridge	11334	161	0	0	0	0	0	0	99627

A. Mission Description and Budget Item Justification: This Program Element (PE) supports the development of new, advanced combat engineer systems that will have mobility characteristics comparable to the maneuver forces supported. The programs included in this PE are the Grizzly (M1 Breacher) and the Wolverine (Heavy Assault Bridge). The Grizzly base vehicle is an M1 Abrams Tank chassis whereas the Wolverine base vehicle is the M1A2 SEP Abrams Tank chassis. The Grizzly will integrate a versatile/survivable full-width mine clearing blade with automatic depth control, a power driven arm, and an armored commander's control station on the chassis. The Wolverine integrates a Military Load Class (MLC) 70 bridge that spans a 24 meter gap (26 meter bridge) with computer controlled launching mechanism.

Project G25, M1 Breacher, was terminated to support the New Army Transformation.

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	70590	58321	37741
Appropriated Value	71069	58321	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-479		
b. SBIR / STTR	-1809		
c. Omnibus or Other Above Threshold Reductions		-239	
d. Below Threshold Reprogramming	+545		
e. Rescissions	-282	-202	
Adjustments to Budget Years Since FY 2000/2001 PB			+21910
New Army Transformation Adjustments		TBD	-59651
Current Budget Submit (FY 2001 PB)	69044	57880	0

Change Summary Explanation: Funding – FY 2001: Increase (+21910) to project DG25 was in support of the M1 Breacher program; later reduction of 59651 was in support of the New Army Transformation, resulting in the termination of this program.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604649A Engineer Mobility Equipment Development
	PROJECT: DG25

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DG25 M1 Breacher	57710	57719	0	0	0	0	0	0	194104

A. **Mission Description and Justification:** The Grizzly (M1 Breacher) provides the Combat Engineer with significantly improved mission effectiveness and crew/vehicle survivability while clearing minefields and removing complex natural and man-made obstacles at the forward edge of the battlefield. The Grizzly is capable of moving with, and would be as survivable as, the maneuver force. The system provides a critical resource for executing in stride breaches, supporting the Force XXI maneuver commander's goals of information and maneuver dominance on the battlefield. The current method of breaching obstacles is to coordinate the employment of line charges, bridges, plows, rollers and even soldiers on the ground in a very dangerous and complex mission. The Grizzly replaces all of this with a single, survivable breach platform that gives the Combat Engineer a capability that does not currently exist in today's complex obstacle breaching operations, and will facilitate successful execution of ground combat mission requirements by maneuver forces.

FY 1999 Accomplishments:

•	36844	Continued Refinement of Design to Support Vehicle Production Configuration and Complete Fabrication of 2 Prototypes
•	662	Procured Chassis Government Furnished Material (GFM) for Prototype Vehicles
•	17352	Performed Component Testing and Simulation, Production Planning, and Accomplish Program Logistics Requirements
•	2852	Provided Program Management
Total	57710	

FY 2000 Planned Program:

•	28100	Complete Vehicle Integration, Shakedown & Delivery to Government of 2 Prototypes in Mar 00
•	21568	Perform Test Fix Implementation, Production Planning, Contractor Test Support and Accomplish Program Logistics Requirements
•	6497	Contract Termination
•	1554	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	57719	

FY 2001 Planned Program: Project not funded in FY 2001.

B. Other Program Funding Summary	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604649A Engineer Mobility Equipment Development
	PROJECT DG25

B. Other Program Funding Summary	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
PA, WTCV, GZ3200, Breacher MOD	0	0	19513	0	0	0	0	0	0	19513

C. **Acquisition Strategy:** Research and development efforts have leveraged the accomplishments of the Combat Mobility Vehicle Advanced Technology Transition Demonstrator (CMV-ATTD) contract. Design modifications were written into the Advanced Development contract for the powertrain and other chassis components/systems necessary to insure that the Grizzly meets the mission profile required by the Operational Requirements Document. Modeling and Simulation was an essential aspect of the program and was being used to avoid costs in all areas of the design, training, testing, and production of this system. Through the production buy the vehicle was to be sole sourced to United Defense Limited Partnership (UDLP), Ground Systems Division, York, PA. The contracts for training devices development and production was to be awarded by STRICOM with maximum use of existing commercial off-the-shelf hardware and software.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
Complete Prototype Rebuild and Assess Performance		2nd Qtr								
Complete Program Termination Activity		4th Qtr								

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604649A Engineer Mobility Equipment Development

PROJECT: DG26

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DG26 Heavy Assault Bridge	11334	161	0	0	0	0	0	0	99627

A. Mission Description and Justification: The Wolverine provides Military Load Class (MLC) 70 capability spanning 24-meter gaps (26-meter bridge). The Wolverine mobility characteristics are comparable to the supported maneuver forces. The Wolverine is an M1A2 SEP Abrams Tank chassis supporting a horizontally launched bridge. The bridge launches in five minutes or less; and can be retrieved in ten minutes or less (inclusive of five minute engagement and five minute placement times.

FY 1999 Accomplishments:

- 3605 Contractor Test Support, Developmental Contract and Refurbishment of Test Vehicles
- 593 Program Management
- 7136 Live Fire Test Execution, Production Verification Test Execution, and System Support Package Build and Placement

Total 11334

FY 2000 Planned Program:

- 157 Program Management
- 4 Small Business Innovative Research

Total 161

FY 2001 Planned Program: Project not funded in FY 2001.

B. Other Program Funding Summary	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
PA, WTCV, GZ3250, HAB MOD	40372	49978	81901	0	0	0	0	0	0	172251
PA, WTCV, GE0177, HAB Spares	893	858	1337	0	0	0	0	0	0	3088
PA, WTCV, G84600 HAB Training Devices	0	385	14844	0	0	0	0	0	0	15229

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604649A Engineer Mobility Equipment Development
	PROJECT DG26

C. **Acquisition Strategy:** Side-by-side Comparison Testing was completed in FY 1993 on three different prototype bridges and launchers for Phase I of Engineering and Manufacturing Development (EMD). As a result of the testing and submission of proposals, one contractor, General Dynamics Land Systems Division (GDLS), was selected to complete Phase II of EMD with a Cost-Plus-Award-Fee contract. A contract was awarded in FY 1996 for two Wolverine systems, with an option for four additional systems exercised in December 1996 that will complete combined developmental and operational testing. A Fixed Price three year multiyear contract was awarded in April 98 for LRIP and initial fielding requirements.

The termination strategy is to be determined.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
Begin DT	4th Qtr									
Complete Live Fire/Vulnerability Test		3rd Qtr								
Complete DT		3rd Qtr								

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	19490	38266	32574	33984	24179	19355	18879	Continuing	Continuing
DL69 Horizontal Technology Integration Second Generation FLIR Engineering Development	0	11847	11949	13674	6633	0	0	0	127127
DL70 Night Vision Devices Engineering Development	9915	21229	14335	16309	16604	18167	17642	Continuing	Continuing
DL74 Long Range Advanced Scout Surveillance System (LRAS3)	9575	0	1490	793	0	0	0	0	37333
DL75 Profiler	0	5190	4800	2345	0	0	0	0	12335
DL76 Lightweight Laser Designator Rangefinder Upgrades	0	0	0	863	942	1188	1237	0	4230

A. Mission Description and Budget Item Justification: This program element provides night vision technologies required for U.S. defense forces to engage enemy forces twenty-four hours a day under conditions with degraded visibility due to darkness, adverse weather and battlefield obscurants. These developments and improvements to high performance night vision electro-optics, radar, laser, and thermal systems and integration of related multi-sensor suites will enable near to long range target acquisition identification and engagement to include significant fratricide reduction, which will improve battlefield command and control in "around the clock" combat operations. Project DL69 is focuses on inserting key Horizontal Technology Integration Second Generation and beyond FLIR (HTI SGF) thermal sensor technology into common battle groups. Project DL70 focuses on night vision electro-optical, laser, and other target identification and location equipment for use by individual soldiers and a variety of platforms. In addition to the Lightweight Laser Designator Rangefinder (a Warfighter Rapid Acquisition Program) this project includes both mounted and dismounted HTI laser evaluation and assessment, and integrates individual sensors into a common architecture. It also funds development and qualification of critical upgrades (e.g. dual wavelength target acquisition capabilities) for Thermal Weapons Sight and Drivers Vision Enhancer production programs, and funds activities associated with image and sensor fusion capabilities (e.g. I2 and thermal). Project DL74 focuses on a long-range multi-sensor system utilizing HTI SGF thermal sensor and other technologies, for use by US Army scouts at extended ranges beyond the Abrams and Bradley capabilities. The LRAS3 will provide the scouts with their first reconnaissance and surveillance system with a twenty-four hour, all weather capability that is mounted or man-portable. Project DL75 focuses on development of the Profiler upgrade of the capabilities of the current AN/TMQ-41 Meteorological Measuring Set. Profiler will employ remote and local sensing of the atmosphere, mesoscale modeling and enhanced computing capabilities to provide target area and more accurate meteorological data. These enhancements and new capabilities will increase the lethality of field artillery systems such as Crusader, Multiple Launched Rocket Systems (MLRS) and towed and self-propelled cannons. Project DL76 focuses on LLDR Upgrades that
will increase the operational capability and survivability of Combat Observation Lasing (COLT) and Fire Support (FIST) teams, thereby yielding greater lethality for precision and area munitions through precise target location and designation. Upgrades developed under this Project will be inserted either through ongoing production

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development

contracts or a Mod in Service line.

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	21167	30644	31270
Appropriated Value	21311	38644	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-144		
b. SBIR / STTR	-545		
c. Omnibus or Other Above Threshold Reductions		-155	
d. Below Threshold Reprogramming	-1046		
e. Rescissions	-86	-223	
Adjustments to Budget Years Since FY 2000/2001 PB			+1304
Current Budget Submit (FY 2001 PB)	19490	38266	32574

Change Summary Explanation: Funding – FY 1999: Reprogrammed below threshold (-1046) to PE 0604817/D902 to support redesign of Combat ID Dismounted Soldier (CIDDS) helmet electronics and weight reduction effort. FY 2001: Funding increase (+1500) due to the LRAS3 initiative that will provide for the design and development of the capability to interface with the Future Battlefield Command, Brigade and Below (FBCB2) hardware and software on the host platform and automatically provide target location information.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

PROJECT: DL69

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DL69 Horizontal Technology Integration Second Generation FLIR Engineering Development	0	11847	11949	13674	6633	0	0	0	127127

A. **Mission Description and Justification-** Horizontal Technology Integration Second Generation FLIR (HTI SGF) will enable the Army to insert key thermal sensor technology into the highest priority forces [the M2A3/M3A3 Bradley Fighting Vehicle System (BFVS), the Long Range Advanced Scout Surveillance System (LRAS3), the M1A2 System Enhancement Package (SEP) Abrams, and the AH-64 Apache Helicopter]. The HTI SGF will allow all vehicles in a common battle group to see the same thermal image. The HTI SGF development is in two parts, an "A" kit, which is specific to the host platform, and includes integration and installation, and a "B" kit, which includes the common FLIR sensor and display. Funds in this project will develop the "B" kit for all weapon systems employing the HTI SGF.

FY 1999 Accomplishments: Project not funded in FY 1999.

FY 2000 Planned Program:

- 100 Milestone I/II Approval for HTI Aviation Second Generation FLIR (SGF)
- 760 Initiate design and development for high performance detectors for Aviation SGF
- 10668 Initiate design and development of Aviation SGF
- 319 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs

Total 11847

FY 2001 Planned Program:

- 5042 Continue development of Aviation SGF
- 1466 Initiate manufacturing of high performance detectors for Aviation SGF (six test unit sets)
- 5441 Initiate prototype manufacturing of B kit for Aviation SGF (six test unit sets)

Total 11949

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
6.4 RDTE 0604710A, "A" Kit LRAS3 (DL74)	9575	0	1490	793	0	0	0	0	37333
6.7 RDTE 0203735A, "A" Kit Bradley (D371)	57787	24777	0	0	0	9419	24503	Continue	Continue

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development; PROJECT: DL69

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA2 K38300 LRAS3 "A" & "B" Kit	0	42030	46156	44361	49809	51140	51085	Continue	Continue
WTCV G80717 M2A3/M3A3 Bradley "B" Kit	39617	45276	59904	61679	49850	52914	55887	Continue	Continue
WTCV GA0750 Abrams Upgrade "A" and "B" Kit	91631	65196	54210	52122	33590	7648	0	0	388697
WTCV GA0730 M1A2 SEP "A" & "B" Kit	0	0	16652	28895	40518	41109	41105	Continue	Continue
ACFT AA6607 Longbow Apache Mods	0	0	0	0	0	64897	85027	Continue	Continue
6.7 RDTE 0203774A, "A" Kit Apache (D508)	0	37144	17434	38388	41168	0	0		

The funds identified above reflect only the portion of funding in the platform funding lines related to DL 69 efforts.

C. **Acquisition Strategy:** The Aviation Second Generation FLIR "B" Kit will be developed and fabricated using competitively awarded cost plus award fee contracts.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Conduct Initial Operational Test &Evaluation (IOT&E) for SGF on Ground Vehicles *	3-4Q						
MS III Decision for SGF on Ground Vehicles **		1Q					
MS I/II Decision for Aviation HTI SGF EMD Pgm		3Q					
Conduct EMD Pgm for Aviation HTI SGF		3-4Q	1-4Q	1-4Q	1-4Q		
IOT&E for Aviation HTI SGF EMD Program					3-4Q		
MS III Decision for Aviation HTI SGF					4Q		

* All operational tests are funded by the host platforms.

** The HTI SGF program is currently in LRIP and is procurement funded through M/S III.

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

PROJECT: DL69

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Producibility Contracts	Various	Various	3876							0	3876	3876
b. EMD Contract	C/CPAF	Texas Instruments, McKinney, TX	62100							0	62100	62100
c. SADA II	C/FP	SBRC, Santa Barbara, CA	2116							0	2116	2116
d. T&M	SS/T&M	Hughes, El Segundo, CA	3556							0	3556	3556
e. LRAS3 "B" Kits	C/CPAF	Texas Instruments, McKinney, TX Hughes, El Segundo, CA	477							0	477	477
f. Trade Studies (3)	C/CP	Various	900							0	900	900
g. Aviation EMD Contract	C/CPAF	To Be Selected				10568	2Q	10982	1Q	18177	39727	79454
h. SBIR/STTR						319					319	
Subtotal Product Development:			73025			10887		10982		18177	113071	152479

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ASARC Support	MIPR	CECOM, NVESD	250							0	250	
b. Matrix Support	MIPR	CECOM, NVESD	7958			672	2Q	677	1Q	1550	10857	
Subtotal Support Costs:			8208			672		677		1550	11107	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DT/OT												
Subtotal Test and Evaluation:												

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

PROJECT: DL69

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Management		PM, NV/RSTA	1791			288	2Q	290	1Q	580	2949	
Subtotal Management Services:			1791			288		290		580	2949	
Project Total Cost:			83024			11847		11949		20307	127127	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development PROJECT DL70

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DL70 Night Vision Devices Engineering Development	9915	21229	14335	16309	16604	18167	17642	Continuing	Continuing

A. **Mission Description and Justification:** This project develops and improves high performance night vision electro-optics, thermal and laser systems, and systems integration of related multi-sensor suites to enable near to long range target acquisition and engagement as well as improve battlefield command and control in "around-the-clock" combat operations. The Lightweight Laser Designator Rangefinder (LLDR) and entered a thirty month Engineering and Manufacturing Development Phase in FY 1997. LLDR is a day/night manportable modular target location and laser designator system. The target location system combines a thermal imager, a day camera, eyesafe laser rangefinder, compass, global positioning system (GPS) and digital data and image export capability. The laser designator provides pinpoint targeting for all laser-guided munitions. LLDR gives the artillery light forces the capability to observe, locate and designate targets for direct and indirect fire missions. Improvements to the Thermal Weapon Sight (TWS) and the Driver's Vision Enhancer (DVE) are also developed under this project. TWS improvements are focused on the integration of target location and digital data transfer capabilities. DVE improvements focus on achieving a dual wavelength capability, leading to image fusion. Sensor fusion activities are planned for both vehicle mounted systems, such as DVE, and soldier carried systems, such as TWS. Both TWS and DVE will benefit from MANTECH improvements to focal plane array and optics. The DVE dual wavelength capabilities will be developed, evaluated and inserted incrementally into ongoing production efforts. The architecture for interoperability of sensors [Mini Eye-Safe Laser Infrared Observation Set (MELIOS), LLDR, Lightweight Video Reconnaissance System (LVRS), TWS, DVE, Long Range Advanced Scout Surveillance System (LRAS3), Synthetic Aperture Radar (SAR), Infrared Line Scanner (IRLS), Forward Looking Infrared (FLIR), visible imagers, hyperspectral cameras and Moving Target Indicator (MTI) radars] on the digital battlefield will be developed through an integrated sensor suite program. This will facilitate the merging of existing sensor data for digital distribution within the Joint Technical Architecture-Army. Sensor data distribution activities include the development and promulgation of a common device architecture, and a computer-based system which will verify and validate the flow of data from the sensor, through a variety of computing devices and then out over the communications network. Efforts include Image Intensified photo cathode development in support of an eye-safe laser system, and evaluation of the suitability and technology supporting a common, HTI, laser system that could be used in a variety of ground and air platforms. Manufacturing technology activities in optics and focal plane arrays are also being supported. Targeting aid development will upgrade the AN/TMQ-41 Meteorological Measuring Set by integrating radar and microwave satellite technology to provide "on demand" trajectory and target area weather conditions. This will increase the ability of artillery/rocket forces to project accurately lethal munitions further into the battlespace. The Enhanced NVG program will develop enhancements and improvements to be incorporated into the Night Vision Goggle system.

FY 1999 Accomplishments:

- 5708 Continued development of ten LLDR EMD models for test/evaluation.
- 1062 Conducted integration and technical tests of the sensor architecture on various platforms [USMC Target Location Designation and Hand-Off System (TLDHS), Bradley FIST, Striker, FBCB2] including Ft. Bragg demonstration.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development PROJECT DL70

FY 1999 Accomplishments: (continued)

•	426	Continued development and integration of prototype HTI tactical laser onto Army platforms, such as FSCS, Apache, Kiowa Warrior, LLDR and LRAS3; focus was on laser performance specifications and interface-to-platform requirements supporting modular laser design.
•	1969	Conducted preliminary hardware evaluation and demonstration of Thermal Upgrade activities (TWS Target Location, DVE Dual Wavelength and MANTECH improvements covering both systems).
•	750	Conducted evaluation of upgrade alternatives for the AN/TMQ-41 (MMS) to include program/technical requirements definition.
Total	9915	

FY 2000 Planned Program:

•	2486	Complete LLDR EMD activities, to include technical and operational testing, reports and equipment refurbishment for transition of the program into production.
•	5568	Fabricate prototypes and evaluate Thermal Upgrade activities (TWS Target Location and displays (eight test units), DVE Dual Wavelength (six test units) and MANTECH improvements covering both systems).
•	2148	Continue integration and technical tests of the sensor architecture for FBCB2 and a variety of platforms such as TLDS, Striker, including efforts leading to participation in the Joint Contingency Forces (JCF) Army Warfighting Experiment (AWE).
•	2472	Conduct modeling and simulation efforts in support of modular laser design for systems such as: FSCS, Apache, Kiowa Warrior, TUAV, LLDR and LRAS3; initiate dismounted multifunction application for the HTI tactical laser (i.e. reduced cost, size, weight and power consumption), to include initial prototype development for systems such as the M-4/M-16, MK-19 and TWS.
•	3000	Conduct analysis and preliminary detail design effort for LLDR Long Range Striker Vehicle application
•	1000	Design and fabricate internal digital interface (MELIOS Digital RSTA, 4 test units) to support battlefield data dissemination
•	1000	Conduct analyses and preliminary design effort for Enhanced NVG to make lighter, smaller and increase individual movement techniques.
•	3000	Combustion Eyesafe Laser was funded in this Program Element (PE) in error; Reprogramming to PE 0602709A, Project DH95, Night Vision & EO Tech has been requested.
•	555	Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	21229	

FY 2001 Planned Program:

•	2639	Continue Thermal Upgrade activities (prototype test and evaluation) to enhance combat effectiveness of TWS and DVE.
•	3595	Continue integration and technical tests of the sensor architecture, including implementing results from the JCF AWE.
•	3388	Continue dismounted HTI laser activity to reduce cost, size, and weight and power consumption.
•	4713	Initiate Image Fusion of Image Intensification and Thermal technologies to enhance the effectiveness of combat and combat service support platforms such as: the individual soldier and vehicles using the DVE (Bradley, Smoke Generators, etc).
Total	14335	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development PROJECT DL70

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
Night Vision AN/PVS-7 Aid K36400 OPA2	43505	44810	32203	24939	26880	31724	42152	Continue	Continue
Night Vision TWS K22900 OPA2	37891	37215	35348	34997	36766	36461	39660	Continue	Continue
Night Vision DVE K31300 OPA2	0	3484	1943	1935	1930	4940	4935	Continue	Continue
Night Vision LLDR K31100 OPA2	0	6234	7093	7032	7204	9824	9814	Continue	Continue

C. **Acquisition Strategy:** The development programs in this project are currently all based on competitive awards and under cost reimbursement type contract. A dual source/approach will be pursued for the DVE image fusion effort scheduled for FY 2001.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
HTI laser prototype design, modeling and simulation	1-4Q	1-3Q					
Develop Prototype Multifunction Tactical HTI Laser for Dismounted Application		2-4Q	1Q				
HTI Laser Demo on Dismounted Platform			2-3Q				
LLDR Vehicle Integration effort conducted	1-4Q						
LLDR Technical Test		2-3Q					
LLDR IOT&E		4Q	1Q				
LLDR MS III Decision			2Q				
LLDR Long Range Striker Vehicle Variant		2-4Q					
Digital MELIOS Design & Fabrication		2-4Q					
Enhanced NVG		2-4Q					
Sensor Architecture Platform Demonstration and Evaluation	2-4Q	1-3Q					
Sensor Architecture Validation/Test (LLDR)	3Q						
Sensor Architecture demonstration for JCF AWE		4Q					
Sensor Architecture integration based on AWE results			1-4Q				
AN/TMQ-41 Upgrade Alternatives Evaluation and Requirements Definition	2-4Q						

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development PROJECT DL70

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Thermal Upgrade MANTECH for Focal Plane Array and optics	1-4Q	1-3Q					
Thermal Upgrade target location and display capability demonstration and evaluation for TWS	2-4Q	1-4Q	1Q				
Thermal Upgrade dual wavelength capability demonstration and evaluation for DVE	3-4Q	1-4Q	1Q				
Image Fusion Activities for DVE			1-4Q	1-4Q			
Image Fusion Activities for soldier carried systems				1-4Q	1-4Q		
Sensor Fusion Activities for Driving and soldier carried systems					1-4Q	1-4Q	1-4Q

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

PROJECT: DL70

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DVE Development	C/CPIF	Various	21831	0		0		0		0	21831	21831
b. Various Prototypes and Studies	C/CPIF	Various	2947	0		0		0		0	2947	2947
c. LLDR Advanced Demonstration System	C/CP	Litton Laser, Apopka, FL	2556	0		0		0		0	2556	2556
d. LLDR WRAP	C/CP	Various	4253	0		0		0		0	4253	4253
e. LLDR EMD	C/CP	Litton Lasers, Apopka FL	10600	5208	1Q	1799	1Q	0		0	17607	17607
f. Sensor Architecture and integration	C/CPIF & C/CP	Various	5492	992	1-2Q	2074	1Q-2Q	2948	1Q	Continue	Continue	Continue
g. HTI Laser Trade Studies	C/CP	Various	1020	0		0		0		0	1020	1020
h. HTI Laser MFS3 design and prototype activities	C/CPIF	Raytheon, Dallas,TX	270	295	1Q	0		0		0	565	565
i. Modular HTI Multifunction Laser Activities	C/CP	Various	0	0		2245	2Q	2973	1Q	Continue	Continue	Continue
j. AN/TMQ-41 Trade Studies and related activities	C/CP	Various	600	632	1-2Q	0		0		0	1232	1232
k. MANTECH Focal Plane Array and optics	C/CP	Raytheon, Dallas, TX	0	1000	1Q	500	1Q			0	1500	1500
l. Thermal Upgrades for TWS (target location)	C/CP, MIPR	Raytheon, El Segundo, CA, Various	0	439	2Q	2575	1Q	1312	1Q	0	4326	4326
m. Thermal Upgrades for DVE (Dual wavelength)	C/CP	Kaiser Electric San Diego, CA	0	135	3Q	1780	1Q-2Q	850	1Q	0	2765	2765
n. Image Fusion for DVE	C/CP	To Be Selected	0	0		0		2500	2Q	Continue	Continue	Continue
o. Image Fusion for Soldier Carried System	C/CP	To Be Selected	0	0		0		2150	2Q	Continue	Continue	Continue
p. LLDR Long Range Striker Vehicle application	C/CP	Litton Laser, Apopka, FL Various	0	0		3000	2Q				3000	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

PROJECT: DL70

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
q. Digital MELIOS Design & Fabrication	C/CP	To Be Selected	0	0		1000	2Q				1000	
r. Enhanced NVG Analysis & Design	C/CP	To Be Selected	0	0		1000	2Q				1000	
s. Combustion Eyesafe Laser		To Be reprogrammed				3000					3000	
t. SBIR/STTR						555					555	
Subtotal Product Development:			49569	8701		19528		12733		Continue	Continue	Continue

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Matrix Support	MIPR	Various	9718	481	1Q	753	1Q-4Q	786	1Q	Continue	Continue	
Subtotal Support Costs:			9718	481		753		786		Continue	Continue	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DT/IOT&E	MIPR	ATEC	6048	383	2Q	365	2Q	247	2Q	Continue	Continue	
b. Other Test Support	MIPR	Various	2636	125	2Q	245	2Q	187	2Q	Continue	Continue	
Subtotal Test and Evaluation:			8684	508		610		434		Continue	Continue	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Project Management		PM, NV/RSTA	3180	225	1Q	338	1Q-4Q	382	1Q	Continue	Continue	
Subtotal Management Services:			3180	225		338		382		Continue	Continue	

Project Total Cost:			71151	9915		21229		14335		Continue	Continue	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development PROJECT DL74

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DL74 Long Range Advanced Scout Surveillance System (LRAS3)	9575	0	1490	793	0	0	0	0	37333

A. **Mission Description and Justification** - Long Range Advanced Scout Surveillance System (LRAS3): This project will develop the Long Range Advanced Scout Surveillance System (LRAS3), a long range multi-sensor system for US Army scouts which will provide the capability to detect, recognize, identify, range and determine the location of potential targets. Currently, US Army scouts do not have the necessary equipment to perform these functions "around the clock." LRAS3 will utilize the Horizontal Technology Integration Second Generation FLIR (HTI SGF) thermal sensor and will enable scouts to function "around the clock" in adverse weather and penetrate battlefield obscurants.

FY 1999 Accomplishments:

•	7045	Completed EMD contract and Fabrication (six systems), integration and test of LRAS3.
•	618	Conducted and completed Developmental Tests.
•	926	Conducted and completed Operational Test.
•	986	Completion of enhanced Built In Test (BIT) development.
Total	9575	

FY 2000 Planned Program: Project not funded in FY 2000.

FY 2001 Planned Program:

•	778	Initiate LRAS3 software modifications to develop required interface with FBCB2
•	637	Initiate LRAS3 hardware redesign to incorporate required interface with FBCB2
•	75	Initiate LRAS3 fabrication of prototype hardware to support software and hardware redesign (2 test units)
Total	1490	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

PROJECT: DL74

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
6.3 RDTE, PE 0603774A, Project 131	2240	3164	10968	12698	11677	5373	5339	Continue	Continue
6.3 RDTE, PE 0604710A, Project L69 (B Kit) *	0	11847	11949	13674	6633	0	0	0	127127
OPA2, SSN K38300 (LRAS3 Production)	0	42030	46156	44361	49809	51140	51085	Continue	Continue
RDTE, PE 0203759, Project 120 (FBCB2)	29154	12179	56328	65176	63601	37699	0	0	264137

* Note Only the Ground portion of the DL69 (prior to FY 99) funding line is related to LRAS3. Aviation SGF funding in FY00-03 is not related to LRAS3

C. **Acquisition Strategy:** This project was awarded via competitive acquisition utilizing oral presentations and Cost as An Independent Variable (CAIV) for the Engineering and Manufacturing Development contract. The current objective for the production contract is to competitively award on a fixed price basis utilizing CAIV.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Fabrication, integration and test of LRAS3	1-2Q						
Conduct Development Test **	1-2Q, 4Q						
Conduct Operational Test ***	3Q						
MS III Production Decision		2Q					
Award Production Contract		2Q					
Award FBCB2 Interface Contract			1Q				
S/W, H/W Devel and Fabrication			1-4Q	1Q			
Qualification Test				2Q			

** Development test in 4QFY99 is for destructive testing.

*** OPTEC (ATEC) is directly funded for the majority of costs for IOT&E.

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

PROJECT: DL74

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. LRAS3 EMD	C/CPAF	Raytheon Systems (TI)	11939	4576	1Q						16515	
b. LRAS3 EMD	C/CPAF	DRS (Hughes)	12958	3755	1Q						16713	
c. LRAS3 Modifications	C/CPAF	TBS						1415	1Q	753	2168	
d. LRAS3 Design Study	C/CPFF	Litton		275	3Q						275	
Subtotal Product Development:			24897	8606				1415		753	35671	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Matrix Support	MIPR	CECOM NVESD	376	219	1Q			50	1Q	30	675	
Subtotal Support Costs:			376	219				50		30	675	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DT	MIPR	TEXCOM		538	3Q						538	
b. OT	MIPR	National Guard		100	3Q						100	
Subtotal Test and Evaluation:				638							638	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

PROJECT: DL74

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Project Management		PM, NV/RSTA	202	112	1Q-4Q			25	1Q-4Q	10	349	
Subtotal Management Services:			202	112				25		10	349	
Project Total Cost:			25475	9575				1490		793	37333	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development PROJECT DL75

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DL75 Profiler	0	5190	4800	2345	0	0	0	0	12335

A. Mission Description and Budget Item Justification: Profiler is an upgrade of the capabilities of the current AN/TMQ-41 Meteorological Measuring Set (MMS). Profiler will employ remote and local sensing of the atmosphere, Mesoscale modeling and enhanced computing capabilities to provide target area and more timely meteorological data. By providing more accurate MET messages, Profiler will enable supported cannon and rocket systems to decrease miss distances, which will increase predicted fire effectiveness. These enhancements and new capabilities will increase the lethality of field artillery systems such as Multiple Launch Rocket Systems (MLRS) and towed and self-propelled cannons. A further enhancement that would remove the balloon radiosonde from the system should reduce the objective crew size from six to four personnel. This Engineering and Manufacturing Development (EMD) effort will increase the accuracy of a wide range of deep fire weapons and munitions, and ultimately reduce total cost of ownership to the Army.

FY 1999 Accomplishments: Project not funded in FY 1999.

FY 2000 Planned Program:

•	4816	Initiate MMS Profiler (MMS-P) EMD development effort, including hardware for four prototype units for both technical tests and operational evaluation and conduct design reviews.
•	162	Studies and simulations to support mesoscale model requirements and enhancements.
•	72	Planning and preparation for development and operational testing
•	140	Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	5190	

FY 2001 Planned Program:

•	4498	Continue MMS-P EMD development effort.
•	99	Ballistics and meteorology simulations to support accuracy requirements.
•	203	Conduct developmental testing and prepare for operational testing.
Total	4800	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development PROJECT DL75

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
6.4 RDTE, Night Vision Devices Engineering Development 0604710A, (DL70) *	9915	21229	14335	16309	16604	18167	17642	Continue	Continue
Profiler K27900 OPA2	0	0	0	11031	15546	17916	17896	Continue	Continue

* DL 70 of the same SSN as Profiler is identified, since prior years' efforts were funded in that project line.

C. **Acquisition Strategy:** The MMS Profiler development and production IDIQ contract will be awarded competitively. The EMD phase contract type will be Cost Plus Award Fee (CPAF) and the production option will be Firm Fixed Price. The formal solicitation will include requirements for oral presentations and cost as an independent variable (CAIV).

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
MS I/II Decision		2Q					
Award EMD Contract		3Q					
Begin System Fabrication		3Q					
Conduct Developmental Testing			4Q	1Q			
Conduct Operational Test				2Q			
MS III Decision				3Q			
Award Production Contract				3Q			
First Unit Equipped (FUE)					3Q		
Initial Operational Capability (IOC)						1Q	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

PROJECT: DL75

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. EMD Contract	C/CPAF	To Be Selected				4000	3Q	3719	1Q	1546	9265	9265
b. Studies and Simulations	MIPR	ARL, NOAA				162	2Q	99	1Q	0	261	261
c. SBIR/STTR						140					140	
Subtotal Product Development:						4302		3818		1546	9666	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Matrix Support	MIPR	CECOM I2WD, Other				778	2Q	730	1Q	220	1728	
Subtotal Support Costs:						778		730		220	1728	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Test Planning and Preparation	MIPR	ATEC				72					72	
b. DT/OT	MIPR	ATEC						203	2Q	534	737	
Subtotal Test and Evaluation:						72		203		534	809	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Project Management		PM, NV/RSTA				38		49		45	132	
Subtotal Management Services:						38		49		45	132	

Project Total Cost:						5190		4800		2345	12335	

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	62500	60600	86321	66189	68738	67227	47653	Continuing	Continuing
DC40 Soldier Support Equipment	1555	4511	5871	9197	12488	13965	14299	Continuing	Continuing
DL40 Clothing and Equipment	4121	3505	4266	4542	4558	5126	5114	Continuing	Continuing
D548 Military Subsistence System	1194	1620	1747	1856	1863	1979	1976	Continuing	Continuing
D667 Land Warrior	43385	36411	60132	36547	35718	29736	9895	Continuing	Continuing
D668 Soldier Enhancement Program	12066	14360	14305	14047	14111	16421	16369	Continuing	Continuing
D680 Mounted Warrior	179	193	0	0	0	0	0	0	372

A. Mission Description and Budget Item Justification: Project supports Engineering and Manufacturing Development (EMD) and Non-Developmental Item (NDI) evaluation of unit/organizational equipment, weapons/munitions, clothing and individual equipment, fabric shelters, field service equipment, food and food service equipment to enhance soldier efficiency, effectiveness, lethality, sustainability and survivability. New food items and food service equipment will be developed to reduce food service logistics requirements for all four Services. The organizational equipment program supports development of a new generation of field device support items: small, large and collective protective shelters; decontamination items; and improved space heaters to shelter and sustain the soldiers in the field and improve quality of life. The Land Warrior program will produce the first fully integrated fighting system for dismounted combat soldiers. The Soldier Enhancement Program provides soldier items that can be procured in three years or less.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY **5 - Engineering and Manufacturing Development**	PE NUMBER AND TITLE **0604713A Combat Feeding, Clothing, and Equipment**

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	67674	110829	136899
Appropriated Value	68218	60829	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-544		
b. SBIR / STTR	-2192		
c. Omnibus or Other Above Threshold Reductions		-229	
d. Below Threshold Reprogramming	-2642		
e. Rescissions	-340		
Adjustments to Budget Years Since FY 2000/2001 PB			-50578
Current Budget Submit (FY 2001 PB)	62500	60600	86321

Change Summary Explanation: Funding – FY 2001: Program reduction (-50578) due to program restructure and change in acquisition strategy for the Land Warrior Program, project (D667), thereby deferring the Mounted Warrior project (D680).

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: DC40

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
DC40 Soldier Support Equipment	1555	4511	5871	9197	12488	13965	14299	Continuing	Continuing

A. **Mission Description and Budget Item Justification:** Develop and field soft shelters, showers, latrines, heaters, mortuary affairs, organizational equipment and other combat service support equipment to improve unit sustainability and combat effectiveness. Develop and transition to procurement cargo and personnel parachutes, airdrop containers and other aerial delivery equipment to improve safety and efficiency of airborne operations. Develop a series of Rigid Wall Shelters (RWS) with added capabilities and enhanced survivability.

FY 1999 Accomplishments:

•	300	Type Classified the Modular General Purpose Tent System. Built Modular General Purpose Tent System (MGPTS) P3I test prototype.
•	832	Awarded contract for commercial Aviation Maintenance Shelter and associated support items.
•	150	Type Classified Laundry Advanced System to transition to production phase.
•	221	Conducted Technical and Operational Testing on the Containerized Shower and Type Classified the system.
•	52	Procured prototypes, conducted Technical Testing, and developed performance specification for Space Heater Small. Conducted study of heating requirements for new Modular General Purpose Tent System.
Total	1555	

FY 2000 Planned Program:

•	2245	Terminate the existing R&D contract for the Advanced Reserve Parachute System. Perform a Jump-off for new R&D ARPS Contract.
•	125	Conduct Milestone I/II on the Space Heater Small. Award LRIP contract and obtain Materiel Release for Space Heater Convective.
•	175	Procure and evaluate candidates for Chaplain's Logistic Support Package and Conduct Technical Testing.
•	500	Acquire and begin testing Modular General Purpose Tent System P3I Items (fabric flooring, frame system, liners).
•	1000	Complete Field Evaluations, procure additional LRIP items. Complete Milestone III for Cargo Bed Covers Type I (HMMWV) and Type II (1.5 ton cargo trailer) and obtain Material Release.
•	430	Conduct Market Investigation and evaluate technologies for the Lightweight Maintenance Enclosure P3I and Temper Improvements.
•	36	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program
Total	4511	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT DC40

FY 2001 Planned Program:

- 2437 Conduct Developmental Testing of Advanced Reserve Parachute System/Advanced Tactical Parachute System.
- 300 Conduct Operational Testing and award LRIP contract for Chaplain's Logistic Support Package. Obtain Milestone III Type Classification Standard.
- 450 Conduct Market Investigation, procure test prototypes and initiate technical testing for the Containerized Chapel.
- 500 Conduct Production Demonstration Model First Article Test Evaluation and Production Verification Testing and Type Classify the Space Heater Small.
- 1313 Complete testing and field evaluations of prototype developments of Modular General Purpose Tent System P3I.
- 450 Procure prototypes and integrate airbeam technology and composite technical data for the Lightweight Maintenance Enclosure P3I and Temper Improvements.
- 421 Conduct Market Investigation on the Low Velocity Airdrop System and perform concept testing.

Total 5871

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE, 0603747.DC09, Unit/Org Equipment	1450	5564	6703	8878	11858	13040	13202	Cont	Cont
M82701, Laundry Advance System	7121	7880	12580	13224	18902	7161		Cont	Cont
M82703, Containerized Self-Service Laundry		976							
M82704, Containerized Shower		946		1258	1158	1231			
M82706, Follow-On Latrine				905	664	870			
MA7801, Advanced Tactical Parachute System					27894				
MA7802, Extraction Parachute Jettison Device		2381							
MA7805, Universal Static Line		976	3971						
MA8061, Lightweight Maintenance Enclosure		3690	1999	5613	6708	6424	6418		

C. **Acquisition Strategy:** Various Combat Service Support equipment is incorporated for Low Rate Initial Production (LRIP) for accelerated production.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2004	FY 2005
Type Classify Laundry Advanced System	2Q*								
Conducted Technical and Operational Testing on Containerized Shower	1Q*								
Developed frame and floor Modular General Purpose Tent System P3I	4Q*								

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT DC40

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2004	FY 2005
Award contract for AMS Shelter	3Q*								
Type Classified Containerized Shower	4Q*								
Type Classify Modular General Purpose Tent System	4Q*								
Conduct Milestone I/II for the Space Heater Convective		1Q							
Award LRIP contract for Space Heater Small		2Q							
Conduct Technical Testing of the Chaplancy Logistical Support Package		3Q							
Complete Milestone III for Cargo Bed Covers Type I (HMMWV) and Type II (1.5 ton trailer) variants		2Q							
Award LRIP Contract for the Chaplancy Logistical Support Package			2Q						
Complete Milestone III for the Chaplancy Logistical Support Package			4Q						
Conduct Developmental Testing of the Advanced Reserve Parachute System/Advanced Tactical Parachute System			3Q						
Conduct Field Evaluation for the Lightweight Maintenance Enclosure P3I and Temper Improvements			3Q						
Type Classify Space Heater Small			4Q						

*Milestone Completed

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: DC40

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. SSCOM	In-House	NRDEC	2158	364		359		654		2522	6057	
b. Contracts	Various	Various	8858	601		754	Various	1392	Various	9606	21211	Cont.
c. Inflation Withhold										6	6	
Subtotal Product Development:			11016	965		1113		2046		12134	27274	

II. Support Costs: There are no efforts associated with the delivery of any of a fully integrated system that are in direct support of this project and essential to the development, training, operation, and maintenance of systems in this project.

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TECOM/OEC	MIPR	Various	4051	500		3220	Various	3537	Various	4551	15859	Cont
Subtotal Test and Evaluation:			4051	500		3220		3537		4551	15859	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PM Office	In-House	PM-Soldier Support/ SSCOM	1472	90		178		288		1562	3590	Cont.
Subtotal Management Services:			1472	90		178		288		1562	3590	

Project Total Cost:			16539	1555		4511		5871		18247	46723	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT DL40

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
DL40 Clothing and Equipment	4121	3505	4266	4542	4558	5126	5114	Continuing	Continuing

A. **Mission Description and Budget Item Justification:** This project develops state-of-the-art individual clothing and equipment to improve the survivability, mobility, sustainment affecting the quality of life of the individual soldier. Funding shown does not reflect funding from OSD PE 0604384BP to support the Chemical/Biological Defense program in accordance with Public Law 103-60 Title XVII.

FY 1999 Accomplishments:

•	525	Update fabrics, style changes, and consolidate dress clothing for Joint Services
•	327	Completed development testing/operational testing for Body Armor Set, Individual Countermine (BASIC) P3I
•	475	Obtain Milestone I/II and procure test items for Concealable Body Armor
•	635	Obtained Milestone III and transitioned to production Modular Body Armor "Interceptor" and Improved Toxicological Agent Protective (ITAP) Ensemble
•	314	Achieved Milestone III and approval from the Chief of Staff, Army for the Improved Physical Fitness Uniform
•	733	Completed operational testing for Modular Lightweight Loadcarrying Equipment (MOLLE)
•	542	Completed market surveys, procured test items, and initiated test for Permethrin Battle Dress Uniforms, Cook's Shoes, and Lightweight Personal Armor Systems Ground Troop (PASGT) Helmet
•	570	In-house engineering support services, computer services, and conduct technical and program reviews
Total	4121	

FY 2000 Planned Program:

•	1140	Correct minor deficiencies from previous test and incorporate Land Warrior compatibility for Modular Lightweight Loadcarrying Equipment (MOLLE)
•	264	Initiate and complete developmental testing/operational testing for Concealable Body Armor
•	138	Type classify and transition to production the Body Armor Set, Individual Countermine (BASIC) P3I
•	410	Update fabrics, style changes, and consolidate dress clothing for Joint Services
•	701	Obtain Milestone I/II, complete market survey, and procure test items for the Advanced Bomb Suit; Improved Toxicological Agent Protective (ITAP) Boots, Glove, and Apron; and Modular Glove Program Phase I (Cold/Wet Weather)
•	207	Complete Permethrin Battle Dress Uniform test, write report, and provide results to the Army Uniform Board for
•	35	Complete testing on the Cook's Shoe and authorize by Common Table of Allowances (CTA)

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT DL40

FY 2000 Planned Program: (continued)

- 265 Complete operational testing on the Lightweight Personal Armor Systems Ground Troop (PASGT) Helmet and submit specification change for authorization
- 263 In-house engineering support services, computer services, and conduct technical and program reviews
- 82 Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)

Total 3505

FY 2001 Planned Program:

- 740 Complete testing and obtain Milestone II for the Modular Glove Program Phase I (Cold/Wet Weather) and initiate Phase II (Barbed Wire/Flame Retardant) with market survey and procurement of test items
- 50 Type classify and transition to production the Concealable Body Armor
- 200 Award engineering manufacturing development contract, procure prototypes, and initiate testing for Improved Toxicological Agent Protective (ITAP) Boots, Glove, and Apron
- 575 Continue to update fabrics, style changes, and consolidate dress clothing for Joint Services
- 732 Investigate ballistic protection materials for Body Armor and apply upgrades (increased protection/lighter weight)
- 1440 Integrate advanced materials for ballistic protection and electronics (audio/microphone) into a Modular Integrated Helmet
- 529 In-house engineering support services, computer services, and conduct technical and program reviews

Total 4266

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE, 0603747.D669, Clothing & Individual Eq.	3645	4058	3491	4809	4849	5502	5223	Cont	Cont
OMA, 121017, Central Funding and Fielding	48310	88467	79590	90013	73401	80941	113533	Cont	Cont

C. **Acquisition Strategy:** Soldier modernization will be accomplished via acquisition programs ranging from NDI/modified NDI through integrated programs. Acquisition strategies will vary from: 1) quick fixes in 36 months or less from concept to Type Classification (TC) such as Soldier Enhancement Programs (SEP), 2) modular improvements which require limited RDT&E and will be completed in more than 36 months from concept to Type Classification.

D. Schedule Profile	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
Life Cycle Systems Review	2&4Q*	2&4Q*	2*&4Q	2&4Q	2&4Q	2&4Q	2&4Q	2&4Q	2&4Q	2&4Q

*Denotes a completed milestone

NOTE: There are numerous on-going individual projects and each project has its own milestone schedule.

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: DL40

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Various	MIPRS	SBCCOM, Natick MA		2659		711		2281		Cont	5651	
b. Various	Contracts	Various		384	Various	1893	TBD	1300	TBD	Cont	3577	
Subtotal Product Development:				3043		2604		3581			9228	

Remark: Product development costs vary annually depending on the number and types of programs being evaluated.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
c. Various	MIPR	TSM, Ft Benning, GA		33							33	
d. Various	Contracts	Various		250	Various						250	
a. Various	MIPR	SBCCOM, R.I., IL		29							29	
Subtotal Support Costs:				312							312	

Remark: Support Costs vary annually depending on number of and types of programs being evaluated.

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Various	MIPRS	OPTEC		195		469		130			794	
b. Various	MIPRS	OFIG, Natick, MA		1		75		5			81	
Subtotal Test and Evaluation:				196		544		135			875	

Remark: Testing costs vary annually by item

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	FY 2001 Cost	Target Value of Contract
a. Various	In-House	PM-S, Ft Belvoir, VA		570		275		550		Cont	1395	
b. SIBR/STTR						82					82	
Subtotal Management Services:				570		357		550			1477	

Remark: Management Services costs vary annually depending on the number and types of programs being evaluated.

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: DL40

		FY 1999 Cost		FY 2000 Cost		FY 2001 Cost			FY 2001 Cost	
Project Total Cost:		4121		3505		4266			11892	

Remark: Based on the number of years Clothing and Individual Equipment programs have been in existence, it is impossible to capture all prior year costs.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT D548

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D548 Military Subsistence System	1194	1620	1747	1856	1863	1979	1976	Continuing	Continuing

Mission Description and Budget Item Justification: Project provides Engineering and Manufacturing Development (EMD) and Non-developmental Item (NDI) evaluation of food and food service equipment to enhance soldier efficiency and survivability. New food items and food service equipment will be developed to reduce food service logistics requirements for all four services. Development of Joint Service Food/Food Service Equipment to improve individual combat effectiveness and reduce logistics burden and operation and support costs of subsistence support for service men and women. Develop multi-fuel, rapidly deployable field food service equipment to support combat, humanitarian missions and operations-other-than-war. Improve equipment to enhance safety in food service, utilize battlefield fuels and decrease fuel and water requirements.

FY 1999 Planned Program:

- 360 Designed and fabricated prototypes of improved tray ration heater, griddle, and stock pot assembly for improved heat transfer and removal of combustion by-products. Conducted Technical Testing and field evaluation of the Tray Ration Heater.
- 368 Completed fabrication and conducted Development and Technical Testing of Marine Corps Rapid Deployment Kitchen.
- 62 Completed Technical Testing of Non-Electric Field Refrigerator and developed performance specification.
- 404 Completed user evaluations of steam generator/power washer for field food sanitation centers and initiated integration of gray water treatment/handling system for on-site wastewater disposal.

Total 1194

FY 2000 Planned Program:

- 320 Complete fabrication of remaining field feeding components to improve efficiency and integrate into complete kitchen for formal testing.
- 201 Conduct Developmental and Operational Testing of the Advanced Food Sanitation Center
- 214 Develop kit components to allow use of Modern Burner Unit in extreme cold weather, and reduce noise levels.
- 291 Prepare design concept for food service equipment. Conduct testing of prototype Air Force Expeditionary Field Feeding System.
- 203 Complete User Testing of Marine Corps Rapid Deployment Kitchen.
- 126 Design improved Tray Ration Heater System with enhanced operational capabilities and reduced cost.
- 116 Conduct requirements analysis and develop concept for improved efficiency Advanced Design Refrigerator.
- 116 Improve sanitation of Mess Kit to ensure safety of personnel.
- 33 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program

Total 1620

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT D548

FY 2001 Planned Program:

- 275 Conduct Developmental and Operational Testing for field kitchen equipment efficiency upgrades.
- 297 Complete documentation, type classify, and award production contract for Advanced Food Sanitation Center.
- 300 Complete fabrication and initiate testing of Air Force Expeditionary Field Feeding System.
- 189 Conduct noise level and cold weather evaluations of kitchen burner kit and transition to procurement.
- 150 Evaluate improved Tray Ration Heater System, demonstrate enhanced operational capability.
- 125 Perform in-house and user evaluations of improved sanitation methods for mess kits.
- 311 Complete design and fabrication of Advanced Design Refrigerator with enhanced transportability and improved thermal efficiency.
- 100 Develop and design improvements for the Navy COMMZ Kitchen, incorporating reliability, maintainability and efficiency innovations.

Total 1747

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE, 0603747.D610, Food Adv Dev	2499	3097	3380	3728	3688	3872	3874	Cont	Cont
OPA3, M65803, Kitchen, Containerized, Field	7337	7032	6133	5609	7501	6975	6562	Cont	Cont
OPA 3, M65802, Sanitation Center, Field Feeding		658	4364	2398	7403	7606	7721	Cont	Cont
M65801, Refrigeration Equipment	5060	927	1479	922	2359	2504	2518		

C. **Acquisition Strategy:** Complete engineering and manufacturing development of food items and equipment for transition to procurement.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2004	FY 2005
Conduct Technical Testing of improved Army Field Feeding Equipment for MBU	3Q*								
Conduct Technical Testing on Rapid Deployment Kitchen	3Q*								
Conduct User Testing of Rapid Deployment Kitchen		3Q							
Design concepts for improved Mess Kit Sanitation		3Q							
Design and Evaluate US Air Force AFE Kitchen		2Q							
Conduct Milestone III and initiate production of Advanced Food Sanitation Center			2Q						

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT D548

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2004	FY 2005
Conduct Developmental and Operational Testing on field kitchen equipment efficiency upgrades			2Q						
Initiate testing of Air Force temporary AEF Kitchen			2Q						
Test concept for Mess Kit Sanitation			3Q						
Complete design and fabrication of Advanced Design Refrigerator			2Q						

* Milestone completed

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: D548

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. SSCOM	In-House	SSCOM	7499	463		890		963		Cont.	9815	Cont.
b. Various	Various	Various	851	154		153	Various	171	Various	Cont.	1329	Cont.
c. Inflation Withhold												
Subtotal Product Development:			8350	617		1043		1134			11144	

II. Support Costs: Not applicable

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TECOM/OEC	MIPR	Various	1981	490		490		525		Cont.	3486	Cont
Subtotal Test and Evaluation:			1981	490		490		525			3486	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Project Ofc Management	In-House	SSCOM	513	87		87		88		Cont.	775	Cont.
Subtotal Management Services:			513	87		87		88			775	

Project Total Cost:			10844	1194		1620		1747			15405	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT D667

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D667 Land Warrior	43385	36411	60132	36547	35718	29736	9895	Continuing	Continuing

A. **Mission Description and Budget Item Justification:** The LW Program establishes the Infantry soldier as the Army's singularly unique weapons platform. It is a first generation integrated fighting system for soldiers and is the first system to provide combat overmatch for the five types of Infantry (air assault, airborne, light, mechanized, and Ranger) in the close, personal, and brutal fight. As a result of the Program not achieving its objectives under the original LW approach, PM-Soldier has developed a restructured acquisition concept. Although all LW subsystems will remain the same in concept, the restructured LW Program will take maximum advantage of components available from Commercial-Off-the-Shelf (COTS), as well as Government-Off-the Shelf (GOTS) components and technologies. With this change in approach, the Program will minimize the use of LW-unique hardware and software and develop a more open systems architecture. This architectural approach will provide greater flexibility to incorporate technology upgrades as they become available, reduce intellectual and proprietary rights issues, and reduce developmental and ownership costs.
LW provides the foundation system upon which future Mounted, Air, and other warrior integrated systems will be based, as well as support to the Marine Corps and other services.

FY 1999 Accomplishments:

•	30747	Conducted preliminary systems integration. Transitioned Modular Lightweight Load Equipment (MOLLE) and Interceptor Body Armor into Protective Clothing and Individual Equipment (PCIE) subsystem design. Developed and successfully tested new 16.3 volt/10-cell/2.8 lbs "LW Day Pack" primary battery powered a XM1 LW system for 13 hours. The 10-cell battery fits into the MOLLE 100-round Utility Pouch without modification. Began fabrication and integration of LW peripheral components. Conducted risk mitigation efforts utilizing Commercial Off The Shelf/Government Off The Shelf (COTS/GOTS) candidates. Fabricated 3 demonstration prototypes utilizing alternative COTS/GOTS candidates.
•	3229	Conducted Force XXI Battle Command, Brigade and Below (FBCB2) interoperability contractor demonstration. Demonstrated voice and data communications via frequency hopping. Demonstrated ability to transmit FBCB2 Free Text, spot reports, position reports, and Call-For-Fire messages through a LW Platoon RTO to a Bradley Company XO outfitted with FBCB2-Applique software.
•	5139	Conducted technology feasibility assessment to identify possible improvements with COTS/GOTS alternatives. Evaluated and implemented selected alternatives to reduce system weight to meet operational requirements. Increased program office to respond to Army Category (ACAT) I/II programmatic requirements.
•	4270	Program management and systems engineering support from other government agencies for overall program efforts. Conducted technical and program reviews and briefings. Transitioned configuration management effort from contractor to government. Established PM Soldier - Monmouth the government integration facility located at Fort Monmouth, NJ.
Total	43385	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT D667

FY 2000 Planned Program:

•	25870	Award Developmental contract to complete system hardware and software integration and produce 15 LW for safety testing and airborne certification. Participate in a platoon(-) exercise to demonstrate operational suitability and soldier acceptance. Conduct LW IPR.
•	1748	Conduct safety testing. Conduct airborne certification, contractor component testing, user fightability evaluations, and obtain safety release.
•	7824	Program management and systems engineering support from other Government agencies for overall program efforts. Conduct technical and program reviews, Army System Acquisition Review Council (ASARC) reporting/briefings, and increase program office resources to respond to Army Category (ACAT) I/II programmatic requirements. Continue operation of PM Soldier - Monmouth. Conduct LW demonstrations to higher headquarters and other countries to demonstrate system capability and functionality. Support to NATO Land Group 3 and other partnered countries to ensure compatibility with potential multinational military operations.
•	969	Small Business Innovative Research (SBIR)/Small Business Technology Transfer program (STTR).
Total	36411	

FY 2001 Planned Program:

•	36427	Fabricate 55 LW prototypes for platoon LUT. Conduct Confidence Testing, Functional Qualification Testing (FQT), and Production Qualification Testing (PQT).
•	9650	Complete Single Channel Ground/Airborne Radio System (SINCGARS) compatible Leader Radio (repackaged Advanced SINCGARS Improvement Program (ASIP)/Network Access Unit (NAU) or "mini-radio" with software router. Complete LW integration of Embedded Battle Command (EBC) software into Windows NT to ensure interoperability with FBCB2/Tactical Internet. Obtain software certification at the Central Technical Support Facility (CTSF) at Fort Hood (digitization). Obtain National Security Agency (NSA) Communications Security (COMSEC) level one certification for leader radio. Incorporate Multiple Integrated Laser Engagement System (MILES 2000) and Combat Identification Dismounted Soldier (CIDDS), and incorporate Integrated Navigation functionality into LW to meet threshold requirements.
•	4644	Conduct airborne certification, user fightability assessments, and obtain safety release. Update training package and manuals for platoon (-) LUT and transition to electronic format. Develop interactive training scenarios, and evaluate integrated training environment. Conduct training for platoon LUT.
•	9411	Program management and systems engineering support from other Government agencies for overall program efforts. Conduct technical and program reviews. Continue operation of PM Soldier - Monmouth. Conduct LW demonstrations to higher headquarters and other countries to demonstrate system capability and functionality. Support to NATO Land Group 3 and other partnered countries to ensure compatibility with potential multinational military operations.
Total	60132	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: D667

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE, 0603001.DJ50, Force XXI Land Warrior	6587	6266	6308	7483	7772	12954	13056	Cont	Cont
OPA3, M80500, Land Warrior	0	0	0	0	0	20774	76783	Cont	Cont
OPA3, MS3610, Initial Spares-Land Warrior	0	0	0	0	0	0	248	Cont	Cont

C. **Acquisition Strategy:** As a result of technical challenges, the LW program was completely restructured last year. The restructured LW Program takes maximum advantage of components available from other Government agencies as well as Commercial-Off-the-Shelf (COTS) components and technologies. With this change in approach, the program will minimize the use of LW-unique hardware and software and develop a more open systems architecture. This architectural approach will provide greater flexibility to incorporate technology upgrades as they become available, reduce intellectual and proprietary rights issues, and reduce cost. System integration will be performed by the Government with products (i.e., subsystems, components) being provided by multiple contractors. These products would conform to standards identified in Interface Control Documents, which will be controlled by the Government. The strategy is to negotiate sole source for the Low Rate Initial Production (LRIP) with options or initial full rate production sufficient to equip the first division. Equipment for each subsequent division is planned to be recompeted. The LW total procurement objective is 34,000 systems. The LW Program supports the Chief of Staff of the Army's (CSA) vision of establishing lethal forces through the use of commercial technologies to lighten the force; increase soldier lethality, and making the force more survivable, more mobile, and more deployable.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
Award Developmental Contract		2Q						
Conduct LW IPR		2Q	2Q	2Q	2Q	2Q	2Q	2Q
Deliver prototypes for safety test/airborne certif		3Q	3Q		3Q		4Q	
Conduct Safety Testing; Airborne Certification		3Q	3Q		3Q		4Q	
Safety Releases		3Q	3Q		3Q		4Q	
Platoon (-) exercise		4Q						
Deliver remaining 55 prototypes for LUT			2-3Q					
Production Qualification Testing (PQT)			4Q	--------1Q	3Q-4Q	4Q	--------1Q	1Q
Limited User Tests (LUT)				4Q		2Q		1Q
Test-Fix					1-2Q		1-2Q	
LRIP Build Decision						4Q		
LRIP Contract Award							4Q	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment — PROJECT: D667

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
Light Forces Initial Oper Test and Eval (IOTE)								2Q
MS III Decision								3Q
Company Mech Limited User Evaluation (LUE)								4Q
Battalion LUE								4Q

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: D667

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Raytheon Systems	CPAF	McKinney, TX	99200	21902	Jul 95	2000	Oct 99	1000	TBD	0	124102	TBD
b. Computer Sciences Corp	Task Order	Eatontown, NJ		7850		20366	Oct 99	32757	TBD	Cont	60973	TBD
c. Optical Air Data Systems	Task Order	Potomac, MD		885		500	Jan 00	1500	TBD	Cont	2885	
d. CECOM	MIPR/Task Order	Ft Monmouth, NJ				3486	Oct 99	5520	TBD	Cont	9006	TBD
e. OGA (STRICOM, SBCCOM, etc.)	MIPR/Task Order	TBD						3000	TBD	Cont	3000	
Subtotal Product Development:			99200	30637		26352		43777			199966	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. SBCCOM	FAD	Natick, MA		893		550		2420			3863	
b. PM-SA/ARDEC	MIPR	Picatinny, NJ		108		80		90			278	
c. NRDEC	MIPR	Natick, MA		180		250		250			680	
d. CECOM	MIPR	Ft. Belvoir, VA		2249		460		477			3186	
e. TSM-Soldier	MIPR	Fort Benning, GA		125		150		150			425	
f. PM Soldier	In-house	Ft. Belvoir		744		1352		1564			3660	
g. Modern Tech Inc.	Task Order	Springfield, VA		1374		800		900			3074	
h. REDECS		Various	2780								2780	
Subtotal Support Costs:			2780	5673		3642		5851			17946	

Remark: Buys government and contract engineering and logistical support for overall program support.

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: D667

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Ft Bragg	MIPR	Fort Bragg, NC		40		171		100		Cont	311	
b. Testing Organizations	MIPR	Aberdeen PG, MD		50		400		2000		Cont	2450	
c. ARL-HRED	MIPR	Ft. Benning, GA		110		110		110		Cont	330	
d. CECOM	MIPR	Fort Monmouth, NJ		305		500		1500		Cont	2305	
e. TSM Soldier	MIPR	Ft Benning, GA		125		150		150		Cont	425	
f. Test Equip/Support				155		417		600		Cont	1172	
Subtotal Test and Evaluation:				785		1748		4460			6993	

Remark: Costs in FY99/00 are for test planning, evaluations, and test equipment only. Testing will be conducted in FY01.

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PM Soldier	In-House	Fort Belvoir, VA	525	2618		322		3200			6665	
b. Modern Technologies Corporation (MTC)	Task Order	Dayton, OH Springfield, VA	676	495		425		425			2021	
c. Wexford Group	Task Order	Vienna, VA		1009		1080		1080			3169	
d. CYIOS, Inc.	Task Order	Washington, DC		270		954		420			1644	
e. ANADAC, Inc./PSA	Task Order	Arlington, VA		397		60		60			517	
f. CSC	Task Order	Eatontown, NJ		464							464	
g. BRTRC	Task Order	Fairfax, VA		160		165		165			490	
h. SBCCOM	MIPR	Natick, MA/APG, MD	1160	183							1343	
i. SY-Tech	Task Order	Sherman Oaks, CA		694		694		694			2082	
j. SBIR/STTR						969					969	
Subtotal Management Services:			2361	6290		4669		6044			19364	

Project Total Cost:			104341	43385		36411		60132			244269	TBD

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT D668

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D668 Soldier Enhancement Program	12066	14360	14305	14047	14111	16421	16369	Continuing	Continuing

A. **Mission Description and Budget Item Justification:** The Soldier Enhancement Program (SEP) increases the lethality, command and control, sustainability, mobility, and survivability of the soldier through accelerated acquisition of lighter, more lethal weapons and improved "soldier items" including lighter, more comfortable load-bearing equipment, field gear, survivability items, communications equipment, and navigation aids. For SEP purposes, soldiers are managed in three categories: dismounted soldiers, combat crews (air and ground), and other soldiers. Projects generally are completed in three years or less.

FY 1999 Accomplishments:

•	1295	Completed evaluation/type classify/transition to production: Machine Gun Optics, Non Lethal 40MM (XM1006), XM84 Stun Grenade, Short Squad Automatic Weapon, Flashlight Mount, M249 Mounts, Infrared Illumination Hand Grenade, Midsize Riot Control Disperser, and Advanced Protective Eyewear System
•	4944	Continued evaluation/procured prototypes and/or tested: Long Range Sniper Rifle, 12 Gauge Breaching Round, Fire Control for the M203, Long Range Tactical Sniper Cartridge, Lightweight Fragmentation Hand Grenade, 40MM Cannister Round, 12 Gauge Non Lethal Point and Crowd Control, Rifle Launched Non Lethal Munitions, Backup Iron Sight for Modular Weapon System, Canteen Water Insert Purifier, Collapsible Grappling Hook, Small Unit Multi-Purpose Trailer (SUMT), Improved Combat Shelter, Helicopter Emergency Egress Device, Fighting Position Revetment, and Lightweight Voice Amplifier
•	1123	Initiated market surveys and/or evaluations: Sniper Accessory Kit, Joint Service Combat Shotgun, M240B Ammunition Pack, Multiple Utility Digging System (MUDS), Concealable Stab Protective Body Armor (CSPBA), Camouflage Uniform System for Soldiers (CUSFS), Advanced Camouflage Face Paint, Protective Gloves, Micro Rappel System, Tactical Search Mirror System, Petroleum Oil Lubricants (POL) Handlers Glove System, and Riot Control Agent Neutralizer
•	2496	In-house engineering support services, computer services, conducted technical and program reviews
•	2208	Army Materiel Command Reprogram - place marker for Defense Finance and Accounting Services
Total	12066	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT D668

FY 2000 Planned Program:

•	4628	Complete evaluation/type classify/transition to production: Rifle Launched Non Lethal Munitions, 40MM Cannister Round, 12 Gauge Breaching Round, 12 Gauge Non Lethal Point and Crowd Control, Long Range Tactical Sniper Cartridge, Long Range Sniper Rifle, Canteen Water Insert Purifier, Collapsible Grappling Hook, Micro Rappel System, Improved Combat Shelter, Helicopter Emergency Egrees Device, and Lightweight Voice Amplifier
•	4086	Continue evaluation/procure prototypes, and/or test: Lightweight Fragmentation Hand Grenade, M203 Enhanced Fire Control, Sniper Accessory Kit, Backup Iron Sight for Modular Weapon System, Petroleum Oil Lubricants (POL) Handlers Glove System, Camouflage Uniform System for Soldiers, Multiple Utility Digging System, Tactical Search Mirror System, Concealable Stab Protective Body Armor, Protective Glove System, Riot Control Agent Neutralizer, Advanced Camouflage Face Paint, and Small Unit Multi-Purpose Trailer,
•	3061	Initiate market surveys and/or evaluations: Joint Service Combat Shotgun, M240B Combat Ammunition Pack (CAP), 12 Gauge Chlorobenzalmalononitrile (CS) Dust Cartridge, Smart Mine Probe, Family of Batons/Night Sticks, Parachutist's Drop Bag, Tactical Assault Ladder Systems, Improved Cold Weather Mask, and Boot Gaiters
•	2205	In-house engineering support services, computer services, conduct technical and program reviews
•	380	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	14360	

FY 2001 Planned Program:

•	4847	Complete evaluation/type classify/transition to production: Lightweight Fragmentation Hand Grenade, M203 Enhanced Fire Control, Sniper Accessory Kit, Backup Iron Sight for Modular Weapon System, Riot Control Agent Neutralizer, POL Handlers Glove System, Boot Gaiters, Camouflage Uniform System for Soldiers, Advanced Camouflage Face Paint, 12 Gauge CS Dust Cartridge, Multiple Utility Digging System, Tactical Assault Ladder System, Tactical Search Mirror System, Family of Batons/Night Sticks, Concealable Stab Protective Body Armor, Protective Glove System, Small Unit Multi-Purpose Trailer, and Smart Mine Probe
•	2083	Continue evaluation/procure prototypes and/or test: Joint Service Shotgun, M240B Combat Ammunition Pack, Parachutist Drop Bag, and Thermal Cutting Device
•	4875	Initiate market surveys and/or evaluations on new items to commence n FY2001
•	2500	In-house engineering support services, computer services, conduct technical and program reviews
Total	14305	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: D668

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA3, MA6800, Soldier Enhancement	4711	3571	3984	3129	3114	5771	6093	Cont	Cont
OPA2, BA5300, Soldier Enhancement	4539	18067	4374	5115	6100	8187	8230	Cont	Cont
WTCV, GC0076, Small Arms (SEP)	2365	5133	3506	301	1975	2417	1929	Cont	Cont
WTCV, GZ1290, Squad Automatic Wpn (Mods)		8289	9956	5422	4110	4834		Cont	Cont
WTCV, GZ2800, M16 Rifle Mods	5197	7148	9592	2087	0	2417	2411	Cont	Cont
WTCV, GB3007, M4 Carbine Mods	6721	5292	2504						12979
WTCV, G01500, Sniper Rifle		1133	3085	2136					6412
WTCV, GC0925, Mods	1118	1002	787	1253	847	1319	1316	Cont	Cont
PAA, F47500, 7.62mm AP	1911	1344							3276
PAA, FA7600, 5.56mm AP	1911	1876	1337	2933	2938	2935	2932		5740
PAA, F00900, 40mm Canister					5508				5553
PAA, E84900, XM84 Stun Grenade	1265	1760	2358	2383					7801
PAA, E86400, 12 Gauge Non Lethal			944						950
PAA, E86500, Cartridge, 12 Ga Crowd Dispersal		951							955
PAA, E91100,XM95 Cartridge, Non Lethal Crowd	2263	3885	6370	6494					20449
PAA, E89000, 40mm Non Lethal	1300	1576	1887	1962					7085
OMA, 121017, Central Funding & Fielding	48130	94559	79590	90013	73402	80942	113533	Cont	Cont

C. **Acquisition Strategy:** The Soldier Enhancement Program (SEP) consists of Non-Developmental Items (NDI) or Commercial Off-The-Shelf (COTS) that can transition to production in three years or less. Items that are technologically challenging requiring more than three years development are pursued under the appropriate system area. New SEP items are reviewed and approved for evaluation annually. Procurement varies by appropriation.

D. Schedule Profile	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
SEP Requirements Reviews	2Q*	2Q*	2Q*	2Q	2Q	2Q	2Q	2Q	2Q	2Q
SEP Projects Reviews	4Q*	4Q*	4Q*	4Q	4Q	4Q	4Q	4Q	4Q	4Q

*Milestones Completed

NOTE: Numerous individual projects are ongoing under the Soldier Enhancement Program (SEP) and each project has its own milestone schedule.

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: D668

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Various	MIPR	SBCCOM, MA		1109		1686		3128			5923	
b. Various	MIPR	NVESD, VA		66							66	
c. Various	MIPR	PM-SA, NJ		3731		6347		6276			16354	
d. Various	MIPR	PM-PWL MI		147		260					407	
e. Various	MIPR	SBCCOM, MD		213		775		580			1568	
f. Various	MIPR	PM-NBC		250		200					450	
g. Various	MIPR	PM-MCD				300		350			650	
h. Various	Contracts	Various		30							30	
Subtotal Product Development:				5546		9568		10334			25448	

Remark: Soldier Enhancement Programs are Non-Development Items (NDI) and Commercial Off-the-Shelf (COTS) items. New items are identified annually. Contractual efforts are very low dollar amounts – used to procure a few prototypes for testing.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Various	MIPR	TSM-SDR, GA		88		132		132			352	
b. Various	Contracts	Various		1713	Various	964	TBD	925	TBD		3602	
c. Various												
Subtotal Support Costs:				1801		1096		1057			3954	

Remark: Support costs very annually depending on the type of items we are evaluating. Research Development and Engineering Centers support to evaluate items also varies annually depending on the number and type s of items.

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Various	MIPR	OFIG, MA		20		20		18			58	
b. Various	MIPR	OPTEC		955		1906		1321			4182	
Subtotal Test and Evaluation:				975		1926		1339			4240	

Remark: Testing costs vary annually by item.

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: D668

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. In-House		PM-Soldier, VA		1536		1390		1575			4501	
b. Reprogram		Army Mat Cmd, VA		2208							2208	
c. SBIR/STTR						380					380	
Subtotal Management Services:				3744		1770		1575			7089	

Remark: Costs vary annually depending on number and type of items being evaluated.

Project Total Cost:				12066		14360		14305	**40731**	40731		

Remark: PM-Soldier has not managed the Soldier Enhancement Program since its inception, as a result it is impossible to capture all prior year costs.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT D680

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D680 Mounted Warrior	179	193	0	0	0	0	0	0	372

A. Mission Description and Justification: Mounted Warrior (MW) is an integrated modular system that will enhance the combat vehicle crewman's fighting capabilities. The MW system will be used by a wide variety of combat crewmen and will be tailored based on Mission, Enemy, Terrain/weather, Troops available and Time (METT-T). The physical burden imposed by cumbersome personal equipment degrades a crewman's effectiveness by increasing rates of fatigue, reducing mobility and restricting their ability to perform mission functions. Consideration will be given to optimizing the balance between vehicle mounted and crewman mounted equipment and designing an overall system that will improve crewman's endurance, safety, mission performance and crewman/vehicle interface. The MW system will provide hands free, tetherless communications, increased laser eye protection, maximum individual protection from Nuclear, Biological, Chemical (NBC) contamination, spill, flame and heat, and will provide for better performance of crew tasks without reducing tactility and agility.

FY 1999 Accomplishments:

•	179	Provided engineering support to the USA Armor Center in development of the Mounted Warrior cordless communication and heads up display Operational Requirements Documents (ORD). Prepared a program structure and costs for Mounted Warrior and developed the management approach for the program
Total	179	

FY 2000 Planned Program:

•	188	Engineering support services, computer services, conduct technical and program reviews for program execution
•	5	Small Business Innovative Research Program (SBIR)
Total	193	

FY 2001 Planned Program: Project not funded in FY 2001

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE D668 Soldier Enhancement Program	12126	14418	14390	14144	14223	16568	16530	Cont	Cont
OMA, 121017, Central Funding and Fielding	48130	94559	79590	90013	73402	80942	113533	Cont	Cont

C. Acquisition Strategy: The Mounted Warrior program is designed to field currently existing mature technologies to meet the needs of the combat vehicle crewman (CVC). Funding to support this program to completion will be requested during the next Program Objective Memorandum (POM).

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: D680

D. Schedule Profile	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
Capstone Requirement Document Approved by USA Armor Center		3Q								
Concept Experimentation Program (CEP)		4Q								
Capstone Requirements Document Approved by Training and Doctrine Command (TRADOC)			2Q							
Operational Requirements Document				2Q*						
Milestone I/II Decision					2Q*					
Development Contract Award					4Q*					
Developmental Testing						4Q*				
Operational Testing							2Q*			
Milestone III Decision							3Q*			
Full Rate Production								2Q*		

*Completion of these milestones is dependent upon receipt of funding.

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604715A Non-System Training Devices - Engineering Development

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	67515	72529	73295	50628	75025	42332	40511	Continuing	Continuing
D241 Non-System Training Devices Combined Arms	52103	50617	50706	40703	64598	34869	39291	Continuing	Continuing
D396 WARSIM Intel Module (WIM)	4774	12318	19899	8948	9426	6433	173	Continuing	Continuing
D573 STRICOM and Naval Air Warfare Center Training Systems Division (NAWCTSD) Support	10638	9594	2690	977	1001	1030	1047	Continuing	Continuing

A. **Mission Description and Justification:** Program Element funds engineering development of Non-System Training Devices to support force-on-force training at the Combat Training Centers (CTC), general military training and training on more than one item/system, as compared with system devices which are developed in support of a specific item/weapon system. Training devices and training simulations help to modernize the forces while providing force multipliers that improve combat effectiveness by providing realistic training. Training devices maximize the transfer of knowledge, skills, and experience from the training situation to a combat situation. Force-on-force training at the National Training Center (NTC), Ft. Irwin, CA; Joint Readiness Training Center (JRTC), Ft. Polk, LA, and Combat Maneuver Training Center (CMTC), Hohenfels, Germany; and battle staff training in Battle Command Training Program (BCTP) will provide increased combat readiness through realistic collective training in low, mid, and high intensity scenarios. Project D241, Non-System Training Devices-Combined Arms, develops simulation training devices for Army-wide use, including the CTCs. Project D396, WARSIM Intel Module, is the intelligence driver for Warfighter Simulation 2000 (WARSIM)/Joint Simulations (JSIMS) land component. FY99/00 Project D573, STRICOM Non-System Training Devices Support, funds in-house costs of project support by US Army Simulation, Training and Instrumentation Command (STRICOM) and support from Naval Air Warfare Center Training Systems Division (NAWCTSD). FY01 Project D573 funds STRICOM infrastructure for command operations only.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	63778	71034	51925
Appropriated Value	64035	73034	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-257		
b. SBIR / STTR	-171		
c. Omnibus or Other Above Threshold Reductions		-262	
d. Below Threshold Reprogramming	+3968		
e. Rescissions	-60	-243	
Adjustments to Budget Years Since FY 2000/2001 PB			+21370
Current Budget Submit (FY 2001 PB)	67515	72529	73295

Change Summary Explanation: Funding – FY 2001: Increase (+21370) for WARSIM to support required functionality at Initial Operating Capability (IOC).

Note: In the FY00 program, the $2M increase for WARSIM was inadvertently placed against project D396; funds will be reprogrammed and executed in project D241.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development PROJECT D241

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D241 Non-System Training Devices Combined Arms	52103	50617	50706	40703	64598	34869	39291	Continuing	Continuing

A. **Mission Description and Justification:** This project is used to develop prototype training devices to support Combined Arms (Infantry, Armor, Aviation, Air Defense, Artillery, Engineer, Chemical, and Support troops) training and multi-system training within the Army, to include the Reserve Components. Corps Battle Simulation (CBS) is the Army's standard command and staff training simulation at the corps/division level. WARSIM will be the next generation battle command simulation system to replace CBS, Tactical Simulation (TACSIM) and Combat Service Support Training Simulation System (CSSTSS). WARSIM will utilize current technology to efficiently provide training support and linkage to other simulations and simulators. WARSIM will comply with Simulation Interoperability Standards Organization (SISO) standards and open architecture to meet the Army's training requirements into the next century, to include High Level Architecture (HLA) compliance. WARSIM is also the land component element of the Joint Simulation System (JSIMS), which is a joint initiative managed by the JSIMS Joint Program Office. The Combat Synthetic Training Assessment Range (CSTAR) trains commanders on combat tactics using a virtual reality battlefield training device with simulated reconnaissance and intelligence capabilities. The Aerial Weapons Scoring System (AWSS) provides for one prototype system to enhance system performance up to the ORD requirements and enable the AWSS to interface with other training systems. AWSS is an integrated group of computer controlled sensors that detect and score rocket and cannon/machine gun engagements during live-fire training and qualification tables. The Engagement Skills Trainer (EST) provides individual and squad level home station training with a deployable small arms engagement trainer, resulting in significant savings in ammunition costs. This project funds the development of training devices, simulators, simulations and instrumentation for the Combat Training Centers (CTCs); Joint Readiness Training Center Military Operations in Urban Terrain (JRTC MOUT) for instrumented training in a realistic MOUT environment; National Training Center Objective Instrumentation System (NTC OIS) to provide a completely digital based system for full tactical system connectivity and High Level Architecture (HLA) compatibility. The Army Battle Command System Integration (ABCSI) provides an interface for the current instrumentation systems to support digitized rotations at the maneuver Combat Training Centers (NTC, CMTC, and JRTC). The National Training Center Range Data Management System (NTC RDMS) Frequency Conversion will develop the architecture to resolve the frequency usage conflict at NTC. The Intelligence Electronic Warfare Tactical Proficiency Trainer (IEWTPT) provides realistic Battle Command training by creating a realistic intelligence information environment that is exploited and reported by Military Intelligence (MI) soldier operation to battle commanders and staff. The Joint Contingency Force Advanced Warfighting Experiment (JCF-AWE) provides for fiber optic connectivity, digital data storage system, C4I after action review capability, and Distributed Interactive Simulation (DIS) requirements at the Joint Readiness Center (JRTC). The FY01 New Generation Army Targetry Systems (NGATS) program provides development and planning to address emerging weapon system targetry requirements

FY 1999 Accomplishments:

- 34364 Completed Spiral Build 1 and continued development of Spiral Build 2 software development for WARSIM 2000.
- 5451 Completed development of Engagement Skills Trainer.
- 1400 Continued limited enhancements to CBS and completed validation of Y2K compliance.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development PROJECT D241

FY 1999 Accomplishments: (continued)

•	7214	Continued development of devices, simulators and simulations to support training at the Combat Training Centers, to include completing non linear editing capability as part of the audio/visual instrumentation effort and completing vehicle targets development as part of the Advanced Target System for JRTC MOUT Phase II, completed domain analysis of the existing NTC OIS to facilitate design of the Common Training Instrumentation Architecture (CTIA) for the future NTC OIS, and initiated engineering development of Army Tactical Command and Control Systems (ATCCS) modules required for ABCS integration at NTC, CMTC and JRTC.
•	3199	Initiated the development of fiber optic connectivity and Distributed Interactive Simulation (DIS) requirements at Joint Readiness Training Center (JRTC) for Joint Contingency Force Army Warfighting Experiment (JCF-AWE).
•	291	Continued development of the CSTAR program.
•	184	Finalized requirements definition and acquisition planning of IEWTPT.
Total	52103	

FY 2000 Planned Program:

•	978	Initiate development of IEWTPT.
•	35943	Complete Spiral Build 2 and initiate Spiral Build 3 software development for WARSIM 2000.
•	2410	Continue development of limited enhancements to CBS.
•	7230	Continue development of devices, simulators and simulations to support training at the Combat Training Centers, to include domain analysis of the CMTC and JRTC Instrumentation Systems and initiate development of the CTIA domain model NTC OIS, develop the architecture for NTC RDMS Frequency Conversion, and continue engineering development of Army Tactical Command and Control Systems (ATCCS) modules required for ABCS integration at NTC, CMTC and JRTC.
•	1984	Initiate the development tasks needed to upgrade the AWSS to full Operational Requirements Document (ORD) compliance. One prototype system will be developed.
•	710	Complete development of CSTAR capability for Fort Hood
•	1362	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	50617	

FY 2001 Planned Program:

•	4043	Continues development of IEWTPT and integration with WARSIM/WIM.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development PROJECT D241

- 10442 Continue development of devices, simulators and simulations to support training at the Combat Training Centers (CTCs), to include complete development of the CTIA domain model for NTC OIS, develop the Advanced Interactive Target System common instrumentation architecture for JRTC MOUT II and complete engineering development of Army Tactical Command and Control Systems (ATCCS) modules required for ABCS integration at NTC, CMTC and JRTC.

FY 2001 Planned Program: (continued)

- 27873 Continue Spiral Build 3 software development of WARSIM.
- 3800 Continue the development tasks needed to upgrade the AWSS to full Operational Requirements Document (ORD) compliance.
- 4548 Initiate NGATS program development and planning to address emerging weapon system targetry requirements to include: Digital Multi-Purpose Range Complex (DMPRC) acquisition contract effort; develop and test prototype Lookback/Shootback Targetry that senses opposing force and initiates appropriate response.

Total 50706

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA3, Appropriation NA0100 Training Devices, Non-System	56529	72532	91937	84346	90861	80422	84436	Cont'd	Cont'd
OPA3, Appropriation MA6600 CTC Support	47884	17374	81845	182	8392	27735	31700	Cont'd	Cont'd
OPA3, Appropriation NA0174 Fire Support Combined Arms Tactical Trainer	15728	24414	1457	0	0			0	107081

C. **Acquisition Strategy:** Competitive development efforts against performance specifications.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Award WARSIM System Development Contract	1Q*	1Q*	1Q	1Q	1Q	1Q	1Q
WARSIM Software Spiral Build 1 complete	4Q*						
WARSIM Software Spiral Build 2 complete		4Q					
WARSIM SW Spiral Bld 3/V1.0 rel - JSIMS IOC				1Q			
EST Contract Award	1Q*						
CBS Contract Award	1Q*	1Q*	1Q				

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604715A Non-System Training Devices - Engineering Development

PROJECT: D241

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
EST MS III		2Q					
JRTC MOUT Phase II Targetry PDR	2Q*						
JRTC MOUT Phase II Targetry CDR		2Q					
NTC OIS Concept Exploration	1Q*	1Q*					
NTC OIS MS II			4Q				
NTC OIS MS III							4Q
NTC RDMS Freq Conv Contract Award		1Q*					
JCF-AWE Contract Award	4Q*						
ABCS Integration Contract Award	1Q*						
ABCS Integration CDR			2Q				
IEWTPT CONTRACT AWARD		3Q	1Q	1Q	1Q	1Q	1Q
IEWTPT MS III						2Q	
NGATS Contract Award			2Q				
AWSS Contract Award		2Q	2Q				
CSTAR Contract Award	4Q*	2Q					

* Milestone Completed

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604715A Non-System Training Devices - Engineering Development

PROJECT: D241

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. WARSIM EMD	C/CPAF	LMIS, Orlando, FL	57859	27922	Nov 98	29414	Dec 99	21522	Nov 00	Cont	136717	Cont
b. WARSIM Functional Description of Battlefield	C/CPFF	Veda Inc, Alexandria, VA	2575	918	Nov 98	700	Nov 99	0	N/A	0	4193	4575
c. WARSIM System Dev Contractor Selection	Various	Multiple	4264							0	4264	4264
d. CBS EMD	MIPR	NASA/JPL	19547	1375	Dec 98	2385	Dec 99			0	23307	21897
e. EST	C/FFP	ECC	761	5451	Nov 98					0	6212	6212
f. IEWTPT	TBS	TBS				300	May 00	3478	Dec 00	Cont	3778	Cont
g. JRTC MOUT Phase II	SS/FFP	SIGCOM, NC	1163	1300	Mar 99					Cont	2463	Cont
h. JRTC MOUT Phase II*	SS/FFP	Northern NET	1976	732	Mar 99			481	Mar 01	0	3189	3189
i. ABCS Integration	C/CPFF	ARL, Univ Texas, TX	774	1255	Dec 98	5516	Dec 99	4030	Dec 00	0	11575	11632
j. NTC RDMS Freq Conv	CPFF	LMIS, Orlando, FL				659	Oct 99			0	659	659
k. JCF-AWE	Various	Multiple		2849	Aug 99					Cont	2849	Cont
l. NGATS	TBS	TBS						3548	Mar 01	Cont	3548	Cont
m. AWSS						1484	Mar 00	3100	Mar 01		4584	
n. CSTAR	T & M	Motorola, Scottsdale, AZ		251	Jul 99	700	Jan 00			Cont	951	Cont
Subtotal Product Dev:			88919	42053		41158		36159			208289	Cont

Remark: WARSIM System Development Contractor was competitively selected based on downselect of three competing contractors, TRW, LORAL, and Hughes.
IEWTPT: Full and open EMD contract to develop prototype. *JRTC MOUT Phase II - Advanced Target System.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. WARSIM Eng & Tech	C/CPFF	MITRE FFRDC	1877	115	Jan 99	115	Nov 99	0	N/A	0	2107	1977
b. WARSIM Algorithms	MIPR	AMSAA, APG, MD	638	150	Nov 98	125	Nov 99	0	N/A	0	913	1038
c. WARSIM Eng Spt	Various	Multiple	2167	1680	Nov 98	1926	Nov 99	2000	Nov 00	Cont	7773	Cont
d. WARSIM Data Mgt & Repository	C/CPIF	Veda Inc., Alexandria, VA	1250	359	Nov 98	268	Nov 99	325	Nov 00	Cont	2202	Cont

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604715A Non-System Training Devices - Engineering Development

PROJECT: D241

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
e. WARSIM Software Engineering	C/CPFF	Nations Inc, Orlando, FL	2986	1467	Dec 98	1170	Dec 99	1500	Dec 00	Cont	7123	Cont
f. CBS Mgt	Various	Misc.	16	25	Dec 98	25	Dec 99				66	66
g. EST	MIPR	Multiple	223								223	223
h. JRTC MOUT Phase II	MIPR	Multiple	1387								1387	1387
i. NTC-OIS	C/BAA	ARL, Utah	1830	3802	Dec 98	861	Dec 99	4404	Dec 00	Cont	10897	Cont
j. ABCS Integration	C/FFP	Madison Res Corp	3440	125	Nov 98	147	Nov 99	200	Nov 00	0	3912	3965
k. NTC RDMS Freq Conv	MIPR	Multiple				47	Oct 99			0	47	53
l. Support Costs for D241	Various	Multiple						1321		Cont	1321	Cont
m. IEWTPT Eng Support	Various	Multiple				533	Jan 00	400	Nov 00	Cont	933	Cont
n. NGATS	MIPR	Multiple						1000	Nov 00	Cont	1000	Cont
o. CSTAR	Various	Multiple		40	Jul 99	10	Jan 00				50	40
p. AWSS	Various	Multiple				500	Feb 00	700	Jan 01		1200	
Subtotal Support Costs:			15814	7763		5727		11850			41154	Cont

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. WARSIM Verification, Validation/Accreditation	Various	Multiple	480	328	Nov 98	643	Nov 99	600	Nov 00	Cont	2051	Cont
b. WARSIM Dev Test	Various	Multiple		538	Nov 98	600	Nov 99	1177	Nov 00	Cont	2315	Cont
Subtotal Test and Evaluation:			480	866		1243		1777			4366	Cont

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604715A Non-System Training Devices - Engineering Development

PROJECT: D241

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. WARSIM IPT Spt	MIPR	NSC, Ft Leavenworth, KS	663	300	Nov 98	272	Nov 99	0	N/A	0	1235	1235
b. WARSIM Cost Analysis	C/CPAF	TASC, Orlando, FL	226	40	Jan 99	100	Jan 00	100	Jan 01	Cont	466	Cont
c. WARSIM Program Mgt	Various	Multiple	3954	547	Nov 98	610	Nov 99	650	Nov 00	Cont	5761	Cont
d. IEWTPT Program Mgt	Various	Multiple	0	184	Oct 98	145	Nov 99	170	Nov 00	Cont	499	Cont
e. JCF-AWE	Various	Multiple	0	350	Aug 99					Cont	350	Cont
f. SBIR/STTR						1362					1362	
Subtotal Management Services:			4843	1421		2489		920			9673	Cont
Project Total Cost:			110056	52103		50617		50706			263482	Cont

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development PROJECT D396

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D396 WARSIM Intel Module (WIM)	4774	12318	19899	8948	9426	6433	173	Continuing	Continuing

A. Mission Description and Justification: WIM is the intelligence driver for Warfighters' Simulation (WARSIM) 2000 and Joint Simulations (JSIMS) Development Agent for Intelligence. It provides simulated, raw intelligence data to drive the intelligence analysis function during major training exercises (i.e., Prairie Warrior, Ulchi Focus Lens, Atlantic Resolve, BCTP Warfighter Exercises and various Corps/Division and Joint exercises). Please Note: Funds inadvertently placed against this program in FY01 for WARSIM 2000 ; when appropriated, funds will be executed in project D241.

FY 1999 Accomplishments:

•	294	Verified and validated completed software.
•	3782	Completed development of Spiral Build 1 and continued development of Spiral Build 2 for the Version 1.0.
•	698	Initiated development of Spiral Build 3 for the Version 1.0.
Total	4774	

FY 2000 Planned Program:

•	523	Verification and validation of completed software.
•	6430	Complete development of Spiral Build 2 for the Version 1.0.
•	5033	Continue system development and complete the majority of Spiral Build 3 for the Version 1.0.
•	332	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	12318	

FY 2001 Planned Program:

•	1235	Verification and validation of completed software.
•	7520	Continue development of Spiral Build 3 for WIM.
•	1301	Initiate development of Version 1.1.
•	2786	Continue development of limited enhancements to CBS.
•	7057	Continue software development of Spiral Build 3 for WARSIM
Total	19899	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604715A Non-System Training Devices - Engineering Development

PROJECT: D396

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA3, Appropriation NA0103 Training Devices, Non-System	639	0	0	35128	34414	11085	1823	Cont'd	Cont'd

C. **Acquisition Strategy:** Competitive development against performance specifications.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Award WIM System Development Contract	1Q*	1Q*	1Q	1Q	1Q	1Q	1Q
WIM Spiral Build 1 complete	4Q*						
WIM Spiral Build 2 complete		4Q					
WIM Spiral Build 3 AND V1.0 release for JSIMS IOC				1Q			
Award CBS Development Contract			1Q				
Award WARSIM EMD Contract			1Q				

* Milestone Completed

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604715A Non-System Training Devices - Engineering Development

PROJECT: D396

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. WIM EMD	C/CPAF	MRJ, Orlando, FL	8911	3575	Nov 98	10261	Nov 99	8095	Nov 00	Cont	30842	Cont
b. Misc COTS HW/SW	Various	Multiple	672			0	N/A	0	N/A	0	672	672
c. CBS Development	MIPR	NASA/JPL						2500	Nov 00		2500	
d. WARSIM EMD	C/CPAF	LMIS, Orlando, FL						7057	Dec 00		7057	
Subtotal Product Development:			9583	3575		10261		17652			41071	Cont

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Software Engineering	C/CPFF	MITRE FFRDC	1109	591	Nov 98	465	Nov 99	465	Nov 00	Cont	2630	Cont
b. Software Engineering	C/CPFF	Nations, Orlando, FL	0	168	Nov 98	0	N/A	0	N/A	0	168	300
c. Engineering	Various	Multiple	682	65	Nov 98	500	Nov 99	500	Nov 00	Cont	1747	Cont
Subtotal Support Costs:			1791	824		965		965			4545	Cont

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Verification, Validation and Accreditation	Various	Multiple	182	294	Nov 98	523	Nov 99	759	Nov 00	Cont	1758	Cont
Subtotal Test and Evaluation:			182	294		523		759			1758	Cont

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604715A Non-System Training Devices - Engineering Development

PROJECT: D396

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Prog Mgt Support/WIM	Various	Multiple	1365	81	Nov 98	237	Nov 99	237	Nov 00	Cont	1920	Cont
b. Program Mgt Spt/CBS								286	Oct 00		286	
c. SBIR/STTR						332					332	
Subtotal Management Services:			1365	81		569		523			2538	Cont
Project Total Cost:			12921	4774		12318		19899			49912	Cont

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development PROJECT D573

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D573 STRICOM and Naval Air Warfare Center Training Systems Division (NAWCTSD) Support	10638	9594	2690	977	1001	1030	1047	Continuing	Continuing

A. Mission Description and Justification: In support of Non-System Training Devices (NSTD), this project funds the US Army Simulation, Training and Instrumentation Command (STRICOM) personnel salaries and support costs in FY99/00. FY01 D573 project funds STRICOM infrastructure for command operations only.

FY 1999 Accomplishments:

•	9388	Funded STRICOM personnel and support costs for Non-System Training Device programs.
•	1250	Funded NAWCTSD support costs for Non-System Training Device programs.
Total	10638	

FY 2000 Planned Program:

•	8157	Funds STRICOM Infrastructure for command operations and support costs for Non-System Training Device programs.
•	1426	Funds NAWCTSD support costs for Non-System Training Device programs.
•	11	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	9594	

FY 2001 Planned Program:

•	2690	Funds STRICOM Infrastructure for command operations.
Total	2690	

B. Other Program Funding Summary: Not Applicable.

C. Acquisition Strategy: Not Applicable.

D. Schedule Profile: Acquisition Milestones not applicable on this project

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604715A Non-System Training Devices - Engineering Development

PROJECT: D573

I. Product Development: Not Applicable

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. STRICOM personnel and support costs to Non-System Training Devices (NSTD) Combined Arms	N/A	STRICOM, Orlando, FL.	50437	9388	N/A	8157	N/A			0	67982	67996
b. Navy Labor personnel and support to NSTD Combined Arms	MIPR	NAWC-TSD, Orlando, FL	6995	1250	N/A	1426	N/A			0	9671	9671
c. STRICOM Infrastructure	N/A	STRICOM, Orlando, FL.						2690	N/A	Cont	2690	Cont
d. SBIR/STTR						11					11	
Subtotal Support Costs:			57432	10638		9594		2690			80354	Cont

III. Test and Evaluation: Not Applicable.

IV. Management Services: Not Applicable.

Project Total Cost:			57432	10638		9594		2690			80354	Cont

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604716A Terrain Information - Engineering Development (TIARA)

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	6320	5308	6082	7138	5603	4721	5000	Continuing	Continuing
D579 Field Army Map System - Engineering Development	3208	5308	5595	6327	4796	4721	5000	Continuing	Continuing
D598 High Volume Map Production (HVMP) Equipment	0	0	487	811	807	0	0	0	2105
D653 Digital Topography Support System - WRAP	3112	0	0	0	0	0	0	0	3112

A. Mission Description and Budget Item Justification: The Project Director for Combat Terrain Information Systems (PD CTIS) is responsible for developing, procuring, and fielding of topographic support systems for the Army. Program Management responsibility and Milestone Decision Authority have been assigned to the Program Executive Officer for Command, Control and Communications Systems (PEO C3S). CTIS systems provide automated terrain analysis, terrain data management and graphics reproduction in support of Intelligence Preparation of the Battlefield (IPB), Command and Control, Terrain Visualization, weapons and sensor systems, and other topographic information customers. CTIS consists of two versions of the Digital Topographic Support System (DTSS) [i.e., HMMWV (DTSS-Light (L)) and 5-ton (DTSS-Heavy (H))], DTSS-Deployable (DTSS-D), DTSS-Base (DTSS-B) and the High Volume Map Production (HVMP) equipment. A Pre-Planned Product Improvement (P3I) program will be conducted to address technology insertion, cyclic upgrade of Commercial Off-the-Shelf equipment and modernization initiatives for the Topographic Support System (TSS). The DTSS-L was a successful FY98/99 Warfighter Rapid Acquisition Program (WRAP)/Force XXI Initiative. Experimentation results from the Div XXI Army Warfighter Experiment (AWE) identified technological enhancements necessary to support the First Digital Division (FDD). WRAP funding supports the development of these enhancements. PD CTIS has management responsibility for planning system integration and execution of assigned products from development through hand-off to the Readiness Command. The DTSS-H, DTSS-L, DTSS-D, and DTSS-B fall under the Field Army Mapping System - Engineering Development (D579) project. The HVMP falls under the D598 project. DTSS-L WRAP falls under the D653 project.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY **5 - Engineering and Manufacturing Development**	PE NUMBER AND TITLE **0604716A Terrain Information - Engineering Development (TIARA)**

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	6157	5348	6120
Appropriated Value	6229	5348	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-72		
b. SBIR / STTR	-163		
c. Omnibus or Other Above Threshold Reductions	+350	-22	
d. Below Threshold Reprogramming			
e. Rescissions	-24	-18	
Adjustments to Budget Years Since FY 2000/2001 PB			-38
Current Budget Submit (FY 2001 PB)	6320	5308	6082

Change Summary Explanation: Funding - FY 1999 – (+350) Additional funding provided for Y2K compliance.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604716A Terrain Information - Engineering Development (TIARA)	PROJECT: D579

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D579 Field Army Map System - Engineering Development	3208	5308	5595	6327	4796	4721	5000	Continuing	Continuing

A. Mission Description and Budget Item Justification: This Project funds development of the DTSS-L (HMMWV), DTSS-H (5-ton), DTSS-D (COTS) and DTSS-B (COTS). The current terrain analysis, topographic and reproduction support provided by Army Engineer Terrain Teams is a slow, labor intensive process that does not meet the needs of the Force XXI battlefield on which the commander must have the ability to rapidly obtain terrain information and topographic products. The DTSS will provide digital maps and updates to commanders and weapons platforms in support of mission planning (e.g., Imagery exploitation, Cover and Concealment, other IPB), rehearsal (e.g., 3D fly through, simulations) and execution (e.g., Common Tactical Picture, route planning). The DTSS automates terrain analysis and visualization, data base development/update/management/distribution, and graphics reproduction. The Combat Terrain Information Systems (CTIS) Modernization Plan emphasizes the development of a combined, integrated, tactically deployable, fully autonomous terrain analysis and graphics reproduction capability. These capabilities are being provided in 5-ton (DTSS-H) and HMMWV (DTSS-L) configurations. Fielding of the DTSS-H was completed in Dec 99. The DTSS-H systems will eventually be replaced by DTSS-Ls as part of a HQDA approved cyclic upgrade program. The DTSS-L is highly mobile and capable of supporting a full range of military operations, as well as peacetime stability and support operations. Both the DTSS-L and DTSS-H have been Type Classified-Standard. The DTSS-D provides a Commercial Off the Shelf (COTS) configuration that is capable of operating all of the terrain analysis software. The DTSS-D consists of transportable workstations and peripherals that can be set up to augment the tactical configurations. The DTSS-D does not include tactically deployable shelters and vehicles or tactical communications. The DTSS-D has been Type Classified-Standard. The DTSS-B was procured in response to a USAEUR initiative to develop the capability to generate terrain information over sparsely mapped areas to support training, mission rehearsal and contingency operations. The DTSS-B is designed to augment NIMA capabilities at the EAC level by providing quick response, special purpose mapping, terrain analysis and data base generation. The DTSS-B includes a Top Secret – SCI component that is capable of handling national technical means information in a secure environment. The DTSS-B has been Type Classified-Standard. CTIS systems will be deployed from Brigade through EAC. Products developed as part of the CTIS RDT&E program (e.g., improved Army Battle Command Systems (ABCS) interoperability, migration to Joint Technical Architecture – Army (JTA-A) and Defense Information Infrastructure Common Operating Environment (DII COE), improved data base management and distribution, automated feature extraction, improved tactical decision aid functionality, rapid terrain visualization, improved graphics reproduction) will be incorporated into all of the DTSS hardware and software architectures. Additionally, the TSS is outdated and must be modernized to keep pace with Army digitization. The modernization initiatives associated with the TSS include updating the Operations, Distribution and Photomechanical Sections with computer workstations, copiers and printers. The Survey section will be downsized to a HMMWV configuration and the Drafting section will be updated to include digital cartographic equipment.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604716A Terrain Information - Engineering Development (TIARA)
	PROJECT D579

FY 1999 Accomplishments:

•	2558	Continue P3I development for DTSS – improved ABCS interoperability, JTA-A/DII COE migration, Y2K compliance, map server architecture
•	300	Conduct architecture analysis for FY00 COTS cyclic upgrade of DTSS-D
•	350	Completed Y2K compliance
Total	3208	

FY 2000 Planned Program:

•	4865	Continue P3I development for DTSS – continue JTA-A/DII COE migration, COTS upgrades, system architecture improvements, TSS upgrades
•	300	Conduct architecture analysis for FY01 COTS cyclic upgrade of DTSS-B
•	143	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	5308	

FY 2001 Planned Program:

•	4977	Continue P3I development for DTSS – rapid terrain visualization, automated feature extraction, artificial intelligence applications, TSS upgrades
•	618	Conduct evaluation of system upgrade alternatives for DTSS-H
Total	5595	

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA - KA2550 - DTSS	17807	24388	20030	4460	4499	20163	19937	Cont	Cont

C. **Acquisition Strategy:** The Acquisition Strategy for the DTSS - Light EMD phase was to utilize Army standard equipment and the Common Hardware/Software (CHS) computer workstations in conjunction with non-development item (NDI) components to develop an integrated baseline hardware configuration. The previous Combat Terrain Information Systems (CTIS) System Engineering and Integration (SE&I) contractor (Lockheed Martin Corp) executed the EMD phase, performing system integration, and provided units for formal test and evaluation. Milestone III for the DTSS-L was successfully completed in Jan 98. Production of the DTSS-L commenced in February 1999. Previously existing DTSS units have been upgraded to a 5-ton ISO 20-foot shelter configuration (DTSS-H). Funding to support cyclic upgrades to the DTSS-H (DTSS-H will be replaced by DTSS-L in FY02/03 timeframe) and DTSS-L has been programmed on a 5-yr. upgrade cycle. Acquisition of the DTSS-D and DTSS-B was completed in FY 1995 and FY 1996, respectively. Based upon CINC, TRADOC and PEO C3S User Evaluation approvals, the DTSS-D was Type Classified - Standard and added to the gaining unit's Table of Organization and Equipment. Funding to support a 5-yr. cyclic upgrade program for the DTSS-D and DTSS-B will commence in FY 2000 and FY 2001, respectively. The DTSS-B has also been Type Classified-Standard. The acquisition of the DTSS-D and DTSS-B relied upon existing contracts and commercial-off-the-shelf to the fullest extent possible.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604716A Terrain Information - Engineering Development (TIARA)
	PROJECT D579

The Project Office will continue with this strategy for the cyclic upgrade program. The pre-planned product improvement program (P3I) will be executed with the current SE&I contractor (Litton/TASC, Inc.). The contracting strategy for the DTSS-Light program was to execute the EMD phase through the previous SE&I contractor, Lockheed Martin Corporation. A Competitive Cost Plus Fixed Fee (CPFF) contract was awarded for both the previous and existing CTIS SE&I contracts. A competitively awarded, Firm Fixed Price (FFP) contract was awarded to Sechan Electronics, Inc. for the Full Rate Production of the DTSS-Light. Production of the DTSS-H was accomplished through Firm Fixed Price (FFP) production contracts with Lockheed Martin Corporation (5) and SFA Inc. (4). The computer workstations for CTIS programs are being procured through the project manager for CHS.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Procurement of Institutional Training Classroom	1-2Q						
Award DTSS-L Production Contract/Options	2Q	1Q	1Q				
DTSS-L Production	2-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Complete Fielding of DTSS-H		1Q					
Field DTSS Build 6.2 Software		3Q					
Continue DTSS P3I Program		1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Upgrade Analysis of TSS		2-4Q					
DTSS-L FUE		4Q					
Field DTSS-L		4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Cyclic Upgrade and Fielding of DTSS-D		3-4Q	1-2Q				
Field DTSS Build 7.0 Software			1Q				
DTSS-L IOC			4Q				
Cyclic Upgrade and Fielding of DTSS-B			3-4Q	1Q			
Field DTSS Build 8.0 Software				1Q			
Field TSS Upgrade				3-4Q	1-4Q	1-3Q	
Field DTSS Build X.X Software					1Q	1Q	1Q
Cyclic Upgrade of DTSS-L						2-4Q	1-4Q
Conduct Cyclic Upgrade of Institutional Training Classroom						2-3Q	
Cyclic Upgrade of DTSS-D							3-4Q

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604716A Terrain Information - Engineering Development (TIARA)

PROJECT: D579

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Primary Hardware Development	C/CPFF C/CPFF	Loral Corp, OH Lockheed Martin, PA	23280	0		0	N/A	0	N/A	0	23280	
b. Primary Hardware Development	C/CPFF	TASC, Reston, VA	0	100	Dec 98	900	Oct 99	1000	Oct 00	Cont	Cont	
Subtotal Product Development:			23280	100		900		1000		Cont	Cont	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Software Development	C/CPFF C/CPFF	Loral Corp, OH Lockheed Martin, PA	34919	0		0	N/A	0	N/A	0	34919	
b. Software Development	C/CPFF	TASC, Reston, VA	571	1566	Dec 98	2487	Oct 99	2767	Oct 00	Cont	Cont	
c. SBIR/STTR				0		143		0		0	143	
Subtotal Support Costs:			35490	1566		2630		2767		Cont	Cont	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DT/OT*	MIPR	TECOM	685								685	
b. FOT&E**				20	Dec 98	150	Nov 99	150	Nov 00	Cont	Cont	
Subtotal Test and Evaluation:			685	20		150		150		Cont	Cont	

Remark: *DT/OT = Combined Developmental and Operational Testing
**FOT&E = Follow-on Test and Evaluation

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604716A Terrain Information - Engineering Development (TIARA)

PROJECT: D579

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Contractor Eng Support	MIPR	MITRE, McLean, VA	1200	352	Oct 98	400	Oct 99	400	Oct 00	Cont	Cont	
b. Government Eng Support	MIPR	CECOM, et.al.	1142	250	Nov 98	275	Nov 99	275	Nov 00	Cont	Cont	
c. Program Mgmt Support*	Requisition	Various		120	Jan 99	153	Nov 99	203	Nov 00	Cont	Cont	
d. Program Mgmt Personnel	MIPR	TEC, Ft. Belvoir, VA	2616	800	Oct 98	800	Oct 99	800	Oct 00	Cont	Cont	
Subtotal Management Services:			4958	1522		1628		1678		Cont	Cont	

Remark: *This category primarily covers Office Automation

Project Total Cost:			64413	3208		5308		5595		Cont	Cont	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604716A Terrain Information - Engineering Development (TIARA)

PROJECT: D598

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D598 High Volume Map Production (HVMP) Equipment	0	0	487	811	807	0	0	0	2105

A. Mission Description and Budget Item Justification: This Project funds the development of the High Volume Map Production (HVMP) equipment. The current high volume graphics reproduction support provided by the Reproduction Subsection of the Topographic Support System is a time consuming labor intensive process. The HVMP will provide a tactical capability to rapidly reproduce large volumes of graphics (maps, charts, situation overlays, imagery, etc.) material. The HVMP will be capable of reproducing information from hardcopy as well as softcopy via a direct digital interface. It is envisioned that the HVMP will be housed in tactical vehicles (e.g., HMMWV or 5-ton). A total of 16 HVMPs will be produced to support the printing squad of the engineer topographic company located at Corps and Echelons Above Corps.

FY 1999 Accomplishments: Project not funded in FY 1999

FY 2000 Planned Program: Project not funded in FY 2000

FY 2001 Planned Program:

•	487	Initiate Engineering and Manufacturing Development of the HVMP
Total	487	

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA – KA2590 – HVMP	0	0	0	0	458	1541	1540	1650	5189

C. Acquisition Strategy: The Acquisition Strategy for the HVMP is to utilize Commercial Off-the-Shelf (COTS) and Non-developmental Item (NDI) components integrated with Army standard hardware (trucks, shelters, power equipment) to develop an integrated hardware baseline. The contracting strategy for the HVMP is to execute the EMD phase through the current SE&I contractor, Litton/TASC, Inc. A Cost Plus Fixed Fee contract was awarded to the CTIS SE&I contractor. A competitively awarded Firm Fixed Price contract is anticipated for the Full Rate Production.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Engineering and Manufacturing Dev			1-4Q	1-4Q	1-2Q		
HVMP Milestone III					3Q		
Award HVMP Production Contract					3Q		
HVMP Production					3-4Q	1-4Q	1-4Q

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604716A Terrain Information - Engineering Development (TIARA)
	PROJECT D653

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D653 Digital Topography Support System - WRAP	3112	0	0	0	0	0	0	0	3112

A. Mission Description and Budget Item Justification: This project funds the Digital Topography Support System (DTSS) Warfighting Rapid Acquisition Program (WRAP) Force XXI Initiative. Several technological enhancements to the DTSS were identified during the Div XXI AWE that were determined to be necessary to support the First Digital Division. The DTSS is the only system that will provide digital topographic support to maneuver brigades. It provides the digital topographic support that is the underpinning for the entire digitization effort and will provide the topographic data required by all ABCS systems. DTSS products support mission planning and execution functions. WRAP will fund RDT&E efforts to address an improved digital interface with other ABCS systems, digital data communications using the Global Broadcast System (GBS), data subsetting/tailoring for ABCS, and data storage/interface with the ABCS digital geospatial data server (Map Server). WRAP funding provides for the acceleration of RDT&E efforts for required improvements by 2 years, significantly reducing the delay between availability of commercial technologies and integration/evaluation for fielding to the FDD.

FY 1999 Accomplishments:

•	3112	Development of technological enhancements (improved ABCS interoperability, GBS interface, data tailoring, Map Server)
Total	3112	

FY 2000 Planned Program: Project not funded in FY 2000

FY 2001 Planned Program: Project not funded in FY 2001

B. Other Program Funding Summary: Not Applicable

C. Acquisition Strategy: The Acquisition Strategy for execution of the WRAP/Force XXI initiative is to accomplish the development effort through the current CTIS SE&I contractor (Litton/TASC, Inc.). A Cost Plus Fixed Fee contract was awarded to the CTIS SE&I contractor.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Initiate development of technology enhancements	2Q						

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604726A Integrated Meteorological System (IMETS) (TIARA)
	PROJECT DD85

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DD85 Integrated Meteorological System (IMETS)	1901	2301	1771	1903	3412	3368	3365	Continuing	Continuing

A. Mission Description: It is essential to provide the battlefield commander at all echelons with accurate, high resolution, near real time weather data in order to conduct intelligence preparation of the battlefield (IPB). This program element, Integrated Meteorological System (IMETS), funds the development of evolving upgrades to the fielded system. The IMETS is a mobile tactical automated weather data receiving, processing, and dissemination system designed to provide timely weather and environmental effects, forecasts, observations, and decision aid support to the Army. The IMETS is an Army-furnished system, which is operated by Air Force weather personnel and maintained within Army support channels. IMETS provides weather information overlays for the Common Tactical Picture, meteorological (met) messages and other tailored products. IMETS provides all Army Battle Command System (ABCS) systems, mission planning and situation awareness with direct client access to the IMETS 4-D (position and time) meteorological database and to the database of weather impacts on friendly and threat systems. IMETS consists of three basic configurations. These configurations enable support for the full range of military operations from large Major Regional Conflicts to small task forces supporting Military Operations Other Than War: 1) command post (CP) configuration for a fixed facilities at echelon above corps (EAC) level where the CP needs the IMETS permanently integrated into the local area network and a tactical IMETS is not required; 2) vehicle-mounted configuration for tactical operations where the supported echelon moves frequently; and c) light configuration for task-organized elements of a supported echelon, integrated into a small task force, where lightweight, easily deployed core weather functions can be performed without its own vehicle to shelter the system.

FY 1999 Accomplishments:

- 864 Continued to investigate, develop, test and apply advanced software and hardware processing, storage, display and input/output (I/O) technologies to tech base prototypes of high performance expanded weather applications capabilities. This included extending the time domain in battlescale forecast modeling and initial integration of AF and Navy forecast data; evaluated the DoD Meteorological Satellite Program Special Sensor Data, environmental record data, for integration into the Weather Effects database; generated a Down Wind Message from IMETS; adapted the AF Electro Optical Tactical Decision Aid (EOTDA) and Army Target Acquisition Model (TARGAC) to run with IMETS weather data; investigated applications to support Aviation Mission Planning; developed a heat/cold tactical decision aid; certified DII/COE level 5 compliance for UNIX operating system; and began preliminary investigation of laptop configurations for future dismounted IMETS weather effects workstations. Implemented IMETS weather effects workstation software application changes required to provide Y2K compliance. Developed initial capabilities for ingest of Air Force MM5 data using GRIB and BUFR World Meteorological Data standard formats. Integrated IMETS ingest of met data by Air Force Tactical satellite (TVSAT) communications. Developed IWEDA weather impact overlays for the Common Tactical Picture.
- 658 Continued to evaluate, configure and integrate tech base prototype capabilities into operational IMETS.
- 200 Continued test and evaluation support for ABCS digitization products.
- 179 Additional funding provided for Y2K compliance.

Total 1901

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604726A Integrated Meteorological System (IMETS) (TIARA)
	PROJECT DD85

FY 2000 Planned Program:

•	312	Integrate IMETS applications to ABCS 6.0 foundation software, including weather overlays, weather overlay provider, Joint Mapping Tool Kit map services; and deliver to CTSF for implementation in First Digitized Division. Participate in demonstrations and AWE exercises such as the Division Capstone Exercise and JCF-AWE. Begin conversion of IMETS Weather Effects Workstation applications to a dismounted laptop version (UNIX and PC/NT). Provide weather and impact information on the ABCS Synchronization Matrix, and weather symbol information/warnings on the Common Tactical Picture (CTP).
•	567	Extend the IMETS weather forecast and decision aid capability from 24 to 96 hr at 36 km resolution. Produce a fast analysis version of the Battlescale Forecast Model (BFM) to produce short range (3 hr) forecasts over small user-defined Areas of Interest. Improve the BFM forecast output time resolution to one hour. Begin development of a common Atmospheric Sounding Program (ASP) to consistently post-process both BFM and MM5 data into weather hazards and features. Extend the IMETS Gridded Meteorological Database (GMDB) to incorporate multiple numerical weather prediction model data (MM5, BFM and 1 deg NOGAPS), including their different data grid definitions and geographic coordinate projections. Develop an initial version of the GMDB that can be hosted on the DTSS terrain data server, and develop special subsets of meteorological data and products that will reside on the Joint Common Data Base (JCDB).
•	250	Interface the first release of tri-service Target Acquisition Weather Software – Army (TAWS-A) to the GMDB and IMETS. Develop a cold stress TDA for the Integrated Weather Effects Decision Aid (IWEDA). Develop a JAVA client version of IWEDA and evaluate as a prototype for platform independent IMETS applications. Investigate constraints on acoustic propagation TDA application prototypes for IMETS. Improve the Vis5D visualization to support the new GMDB data sets. Develop meteograms and other new contour displays. Develop IMETS products and parameters to support Aviation Mission Planning and data visualization from the GMDB met data. Develop initial meteorological satellite remote sensing products for IMETS using the Air Force Small Tactical Terminal or other sources of multi-band met satellite imagery, and special sounder data; and configure to IMETS satellite data registration, calibration and display.
•	210	Purchase six IMETS Light test articles at $35K each
•	150	Continue to develop IMETS interoperability with other BFA systems, including MCS, ASAS, AFATDS, CSSCS and AMDWS.
•	550	Continue to evaluate, configure and integrate tech base prototype capabilities into operational IMETS.
•	200	Continue test and evaluation support for ABCS digitization products.
•	62	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	2301	

FY 2001 Planned Program:

•	250	Integrate IMETS applications to ABCS 7.0 foundation software. Complete conversion of IMETS data ingest, weather forecast, weather impact applications, graphical user interface, 2-D and 3-D data visualizations to execute on a dismounted laptop configuration. Certify DII/COE level 5 compliance for the laptop configuration.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604726A Integrated Meteorological System (IMETS) (TIARA)
	PROJECT DD85

FY 2001 Planned Program: (continued)

- 539 Extend the IMETS nested BFM and MM5 forecasts to 120 hours. Extend the IMETS Gridded Meteorological Database (GMDB) to incorporate latest METOC standards for common environmental data across services. Complete development of a common Atmospheric Sounding Program (ASP) to consistently post-process both BFM and MM5 data into weather hazards and features. Continue to develop a GMDB that can be hosted on the DTSS terrain data server for distributing IMETS gridded meteorological data and weather impacts database information to ABCS clients at lower echelons where there is no full IMETS capability. Continue to develop special subsets of meteorological data and products that will reside on the Joint Common Data Base (JCDB), to include hosting the GMDB on the JCDB. Integrate physics-based TAWS-A and rule-based IWEDA decision aids into an Army Tactical Decision Aid (ATDA) on IMETS. Integrate an acoustic propagation decision aid into the ATDA. Integrate additional polar and geostationary meteorological satellite remote sensing data analysis into IMETS to provide surface state, precipitation, snow cover and other weather parameters of interest.
- 150 Develop IMETS interoperability with other BFA systems, including MCS, ASAS, AFATDS, CSSCS and AMDWS.
- 382 Continue to evaluate, configure and integrate tech base prototype capabilities into operational IMETS.
- 200 Continue test and evaluation support for ABCS.
- 250 Implement a capability for IMETS to participate with both live and synthetic weather scenarios in live, virtual and constructive simulation exercises leading to First Digitized Corps. Develop a capability to ingest climatological and synthetic weather scenarios into IMETS for play in exercises. Interface to Air Force Combat Climatology Center and NCAR historical weather databases. Integrate to M&S through a C4I to HLA interface to allow the IMETS data to be used to support simulations and existing M&S weather servers.

Total 1771

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	1777	2318	1782
Appropriated Value	1790	2318	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-13		
b. SBIR / STTR	-47		
c. Omnibus or Other Above Threshold Reduction	+179	-9	
d. Below Threshold Reprogramming			
e. Rescissions	-8	-8	
Adjustments to Budget Years Since FY 2000/2001 PB			-11
Current Budget Submit (FY 2001 PB)	1901	2301	1771

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604726A Integrated Meteorological System (IMETS) (TIARA)
	PROJECT DD85

Change Summary Explanation: Funding - FY99 (+179): Additional funding provided for Y2K compliance.

C. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA 2 - SSN: BW0021-IMETS	4832	5444	7018	2511	7213	8679	8469	0	44192

D. Acquisition Strategy: The IMETS development program integrates efforts from the Air Force, Army, and OSD's DII COE. It is consistent with the development of the C4I Joint Technical Architecture-Army. The IMETS Non Developmental Item acquisition strategy has proven successful in the fielding of twenty systems since program initiation in FY 1992. This development strategy will be continued to include software modules as they mature and become part of the COE library. A common map server update is of primary focus along with increased user interoperability. Current improvement efforts are to incorporate new numerical weather prediction forecasts and products communicated from centralized Air Force Hubs to the individual IMETS and its Battlescale Forecast Model in the field. Weather tactical decision aid upgrades and updated forecaster aids are developed to include products from Air Force initiatives such as the New Tactical Forecast System and Small Tactical Terminal for high resolution domestic and foreign weather satellite data. IMETS data and applications will be accessible to Battlefield Functional Area C4I systems as clients through weather database services with the Combat Terrain Information System (CTIS) Digital Topographic Support System (DTSS) environmental database and through the Joint Common Data Base. Application modules from the Army Research Laboratory will be integrated and fielded as an upgrade to the current software baseline. These include: improvements in generation and display of higher time resolution and higher spatially resolved weather forecast and effects information; inclusion of physics-based weather decision aids and models; development of more versatile weather databases that support a variety of service and allied weather forecast models and environmental databases; development of weather applications consistent with joint METOC data standards; development of weather remote-sensing products from meteorological satellites; and ingest of battlefield sensor data to augment initializing mesoscale forecasts.

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Extend Battlescale Forecast Model (BFM) and Air Force MM5 forecast data resolutions	2-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Develop/Integrate Visualization 5D program	3-4Q	3-4Q	3-4Q				
Develop Thunderstorm and turbulence model	2-4Q						
Develop common BFM and MM5 Atmospheric Sounding post processor		1-4Q	1-4Q				
Develop Gridded Met Database on DTSS terrain server and support Joint Common Database products		1-4Q	1-4Q				
AF Weather Effects re-engineering integration	1-4Q	1-4Q					
Convert weather effects apps to other platforms		1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604726A Integrated Meteorological System (IMETS) (TIARA)

PROJECT: DD85

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Integrated Weather Effects Decision Aid update (client and laptop integration)	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
DII/COE Level 6 compliance	2-4Q	1-4Q					
Integrate DMSP Environmental Data Record and other remote sensing products	2-4Q	1Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Develop application for Aviation Mission Planning	2-4Q	1-4Q					
Develop heat/cold tactical decision aid	2Q	1-2Q					
Develop TAWS-A and ATDA decision aids		1-4Q	1-4Q	1-4Q			
Support ABCS/IMETS integration effort	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604726A Integrated Meteorological System (IMETS) (TIARA)

PROJECT: DD85

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Product Integration	CPAF Task Order	Logicon RDA Tacoma, WA	9420	546	1Q99	462	1Q 00	401	1Q 01	2703	13532	
b. Weather Application	MIPR	ARL, White Sands Missile Range, NM	1437	608	1Q99	790	1Q00	770	1Q01	8898	12503	
c. GFE	MIPR	PEO C3S Ft. Monmouth, NJ				287	1Q 00				287	
d. Y2K Plus Up	MIPR	CECOM		171	3Q						171	
e. Inflation Withhold				8							8	
f. SIBR/STTR		HQ DA		47		62					109	
Subtotal Product Development:			10857	1380		1601		1171		11601	26610	

Remark: The target value of the contract is based on the total contract with task orders written against it. There is no target value associated with each task order.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Documentation Coordination	MIPR	CECOM	200	200	2Q99	300	2Q 00	200	2Q 01	2702	3602	
b. Program Office	MIPR	PMO Intel Fusion McLean, VA	571	121	1Q99	200	1Q 00	200	1Q 01	2477	3569	
Subtotal Support Costs:			771	321		500		400		5179	7171	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ABCS	MIPR	ARL, White Sands Missile Range, NM	200	200	1Q99	200	1Q 00	200	1Q 01	3376	4176	
Subtotal Test and Evaluation:			200	200		200		200		3376	4176	

Remark: No target value associated with the MIPR.

ARMY RDT&E COST ANALYSIS (R-3)		DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604726A Integrated Meteorological System (IMETS) (TIARA)	PROJECT: DD85

V. Management Services: None.

			Total PYs Cost	FY 1999 Cost		FY 2000 Cost		FY 2001 Cost		Cost To Complete	Total Cost	
Project Total Cost:			11828	1901		2301		1771		20156	37957	

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)			DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604739A JTT/CIBS-M (TIARA)		PROJECT D702

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D702 Common Integrated Broadcast Service-Modules	4192	4519	6060	1975	1956	1945	1939	0	31545

A. Mission Description and Budget Item Justification: The Integrated Broadcast Service (IBS) is the worldwide, DoD standard network for transmitting tactical and strategic intelligence and targeting data within a common format which will migrate to a single family of Joint Tactical Terminals for improved operational jointness. The Common Integrated Broadcast Service - Modules (CIBS-M) is a totally integrated Joint Program (all services and Special Operations Command (SOCOM)) which was created to consolidate and replace existing IBS receiver functionality/capability, inherent with the duplicative existing systems, with a "common family" of IBS modules (both hardware and software). This is required to implement the IBS Plan and consolidate/eliminate duplication of effort previously spread across multiple PEs/SSNs DoD wide. The JTT program leverages to the maximum extent possible, early tech base efforts initiated by the National Reconnaissance Office (NRO). These efforts will continually increase the reliability of the JTT/CIB-M while reducing the size of the JTT family of terminals. For those efforts which show promise, the management control will transition to the JTT JPO. The CIBS-M family of modules will be the "sole" provider of modules ensuring continued IBS interoperability to a variety of tactical receivers across DoD and the services. This program funds the design, development, test and evaluation of initial CIBS hardware and software modules, as well as implementing performance expanding modifications to the family of Joint Tactical Terminal (JTT) equipment, to train, equip and support the warfighter resulting with improved Joint Readiness and Interoperability.

FY 1999 Accomplishments:

•	3440	CIBS-M Software Development, Continuous Phase Modulation (CPM), Joint Control Client (JCC)
•	60	Multi Mission Advanced Tactical Terminal/Commanders Tactical Terminal (MATT/CTT) Migration Support
•	520	CIBS-M Hardware Development (Stand Alone CIBS-M Cryptographic Module (SACM), (Cornfield)
•	137	Defense Information Infrastructure Common Operating Equipment (DII COE) Migration Support
•	35	Joint Interoperability Test Center Support (JITC)
Total	4192	

FY 2000 Planned Program:

•	1297	Develop Common Integrated Broadcast Service (CIBS-M) Software for Integrated Broadcast Service (IBS) Interoperability
•	1100	Host Platform Integration for other Services MOT&E
•	502	DoD Information Technology Security Certification and Accreditation Process (DITSCAP)
•	1100	Test Support (User Demonstration & JITC Support)
•	400	Modeling & Simulation in support of Operational Training (Distance Learning, Distributed Interactive Simulation)
•	120	Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	4519	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604739A JTT/CIBS-M (TIARA) — PROJECT: D702

FY 2001 Planned Program:

- 4493 IBS Format Implementation (Tactical Data Information Link, Version J (TADIL-J),JCC,DII COE, DITSCAP,DAMA and VMF Translator)
- 1207 Test Support (MOT&E,TADIL A, Secondary Imagery Dissemination System (SIDS))
- 360 Modeling and Simulation in support of Operational Training (Distance Learning, Distributed Interactive Simulation)

Total 6060

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	4400	4552	6096
Appropriated Value	4447	4552	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-47		
b. SBIR / STTR	-117		
c. Omnibus or Other Above Threshold Reduction		-18	
d. Below Threshold Reprogramming	-73		
e. Rescissions	-18	-15	
Adjustments to Budget Years Since FY 2000/2001 PB			-36
Current Budget Submit (FY /2001 PB)	4192	4519	6060

C. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
V29600 JTT/CIBS-M (Tiara)	10235	24151	26753	11506	9955	17897	13072	Continue	Continue
BS9730 PEO IEW&S Spares	4522	0	0	0	0	0	0	0	8844
BA1081 Integrated Broadcast Terminal Mod (Tiara)	6411	0	0	0	0	0	0	0	8266

This Joint program also supports direct procurement of JTTs under the following PEs: Air Force – 0305158F; Naval Aviation – 0204152N, 0204154N and 0204251N.

D. Acquisition Strategy: The CIBS-M family of modules will be the sole provider of IBS Modules to a variety of IBS receivers across all DOD component agencies. The JTT/CIBS-M acquisition strategy has taken advantage of early streamlining initiatives and has addressed reducing O&S costs under the umbrella of Total Ownership Cost Reduction (TOCR) efforts. The Joint Program will competitively develop hardware and software modules and procure the required modules for integration into host receiver systems. Additionally, this line provides for necessary modifications to IBS modules as the broadcast networks continue to evolve and modify their formats and protocols. The R&D program will fund the design and development of P3I (priority to those objective requirements in the JTT ORD that have not been satisfied). A competitive FFP contract was awarded in FY98 consisting of 9 option awards for JTT and CIBS-M which includes a 10 year warranty.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604739A JTT/CIBS-M (TIARA)
	PROJECT D702

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
CIBS-M Software Development	1Q						
JTT Host Integration for other Services(MOT&E)		2-4Q					
User Demonstration		3Q					
IBS Format Implementation			1Q				
Multiple Service Operational Test & Evaluation			2Q				
MS III Decision			3Q				

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604739A JTT/CIBS-M (TIARA)

PROJECT: D702

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. P3I	FFP&C/PFF	Raytheon, St Petersburg, FL	2891	3266	1Q	525	2-3Q	3791	1Q	Continue	10473	
b. Modeling & Simulation	FFP	DCSI				400	1-3Q				400	
c. DITSCAP	T & M	Computer Science Corporation				502	1-2Q				502	
d. SBIR/STTR						120					120	
Subtotal Product Development:			2891	3266		1547		3791			11495	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Matrix Support	MIPR	Ft. Monmouth	159	121	1Q	125	1Q	125	1Q	Continue	530	
b. Software Support	T&M	Ft. Monmouth	776	125	1Q	130	1Q	130	1Q	Continue	1161	
e. TSM Support	MIPR	TSM, Ft Huachuca, AZ	125	190	1Q	400	2Q	450	1Q	Continue	1165	
Subtotal Support Costs:			1060	436		655		705			2856	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Interoperability Test Spt	MIPR	JITC	443	15	2Q	100	2Q			Continue	558	
b. Engineering Support	MIPR	SPAWAR System Ctr	3984	285	1Q	300	2Q	200	2Q	Continue	4769	
c. User Demo	MIPR	Various		40	1Q	650	3Q			690	1380	
d. MOT&E Support	MIPR	TEXCOM				1100	2Q	1200	1Q	2300	4600	
Subtotal Test and Evaluation:			4427	340		2150		1400		2990	11307	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604739A JTT/CIBS-M (TIARA)

PROJECT: D702

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Management		PM, JTT	425	150	1Q	167	1Q	164	1Q	Continue	906	
Subtotal Management Services:			425	150		167		164			906	
Project Total Cost:			8803	4192		4519		6060		2990	26564	

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY **5 - Engineering and Manufacturing Development**	PE NUMBER AND TITLE **0604741A Air and Missile Defense Command, Control, Intelligence - Engineering Development**

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	13033	7943	16462	19152	19245	18653	18910	Continuing	Continuing
D126 FAAD Command and Control Engineering Development	7351	7454	8164	9124	9522	9566	9842	Continuing	Continuing
D146 Air & Missile Defense Planning & Control System (AMC PCS)	744	489	8298	10028	9723	9087	9068	Continuing	Continuing
D169 Air & Missile Defense Planning & Control System - WRAP	4938	0	0	0	0	0	0	0	4938

A. **Mission Description and Budget Item Justification:** The Forward Area Air Defense Command, Control, and Intelligence (FAAD C2I) System (Project D126) provides critical, automated threat aircraft, cruise missile, and UAV Battle Management/Command, Control, Communication, and Intelligence (BM/C4I) information to support the planning and decision process at various levels of command. The mission is to collect, digitally process, and disseminate real time target cueing and tracking information, common tactical air picture, and C2I information to all Short Range Air Defense (SHORAD) weapons [Avenger, Bradley Linebacker, Manportable Air Defense System (MANPADS), joint and combined arms]. Unique FAAD C2I software will provide this mission capability by integrating FAAD C2 engagement operations software with the Joint Tactical Information and Data System (JTIDS), Single Channel Ground and Airborne Radio System (SINCGARS), Enhanced Position Location Reporting Systems (EPLRS), Global Positioning System (GPS), Airborne Warning and Control System (AWACS), Sentinel, and the Army Battle Command System (ABCS) architecture. Provides joint C2 interoperability and horizontal integration with PATRIOT, THAAD, MEADS, and SHORAD weapon systems. FAAD C2I is the first system to digitize for the First Digitized Division/First Digitized Corps (FDD/FDC).

The Air and Missile Defense Planning and Control System (AMDPCS) (Project D146) is the backbone of air defense which provides BM/C4I capability to Air Defense Artillery Brigades, the Army Air and Missile Defense Command (AAMDC) corps and EAC headquarters, and joint force command and control elements, such as the Battlefield Coordination Detachment (BCD). The AMDPCS provides ADA Bdes with a fire control system via the Air Defense System Integrator (ADSI) for monitoring and controlling engagement operations by subordinate battalions. The AMDPCS provides a common air and missile defense staff planning and battlespace situational awareness tool via the Air and Missile Defense Workstation (AMDWS) to achieve the common tactical and operational air picture. The AMDWS, like ADSI, will be fielded to air and missile defense units at all echelons of command, battery through theater. The AMDPCS provides the ABCS architecture and the Army AMD Task Forces (AMDTF) with BM/C4I capability and the Army component of interoperable Joint Theater Air and Missile Defense (JTAMD) BM/C4I. The AMDPCS enables Active, Passive and Attack Operations coordination with the joint forces. AMDPCS (Project D169) was initiated with WRAP funding in FY 99.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604741A Air and Missile Defense Command, Control, Intelligence - Engineering Development

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	11458	7995	8942
Appropriated Value	11606	7995	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-148		
b. SBIR / STTR	-279		
c. Omnibus or Other Above Threshold Reductions	+1900	-28	
d. Below Threshold Reprogramming			
e. Rescissions	-46	-24	
Adjustments to Budget Years Since FY 2000/2001 PB			+7520
Current Budget Submit (FY 2001 PB)	13033	7943	16462

Change Summary Explanation: Funding - FY99 Program increased for Y2K conversion.

FY01 increase for the following efforts:

1) Continued AMDWS S/W development to enable AD BOS participation in FDD/FDC.
2) Army AD participation in Joint Operations by developing ADMSW & AMDPCS to be compatible with TBMCS.
3) Continued to fund Joint Interoperable HW/SW development in order to fight with Air Force and Navy.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604741A Air and Missile Defense Command, Control, Intelligence - Engineering Development PROJECT D126

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D126 FAAD Command and Control Engineering Development	7351	7454	8164	9124	9522	9566	9842	Continuing	Continuing

A. <u>Mission Description and Budget Item Justification</u>: **Project D126 – FAAD Command and Control Engineering Development:** The Forward Area Air Defense Command, Control, and Intelligence (FAAD C2I) System Project D126) provides critical, automated threat aircraft, cruise missile, and UAV Battle Management/Command, Control, Communication, and Intelligence (BM/C4I) information to support the planning and decision process at various levels of command. The mission is to collect, digitally process, and disseminate real time target cueing and tracking information, common tactical air picture, and C2I information to all Short Range Air Defense (SHORAD) weapons [Avenger, Bradley Linebacker, Manportable Air Defense System (MANPADS), joint and combined arms]. Unique FAAD C2I software will provide this mission capability by integrating FAAD C2 engagement operations software with the Joint Tactical Information and Data System (JTIDS), Single Channel Ground and Airborne Radio System (SINCGARS), Enhanced Position Location Reporting Systems (EPLRS), Global Positioning System (GPS), Airborne Warning and Control System (AWACS), Sentinel, and the Army Battle Command System (ABCS) architecture. Provides joint C2 interoperability and horizontal integration with PATRIOT, THAAD, MEADS, and SHORAD weapon systems. FAAD C2I is the first system to digitize for the First Digitized Division/First Digitized Corps (FDD/FDC). Digitized Corps (FDD/FDC).

FY 1999 Accomplishments:

•	100	Operational Assessment
•	3651	Continued Block III software development
•	3500	Continued digitization integration with all Active Army Divisions
•	100	Completed Critical Design Review /System Certification Test
Total	7351	

FY 2000 Planned Program:

•	4154	Continue Block III software development for FDD
•	3027	Complete digitization integration with all Active Army Divisions; conduct digitization integration with Reserve Component units
•	100	System Certification Test for FDD
•	173	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	7454	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604741A Air and Missile Defense Command, Control, Intelligence - Engineering Development
	PROJECT D126

FY 2001 Planned Program:

- 7064 Continue Block III software development for FDC
- 1000 Continue digitization integration with the Reserve Component units
- 100 Complete Critical Design Review for FDC

Total 8164

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE, 64820.DE10 – Sentinel GBS	6708	5089	8429	3639	0	0	0	Cont	Cont
OPA 2, WK5053 – Sentinel GBS	57475	48257	24188	28497	31882	34672	34635	Cont	Cont
OPA 2, WK5057 – Sentinel MODS	0	0	0	5502	11312	16954	16936	Cont	Cont
OPA 2, AD5050 – FAAD C2	25462	10546	17868	12330	12268	26025	25996	Cont	Cont
OPA 2, AD5090 – Mods FAAD C2	0	7769	0	0	0	0	0	Cont	Cont
OPA 2, AD5070 – Air and Missile Defense	0	2925	4859	6294	6382	6260	6294	Cont	Cont
Spares (BS9702) – FAAD C2	748	387	586	463	584	2124	2133	Cont	Cont
Spares (BS9732) – Sentinel GBS	5102	4334	1922	3192	678	3853	2806	Cont	Cont

C. **Acquisition Strategy:** The acquisition strategy relies heavily on non-development items (NDI) and evolutionary software development to rapidly meet the demands of air defense battle management/command, control, communications, computers, and intelligence (BM/C4I) requirements, and to keep pace with automated information technologies. The concept of evolutionary software development is being followed and will be accomplished in Blocks I, II, III and IV. Blocks I and II have been completed. FAAD C2 Block III is currently being developed for both the Army's Active and Reserve components.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Critical Design Review	2Q		3Q			2Q	
System Certification Test	2Q	4Q			3Q		
First Unit Equipped – Objective System					4Q		
Contract Award, BLK IV				4Q			

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604741A Air and Missile Defense Command, Control, Intelligence - Engineering Development

PROJECT: D126

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TRW, BLK I	C/CPIF	Dominquez Hills, CA	176461							0	176461	
b. TRW, BLK II	SS/CPIF	Dominquez Hills, CA	32206							0	32206	
c. TRW, BLK III	SS/CPIF	Dominquez Hills, CA	47848	5624	Mar 99	5061	Mar 00	5869	Mar 01	Cont	64402	
d. TRW	SS/T&M	Dominquez Hills, CA	6093			224	Dec 99	250	Dec 00	Cont	6567	
e. Matrix (RDEC)	MIPR	Huntsville, AL	5427	532		620		685		Cont	7264	
f. Sentinel GBS	MIPR	Huntsville, AL	3791							0	3791	
g. CHS	MIPR	Ft. Monmouth, NJ	1000	200		200		200		0	1600	
h. JTIDS	MIPR	Ft. Monmouth, NJ	6000							Cont	6000	
i. In-house/Govt Spt	Various	Various	11367	895		900		1010		Cont	14172	
j. Inflation Withhold						26					26	
Subtotal Product Development:			290193	7251		7031		8014		Cont	312489	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. SETA	Various	Huntsville, AL	10879	0		150	Feb 00	150	Feb 01	Cont	Cont	
b. SBIR/STTR			444			173					617	
Subtotal Support Costs:			11323			323		150		Cont	Cont	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ADATD, Ft. Bliss			9916	100		100				Cont	10116	
b. OPTEC			2000	0		0				0	2000	
Subtotal Test and Evaluation:			11916	100		100				Cont	12116	

IV. Management Services: Not applicable

Project Total Cost:			313432	7351		7454		8164		Cont	Cont	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604741A Air and Missile Defense Command, Control, Intelligence - Engineering Development PROJECT D146

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D146 Air & Missile Defense Planning & Control System (AMC PCS)	744	489	8298	10028	9723	9087	9068	Continuing	Continuing

A. Mission Description and Budget Item Justification: **Project D146 – Air and Missile Defense Planning and Control System:** The Air and Missile Defense Planning and Control System (AMDPCS) is the backbone of air defense which provides BM/C4I capability to Air Defense Artillery Brigades, the Army Air and Missile Defense Command (AAMDC) corps and EAC headquarters, and joint force command and control elements, such as the Battlefield Coordination Detachment (BCD). The AMDPCS provides ADA Bdes with a fire control system via the Air Defense System Integrator (ADSI) for monitoring and controlling engagement operations by subordinate battalions. The AMDPCS provides a common air and missile defense staff planning and battlespace situational awareness tool via the Air and Missile Defense Workstation (AMDWS) to achieve the common tactical and operational air picture. The AMDWS, like ADSI, will be fielded to air and missile defense units at all echelons of command, battery through theater. The AMDPCS provides the ABCS architecture and the Army AMD Task Forces (AMDTF) with BM/C4I capability and the Army component of interoperable Joint Theater Air and Missile Defense (JTAMD) BM/C4I. The AMDPCS enables Active, Passive and Attack Operations coordination with the joint forces. AMDPCS (Project D169) was initiated with WRAP funding in FY 99.

FY 1999 Accomplishments:

	744	Y2K Compliance Efforts
Total	744	

FY 2000 Planned Program:

•	383	Continue Software Development
•	93	Conduct Preliminary Design Review/System Certification Test
•	13	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	489	

FY 2001 Planned Program:

•	4949	Continue AMDWS Software Development
•	1300	Continue ADSI Software Development
•	1049	System Certification Test/Interoperability Operational Assessment
•	1000	Develop AMDPCS sheltered subsystem configuration
Total	8298	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604741A Air and Missile Defense Command, Control, Intelligence - Engineering Development PROJECT D146

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA, AD 5070 – AMDPCS	0	2925	4859	6294	6382	6260	6294		

C. **Acquisition Strategy:** The acquisition strategy relies on non-development items (NDI) and evolutionary software development to rapidly meets the demands of air defense battle management command, control, communications, computers, and intelligence (BM/C4I) requirements and to keep pace with automated information technologies. The concept of evolutionary software development will be accomplished in a series of Block releases and upgrades. AMDPCS is being developed for both the Army's Active and Reserve components.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Y2K Certification – AMDWS/ADSI	3Q						
AMDWS Software Release		2Q	1Q/3Q				
AMDWS Software Certification		2Q	1Q				
ADSI Software Release	3Q	3Q					
ADSI Software Certification	3Q	3Q					

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604741A Air and Missile Defense Command, Control, Intelligence - Engineering Development

PROJECT: D146

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TRW	SS/CPIF	Huntsville, AL		744	Aug 99	331	Mar 00	5249	Mar 01		Cont	
b. USN/APC	MIPR	Austin, TX						1800			1800	
c. In-House/Govt Support						50		549			599	
d. Inflation Withhold						2					2	
Subtotal Product Development:				744		383		7598			Cont	

Remark:

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. SETA	Various	Various						500	Dec 00		500	
b. SBIR/STTR						13					13	
Subtotal Support Costs:						13		500			513	

Remark:

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Certification		JITC, Ft Huachuca				93		100			193	
b. Interoperability Assessment		CTSF, Ft Hood						100			100	
Subtotal Test and Evaluation:						93		200			293	

Remark:

IV. Management Services : Not applicable

Project Total Cost:				744		489		8298			9531	

Remark:

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604741A Air and Missile Defense Command, Control, Intelligence - Engineering Development PROJECT D169

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D169 Air & Missile Defense Planning & Control System - WRAP	4938	0	0	0	0	0	0	0	4938

A. Mission Description and Budget Item Justification: Project D169 - WRAP Funding initiated the Air and Missile Defense Planning and Control System (AMDPCS) program. The AMDPCS is the backbone of air defense which provides BM/C4I capability to Air Defense Artillery Brigades, the Army Air and Missile Defense Command (AAMDC) corps and EAC headquarters, and joint force command and control elements, such as the Battlefield Coordination Detachment (BCD). The AMDPCS provides ADA Bdes with a fire control system via the Air Defense System Integrator (ADSI) for monitoring and controlling engagement operations by subordinate battalions. The AMDPCS provides a common air and missile defense staff planning and battlespace situational awareness tool via the Air and Missile Defense Workstation (AMDWS) to achieve the common tactical and operational air picture. The AMDWS, like ADSI, will be fielded to air and missile defense units at all echelons of command, battery through theater. The AMDPCS provides the ABCS architecture and the Army AMD Task Forces (AMDTF) with BM/C4I capability and the Army component of interoperable Joint Theater Air and Missile Defense (JTAMD) BM/C4I. The AMDPCS enables Active, Passive and Attack Operations coordination with the joint forces. AMDPCS was initiated with WRAP funding in FY 99. Project D146 will continue development of AMDPCS.

FY 1999 Accomplishments:

•	3543	AMDWS Software Development
•	1000	ADSI Software Development
•	395	AMDWS and ADSI Software Certification
Total	4938	

FY 2000 Planned Program: Project not funded in FY 2000

FY 2001 Planned Program: Project not funded in FY 2001

B. Other Program Funding Summary: Not applicable

C. Acquisition Strategy: The acquisition strategy relies on non-development items (NDI) and evolutionary software development to rapidly meets the demands of air defense battle management command, control, communications, computers, and intelligence (BM/C4I) requirements and to keep pace with automated information technologies. The concept of evolutionary software development will be accomplished in a series of Block releases and upgrades. AMDPCS is being developed for both the Army's Active and Reserve components.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604741A Air and Missile Defense Command, Control, Intelligence - Engineering Development

PROJECT: D169

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Y2K Certification - AMDWS/ADSI	3Q						
ADSI Software Release	3Q						
ADSI Software Certification	3Q						

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604741A Air and Missile Defense Command, Control, Intelligence - Engineering Development

PROJECT: D169

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TRW	C/CPFF	Huntsville, AL		3543	Feb 99						3543	
b. USN/APC	T&M	Austin, TX		1000							1000	
Subtotal Product Development:				4543							4543	

II. Support Costs: Not applicable

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Certification		JITC, Ft Huachuca		150							150	
b. Interoperability Assess		CTSF, Ft Hood		95							95	
c. Certification		SED, Redstone Ars		150							150	
Subtotal Test and Evaluation:				395							395	

IV. Management Services: Not applicable

Project Total Cost:				4938							4938	

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604746A Automatic Test Equipment Development

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	9423	16063	12956	8332	8564	12433	10931	Continuing	Continuing
DL59 Diagnostic/Expert Systems Development	6582	13166	3542	3554	3661	3694	3682	Continuing	Continuing
DL65 Test Equipment Development	2841	2897	2987	977	976	1070	1167	Continuing	Continuing
DL66 Embedded Diagnostics/Prognostics Development	0	0	6427	3801	3927	7669	6082	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program element provides for the development of diagnostic/prognostic hardware and software to support the increasingly complex electronics of Army weapon systems. The program focuses on commercial state-of-the-art test technologies which are common to multiple weapons platforms to minimize the cost of troubleshooting and maintenance in the field. Expert systems and artificial intelligence applications are being developed under this program element as part of the Army Diagnostics Improvement Program (ADIP) to support the overall Army strategy of improving the self-diagnostic capability of weapon systems through use of embedded sensors and built-in diagnostics. The goal of embedding diagnostics is to minimize the need for external testers and to improve the troubleshooting abilities of soldiers in the field. Emphasis is also being placed on development of paperless maintenance manuals and procedures and on battlefield electro-optical displays which will reduce the Army's investment in test program sets and in maintenance publications and procedures. This program element further provides for the development of modular, reconfigurable automatic and semi-automatic systems to satisfy calibration and repair requirements of Army general purpose test, measurement, and diagnostic equipment (TMDE). The calibration mission covers all equipment commodities, including the most sophisticated TMDE, and requires capabilities to support state-of-the-art technologies. A rapidly deployable calibration set with emphasis on digital electronics and tailored to support Army field units is being developed to alleviate the serious deployability and survivability shortfalls in the current systems.

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	9962	10252	12632
Appropriated Value	10030	16252	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-68		
b. SBIR / STTR	-252		
c. Omnibus or Other Above Threshold Reductions		-65	
d. Below Threshold Reprogramming	-247		
e. Rescissions	-40	-124	
Adjustments to Budget Years Since FY 2000/2001 PB			+324
Current Budget Submit (FY 2001 PB)	9423	16063	12956

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604746A Automatic Test Equipment Development PROJECT DL59

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
DL59 Diagnostic/Expert Systems Development	6582	13166	3542	3554	3661	3694	3682	Continuing	Continuing

A. **Mission Description and Budget Item Justification:** This project funds development of diagnostic and prognostic systems and general purpose test and diagnostic equipment. These systems and equipment are required to overcome existing deficiencies and voids in organic test and diagnostic capabilities and to ensure the operational readiness, accuracy, and effectiveness of the Army's weapons and combat support systems. The project provides for development of diagnostic/prognostic technologies and state-of-the-art general purpose automatic test equipment to support the Army's weapon systems; improvement of general purpose automatic test equipment to meet new testing and technological requirements; market surveys of commercially available test equipment, methods, and procedures to determine applicability to Army requirements; and development and validation of test and diagnostic software. Applications of state-of-the-art technologies in expert systems and artificial intelligence, paperless maintenance and troubleshooting manuals, electro-optical displays for battlefield use, and soldier-friendly equipment will be developed to meet identified requirements.

FY 1999 Accomplishments:

•	670	Tested and evaluated anticipatory maintenance system for ground vehicles.
•	1529	Developed interface software needed by developers to utilize Integrated Family of Test Equipment (IFTE) test capabilities.
•	1728	Evaluated commercial diagnostics for application to Army helicopter system maintenance requirements.
•	2455	Initiated preplanned product improvement program to expand test and diagnostic capabilities of the IFTE Electro-Optics Test Facility (EOTF).
•	200	Developed test program set for Army VXI test system.
Total	6582	

FY 2000 Planned Program:

•	1390	Expand ground vehicle-based anticipatory maintenance system to brigade level.
•	1519	Develop initial helicopter-based anticipatory maintenance system.
•	1424	Develop horizontal technology insertion interface for the Bradley Fighting Vehicle System.
•	3915	Complete preplanned product improvement program, testing, and user assessment for EOTF.
•	2213	Develop EOTF test programs.
•	2360	Upgrade EOTF prototype hardware.
•	345	Small Business Innovative Research/Small Business Technology Transfer programs.
Total	13166	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604746A Automatic Test Equipment Development PROJECT DL59

FY 2001 Planned Program:

- 1482 Evaluate new hardware upgrades for the Integrated Family of Test Equipment.
- 1060 Develop and evaluate new software applications for the Integrated Family of Test Equipment.
- 1000 Commence Army developmental efforts on a Department of Defense (DoD) joint service automatic test system.

Total 3542

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA3, MB2201, Electronic Repair Shelter	3645	10418	6394	5083	4214	149	0	0	29903
OPA3, MB4001, Base Shop Test Facility	13047	13383	6696	1697	0	0	0	0	34823
OPA3, MB4002, Contact Test Set (SPORT)	23362	25247	37081	34570	38533	17113	17095	Cont	Cont
OPA3, MB4003, Electro-Optic Equipment	29320	12675	15210	10721	12391	11743	9296	0	101356

C. Acquisition Strategy: This project funds a number of separate but related efforts to develop and upgrade general purpose automatic test equipment and diagnostic software to support Army weapon systems. The projects are managed by the Product Manager, Automatic Test Support Systems and are focused on ensuring maximum use of commercial technologies and equipment to satisfy the Army's test and diagnostic requirements. When the necessary expertise and capability are available within the Department of Defense, services required for the individual developmental projects are ordered from the government source; otherwise, commercial contracts are used. Equipment required for developmental projects is obtained by contract from the commercial supplier. Developmental efforts on the Electro-Optics Test Facility (EOTF) preplanned product improvement program are being completed under a sole source contract awarded to the prime contractor for the system. The Army will participate with the other services in development of a DoD standard automatic test system. The Army requirement is stated in the Integrated Family of Test Equipment (IFTE) operational requirements document (ORD). This developmental effort will be competitive contractual action and will be managed by a joint service NxTest Technical Working Group.

D. Schedule Profile:	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Complete EOTF User Assessment		4Q					
EOTF Type Classification-Standard			1Q				
IFTE ORD Approval		1Q					
Follow-On Automatic Test System Milestone I/II			1Q				

NOTE: This is a continuing program of developmental activities to provide a means for satisfying test and diagnostic support requirements of Army weapon systems. It consists of a number of similar and related efforts many of which do not entail distinct major milestones.

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604746A Automatic Test Equipment Development

PROJECT: DL59

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Systems Engineering	SS/CPAF	Northrop Grumman, Rolling Meadows, IL	0	1126	May 99	4470	Jan-Jun 00	978	Jan 01	Cont	6574	
b. Software Development	SS/CPAF	Northrop Grumman, Rolling Meadows, IL	0	1302	May 99	800	Feb 00	671	Jan 01	Cont	2773	
c. Systems Engineering	Various	Various	32401	1418		2149		768		Cont	36736	
d. Software Development	Various	Various	23100	969		1941		200		Cont	26210	
e. Testing	Various	Various	4107	630		1015		200		Cont	5952	
f. Support Equipment	Various	Various	0	75		0		0		0	75	
g. Government Engineering		Various	6355	531		681		200		Cont	7767	
h. Prototype Hardware Upgrade			0	0		1240		0		0	1240	
Subtotal Product Development:			65963	6051		12296		3017			87327	

Remark: Test and evaluation costs are included as part of the product development costs.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total Pys Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Contractor Technical Services	Various	Various	314	0		0		150		Cont	464	
b. Integrated Logistics Development	Various	Various	695	0		0		0		0	695	
Subtotal Support Costs:			1009					150			1159	

III. Test and Evaluation: See product development remark.

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total Pys Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Management Personnel			4392	456		475		325		Cont	5648	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604746A Automatic Test Equipment Development

PROJECT: DL59

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total Pys Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
b. Program Management Support			1992	75		50		50		Cont	2167	
C. SBIR/STTR						345					345	
Subtotal Management Services:			6384	531		870		375			8160	
Project Total Cost:			73356	6582		13166		3542			96646	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604746A Automatic Test Equipment Development	PROJECT DL65

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
DL65 Test Equipment Development	2841	2897	2987	977	976	1070	1167	Continuing	Continuing

A. Mission Description and Budget Item Justification: This project funds development of the Army's next generation calibration set (CALSET 2000). A redesigned, rapidly deployable calibration set is required to overcome existing deficiencies and voids in organic calibration and repair capabilities. Experiences/lessons learned from Desert Shield/Desert Storm and from operations in Somalia and Bosnia highlighted the need for a more mobile and upgraded calibration set. Primary needs are for an appropriate mobility footprint that will allow airlift via C-141 or C-130 aircraft, greatly reduced electromagnetic interference/radio frequency interference signature for operations on the modern digital battlefield, and enhanced battlefield mobility. The downsized calibration set being developed under this project will employ reconfigurable, open electronics architecture and computer-based calibration instrumentation wherever feasible and will be housed in transport configurations to allow airlift via C-141/C-130 aircraft. This project also funds identification and evaluation of commercial and nondevelopmental test, measurement, and diagnostic equipment (TMDE) with potential to meet weapon system maintenance requirements and to cost effectively migrate new, higher reliability, open architecture electronics test equipment into the Army's inventory. Studies, market research, inventory analyses, bid sample testing, prototyping, and other efforts required in the early phases of the acquisition cycle will be accomplished under this project to support TMDE and calibration standards acquisitions.

FY 1999 Accomplishments:

•	1794	Initiated development of two prototypes combining the current AN/GSM-286 and AN/GSM-287 Calibration Sets into a downsized configuration.
•	745	Acquired and evaluated several smaller, lighter, high-precision calibration standards for technology insertion into downsized equipment configuration.
•	302	Initiated development of software to link calibration sets computers and demonstrated basic Integrated Calibration Environment (ICE) software.
Total	2841	

FY 2000 Planned Program:

•	1719	Continue development of CALSET 2000 downsized calibration set configuration.
•	250	Perform field testing and user assessment of CALSET 2000.
•	250	Continue development of software/database linkages, including ICE and external communications links.
•	600	Design and develop software to automate transponder/interrogator sets using the Identification Friend or Foe Radar Test Set.
•	78	Small Business Innovative Research/Small Business Technology Transfer programs.
Total	2897	

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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604746A Automatic Test Equipment Development PROJECT DL65

FY 2001 Planned Program:

- 550 Complete development and testing of CALSET 2000 downsized calibration set.
- 1456 Implement preplanned product improvement program for CALSET 2000 concentrated in areas of virtual instrumentation and intrinsic standards.
- 300 Prototype and perform software integration of VXI test equipment system.
- 381 Perform market research and evaluation of commercial equipment and develop performance specifications for acquisitions.
- 300 Perform analyses to identify impending and future shortages of critical Army test equipment capabilities.

Total 2987

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA3, N10000, Calibration Sets Equipment	9751	11358	18828	15902	16616	17685	17667	Cont	Cont
OPA3, N11000, Test Equipment Modernization	13920	14196	18738	15557	17094	18090	18070	Cont	Cont

C. Acquisition Strategy: This project funds development and upgrade of general purpose test equipment and calibration standards and the associated support equipment and software. The projects are managed by the Product Manager, Test Equipment Modernization/Calibration Sets Equipment and provide state-of-the-art capabilities to satisfy test and diagnostic requirements of Army weapon systems. Projects are focused on use of commercial and nondevelopmental item technologies to reduce the Army's investments in test and calibration equipment and to reduce the logistics and operations and support cost burdens. When the necessary expertise and capability are available within the Department of Defense, services required for the individual developmental projects are ordered from the government source; otherwise, commercial contracts are used. Equipment required for developmental projects is obtained from the commercial supplier. Candidate commercial equipment and nondevelopmental items are identified and evaluated through market research and government testing and evaluation.

D. Schedule Profile: This is a continuing program of developmental activities to provide a means for satisfying test and diagnostic support requirements of Army weapons and support systems. It consists of a number of similar and related efforts, many of which do not entail distinct major milestones. Major milestones for the CALSET 2000 Calibration Set being developed under this project are as follows:

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
CALSET 2000 ORD Approval, Milestone I/II			2Q							
CALSET 2000 User Assessment				4Q						
CALSET 2000 Milestone III					1Q					
CALSET 2000 Initial Operational Capability						4Q				

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604746A Automatic Test Equipment Development

PROJECT: DL65

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Systems Engineering	Various	Various	0	1076		1431		1551		Cont	Cont	
b. Software Development/ Engineering	Various	Various	0	272		810		750		Cont	Cont	
c. Set Components/Support Equipment	Various	Various	0	1105		0		0		0	1105	
d. Testing	Various	Various	0	50		250		250		Cont	Cont	
e. Government Engineering		Various	0	218		278		286		Cont	Cont	
Subtotal Product Development:				2721		2769		2837		Cont	Cont	

Remark: Test and evaluation costs are included as part of the product development costs.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Technical Support Services	Various	Various	0	120		50		150		Cont	Cont	
Subtotal Support Costs:				120		50		150		Cont	Cont	

III. Test and Evaluation: See product development remark.

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total Pys Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. SBIR/STTR						78					78	
Subtotal Support Costs						78					78	

Project Total Cost:				2841		2897		2987		Cont	Cont	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604746A Automatic Test Equipment Development PROJECT DL66

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
DL66 Embedded Diagnostics/Prognostics Development	0	0	6427	3801	3927	7669	6082	Continuing	Continuing

A. Mission Description and Budget Item Justification: This project funds the developmental efforts under the Army Diagnostics Improvement Program (ADIP). The ADIP has three main thrusts: Embed diagnostics on all major Army platforms, develop an anticipatory maintenance system, and improve the diagnostics on current systems. Generic procedures, software applications, and hardware devices that can be embedded in weapon systems will be developed and tested under this project. Included in this effort will be a basic, generic Health and Usage Monitoring System for Army helicopters. A similar system will be developed for ground-based fighting systems, and an inexpensive system will be developed for use in the ground-based diesel engine truck fleet.

FY 1999 Accomplishments: Funded as part of Project DL59 in FY 1999.

FY 2000 Planned Program: Funded as part of Project DL59 in FY 2000.

FY 2001 Planned Program:

- 2175 Test and evaluate helicopter-based anticipatory maintenance system for Kiowa Warrior.
- 2541 Develop generic embedded diagnostics structure for ground fighting vehicles.
- 1711 Develop initial anticipatory logistics software interfaces.

Total 6427

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA3, N11100, Army Diagnostics Improvement Program		5172						0	5172
OPA3, N11103, IFTE Test Program Sets			6803	6774	6760	6742	5797	0	32876
OPA3, N11104, Improved Simplified Test Equipment M1/FVS			10497	10256	0	0	0	0	20753

C. Acquisition Strategy: This project funds a continuing program for development of maintenance systems, methods, and procedures to improve diagnostic support capabilities for Army weapon systems and for integration of commercial diagnostics applications into Army maintenance concepts. The project is managed by the Product Manager, Automatic Test Support Systems and is focused on ensuring maximum use of commercial technologies to satisfy the Army's test and diagnostic requirements. When the necessary expertise and capability are available within the Department of Defense, services required for the individual initiatives under this project will be ordered

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604746A Automatic Test Equipment Development PROJECT DL66

from the government source; otherwise, existing or new commercial contracts will be used. Equipment required for developmental projects will be obtained by contract from the commercial supplier. Candidate equipment and maintenance methods will be identified and evaluated through market research and government testing and evaluation.

D. Schedule Profile: This is a continuing program of developmental activities to improve diagnostics of Army weapons and combat support systems. It consists of a number of similar and related efforts that do not entail distinct major milestones.

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604746A Automatic Test Equipment Development

PROJECT: DL66

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Systems Engineering	Various	Various	0	0		0		3590		Cont	3590	
b. Software Development/ Engineering	Various	Various	0	0		0		1987		Cont	1987	
c. Testing	Various	Various	0	0		0		200		Cont	200	
d. Government Engineering		Various	0	0		0		200		Cont	200	
Subtotal Product Development:								5977			5977	

Remark: Test and evaluation costs are included as part of the product development costs.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Contractor Technical Services	Various	Various	0	0		0		150		Cont	150	
Subtotal Support Costs:								150			150	

III. Test and Evaluation: See product development remark.

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Management Personnel			0	0		0		250		Cont	250	
b. Program Management Support			0	0		0		50		Cont	50	
Subtotal Management Services:								300			300	
Project Total Cost:								6427			6427	

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604760A Distributive Interactive Simulations - Engineering Development

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	2634	7605	20689	30858	31609	28799	25457	Continuing	Continuing
DC73 Synthetic Theater of War	0	774	1116	2190	1245	0	0	0	19658
DC74 Developmental Simulation Technology	0	0	3343	7350	6023	4827	4622	Continuing	Continuing
DC77 Interactive Simulation	1342	4266	1050	3595	3525	2629	2687	Continuing	Continuing
DC78 Computer Generated Forces	1292	2565	15180	17723	20816	21343	18148	Continuing	Continuing

A. Mission Description and Budget Item Justification: Distributed Interactive Simulation (DIS) is a synthetic environment within which humans may interact through a systematic connection of different subcomponent simulations, simulators and/or instrumented live task forces. These components may be located together or distributed at geographically dispersed locations, yet can interoperate using various simulation hardware linked through use of standard communication architecture. This program element supports the Army's Advanced Simulation Program to enable operational readiness and support the development of concepts and systems for Force XXI and the Army After Next through the application of new simulation technology and techniques. This engineering development and application of simulation technology will provide the tools to electronically link all subcomponents together in a manner that is transparent to the user. The synthetic environment is used to verify the scenarios, tactics/techniques and procedures, train testers on new hardware/software and conduct trial test runs before costly live field tests. The tools developed are available for reuse by developers and users of simulations throughout the Army. Project DC73, Synthetic Theater of War, STOW-A, provides innovative applications of legacy systems (live, virtual and constructive, C4I Surveillance and Reconnaissance) to meet the urgent requirements of the domains (e.g. training shortfalls) in preparation of next generation systems. STOW-A provides direct support to the Training, Exercises and Military Operations (TEMO) domain and the Advanced Concepts Requirements (ACR) domain. TEMO support derives from the demonstrated, low cost training capabilities that are provided by the toolkit. ACR support derives from the demonstrated capability of the kit to support battle lab and AWE exercises and experiments and the development of Tactics, Techniques and Procedures to support digital operations. Project DC74, Developmental Simulation Technology, provides simulator equipment upgrades, network upgrades, software upgrades, and resolves interoperability issues in support of the Army's Core DIS Facilities (CDFs) at Fort Knox, Fort Benning, Fort Rucker and the Operational Support Facility in Orlando, Florida. Project DC77, Interactive Simulation, focuses on engineering development of advanced simulation technology and tools to provide a reusable synthetic environment. The project also develops and enhances reconfigurable simulators which are used as Advanced Concepts Research Tools (ACRT) that will allow the battlelabs to accomplish their mission in support of the ACR, Research, Development and Acquisition (RDA), and TEMO domains. Project DC78 develops and upgrades computer generated forces software systems that support experimentation, concept evaluation, materiel development and training. The One Semi-Automated Forces (OneSAF) program will combine and

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY **5 - Engineering and Manufacturing Development**	PE NUMBER AND TITLE **0604760A Distributive Interactive Simulations - Engineering Development**

improve the functionality and behaviors of several current semi-automated forces to provide a single SAF for Army use in simulations. The Advanced Simulation Program will have benefit across the Army and DOD by providing standards for interoperability and software.

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	2727	7657	20646
Appropriated Value	2766	7657	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-39		
b. SBIR / STTR	-54		
c. Omnibus or Other Above Threshold Reductions		-28	
d. Below Threshold Reprogramming	-29		
e. Rescissions	-10	-24	
Adjustments to Budget Years Since FY 2000/2001 PB			+43
Current Budget Submit (FY 2001 PB)	2634	7605	20689

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

PROJECT: DC73

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DC73 Synthetic Theater of War	0	774	1116	2190	1245	0	0	0	19658

A. Mission Description and Justification: This project supports engineering development and integration of the Synthetic Theater of War (STOW). Development focuses on leveraging existing and emerging technology in a manner that produces substantial and continual improvements in combat readiness through the use of full spectrum, high fidelity, distributed simulation capability to support a large scale user based exercise/experiment for JOINT VENTURE training and analytical needs.

FY 1999 Accomplishments: Project not funded in FY 1999

FY 2000 Planned Program:

- 755 Continue to develop the software required to link entity-based simulations and simulators to live tactical command and control systems in support of periodic releases of Army Battle Command Systems (ABCS) software. Support Joint Venture and Joint Contingency Force Simulation - Simulation Integration.
- 19 Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)

Total 774

FY 2001 Planned Program:

- 1116 Continue to develop the software required to link entity-based simulations and simulators to live tactical command and control systems in support of periodic releases of ABCS software. Support Joint Venture and Division Capstone Exercise Simulation - Simulation Integration.

Total 1116

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA3, KA6000, Reconfigurable Simulators	747	2398	2330	362	122	121	121	Cont	Cont

C. Acquisition Strategy: Development and procurement through delivery orders to competitively selected contractors based on performance specifications.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Award Engr & Integration Contract		2Q	1Q	1Q	1Q		

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

PROJECT: DC73

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. STOW-A Development	C/CPAF	Lockheed-Martin, Orlando, FL	3104							0	3104	3104
b. STOW-A Requirements Analysis	C/CPIF	Cubic Applications, Ft Leavenworth, KS	1290							0	1290	1290
c. STOW-A Development	C/CPIF	Orlando, FL	4710							0	4710	4710
d. CCTT TSIU Interface	C/CPIF	Coleman Research, Huntsville, AL	1796							0	1796	1796
e. STOW-A Software Devt	TBD	TBD				576	Mar 00	604	Dec 00	2451	3631	3631
Subtotal Product Dev:			10900			576		604		2451	14531	14531

Remark: Each award is Delivery Order (DO) against CPIF.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Miscellaneous	Various	Various	1252			72	Nov 99	293	Nov 00	569	2186	2248
Subtotal Support Costs:			1252			72		293		569	2186	2248

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Miscellaneous	Various	Various	789	0		0		0		0	789	789
Subtotal Test and Evaluation:			789	0		0		0		0	789	789

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Service Support	Various	Multiple	1295			107	Nov 99	219	Nov 00	415	2036	2071
b. SBIR/STTR						19					19	
Subtotal Mgt Services:			1295			126		219		415	2055	2071

Project Total Cost:	14236			774		1116		3435	19561	19639

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BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

PROJECT: DC74

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DC74 Developmental Simulation Technology	0	0	3343	7350	6023	4827	4622	Continuing	Continuing

A. Mission Description and Justification: Project DC74 - Developmental Simulation Technology: This project supports the Core Distributed Interactive Simulation (DIS) Facilities (CDF) at Fort Knox, KY, Fort Rucker, AL, Fort Benning, GA and the Operational Support Facility in Orlando, FL, which provide a virtual combined arms battlefield with the warfighter-in-the-loop to evaluate weapon system concepts, tactics, doctrine and test plans.

FY 1999 Accomplishments: Project not funded in FY 1999

FY 2000 Planned Program: Project not funded in FY 2000

FY 2001 Planned Program:

•	3343	Award contract to integrate additional ground and aviation full fidelity Advanced Concepts Research Tools (ACRT). Award contract to develop and acquire C4I variants of the ACRT.
Total	3343	

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA3, KA6000, Reconfigurable Simulators	747	2398	2330	362	122	121	121	Cont	Cont

C. Acquisition Strategy: Competitive development leading to competitive procurement against performance specifications

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Advanced Distributed Simulation Technology (ADSTII) Delivery Order Contract Award			1Q	1Q	1Q	1Q	1Q

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BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

PROJECT: DC74

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ACRT Modify Integrate Existing Simulators	C/CPAF	TBS						3343	Jan 02	Cont	3343	Cont
Subtotal Product Development:								3343			3343	Cont

Remark: Each award is Delivery Order against CPAF

II. Support Costs: Not applicable

III. Test and Evaluation: Not applicable

IV. Management Services: Not applicable.

Project Total Cost:				0		0		3343	.	Cont	Cont	Cont

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development / PROJECT: DC77

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DC77 Interactive Simulation	1342	4266	1050	3595	3525	2629	2687	Continuing	Continuing

A. **Mission Description and Justification: Project DC77 - Interactive Simulation:** This project focuses on engineering development of techniques and Distributed Simulation technology [e.g. Higher Level Architecture (HLA)] of wide area simulation networking in support of modeling and simulation, doctrinal development, training, and operations, utilizing live, virtual and constructive simulations. Development also supports related simulations and simulator efforts, including the Advanced Concepts Research Tools (ACRT).

FY 1999 Accomplishments:

•	860	Provided systems engineering and developed High Level Architecture environment and standards to support interoperability within the training domain.
•	482	Developed the software required to link entity-based simulations and simulators to live tactical command and control systems in support of periodic releases of Army Battle Command Systems (ABCS) software in support of STOW-A.
Total	1342	

FY 2000 Planned Program:

•	3105	Award contract modification to integrate additional ground and aviation full fidelity Advanced Concepts Research Tools (ACRT) at the Core DIS facilities. Award contract modification to develop and acquire C4I variants of the ACRT.
•	391	Development and management of the Advanced Simulation Program to achieve Army-wide modeling and simulation infrastructure objectives.
•	672	Continue development of High Level Architecture technology and tools to support Simulation Object Modeling, Federation Object Model development and federation exercise management, data collection and after action review, and HLA compliance tools.
•	98	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	4266	

FY 2001 Planned Program:

•	400	Continue development and management of the Advanced Simulation Program to achieve Army-wide modeling and simulation infrastructure objectives.
•	650	Continue development of High Level Architecture technology and tools to support Simulation Object Modeling, Federation Object Model development and federation exercise management, data collection and after action review, and HLA compliance tools.
Total	1050	

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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604760A Distributive Interactive Simulations - Engineering Development PROJECT DC77

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA3, KA6000, Reconfigurable Simulators	747	2398	2330	362	122	121	121	Cont	Cont

C. **Acquisition Strategy:** Competitive development leading to competitive procurement against performance specifications.

D Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Advanced Distributed Simulation Technology II Delivery Order Contract Awarded	1Q*	2Q	1Q	1Q	1Q	1Q	1Q

Milestone Completed*

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

PROJECT: DC77

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Battlelab Reconfigurable Simulator development	C/CPIF	Hughes Training Inc., Orlando, FL	4144	0	0	0	0	0	0	0	4144	4144
b. ACRT Development and Integration	C/CPAF	NAWC-TSD Orlando, FL	2661	0	0	3105	Feb 00			Cont	5766	Cont
c. DISECT Development	C/CPIF	TASC, Orlando, FL	464	0		0		0		Cont	464	Cont
d. HLA Tool Development	Various	Various	3228	731	Nov 98	524	Nov 99	473	Nov 00	Cont	4956	Cont
e. STOW-A Development	Various	Various		351	Nov 98						351	
Subtotal Product Development:			10497	1082		3629		473			15681	Cont

Remark: Battlelab Reconfigurable Simulator Program replaced by ACRT. Contract awards are Delivery Orders (DO) against CPIF.

II. Support Costs: Not Applicable. Each award is DO of CPIF.

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ModSAF V&V	Various	Various	285							0	285	285
Subtotal Test and Evaluation:			285							0	285	285

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. HLA Tools program mgt	Various	Various	271	129	Nov 98	148	Nov 99	177	Nov 00	Cont	725	Cont
b. ASP PM Management	Various	Various		0		391	Oct 99	400	Oct 00	Cont	791	Cont
c. STOW-A PM Mgt	Gov't In-House	STRICOM, Orlando, FL		131							131	
d. SBIR/STTR						98					98	
Subtotal Management Services:			271	260		637		577			1745	Cont

Project Total Cost:			11053	1342		4266		1050			17711	Cont

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604760A Distributive Interactive Simulations - Engineering Development PROJECT DC78

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DC78 Computer Generated Forces	1292	2565	15180	17723	20816	21343	18148	Continuing	Continuing

A. Mission Description and Justification: This project provides for the development of software systems to realistically represent activities of units and forces in simulation. This representation is used to support concept evaluation, experimentation, materiel acquisition and training communities. This project funds improvements, new functionality, enhancements and re-architecture of Modular Semi Automated Forces (ModSAF). Other initiatives include the systems engineering and design for improvements to the architecture and interoperability of Army SAFs, and the evolution to an Army universal computer generated forces system, OneSAF. OneSAF is a composable next generation SAF that will represent a full range of operations, systems and control processes for support of training research, development and acquisition simulation applications including human-in-the-loop.

FY 1999 Accomplishments:

•	482	Continued the development of the OneSAF architecture to provide composability, HLA compliance and repeatability
•	253	Continued OneSAF requirements definition.
•	437	Completed development of One SAF Test Bed (OTB) Build 1.0, integrated functionality of ModSAF V5.0, and initiated development of OTB Builds 2.0 and 3.0/4.0.
•	120	Verified and validated newly integrated software.
Total	1292	

FY 2000 Planned Program:

•	626	Complete development of OTB Builds 2.0 and 3.0/4.0 and initiate development of OTB Build 5.0
•	499	Complete development and issue OneSAF Version 1.0 (Alpha) for initial use, replacing ModSAF, and initiate development of Version 2.0.
•	1373	Prepare Statement of Work (SOW) for system development contract.
•	67	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	2565	

FY 2001 Planned Program:

•	4907	Complete development of OTB Build 5.0 and continue development of Version 2.0.
•	9488	Develop functionality to represent composiable behaviors, opposing forces and provide terrain, editing and data collection tools and OneSAF infrastructure enhancements.
•	785	Verification and validation of newly integrated software.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604760A Distributive Interactive Simulations - Engineering Development PROJECT DC78

Total 15180

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OMA, 121014	500	500	497	2500	2798	3300	3600	Cont	Cont

C. **Acquisition Strategy:** Competitive development leading to competitive procurement against performance specifications.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
ADST II Delivery Order Contract Award	1Q*	1Q*	1Q				
Test Bed Build 3.0 Complete		3Q					
Version 1.0 Alpha Release		4Q					
Award OneSAF New Competitive Development Contract			1Q				
Verification & Validation performed on continuous basis. 1st Qtr annual award.				1Q	1Q	1Q	1Q

Milestone Completed*

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

PROJECT: DC78

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ModSAF enhancement	C/CPAF	Lockheed-Martin Inc., Orlando, FL	500			0		0		Cont	500	Cont
b. OneSAF Systems architecture/development	C/CPAF	Lockheed-Martin Inc., Orlando, FL	2685	366	Nov 98	1125	Nov 99	3587	Nov 00	Cont	7763	Cont
c. OneSAF Systems architecture/development	C/CPFF	MITRE FFRDC	0	412	Nov 98	206	Nov 99	212	Nov 00		830	
d. OneSAF Systems architecture/development	Various	Various	2439	110	Nov 98	193	Dec 99	633	Dec 00	Cont	3375	Cont
e. OneSAF System Dev	C/CPAF	TBD						9103	Dec 00	Cont	9103	Cont
Subtotal Product Dev:			5624	888		1524		13535			21571	Cont

Remark: New Competitive Contract for OneSAF Development. Each award is DO against CPAF.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Systems analysis	Various	Various	405	164	Dec 98	185	Dec 99	460	Dec 00	Cont	1214	Cont
Subtotal Support Costs:			405	164		185		460			1214	Cont

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Verify & Validate	Various	Various	343	120	Nov 98	235	Nov 99	785	Nov 00	Cont	1483	Cont
Subtotal Test and Evaluation:			343	120		235		785			1483	Cont

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

PROJECT: DC78

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program management	Various	Various	375	120	Nov 98	554	Nov 99	400	Nov 00	Cont	1449	Cont
b. SBIR/STTR						67					67	
Subtotal Mgmt Services:			375	120		621		400			1516	Cont
Project Total Cost:			6747	1292		2565		15180			25784	Cont

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	42025	71879	57419	76674	71545	65355	65395	Continuing	Continuing
D909 Tactical Exploitation of National Capabilities (TENCAP) - Engineering Development (TIARA)	42025	71879	44503	46748	43926	59554	59395	Continuing	Continuing
D957 Tactical Exploitation System (TES) (TIARA)	0	0	12916	29926	27619	5801	6000	Continuing	Continuing

A. Mission Description and Budget Item Justification: This project supports the engineering development, enhancement, and sustainment of the Tactical Exploitation System (TES), Division TES (DTES), Advanced Electronic Processing Dissemination System (AEPDS), Mobile Integrated Tactical Terminal (MITT), and Forward Area Support Terminal (FAST). The Army's TES incorporates the standards and protocols dictated by the Common Imagery Ground/Surface System (CIG/SS) program. TES brings all of the existing and emerging Army TENCAP capabilities (AEPDS, Modernized Imagery Exploitation System (MIES), and Enhance Tactical Radar Correlator (ETRAC)) into an integrated common baseline that is downsized, modular and scaleable to meet a wide range of contingency requirements. DTES will replace the MITT. TENCAP Common Baseline addresses common subsystems, planned improvements, key activities and ongoing/planned initiatives determined to have potential application to multiple TENCAP systems. MIES, ETRAC, and the CIG/SS portion of TES are funded under PE 0305208A. Specific details are provided in the Tactical Intelligence and Related Activities (TIARA) Congressional Budget Justification Book, Volume II and the Joint Military Intelligence Programs (JMIP) Congressional Budget Justification Book, Vol. II.

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	43950	70940	57008
Appropriated Value	44674	72440	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-724		
b. SBIR / STTR	-1647		
c. Omnibus or Other Above Threshold Reductions		-298	
d. Below Threshold Reprogramming	-26		
e. Rescissions	-252	-263	
Adjustments to Budget Years Since FY 2000/2001 PB			+411
Current Budget Submit (FY 2001 PB)	42025	71879	57419

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA) PROJECT D909

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D909 Tactical Exploitation of National Capabilities (TENCAP) - Engineering Development (TIARA)	42025	71879	44503	46748	43926	59554	59395	Continuing	Continuing

A. **Mission Description and Budget Item Justification:** This project supports the engineering development, enhancement, and sustainment of the Tactical Exploitation System (TES), Division TES (DTES), Advanced Electronic Processing Dissemination System (AEPDS), Mobile Integrated Tactical Terminal (MITT), and Forward Area Support Terminal (FAST). The Army's TES incorporates the standards and protocols dictated by the Common Imagery Ground/Surface System (CIG/SS) program. TES brings all of the existing and emerging Army TENCAP capabilities (AEPDS, MIES, and ETRAC) into an integrated common baseline that is downsized, modular and scaleable to meet a wide range of contingency requirements. DTES will replace the MITT. TENCAP Common Baseline addresses common subsystems, planned improvements, key activities and ongoing/planned initiatives determined to have potential application to multiple TENCAP systems. MIES, ETRAC, and the CIG/SS portion of TES are funded under PE 0305208A. Specific details are provided in the Tactical Intelligence and Related Activities (TIARA) Congressional Budget Justification Book, Volume II and the Joint Military Intelligence Programs (JMIP) Congressional Budget Justification Book, Vol. II.

FY 1999 Accomplishments:

•	15510	Continued software upgrades and enhancements for the refinement of the TENCAP Common Baseline to fully exploit national and theater capabilities such as integration of communications capabilities to meet changing architectures and implementation of software appliqué to provide the operational commander with enhanced battlefield intelligence products. In addition to staying current with national and theater capabilities, this effort included engineering development and integration of Graphical Situation Display (GSD), Secondary Imagery Dissemination Environment And Resource Manager (SIDEARM), Defense Messaging System (DMS) into TENCAP systems.
•	3500	Began engineering development of Tactical SIGINT Processor (TSP) for integration into TES to provide critical intelligence data to Tactical Commanders.
•	17772	Continued engineering development of TES #1, including integration of existing reusable components (i.e. Miniaturized Data Acquisition System (MIDAS), Dissemination Element (DE), Common Imagery Processor (CIP), Common Data Link (CDL)) and the purchase and integration of COTs/GOTs government furnished equipment (GFE).
•	5243	Continued support to TENCAP program management and administrative activities (e.g. FFRDC (Aerospace), ARL support, ASPO support, Army Topographic Engineering Center (TEC)).
Total	42025	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)
	PROJECT D909

FY 2000 Planned Program:

•	16672	Continue software upgrades and enhancements for the refinement of the TENCAP Common Baseline to fully exploit national and theater capabilities such as integration of communications capabilities to meet changing architectures and implementation of software appliqué to provide the operational commander with enhanced battlefield intelligence products. In addition to staying current with national and theater capabilities, this effort includes engineering development and integration of Generic Area Limitation Environment (GALE), improvements in Fault Detection and Fault Isolation (FDFI), and integration of SCI DMS into TENCAP systems.
•	7313	Continue engineering development of Tactical SIGINT Processor (TSP) for integration into TES to provide critical intelligence data to Tactical Commanders
•	7052	Develop prototype Division TES (DTES)
•	11830	Complete engineering development of TES #1, including integration of existing reusable components (i.e. MIDAS, DE, CIP) and the purchase and integration of COTs/GOTs GFE.
•	19496	Initiate engineering development of TES #2, including integration of existing reusable components (i.e. MIDAS, DE, CIP) and the purchase and integration of COTs/GOTs GFE. (Majority of this effort transfers to Project D957 in FY 2001.)
•	6666	Continue support to TENCAP program management and administrative activities (e.g. FFRDC (Aerospace), ARL support, ASPO support, Army Topographic Engineering Center (TEC)).
•	1500	Initiate transition engineering of Semi-Automated IMINT Processing (SAIP) from ACTD residual to operational configuration, including preliminary design of downsized SAIP for integration within TES.
•	1350	Initiate modification of TES to receive Tactical Downlink to provide time critical direct support to deep operations and deep targeting.
Total	71879	

FY 2001 Planned Program:

•	18856	Continue software upgrades and enhancements for the refinement of the TENCAP Common Baseline to fully exploit national and theater capabilities such as integration of communications capabilities to meet changing architectures and implementation of software appliqué to provide the operational commander with enhanced battlefield intelligence products. In addition to staying current with national and theater capabilities, this effort includes: engineering development and integration of intelligence models of actual TENCAP systems and products for use in Warfighter demonstrations and simulations; engineering development of downsized components to receive national broadcast on smaller platforms (desktop and laptop computers); and development of system upgrades to leverage and exploit commercial imagery in TES.
•	8000	Complete engineering development of Tactical SIGINT Processor (TSP) for integration into TES to provide critical intelligence data to Tactical Commanders
•	4037	Complete engineering development of TES #2, including integration of existing reusable components (i.e. MIDAS, DE, CIP) and the purchase and integration of COTs/GOTs GFE.
•	6500	Continue modification TES to receive Tactical Downlink to provide time critical direct support to deep operations and deep targeting.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)
	PROJECT D909

FY 2001 Planned Program: (continued)

- 500 Complete development of prototype Division TES (DTES)
- 6610 Continue support to TENCAP program management and administrative activities (e.g. FFRDC (Aerospace), ARL support, ASPO support, Army Topographic Engineering Center (TEC)).

Total 44503

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE, A Budget Activity 5									
PE 0604766A TENCAP Project D957 (TIARA)			12916	29926	27619	5801	6000	Cont	Cont
RDTE, A Budget Activity 7									
PE 0305208A (JMIP)	8585	8004	7894	8212	8288	8445	8676	Cont	Cont
Other Procurement Army, OPA-2									
BZ7315 TENCAP (TIARA)	6033	4350	12853	3839	4382	1977	1975	Cont	Cont
BZ7316 CIG/SS (JMIP)	2487	2778	2833	2599	2610	2653	2714	Cont	Cont
BZ7317 Tactical Surveillance System (TIARA)				22228	11166	31744	9969	Cont	Cont

C. **Acquisition Strategy:** As pioneers in streamlined acquisition, ASPO's success in delivering systems as those described above to warfighters can be directly attributed to an environment emphasizing stable funding, low density acquisition, minimal use of MILSPECS, and managed competition. By tailoring existing technology, leveraging the best commercial practices and using commercial and government-off the shelf software, ASPO minimizes risk while maximizing efficiency. Finally, Government and contractor personnel and facilities accomplish dedicated cradle to grave Integrated Logistics Support (ILS) for TENCAP systems through a coordinated effort.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Initiate migration of JTT into AEPDS and TES	2nd QTR						
Complete integration of GBS into AEPDS and TES	4th QTR						
Complete Eng. Development of TES-Forward	4th QTR						
Complete Eng. Development of TES-Main		4th QTR					
Complete development and integrate TSP into TES			4th QTR				
Complete development of TES #2			4th QTR				
Complete development of DTES prototype			3rd QTR				

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)

PROJECT: D909

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Initiate integration of Phased Array Antenna into TENCAP systems.				2nd QTR			
Complete integration of Phased Array Antenna into TENCAP systems					3rd QTR		
Initiate Future Imagery Architecture integration into TENCAP Systems						2nd QTR	
Initiate SAIP integration into TENCAP systems						3rd QTR	
Integrate GBS/JBS into TENCAP systems							3rd QTR

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)

PROJECT: D909

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TES #1 Prototype *	C/CPAF	CLASSIFIED	47766	17772	11/98	11830	11/99		0	0	77368	
b. Common Baseline **	SS/CPAF	CLASSIFIED	N/A	15510	1/99	16672	2/00	18856	2/01	Cont	51038	
c. TSP	SS/CPAF	CLASSIFIED	143	3500	12/98	7313	11/99	8000	11/00	0	18956	
d. TES #2 EDM*	SS/CPAF	CLASSIFIED	0			19496	3/00	4037		0	23533	
e. DTES Prototype	SS/CPAF	CLASSIFIED	0			7052	4/00	500	11/00	0	7552	
f. TDL Collector	TBD	TBD	0			1350	3/00	6500	1/01	23000	30850	
g. SAIP Prototype Study	TBD	TBD	0			1500	2/00			0	1500	
Subtotal Product Development:			47909	36782		65213		37893		23000	210797	

Remark: * TES development is also partially funded under PE 0305208A and PE 0604766A Project D957.
** Common Baseline addresses common subsystems, planned improvements, key activities, and ongoing/planned initiatives determined to have potential application to multiple TENCAP systems (including MIES, ETRAC, and TES that have funding under PE 0305208A)

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. System Engineering (Government)	N/A	TEC, Alexandria VA	Cont	1235		1603	12/99	1649		Cont	4487	
b. ASPO In-house	N/A	ASPO, Alexandria, VA	Cont	2533		3531	9/00	3564		Cont	9628	
c. FFRDC	CPAF	Aerospace Corp, LAAFB, CA	Cont	1475		1532	12/99	1397		Cont	4404	
Subtotal Support Costs:				5243		6666		6610			18519	

III. Test and Evaluation: Not applicable

IV. Management Services: Not applicable

Project Total Cost:			47909	42025		71879		44503		23000	229316	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)

PROJECT: D957

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D957 Tactical Exploitation System (TES) (TIARA)	0	0	12916	29926	27619	5801	6000	Continuing	Continuing

A. Mission Description and Budget Item Justification: This project supports the engineering development and enhancement of the Tactical Exploitation System (TES). The Army's TES will incorporate the standards and protocols dictated by the Common Imagery Ground/Surface System (CIG/SS) program. TES brings all of the existing and emerging Army TENCAP capabilities (AEPDS, MIES, and ETRAC) into an integrated common baseline; downsized, modular and scaleable to meet a wide range of contingency requirements. The CIG/SS portion of TES is funded under PE 0305208A. Specific details are provided in the Tactical Intelligence and Related Activities (TIARA) Congressional Budget Justification Book, Volume II and the Joint Military Intelligence Program (JMIP) Congressional Budget Justification Book, Vol. II.

FY 1999 Accomplishments: Effort was funded under project D909 of this PE in FY 1999.

FY 2000 Planned Program: Effort is funded under project D909 of this PE in FY 2000.

FY 2001 Planned Program:

•	750	Provide program management support to Semi Automated Imagery Processor (SAIP) activities.
•	7796	Complete engineering development of TES #2, including integration of existing reusable components (i.e. MIDAS, DE, CIP) and the purchase and integration of COTs/GOTs GFE. This effort was started under Project D909 in FY 2000.
•	4370	Initiate engineering development of TES #3, including integration of existing reusable components (i.e. MIDAS, DE, CIP) and the purchase and integration of COTs/GOTs GFE
Total	12916	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)
	PROJECT D957

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE, A Budget Activity 5									
PE 0604766A TENCAP Project D909 (TIARA)	42025	71879	44503	46748	43926	59554	59395	Cont	Cont
RDTE, A Budget Activity 7									
PE 0305208A (JMIP)	8585	8004	7894	8212	8288	8445	8676	Cont	Cont
Other Procurement Army, OPA-2									
BZ7315 TENCAP (TIARA)	6033	4350	12853	3839	4382	1977	1975	Cont	Cont
BZ7316 CIG/SS (JMIP)	2487	2778	2833	2599	2610	2653	2714	Cont	Cont
BZ7317 Tactical Surveillance System (TIARA)				22228	11166	31744	9969	Cont	Cont

C. **Acquisition Strategy:** As pioneers in streamlined acquisition, ASPO's success in delivering systems as those described above to warfighters can be directly attributed to an environment emphasizing stable funding, low density acquisition, minimal use of MILSPECS, and managed competition. By tailoring existing technology, leveraging the best commercial practices and using commercial and government-off the shelf software, ASPO minimizes risk while maximizing efficiency. Finally, Government and contractor personnel and facilities accomplish dedicated cradle to grave Integrated Logistics Support (ILS) for TENCAP systems through a coordinated effort.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Complete development of TES #2			4th QTR				
Complete development of TES #3				4th QTR			
Complete development of TES #4						4th QTR	
Complete development of TES #5							4th QTR

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)

PROJECT: D957

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TES #2 EDM *	SS/CPAF	CLASSIFIED						7796	11/00	*	7796	
b. TES #3 EDM *	SS/CPAF	CLASSIFIED						4370	3/01	*	4370	
Subtotal Product Development:								12166			12166	

Remark: * TES development is also partially funded under PE 0305208A and PE 0604766A Project D909.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. System Engineering (Government)	N/A	TEC, Alexandria, VA						400		Cont	Cont	
b. Contractor	SS/FF	Classified						350		Cont	Cont	
Subtotal Support Costs:								750				

III. Test and Evaluation: Not applicable

IV. Management Services: Not applicable

Project Total Cost:								12916		Cont	Cont	

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	131940	142753	96102	58392	11656	7073	0	0	1780438
D641 BAT	43536	16877	0	0	0	0	0	0	1060087
D687 BAT P3I	49186	80707	68466	58320	11221	5569	0	0	393151
D688 ATACMS BLK II	38308	43015	27586	0	0	0	0	0	321786
D686 ATACMS BLK IIA	652	0	0	0	0	0	0	0	652
D2NT BAT Operational Test	258	2154	50	72	435	1504	0	0	4762

A. Mission Description and Justification: The BAT is the submunition in the Block II missile system that supports the Army's deep fire doctrine calling for the destruction and disruption of threat forces and long range weapons at ranges in excess of 100 kilometers before they can influence the maneuver battle. In the past, the only options have been to engage these targets with attack helicopters or fixed wing aircraft. While effective, these options place critical resources and their air crews at risk. The BAT system significantly reduces this risk through its autonomous acquisition and terminal guidance capabilities to attack well-defended armored forces behind enemy lines. The BAT system includes the BAT submunition, a pre-planned product improvement (P3I) BAT submunition, and the Army Tactical Missile System Block II (ATACMS BLK II) missile. BAT is a dual-sensor (acoustic and infrared) submunition that autonomously seeks out and destroys moving armored vehicles without human interaction. BAT and BAT P3I submunitions are carried deep into enemy territory by the Army TACMS, then dispensed over a large target array to selectively attack and destroy individual targets. The BAT P3I program will improve the sensor and warhead subassemblies to increase lethality and to enable the BAT submunition to attack cold, stationary, armored targets and other critical high priority targets. The ATACMS BLK II missile is a version of the currently fielded and combat-proven Army TACMS Block I missile and is designed to carry 13 BAT or BAT P3I submunitions.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB	128521	128026	112149
Appropriated Value	128858	144026	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-337		
b. SBIR / STTR	-460		
c. Omnibus or Other Above Threshold Reductions		-590	
d. Below Threshold Reprogramming	+3949		
e. Rescissions	-70	-683	
Adjustments to Budget Years Since FY 2000/2001 PB			-1295
New Army Transformation Adjustment			-14752
Current Budget Submit (FY 2001 PB)	131940	142753	96102

Change Summary Explanation: Funding - FY01: Project 686 was adjusted to reflect the New Army Transformation.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition — PROJECT: D641

COST (In Thousands)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D641 BAT	43536	16877	0	0	0	0	0	0	1060087

A. **Mission Description and Justification:** The BAT submunition is an unpowered, aerodynamically stable vehicle approximately 36 inches long, 5.5 inches in diameter, and weighs 44 pounds. The BAT is an acoustic and infrared terminally guided submunition that searches for, tracks, and destroys moving armored combat vehicles. BAT submunitions are carried deep into enemy territory by a variant of the Army Tactical Missile System (ATACMS Block II), then dispensed over concentration of critical high-payoff targets to selectively attack and destroy individual targets. By using acoustic technology, BAT has the advantage of an extremely large footprint, which allows it to compensate for target location errors. Because the BAT is a certified round, it provides for low sustainment costs when coupled with the ATACMS Block II.

FY 1999 Accomplishments Program:

•	37542	Built hardware to support Initial Operational Test and Evaluation (IOT&E)and Live Fire Test and Evaluation (LFT&E)(supports FY 99 incremental funding of test article buildup (total test articles required is 98 BATs)
•	2999	Continued EMD program
•	2690	Supported Carrier Flight Testing and Other Integration Activities
•	305	Conducted Test Range and Target Operation, Maintenance and Improvement
Total	43536	

FY 2000 Planned Program:

•	10078	Support IOT&E/LFT&E Qualification Tests (supports FY 00 incremental funding of test article buildup (total test articles required is 98 BATs)
•	2811	Conduct LFT&E
•	2933	Conduct Integration Activities
•	500	Conduct Test Range and Target Operation, Maintenance and Improvement
•	100	Trade studies and system improvement and optimization activities
•	455	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	16877	

FY 2001 Planned Program: Project not funded in FY 2001

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition PROJECT D641

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Complete	Total Cost
Missile Procurement, Army CA 6100 BAT	94529	142938	134987	147713	222015	190789	196044	Continuing	2504019

C. **Acquisition Strategy:** The BAT system is a sole source EMD program. Upon completion of the development program, BAT submunitions will be procured as part of Army TACMS Block II/BAT systems by way of a sole source production contract with Lockheed Martin Missiles and Fire Contral-Dallas. Lockheed is the system integrator for the Army TACMS Block II/BAT missile system. This strategy is being followed for the FY99 and FY00 LRIP buys and will be continued through full rate production.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2004	FY 2005
Block II/BAT LRIP DAB*	2QTR							
Award LRIP I Contract*	3QTR							
THC Qualification Tests		2QTR						
First THC Deliveries		2QTR						
IOT&E Tests Begin		3QTR						
LFT&E Tests Begin		4QTR						
Block II/BAT MSIII Decision (ASARC)			3QTR					

* Milestone completed.

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition

PROJECT: D641

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Northrop Grumman Corp	SS/CPAF/ CPFF/CPIF/ FPIF		767362	39881		14588					821831	
b. RDEC Support			35897	815							36712	
Subtotal Product Development:			803259	40696		14588					858543	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Sys Eng Tech Assist & Program Mgmt Spt	SS/CPFF		60848	490							61338	
b. Misc Other Gov Act	PO		46937	362		68					47367	
Subtotal Support Costs:			107785	852		68					108705	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Range Support	PO		22551	0		2021					24572	
b. Other Test	PO		15758	669							16427	
Subtotal Test and Evaluation:			38309	669		2021					40999	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. In-House Support	PO		50321	1319		200					51840	
Subtotal Management Services:			50321	1319		200					51840	

Project Total Cost:	999674	43536		16877					1060087	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition PROJECT D687

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D687 BAT P3I	49186	80707	68466	58320	11221	5569	0	0	393151

A. Mission Description and Justification: The BAT P3I submunition maintains the Basic BAT length, diameter, and weight configurations while increasing submunition lethality and expanding the target set to be attacked. The BAT P3I program will incorporate new seeker, warhead, and microprocessor technologies into the current Basic BAT configuration while maintaining the current BAT form, fit and maximum commonality of BAT components. This program includes studies/demos pertaining to technology advancements, alternate carriers, target recognition, and acoustic/infrared/millimeter wave characterization of expanded target sets. The BAT P3I is a multi-sensored, terminally guided submunition that searches, tracks, and destroys specific targets including mobile armored combat vehicles, cold stationary armored combat vehicles, Surface-to-Surface missile (SSM) Transporter Erector Launchers (TELs), and Heavy Multiple Rocket Launchers (MRLs). BAT P3I submunitions are carried deep into enemy territory by the Army Tactical Missile System (ATACMS), then dispensed over numerous high-payoff target concentrations to selectively attack and destroy individual targets. As a certified round, the BAT P3I submunition provides a low sustainment cost when coupled with the ATACMS Block II.

FY 1999 Planned Program:

•	26886	Completed P3I PDRR and started Continued Development Program
•	16000	Procured Test Hardware (18 Seekers and 17 BAT common hardware test articles)
•	2200	Conducted Target Signature Collection Activities and CFT preparation
•	2400	Continued Hardware-in-the-Loop Seeker Assessments
•	1500	Conducted Simulations and Algorithm Development
•	200	Trade studies, Cost as an Independent Variable (CAIV) initiatives, risk reduction and system improvement and optimization activities
Total	49186	

FY 2000 Planned Program:

•	32221	Continue P3I BAT Seeker Development and Design
•	18213	Conduct CFTs and Recoverable Flight Tests
•	17900	Fabricate/Assemble Engineering Test Hardware (50 Seeker test articles)
•	2000	Conduct Warhead performance tests
•	3500	Continue Hardware-in-the-Loop Operations
•	3500	Simulation Analysis and Modeling
•	1000	Missile Carrier Integration
•	200	Trade studies, CAIV initiatives, risk reduction and system improvement and optimization activities

•	2173	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	80707	

FY 2001 Planned Program:

•	28739	Continue Seeker Integration and System Testing
•	15200	Complete Design and Fabricate P3I BAT Seeker Hardware
•	14277	Conduct Engineering Design/Design Verification Tests
•	4000	Continue Hardware-in-the-Loop Operations
•	2000	Missile Carrier Integration
•	4000	Simulation Analysis
•	250	Trade studies, CAIV initiatives, risk reduction and system improvement and optimization activities
Total	68466	

B. Other Program Funding Summary: There are no other related RDT&E or other appropriation efforts.

C. Acquisition Strategy: The BAT P3I system employs a sole source contract with the prime contractor, Northrop Grumman Corporation. Production cut-in of BAT P3I onto the ATACMS Block II will provide full capability against moving and stationary armored targets.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Captive Flight Test (CFT)		1&3QTR	2QTR				
Continuous CFT (Seeker Tests)	4QTR*	1&3QTR					
Warhead Testing	1-4QTR*	1-2QTR					
Continue Dual Mode Radar Seeker Design	1-4QTR*	1-4QTR					
Hardware-in-the-Loop Testing	1-4QTR*	1-4QTR	1-4QTR	1-4QTR	1-4QTR		
Tactical Prototype Seeker Integration		2&3QTR					
Recoverable BAT Tests		2QTR	1&4QTR	3QTR			
Engineering Development Tests (EDTs)			3&4QTR	4QTR	1&4QTR		
Warhead LFT&E/Soft Target					3QTR		
Software CDR			4QTR				
Design Verification Tests			3&4QTR				
Envir Stress Test (EST) Prod Qual Tests (PQT)			4QTR	1QTR			
DT System Tests (Block II)				2QTR			

*Milestone completed.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition PROJECT D687

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Blk II/P3I BAT Production Cut-In Decision				3QTR			
Blk II/P3I BAT Continue Production Decision							1QTR
Blk II/P3I BAT Limited User Tests (LUTS)						4QTR	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition

PROJECT: D687

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Northrop Grumman Corp	SS-CPIF		93175	40161		55223		43873		50112	282544	
b. RDEC Support*	PO		9919	3731		3999		2475		4498	24622	
c. TRW	SS-CPIF					2896					2896	
d. Lockheed	SS-CPIF					500		500		1100	2100	
Subtotal Product Development:			103094	43892		62618		46848		55710	312162	

Remark: *Includes Hardware-in-the Loop costs

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Sys Eng Tech Assist & Program Mgmt Spt	SS-CPFF		2655	1143		1140		1200		3400	9538	
b. Misc Other Gov Act	PO		2731	525		113		125		350	3844	
Subtotal Support Costs:			5386	1668		1253		1325		3750	13382	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Range Support	PO		35	235		1542		6835		8995	17642	
b. Other Test Activities	PO		5995	1316		11519		10080		3210	32120	
Subtotal Test and Evaluation:			6030	1551		13061		16915		12205	49762	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. In-House Support	PO		5172	2075		3775		3378		3445	17845	
Subtotal Management Services:			5172	2075		3775		3378		3445	17845	

Project Total Cost:	119682	49186		80707		68466		75110	393151	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition / PROJECT: D688

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D688 ATACMS BLK II	38308	43015	27586	0	0	0	0	0	321786

A. **Mission Description and Justification:** The Army Tactical Missile System Block II (ATACMS BLK II) is a ground launched, solid propellant, inertially guided Global Positioning System (GPS)-aided missile system with 13 Basic BATs or BAT P3Is as its payload. The mission of the ATACMS BLK II is to delay, disrupt, neutralize, or destroy armored combat vehicles and other critical high-payoff targets. Once the BAT P3I submunition is incorporated into the ATACMS BLK II, the target set will expand to include cold stationary armored combat vehicles. The ATACMS BLK II will carry and dispense BAT and BAT P3I submunitions deep into enemy territory where these submunitions will autonomously track and destroy numerous critical high-payoff targets. The ATACMS BLK II will be capable of being launched from the M270 Launcher with the Improved Position Determining System (IPDS) and the M270A1 launcher. Funds also cover the costs of trade studies/demonstrations pertaining to technology advancements, payload variants, propulsion, guidance and control, and fire control improvements.

FY 1999 Planned Program:

- 24702 Continued Development and Subsystem Qualification
- 6299 Continued pilot production line and IOT&E preparation activities
- 3483 Completed PQT and conduct development testing (DT)
- 1073 Conducted M270A1 Launcher Integration Tests
- 1451 Conducted C4I System Integration Tests
- 1300 Continued Command and Control Software Design, Development and Test

Total 38308

FY 2000 Planned Program:

- 16533 Prepare for and conduct IOT&E
- 16000 TACMS 2000 Cost reduction activities for Block II/BAT Missile System
- 4724 Complete missile and submunition integration activities and complete DT
- 2100 Continue Command and Control Software Design, Development and Test
- 2000 Complete Launcher Integration Tests
- 500 Trade studies and system improvement and optimization activities
- 1158 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs

Total 43015

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition
	PROJECT D688

FY 2001 Planned Program:

- 14186 Continue and complete IOT&E
- 400 Continue Command and Control Software Design, Development and Test
- 13000 Trade studies and system improvement and optimization activities

Total 27586

B. Funding Other Program Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Complete	Total Cost
Missile Procurement, Army CA 6105 ATACMS BLK II	55146	85113	96719	114822	153639	125159	113266	Continuing	1669205

B. Acquisition Strategy: The Army Tactical Missile System Block II is a sole source EMD program. Upon completion of the development program, the Army TACMS Block II/BAT systems will be procured by way of a sole source production contract with Lockheed Martin Missiles and Fire Control-Dallas. Lockheed is the system integrator for the Army TACMS Block II/BAT missile system. This strategy is being followed for the FY99 and FY00 LRIP buys and will be continued through full rate production.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
PQT Flight Tests*	1QTR						
Block II/BAT LRIP DAB*	2QTR						
DT/OT Flight Test Complete		3QTR					
IOT&E Testing		3/4QTR	1QTR				
Block II/BAT MS III Decision (ASARC)			3QTR				

*Milestone Completed

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition

PROJECT: D688

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. LMVS	SS/CPIF		164099	19009		22678		8970			214756	
b. RDEC Support	PO		7012	1026		2263		1500			11801	
Subtotal Product Development:			171111	20035		24941		10470			226557	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Sys Eng Tech Assist & Program Mgmt Spt	SS/CPFF		4177	1447		1579		1140			8343	
b. Misc OGA Activities	PO		9772	923		660		500			11855	
Subtotal Support Costs:			13949	2370		2239		1640			20198	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Range Support	PO		8381	6229		8026		6554			29190	
b. Other Test Activity	PO		5984	6487		3925		5273			21669	
Subtotal Test and Evaluation:			14365	12716		11951		11827			50859	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. In-House Support	PO		13452	3187		3884		3649			24172	
Subtotal Management Services:			13452	3187		3884		3649			24172	

Project Total Cost:	212877	38308		43015		27586			321786	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)			DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition		PROJECT: D686

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D686 ATACMS BLK IIA	652	0	0	0	0	0	0	0	652

A. **Mission Description and Justification:** The Army TACMS Block IIA (ATACMS Block IIA) will be a ground launched, solid propellant, inertially guided Global Positioning System (GPS) aided missile system with 6 BAT P3I submunitions as its payload. The mission of the ATACMS Block IIA will be to delay, disrupt, or destroy the Block II target sets plus cold stationary armored combat vehicles as well as moving and stationary heavy multiple rocket launchers (MRLs) and surface-to-surface missile (SSM) transporter erector launchers (TELs). The ATACMS Block IIA will be launched from the M270A1 launcher in response to the same Command and Control (C2) systems applicable to the Block I, Block IA, and Block II missiles. The range of the Block IIA missile will be significantly greater than that of the Block II. The Army TACMS Block IIA was terminated and the funds realigned in support of higher priority requirements of the New Army Transformation.

FY 1999 Planned Program:

•	652	Awarded trade studies and system improvement and optimization activities contract
Total	652	

FY 2000 Planned Program: Project not funded in FY 2000

FY 2001 Planned Program: Project not funded in FY 2001

B. Other Program Funding Summary: There are no other RDT&E of other appropriation efforts

C. Acquisition Strategy: Not applicable.

D. Schedule Profile: There are no applicable schedule milestones for this effort

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition PROJECT D2NT

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D2NT BAT Operational Test	258	2154	50	72	435	1504	0	0	4762

A. Mission Description and Justification: Project D2NT finances the direct costs of planning and conducting operational testing and evaluation of the BAT submunition by the Operational Test and Evaluation Command (OPTEC). Operational testing is conducted under conditions as similar as possible to those encountered in actual combat with typical soldiers trained to employ the system. OPTEC provides the Army leadership with an independent test and evaluation of both the effectiveness and suitability of the system.

FY 1999 Planned Program:

•	258	IOTE planning and preparation
Total	258	

FY 2000 Planned Program:

•	2096	IOTE planning and preparation. Support IOTE tests.
•	58	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	2154	

FY 2001 Planned Program:

•	50	IOTE planning and preparation
Total	50	

B. Other Program Funding Summary: There are no other related RDT&E or other appropriation efforts.

C. Acquisition Strategy: Not applicable.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Planning and Preparation of IOT&E Activities	1QTR*	1QTR	1QTR	1QTR	1QTR	1QTR	

*Milestone completed

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604770A Joint Surveillance/Target Attack Radar System PROJECT D202

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D202 Army Joint STARS (TIARA)	5316	25676	17898	17713	12833	14372	11527	Continuing	Continuing

A. Mission Description and Justification: The Joint Army/Air Force program objective is to develop a radar, datalink, ground station, and airframe that will provide the capability to locate, track and classify tracked and wheeled vehicles beyond ground line-of-sight during the day, night and under most weather conditions. Radar data from the E-8 Joint STARS aircraft is broadcast to multiple Common Ground Stations (CGS) via a secure surveillance and control data link (SCDL). The rapidly deployable CGS is housed in a Standard Integrated Command Post Shelter (SICPS) and mounted on a High Mobility Multi-Purpose Wheeled Vehicle (HMMWV). The CGS acquisition approach is predicated on an aggressive spiral development approach. This spiral development has and will expand the number and quality of sensor inputs to the CGS and also will expand the CGS' ability to disseminate information to tactical intel and fire support nodes. In addition to receiving Joint STARS Moving Target Indicator (MTI) & Synthetic Aperture Radar (SAR) radar data, the baseline CGS receives Hunter Unmanned Arial Vehicle (UAV) video, intel broadcasts and National Imagery and disseminates message based information to Army intel and fire support nodes. Block 10 CGS will additionally provide UHF SATCOM connectivity to the E-8 Joint STARS aircraft, receipt of Predator UAV video, direct links for receipt of Airborne Reconnaissance Low (ARL) and U2 MTI radar data and DII COE level 6 compliance. Block 20 CGS will additionally provide accreditation to System High mode to address growing security and information assurance (IA) concerns, integration of the CGS with the ABCS TOC LAN to improve and expand dissemination of CGS products and replacement of the legacy CTT with the objective Joint Tactical Terminal (JTT) to assure continued and improved receipt of intel broadcast data. Beyond Block 20, the CGS spiral development will include direct links (TCDL) with the Predator UAV and Tactical UAV to reduce reliance on UAV ground stations and to reduce the overall TOC footprint IAW CSA medium force initiatives. TCDL will also provide more timely receipt of MTI and SAR radar data from ARL and the follow on Aerial Common Sensor (ACS). Longer term, the CGS will include improved data links and processing to exploit the sensor improvements associated with the Joint STARS Radar Technology Improvement Program (RTIP). The net result of the CGS spiral development will be to integrate signal, imagery, and other intelligence processing into a single ground station, resulting in enhanced battle management as well as significant cost savings. The CGS spiral development will require upgrade of existing data links and addition of data links to improve and expand CGS sensor connectivity and will also require improvements to the CGS software and ADP suite to process the increased intelligence data generated by the JSTARS aircraft and other sensors. The Joint Service Work Station (JSWS) is a variant of the CGS and will use the hardware and software design, analyses and logistics data from the CGS as the basis for its configuration. The CGS supports Land Forces in Joint, Combined and Multinational Formations for a variety of missions. It is deployable, agile, versatile, lethal, survivable, sustainable, affordable and capable of resolving conflicts decisively. The actual radar enhancements and all associated modifications to the Joint Stars air platform are fully funded within the USAF RDT&E PE 060440F.

FY 1999 Accomplishments:

- 2802 Conducted Operational Reliability Demonstration Test (ORDT).
- 597 Prepared Information Security (INFOSEC) evaluation report.
- 600 Integrated Ground Data Terminal (GDT) Built in Test (BIT) into CGS.
- 1317 Developed CGS Army Battle Command System (ABCS) data interchange prototype.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604770A Joint Surveillance/Target Attack Radar System PROJECT D202

Total 5316

FY 2000 Planned Program:

- 3100 Initiate Integration of the Tactical Control Data Link (TCDL) to interface with ARL.
- 1600 Joint Services Wide Band Data Link Risk Reduction Effort
- 10300 Surveillance Control Data Link (SCDL), the principal data link to the Air Force E8 Aircraft, System Improvement Program (SIP 3).
- 8569 Block 20 Preplanned Product Improvement (P3I) Development (System High Accreditation, Joint Common Database (JCDB), MTI/Track Overlay, And VSTARS Capabilities)
- 1435 Common Tactical Ground Station (CTGS) Systems Engineering/Software Tools Prototype
- 672 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs

Total 25676

FY 2001 Planned Program:

- 5471 Initiate CGS mods for integration of Data Link Enhancement.
- 5935 Continue Integration and Testing of TCDL.
- 830 Integrate Modeling and Simulation of the Enhanced Radar Modes for Ongoing Operator Training.
- 1205 Continue SCDL Improvement Program
- 1557 Joint Service Work Station (JSWS) Battle Lab Support
- 2900 Conduct Common Tactical Ground Station Software Prototype Demo

Total 17898

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	5463	11535	26871
Appropriated Value	5503	26035	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-40		
b. SBIR / STTR	-125		
c. Omnibus or Other Above Threshold Reduction		-104	
d. Below Threshold Reprogramming			
e. Rescissions	-22	-255	
Adjustments to Budget Years Since FY 2000/2001 PB			-8973
Current Budget Submit (FY 2001 PB)	5316	25676	17898

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604770A Joint Surveillance/Target Attack Radar System
	PROJECT D202

Change Summary Explanation: FY2000 – Congressional Increase of $14.5M. $10M for SCDL, $3M for new requirements and $1.5M for the Joint Service Wideband Datalink.
FY2001 – Funds were realigned from RDTE to OPA to meet requirements in accordance with the Army Cost Position.

C. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
BA1080 Joint STARS (TIARA)	82326	94818	66415	20941	0	10779	6261	Continue	Continue
BS9724 Joint STARS Spares	5894	6131	6179	6864	4367	0	0	0	57721
1001018A NATO AGS C35	2784	0	0	0	0	0	0	0	10038

The Joint STARS Program is also related to Air Force PE 060477

D. Acquisition Strategy: In December 1995, the JSTARS Ground Station Program awarded an eight year [basic plus seven one year options] production contract to acquire the balance of ground stations required to meet Army needs. Initial production quantities are designated Low Rate Initial Production (LRIP), and provide a basic capability. This baseline CGS is enhanced via a spiral development approach that adds additional sensor interface, exploitation tools and operator aids. The CGS contract also includes provisions for the design, development and test of various P3I block improvements. Following P3I prove out, the modifications will be folded into the production contract via fixed price contract revisions. All P3Is will be developed and implemented in accordance with the CGS System Improvement Plan (SIP).

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Conduct ORDT	2Q						
Initiate TCDL Integration		2Q					
Initiate SCDL SIP 3 Program		3Q					
Initiate Block 20 P3I Program		1Q					
Milestone III		3Q					
Block 10 Reliability Growth Test		3Q					
Initiate CGS Data Link Enhancement Planning			1Q				
Continue TCDL Integration			1Q				
Continue SCDL Improvement Program			1Q				
Modeling and Simulation			2Q				
Conduct CGS TCDL Testing			3Q				
TCDL Retrofit				2Q			
CTGS Retrofit					1Q		
FOT&E						2Q	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604770A Joint Surveillance/Target Attack Radar System

PROJECT: D202

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TCDL	CPFF	TBD				2800	2Q	4785	1Q	Continue	7585	
b. CGS Data Link Enhance	CPFF	TBD						5021	1Q	Continue	5021	
c. JSWB DL						1500	1Q			Continue	1500	
d. SCDL SIP 3 Development	C/FP	San Diego, CA		600	4Q	10000	3Q	1052	1Q	Continue	11652	
e. P3I Development	C/FP	Motorola, Scottsdale,AZ		597	3Q	8028	1 – 2Q			Continue	8625	
g. Modeling & Simulation	C/FP	Motorola, Scottsdale,AZ						830	2Q	Continue	830	
h. JSWS Battle Lab Spt for M&S	MIPR	TBD						1350	1Q	Continue	1350	
i. CTGS Prototype and Demo	C/FP	TBD				1400	2Q	2700	2Q	Continue	4100	
j. SBIR/STTR						672	2Q				672	
k. Field Support			3826	1017	1Q						4843	
Subtotal Product Development:			3826	2214		24400		15738			46178	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Matrix Support	MIPR	CECOM	85	187	1Q	655	1Q	675	1Q	Continue	1602	
b. Joint Test Force Support	MIPR	Various	163	30	1Q	35	1Q	200	1Q	Continue	428	
Subtotal Support Costs:			248	217		690		875			2030	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604770A Joint Surveillance/Target Attack Radar System

PROJECT: D202

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FFY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. ORDT	MIPR	TEXCOM/OEC	6147	623	2Q						6770	
b. ORDT	C/T&M	Motorola	3425	1962	2Q						5387	
c. TCDL	MIPR	TBD						700	1Q	Continue	700	
Subtotal Test and Evaluation:			9572	2585				700			12857	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Project Management		PM, JointStars	1024	300	1Q	586	1Q	585	1Q	Continue	2495	
b.												
Subtotal Management Services:			1024	300		586		585			2495	

Project Total			14670	5316		25676		17898			63560	

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604778A Positioning Systems Development

PROJECT: D168

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D168 NAVSTAR Global Positioning System (GPS) Equipment	365	439	2420	0	0	0	0	0	3224

A. **Mission Description and Justification:** **NAVSTAR GPS** is the Joint Program Office at LAAFB. The program is composed of three segments: Space, Control and User Equipment. PM GPS falls under the User Equipment segment and procures the majority of user equipment. Project D 168 provides for Army participation in the research and development phases of Army weapon systems requiring POS/NAV capabilities. It provides for the engineering development of several alternatives for integration of GPS receivers into selected systems. These alternatives include, but are not limited to, Embedded/Integrated GPS, Defense Advanced GPS Receivers (DAGR), Tactical GPS Anti-Jam Technology (TGAT) and Differential GPS.

FY 1999 Accomplishments:

- 170 Development of DAGR GUI
- 107 Development of GRAM and GPS/INS
- 88 Conducted studies on interfacing of GPS with other systems

Total 365

FY 2000 Planned Program:

- 214 Continued development of GRAM and GPS/INS
- 213 Studies associated with the NAVWAR and GPS modernization programs
- 12 Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)

Total 439

FY 2001 Planned Program:

- 223 Exploration and development of Pseudolites
- 2197 Development effort associated with the Defense Advanced GPS Receiver

Total 2420

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604778A Positioning Systems Development
	PROJECT D168

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000 /2001PB)	377	443	435
Appropriated Value	379	443	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-2		
b. SBIR / STTR	-10		
c. Omnibus or Other Above Threshold Reduction		-2	
d. Below Threshold Reprogramming			
e. Rescissions	-2	-2	
Adjustments to Budget Years Since FY 2000/2001 PB			+1985
Current Budget Submit (FY 2001 PB)	365	439	2420

Summary Change Explanation: Funding – FY 2001 increase supports development and upgrade of programs that will ensure GPS can operate in a NAVWAR/EW environment. These funds will support OSD mandated NAVWAR exploration and development of GPS equipment; continue the development of GRAM and GPS/INS; and facilitate studies associated with NAVWAR and GPS modernization programs.

C. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY2002	FY2003	FY 2004	FY 2005	To Complete	Total Cost
K47800, Other Procurement, Army, NAVSTAR GPS	7863	6557	21439	32645	49822	48128	44751	348000	559,205

D. Acquisition Strategy: Perform studies and analyses of host vehicles to support development of alternative GPS applications.

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604778A Positioning Systems Development

PROJECT: D168

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DAGR Risk Reduction	MIPR	USAF LAAFB	0					2197	Jan 01	0	2197	
b. GPS Pseudolites	MIPR	Fort Monmouth, NJ	0					223	Jan 01	0	223	
c. GRAM Development	MIPR	USAF LAAFB				214	Mar00				214	
d. NAVWAR	MIPR	USAF LAAFB				213	Mar01				213	
e. SBIR/STTR						12					12	
f. DAGR/GRAM	MIPR	Hanscom AFB, MA		365	Apr99							
Subtotal Product Development:				365		439		2420			3224	

II. Support Costs: Not applicable

III. Test and Evaluation: Not applicable

IV. Management Services: Not applicable

Project Total Cost:			0	365		439		2420			3224

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604780A Combined Arms Tactical Trainer (CATT)

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	21644	19775	18498	8881	5061	5049	5039	Continuing	Continuing
D571 Close Combat Tactical Trainer	9244	13138	7738	4986	5061	5049	5039	Continuing	Continuing
D582 Synthetic Environment Core	0	6637	10760	3895	0	0	0	0	21292
D585 Aviation Combined Arms Tactical Trainer (AVCATT-A) - WRAP	12400	0	0	0	0	0	0	0	12400

A. **Mission Description and Justification:** The Combined Arms Tactical Trainer (CATT) is a family of combined arms simulation systems designed to support the Army's simulation-based Combined Arms Training Strategy. The initial CATT system is the Close Combat Tactical Trainer (CCTT) which provides the underlying baseline (architecture, terrain data bases, after action review [AAR], semi-automated forces [SAF], and models/algorithms) for future CATT expansions, pre-planned product improvements and system enhancements. Synthetic Environment Core provides for the expansion of the Synthetic Environment baseline to include enhanced Aviation, Engineer, Fire Support, and Air Defense capabilities needed to support integration of hardware/simulators funded by System Program Managers. CATT enables units, from crew to the battalion task force level, to conduct a wide variety of combat tasks on a realistic, interactive synthetic battlefield. CATT's combination of manned simulators and staff officer workstations enables units to train as a combined arms team in a cost effective manner. CATT reinforces the successes and corrects the shortcomings of the Simulator Network (SIMNET) and Aviation Network (AIRNET) demonstration programs executed by the Defense Advanced Research Projects Agency (DARPA). By practicing skills in CATT, units are able to make more effective use of scarce resources and costly live fire and maneuver exercises as well as train tasks deemed too hazardous to conduct in the field. Fielded in both fixed site and mobile/transportable versions, CATT enables both Active and Reserve component units to prepare for real world contingency missions. By being able to process a wide array of terrain data bases and modify the behavior of the computer generated opposing forces, CATT offers a virtually unlimited array of training options to support the Army's many regional contingency missions. The combination of tough field and live fire training and realistic simulation training in CATT is the catalyst to prepare soldiers and their leaders for the uncertainties they will face in an unpredictable world.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604780A Combined Arms Tactical Trainer (CATT)

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	7472	19925	18627
Appropriated Value	7533	19925	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-61		
b. SBIR / STTR	-198		
c. Omnibus or Other Above Threshold Reprogramming	+14400	-81	
d. Below Threshold Reprogramming			
e. Rescissions	-30	-69	
Adjustments to Budget Years Since FY 2000/2001 PB			-129
Current Budget Submit (FY 2001 PB)	21644	19775	18498

Change Summary Explanation: Funding – FY 1999: An increase of 12400 is a Congressionally approved reprogramming from 0203761A/project 394 (Force XXI WRAP) for the development of the Aviation Combined Arms Tactical Trainer (AVCATT-A). Additional increase (+2000) was a transfer from the Operational Rapid Response Transfer Fund (ORRTF) for a Kosovo database development.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604780A Combined Arms Tactical Trainer (CATT)
	PROJECT D571

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D571 Close Combat Tactical Trainer	9244	13138	7738	4986	5061	5049	5039	Continuing	Continuing

A. **Mission Description and Justification:** This program provides for engineering and manufacturing development (EMD) and pre-planned product improvements (P3I) for the Close Combat Tactical Trainer (CCTT) which will enhance readiness of both active and reserve component forces. The program develops a networked system of interactive computer driven simulators, emulators and semi-automated forces that replicate combat vehicles and weapon systems, combat support systems, combat service support systems, and command and control systems to create a fully integrated real-time collective task training environment. This trainer will allow soldiers to practice, repetitively, techniques that, if performed on real equipment, would be too hazardous, time-consuming and expensive. These trainers enhance realism and allow soldiers and units to learn tactical combat lessons on maneuver, command and control, and improved teamwork for increased survivability. The pre-planned product improvements provide CCTT an opportunity to enhance its capabilities as a tactical trainer as well as maintain concurrency with the structural changes that today's battleforce is experiencing.

FY 1999 Accomplishments:

•	6861	Completed EMD contract, provided structured training (STRUCTT) exercises and interface between Commander's Independent Training Tool (CITT) and Maintenance Control Console (MCC), initiated High Level Architecture (HLA) compliance efforts and other Pre-Planned Product Improvements.
•	83	Maintained support services to the program office.
•	300	Provided government program management, engineering, technical, contract and continuous operational evaluation support.
•	2000	Kosovo terrain database development.
Total	9244	

FY 2000 Planned Program:

•	10144	Develop Training Support Packages (TSPs) to support structured approach to preparation for training exercises, complete High Level Architecture (HLA) compliance efforts, and begin Pre-Planned Product Improvements (P3I) for After Action Reports (AAR) and Dismounted Infantry (DI) components of CCTT and other user prioritized P3I.
•	2000	Develop Korean terrain database.
•	80	Maintain support services to the program office.
•	560	Provide government program management, engineering, technical, contract and continuous operational evaluation support.
•	354	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	13138	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604780A Combined Arms Tactical Trainer (CATT)
	PROJECT D571

FY 2001 Planned Program:

- 7018 Develop additional Training Support Packages (TSPs), Complete Pre-Planned Product Improvements for After Action Reports (AAR) and Dismounted Infantry (DI) components of CCTT and other user prioritized items.
- 80 Maintain support services to the program office.
- 640 Provide government program management, engineering, technical, contract and continuous operational evaluation support.

Total 7738

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA3, Appropriation NA0170 SIMNET/CCTT	87946	64713	81160	35040	7669			0	466328
RDTE, Appropriation 0605712A Support of Operational Testing (CCTT Portion)									6528
Military Construction, A Appropriation 2050 (CCTT Portion)	7600	0	0					0	52100
Operation and Maintenance, A Appropriation 115013 under WCLS MDEP (CCTT Portion)	14900	17896	23048	26327	32919	39503	40304	Cont'd	Cont'd

C. **Acquisition Strategy:** Competitive cost plus award fee contract for EMD phase. Competitive procurement against performance specifications as part of basic contract.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
MS III Decision	1Q*						
Full Rate Production Contract Award	2Q*						
P3I Software/Hardware Insertions	4Q*	4Q	4Q	4Q	4Q	4Q	4Q
Kosovo Database Development Contract Award	4Q*						
Korean Database Development Contract Award		2Q					

* Completed Milestones

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604780A Combined Arms Tactical Trainer (CATT)

PROJECT: D571

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. CCTT EMD	C/CPAF & T&M/FFP	Lockheed/Martin Orlando, FL	203991	2900	Dec 98						206891	206891
b. Pre-Planned Product Improvements (P3I)	C/CP	Lockheed/Martin Orlando, FL	0	3961	Dec 98	10144	Oct 99	7018	Oct 00	Cont	21123	Cont
c. Database Development		SAIC, Orlando, FL		2000	Sep 99	2000	Mar 00				4000	4000
Subtotal Product Development:			203991	8861		12144		7018			232014	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Engineering and Technical Support	MIPR	Various activities	30155	83	Nov 98	80	Nov 99	80	Nov 00	Cont	30398	
Subtotal Support Costs:			30155	83		80		80			30398	

III. Test and Evaluation: Not Applicable

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Project Office Support	MIPR	STRICOM/NAWC-TSD, Orlando, FL	11194	300	Nov 98	560	Nov 99	640	Nov 00	Cont	12694	
b. SBIR/STTR						354					354	
Subtotal Management Services:			11194	300		914		640			13048	

Project Total Cost:			245340	9244		13138		7738			275460	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)			DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604780A Combined Arms Tactical Trainer (CATT)		PROJECT: D582

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D582 Synthetic Environment Core	0	6637	10760	3895	0	0	0	0	21292

A. **Mission Description and Justification** Synthetic Environment Core (SE Core) provides for the engineering, manufacturing, and development (EMD) enhancements to the Synthetic Environment baseline for use in future CATT expansions. This first initiative will support the development and refinement of the SE Core architecture to include functionality for the Aviation Combined Arms Tactical Trainer – Aviation Reconfigurable Manned Simulators (AVCATT-A), which will enhance readiness of the Army (Active and Reserve component forces). The program will provide terrain databases, aviation behaviors, Air Defense capabilities, natural effects (e.g., wind) that enable the Army, specifically the aviation community, to conduct collective training and aviation combined arms training in the virtual environment. SE Core will provide the semi-automated forces (SAF) behaviors to represent the evolving structure, tactics, and procedures of the Army's digitized battlefield. SE Core will provide the additional aviation models to support aviation collective training, and will provide for extended ranges to simulate the aviation weapon systems and communication particular to the aviation community. The program will provide for scenario development to support aviation combined arms and collective training and After Action Review of an exercise.

FY 1999 Accomplishments: Project not funded in FY 1999

FY 2000 Planned Program:

•	4890	Develop aviation semi-automated forces behaviors, an aviation terrain database, interoperability between aviation and ground simulations, and mission planning and controls for the AVCATT-A system. Development and refinement of SE Core architecture.
•	1009	Develop an After Action Review capability, training scenarios, and provide for system High Level Architecture (HLA) compliance. Acquire development hardware to support software development
•	200	Maintain support services to program office.
•	359	Provide government program management, engineering, technical and contract support for the aviation effort and the refinement of the SE Core baseline.
•	179	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	6637	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604780A Combined Arms Tactical Trainer (CATT) / PROJECT: D582

FY 2001 Planned Program:

- 7224 Continue development of aviation semi-automated forces behaviors, an aviation terrain database, interoperability between aviation and ground simulations, and mission planning and controls for the AVCATT-A system. Development and refinement of SE Core architecture.
- 2900 Continue development of the After Action Review capability, training scenarios, and provide for system High Level Architecture (HLA) compliance.
- 200 Maintain support services to program office.
- 436 Provide Government Program management, engineering, technical, and contract support for the aviation effort and the refinement of the SE Core baseline.

Total 10760

B. Other Program Funding Summary: Not Applicable

C. Acquisition Strategy: Engineering Manufacturing & Development (EMD) competitive contract against performance specification.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
MS II Decision	2Q*						
Contract Award		1Q*					

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604780A Combined Arms Tactical Trainer (CATT)

PROJECT: D582

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. SE Core	C/CPAF	Raytheon Systems Co. Arlington, TX				5899	Oct 99	10124	Oct 00	3510	19533	
Subtotal Product Development						5899		10124		3510	19533	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Engineering Services & Technical Support	C/FFP/T&M	Madison Research. Orlando, FL				200	Nov 99	200	Nov 00		400	
Subtotal Support Costs:						200		200			400	

Remark: Each award is a Delivery Order against CFFP.

III. Test and Evaluation: Not Applicable.

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Project Office Support	MIPR	STRICOM/NAWC-TSD, Orlando, FL				359	Nov 99	436	Nov 00	385	1180	
b. SBIR/STTR						179					179	
Subtotal Management Services:						538		436		385	1359	

Project Total Cost:						6637		10760		3895	21292	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)			DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604780A Combined Arms Tactical Trainer (CATT)		PROJECT: D585

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D585 Aviation Combined Arms Tactical Trainer (AVCATT-A) - WRAP	12400	0	0	0	0	0	0	0	12400

A. Mission Description and Justification: Aviation Combined Arms Tactical Trainer—Aviation Reconfigurable Manned Simulator (AVCATT-A) is an Army aviation training system for both the active and reserve components. This engineering, manufacturing, and development (EMD) effort will provide the first prototype suite of AVCATT-A equipment which consists of six (6) reconfigurable networked simulators supporting the AH-64A/D, UH-60A/L, CH-47D, OH-58D, UH-1H and AH-1F platforms. Supporting role-player, semi-automated blue and opposing forces (SAF), and after action review (AAR) workstations are also provided as part of the suite. AVCATT-A will be a fully mobile system, capable of utilizing shore and generator power and is deployable worldwide.

AVCATT-A will permit various aviation units to conduct collective task training on a real-time, computerized battlefield in a combined arms scenario. Other required elements that are present on the modern, high intensity battlefield, such as the combat support and combat service support elements are an integral part of the simulation database. The terrain databases, aviation behaviors, Air Defense capabilities, and natural effects (e.g., wind) will be provided through the Synthetic Environment Baseline developed through the Synthetic Environment Core Program.

AVCATT-A is a key component to the Aviation Combined Arms Training Strategy and is designed to provide realistic, high intensity collective and combined arms training to aviation units. AVCATT-A provides Army aviation units (active, reserve and National Guard) the capability to train as they fight prior to deployment to the field, to prepare for deployment to real world contingencies and to support mission rehearsals in deployment areas.

FY 1999 Accomplishments:

•	11140	Developed a prototype Aviation Combined Arms Tactical Trainer - Aviation Reconfigurable Manned Simulation (AVCATT-A) and integrate with the Synthetic Environment Baseline.
•	1260	Provided government program management, engineering, technical and contract support for the development and integration effort.
Total	12400	

FY 2000 Planned Program: Project not funded in FY 2000.

FY 2001 Planned Program: Project not funded in FY 2001.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604780A Combined Arms Tactical Trainer (CATT)
	PROJECT D585

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA3, Appropriation NA0173 Aviation Combined Arms Tactical Trainer	0	0	14744	38723	39336	40163	41001	Cont	Cont

C. **Acquisition Strategy:** Engineering Manufacturing & Development (EMD) competitive contract against performance specification.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
AVCATT-A MS II Approval	2Q*						
AVCATT-A Contract Award		1Q*					

* Completed Milestones

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604801A Aviation - Engineering Development PROJECT DC45

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DC45 Aircrew Integrated Systems - ED	11056	13439	7104	2254	2274	2561	2577	Continuing	Continuing

A. **Mission Description and Budget Item Justification:** Aircrew Integrated Systems (ACIS) – Engineering Manufacturing Development (EMD) project provides engineering and manufacturing development for those systems and items of equipment which are unique and necessary for the sustainment, survivability, and performance of Army aircrews and troops on the future integrated battlefield and related training missions. The basic Air Warrior EMD programs will focus on air vehicle integration, airworthiness considerations, and user evaluation of multiple technologies to improve aircrew mission performance, aircrew comfort, aircrew and aircrew station interface, safety and survivability. These funds also include work on: advanced laser protection against emerging new threat systems; product improvement of existing helmets to improve performance and increase commonality; development and adaptation of airbag technology to Army aircraft to improve crash protection and enhance aircrew survivability. Follow-on integration and test of Air Warrior program product improvement effort will continue to enhance and maximize aircrew performance in force modernized aircraft by integrating new technologies into the basic Air Warrior ensemble. Maximum advantage will be taken of simulation to reduce program technical risk through early user evaluation and to reduce program design and test cost and schedules. This project does not duplicate any aircraft platform program efforts. Both joint and service independent efforts continue to be pursued under the scope of this project.

FY 1999 Accomplishments:

•	4643	Continued Air Warrior Engineering Manufacturing Development effort and development of technical insertion plan
•	509	Continued Advanced Laser Eye Protection (Joint Service) Engineering Manufacturing Development
•	4409	Initiated Helmet Mounted Display Engineering Manufacturing Development
•	1495	Completed Cockpit Air Bag System (CABS) pre-production evaluation and testing
Total	11056	

FY 2000 Planned Program:

•	6086	Continue Air Warrior Engineering Manufacturing Development for basic ensemble and components design
•	6725	Continue Helmet Mounted Display Engineering Manufacturing Development
•	300	Continue Advanced Laser Eye Protection (Joint Service) Engineering Manufacturing Development
•	328	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	13439	

FY 2001 Planned Program:

•	7104	Continue Air Warrior Engineering Manufacturing Development effort for ensemble developmental and operational test
Total	7104	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604801A Aviation - Engineering Development PROJECT DC45

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget: FY 2000/2001 PB	11519	6312	9264
Appropriated Value	11599	13312	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-80		
b. SBIR / STTR	-292		
c. Omnibus or Other Above Threshold Reprogramming		+250	
d. Below Threshold Reprogramming	-125		
e. Rescissions	-46	-123	
Adjustments to Budget Years Since FY 2000 / 2001 PB			-2160
Current Budget Submit (FY 2001 PB)	11056	13439	7104

Change Summary Explanation: Funding - FY 2000: 300 increase to the Advanced Laser Eye Protection for Overseas Contingency Operations.
FY 2001 - Funds were moved to the CABS Aircraft Procurement, Army Appropriation in order to realign funding with current requirements.

C. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE,A PE 0604801A PROJ DB45 – ACIS AD	6205	2943	0	2665	2670	2920	2912	Cont	Cont
Aircraft Procurement, Army SSN AZ3110 – ACIS	8972	17167	3490	22193	34072	56619	56535	Cont	Cont

D. Acquisition Strategy: An Air Warrior Program Definition and Risk Reduction (PDRR) development contract was awarded in FY 1997 to perform a functional requirements analysis and consider user requirements and available technologies to optimize recommended alternatives within the constraints of cost as an independent variable. The Air Warrior basic ensemble program was approved to proceed into an engineering manufacturing development system life cycle phase in 1st Quarter, FY 1999. Currently, a combined government and contractor team is developing Air Warrior improvements and integrating those components into a basic Air Warrior ensemble that will be integrated with the force modernization aircraft. Prototypes that represent the basic Air Warrior ensemble will be developed for test and evaluation. The Air Warrior aircraft platform specific nonrecurring production engineering will begin during FY 02 in preparation for basic ensemble production, aircraft integration, and fielding. Performance specifications for the joint service advanced laser eye protection program are being developed and will be used for production competition. The Cockpit Air Bag Systems (CABS) common components will be competitively procured using an approved performance specification and interface drawings (except that the initial production quantity will be procured sole-source from the developer). The CABS also requires aircraft platform specific integration nonrecurring engineering and hardware. The CABS aircraft platform specific hardware will be procured competitively. CABS will be installed via field retrofit and production line incorporation (where applicable).

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604801A Aviation - Engineering Development
	PROJECT DC45

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Air Warrior Milestone II approved	1Qtr						
EMD for Air Warrior basic ensemble	4Qtr	4Qtr	4Qtr	4Qtr			
Development of Technical Insertion Plan	4Qtr						
Air Warrior Preliminary Design Review		3Qtr					
Critical Design Review and initial Prototype Development		4Qtr					
Air Warrior System Test (Development/Qualification)			1Qtr				
Begin Air Warrior nonrecurring production engineering integration into aircraft platforms				1Qtr			
Continuous evaluation, test, and insertion of new technologies as Air Warrior product improvements				4Qtr	4Qtr	4Qtr	4Qtr
Air Warrior basic ensemble Milestone III					1Qtr		
Production of the basic Air Warrior ensemble and aircraft platform specific integration components during FY2002 through outyears					1Qtr	4Qtr	4Qtr
Air Warrior basic ensemble IOC						1Qtr	
Production of Air Warrior ensemble product improvements as emerging technologies can be inserted during FY 2003 through outyears						4Qtr	4Qtr

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604801A Aviation - Engineering Development

PROJECT: DC45

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Air Warrior	SS-CPFF	Various	465	4643	May 1999	3428	Feb 2000	3829	Jan 2000	Cont	12365	Cont
b. Adv Laser Eye Protection	C-CPFF	Aotec, Southbridge, MA	771	344	Dec 1998	300	Mar 2000			0	1415	Cont
c. Cockpit Air Bags	SS-CPFF	Simula, Inc., Phoenix, AZ	9159	860	Apr 1999						10019	Cont
d. Product Dev Integration	Fixed Rate	Various	0	0		1288	Quarterly	1218	Quarterly	Cont	2506	Cont
e. Helmet Mounted Display	SS-CPFF	Microvision, Seattle, WA	0	4177	Apr 1999	6000	Apr 2000			Cont	10177	Cont
f. Small Business Innovative Research						328					328	
Subtotal Product Development			10395	10024		11344		5047			36810	Cont

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Matrix Support	Reimbursable	Various Government		564	Quarterly	915	Quarterly	788	Quarterly	Cont	2267	Cont
Subtotal Support Costs:				564		915		788			2267	Cont

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Matrix Support	Reimbursable	Various Government		205	Quarterly	455	Quarterly	660	Quarterly	Cont	1320	Cont
Subtotal Test and Evaluation:				205		455		660			1320	Cont

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PM Administration	Reimbursable			263		725		609		Cont	1597	Cont
Subtotal Management Services:				263		725		609			1597	Cont

Project Total Cost:			10395	11056		13439		7104			41994	Cont

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	39650	68464	22505	34336	34354	64335	56212	Continuing	Continuing
D134 Objective Individual Combat Weapon Engineering Development (OICW)	0	14701	0	25513	22238	19340	14999	Continuing	Continuing
D284 Multipurpose Individual Munition	17691	16967	14393	0	0	0	0	0	71859
D613 Mortar Systems	9077	17168	5069	5660	5458	30172	30485	Continuing	Continuing
D695 XM982 Projectile	6585	11784	0	0	0	0	0	0	20378
D705 Hydra 70 Engineering and Manufacturing Development	3787	0	0	0	0	0	0	0	3803
DAS1 Small Arms Improvement	2510	7844	3043	3163	6658	14823	10728	Continuing	Continuing

A. Mission Description and Budget Item Justification: Provides for engineering development of weapons and munitions systems. The Multi-Purpose Individual Munition (MPIM) provides the infantry with a fire-and-forget weapon capable of defeating enemy forces in buildings, bunkers, and lightly armored vehicles. The Objective Individual Combat Weapon (OICW) represents the next generation individual soldier's weapon, replacing selected M16 rifles, the M4 series carbine, the rifle-mounted M203 40mm grenade launcher as well as night vision devices and laser range finders. The mortar systems effort supports development of the Mortar Fire Control System (MFCS). The MFCS is a revolutionary improvement in mortar capability, seamlessly linking mortar fires in the future digital battlefield. Additionally, it funds development of a low cost 60mm training round in FY2000 and the Precision Guided Mortar Munition in FY 02 – FY05. The XM982 extended range Dual Purpose Improved Conventional Munition (DPICM) is an extended range 155mm artillery projectile. It will extend the range of the M198, M190A5, M190A6, 155mm Paladin and the lightweight Howitzer to approximately 37 kilometers, with the Modular Artillery Charge System (MACS) in Crusader extending the range to 47 kilometers. Beginning in FY01, funding for the XM982 Program is in Program Element 0604814, Project D708. The Hydra 70 EMD program will accomplish airworthiness testing of the Hydra 70 rocket motor under various flight conditions. The small arms improvement program develops technology to enhance lethality, target acquisition, fire control, training effectiveness, and /or reliability for small arms weapon systems. This project develops a universal mounting bracket for the MK19-3 Grenade Machine Gun.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY **5 - Engineering and Manufacturing Development**	PE NUMBER AND TITLE **0604802A Weapons and Munitions - Engineering Development**

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	35566	54943	55077
Appropriated Value	35725	69143	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-159		
b. SBIR / STTR	-502		
c. Omnibus or Other Above Threshold Reductions	+2662	-279	
d. Below Threshold Reprogramming	+2000		
e. Rescissions	-76	-400	
Adjustments to Budget Years Since FY 2000/2001 PB			-32572
Current Budget Submit (FY 2001 PB)	39650	68464	22505

Change Summary Explanation: Funding - FY 2001: XM982 projectile (PE 64802.D695) funding (-15594) moved to PE 64814.D708.
MPIM program (D284) increased by 2000 for IOTE and by 2100 to complete a cost reduction initiative.
OICW funds (-26047) were realigned to Advanced Development PE 63802.DAS3.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D134

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D134 Objective Individual Combat Weapon Engineering Development (OICW)	0	14701	0	25513	22238	19340	14999	Continuing	Continuing

A. Mission Description and Budget Item Justification: The Objective Individual Combat Weapon (OICW) represents the next generation individual soldier's weapon, replacing selected M16 rifles, the M4 series carbine, the rifle-mounted M203 40mm grenade launcher as well as night vision devices and laser range- finders. The OICW will provide the soldier with significant increases in individual weapon performance that will result in an overall improvement in combat effectiveness to include hit probability, range, lethality, cost per kill, combat load, man/machine interface and sustainability and logistics.

FY 1999 Accomplishments: Project not funded in FY 1999

FY 2000 Planned Program:

- 7200 Contract award-ammo/fuze development
- 7106 Contract award-weapon/fire control development
- 395 Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)

Total 14701

FY 2001 Planned Program: FY 2001 funds for the OICW realigned to PE 0603802A.DAS3 in advanced development.

B. Other Program Funding Summary	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDT&E: PE 0603802.DAS3-OICW				25886	1985					27871
PAA: SSN E92500 Objective Family of Weapons							2431	2429	Cont	Cont

C. Acquisition Strategy: The OICW prototype system was demonstrated in the Advanced Technology Demonstration (ATD) in FY 1999. Based on the results of the ATD and the requirements of the final Operational Requirements document (ORD) for the OICW system, a decision was made to enter the Program Definition and Risk Reduction {PD&RR) phase rather than Engineering and Manufacturing Development (EMD) in FY00. This PD&RR phase (PE 0603802A.DAS3) will be a simulation based acquisition phase which utilizes modeling and simulation while developing, building and testing only the key high technology necessary to conduct Cost as an Independent Variable (CAIV) trade-offs at Milestone II. This phase will produce a near final design for the OICW. The PD&RR phase will continue into FY2002. The EMD phase (PE 0604802A.DAS1) which begins in FY2002, will complete the final design, development and validation of the training simulators and complete the developmental, operational, and live-fire tests necessary to reach Milestone III in FY06. FY 2000 funding is currently being reprogrammed to conform to this strategy.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT D134

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Contract Preparation		1Qtr*		1Qtr			
Ammo/Fuze Development		2-4Qtr*		2-4Qtr	1-4Qtr		
Weapon/Fire Control Development		2-4Qtr*		2-4Qtr	1-4Qtr		
Quality Design & Build					3-4Qtr	1-2Qtr	1Qtr
Developmental technical test*		4Qtr*					
Developmental Testing & Assessment					1-4Qtr	1-4Qtr	
Live –fire testing						2-4Qtr	
Operational Testing ,(LUT/OT&E) & Assessment							1-2Qtr

* FY2000 funds are being reprogrammed to advanced development PE 0603802.DAS3. The advanced development program will be executed in FY2000 through the beginning of FY2002.

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D134

Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Primary System Contract	TBD	Contractor TBD		10534*	TBD		TBD	49200	59734	
Subtotal Product Development:				10534				49200	59734	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Development	MIPR	Multiple		2062*	Multiple		Multiple	8956	11018	
b. Integrated Logistics Spt	MIPR	Multiple		100*				400	500	
c. Training and Simulations	MIPR	Multiple		778*				12152	12930	
Subtotal Support Costs:				2940				21508	24448	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DT	MIPR	ATEC		282*				690	972	
b. OT	MIPR	ATEC						7308	7308	
Subtotal Test and Evaluation:				282				7998	8280	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PGM Management	Allotment	PM Small Arms		925*				4304	5229	
b. Travel				20*				80	100	
Subtotal Management Services:				945				4384	5329	

Project Total Cost:				14701				83090	97791	

*FY 2000 program is being realigned to Advanced Development in PE 0603802A.DAS3. The Advanced Development program will be executed FY 2000 through the beginning of FY 2002.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)		DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development	PROJECT: D284

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D284 Multipurpose Individual Munition	17691	16967	14393	0	0	0	0	0	71859

A. **Mission Description and Budget Item Justification:** Provides for the engineering manufacturing development (EMD) of a lightweight, shoulder fired, multiple purpose weapon. Provides the infantry with a fire and forget weapon capable of defeating enemy forces in buildings, bunkers, and lightly armored vehicles. The Multi-Purpose Individual Munition/Short Range Anti-Tank Weapon (MPIM/SRAW) is capable of being fired quickly from its carrying configuration and can be safely fired from an enclosure for close battle. It is more versatile than the AT4 system because it can be fired from enclosures and defeat bunkers and various field fortifications. This system will have tremendously increased lethality over the AT4 and will be multiple targets capable. System design will allow for growth, service life extension and technology insertion to support the U. S. Army mission of crisis response to regionally based threats. The Army and U. S. Marine Corps have signed a memorandum of agreement for a horizontal technology integration effort utilizing the USMC SRAW flight module/launcher as the carrier for the MPIM warhead.

FY 1999 Accomplishments:

•	13249	Phase II EMD contract, development, fabrication, and qualification of the MPIM/SRAW system
•	955	Twenty missiles for pre-production testing (PPT)
•	965	Tested PPT, warhead section and missile flight testing
•	575	Systems engineering requirements generation and system level trade studies
•	400	Warhead design, development and trade studies
•	157	Safe and Arm (grenade S&A design, development and trade studies)
•	237	Flight Module risk analysis, design verification and trade studies
•	1153	Program management administration
Total	17691	

FY 2000 Planned Program:

•	11227	Phase II EMD contract, development, fabrication, qualification of the MPIM/SRAW system
•	400	Cost reduction initiative
•	2339	Fifty missiles for preproduction qualification test (PPQT)
•	728	Testing – (PPQT) (warhead and missile flight testing)
•	765	Systems engineering requirements generation and system level trade studies
•	145	Warhead design, development and trade studies
•	90	Safe and Arm (grenade S&A design, development and trade studies)

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT D284

FY 2000 Planned Program: (continued)

•	143	Flight module risk analysis, design verification and trade studies
•	685	Program management administration
•	445	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	16967	

FY 2001 Planned Program:

•	2083	Phase II EMD contract, fabrication, and qualification of the MPIM/SRAW system, and cost reduction initiatives
•	1600	Cost reduction initiative
•	4917	Missiles for PPQT (53 missiles) and initial operational test and evaluation (IOTE) (50 missiles)
•	1754	Testing- PPQT(warhead and missile flight testing)
•	1800	Conduct initial operational test and evaluation (IOTE)
•	697	Systems engineering requirements generation and system level trade studies
•	255	Warhead design, development and trade studies
•	75	Safe and Arm (design, development and trade studies)
•	146	Flight module risk analysis, design verification and trade studies
•	1066	Program management administration
Total	14393	

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
Missile Procurement, Army, SSN C09100 (Multi-Purpose Individual Munition)	0	0	3547	20306	23043	47276	47224	Cont	Cont

C. **Acquisition Strategy:** The MPIM/SRAW is a 65-month two phase EMD program which will leverage off the USMC 42-month SRAW EMD contract awarded in June 1994 and the 18-month U. S. Army technology demonstration MPIM/SRAW contract awarded in January 1995. The MPIM/SRAW EMD Phase 1 contract (18 month risk mitigation effort) was awarded in October 1996 with an EMD Phase 2 (maturation) contract (option) award in May 1998. FY99 funding supports PPT and preparation for CDR. FY 00/01 funding will support completion of systems qualifications and maturation in support of Milestone III in FY02. The EMD effort includes dollars to complete a cost reduction initiative (CRI), resulting in increased producibility and a lower average unit production cost.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT D284

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Complete early user demonstration (EUD) test	1Q*						
Conduct preliminary design review (PDR)	2Q*						
Initiate cost reduction initiative (CRI)		2Q					
Conduct CDR		3Q					
Initiate PPQT		4Q					
Conduct production readiness review (PRR)			3Q				
Complete PPQT			4Q				
Complete IOTE				2Q			
Complete cost reduction initiative (CRI)				4Q			

*Completed milestone

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D284

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Contract (EMD Phase I)	SS/CPIF	Lockheed Martin, Orlando	7263	0		0		0	7263	
b. Contract (EMD Phase II)	SS	Lockheed Martin Orlando	22371	13566	NOV99-APR 00	7000	NOV 00	0	42937	
c. Cost reduction initiative	SS	Lockheed Martin	0	400	JAN 00	1600	TBD	0	2000	
d. Engineering support	1095	MRDEC, AMCOM	3780	722	Nov 99	713	NOV 00	0	5215	
Subtotal Product Development:			33414	14688		9313			57415	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Engineering Support	SETA	Nichols—Huntsville, Al	557	421	Various	460	Various	0	1438	
Subtotal Support Costs:			557	421		460			1438	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TECOM: APG	1095	RTTC, RSA	1448	443		880		0	2771	
b. Govt Agencies	MIPR	Multiple	997	285		874		0	2156	
c. ATEC	MIPR	Alexandria, VA	0	0		1800		0	1800	
Subtotal Test and Evaluation:			2445	728		3554			6727	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D284

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PM MPIM	In-house	AMCOM ,RSA	4083	1130		1066		0	6279	
Subtotal Management Services:			4083	1130		1066			6279	
Project Total Cost:			40499	16967		14393			71859	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT D613

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D613 Mortar Systems	9077	17168	5069	5660	5458	30172	30485	Continuing	Continuing

A. **Mission Description and Budget Item Justification**: This program provides funds to complete development and type classify items that will enhance the effectiveness, lethality, versatility of use, mobility, and accuracy of mortar systems. Current mortar systems include conventional ammunition with a variety of fuzing and applications, weapons that range from man-portable 60mm to vehicle-mounted 120mm mortars, and related equipment such as fire control, mortar ballistic computer, training devices, and ammunition. Current funding for this project completes development of the digital Mortar Fire Control System (MFCS). MFCS is a revolutionary improvement in mortar capability, seamlessly linking mortar fires in the future digital battlefield. MFCS provides an on-board fire control system that includes a fire control computer, position navigation system, and gun pointing system. MFCS allows mortar crews to set-up in one minute, down from the current eight minutes. Accuracy is increased by a factor of four. Shorter exposure times increase crew survivability. The MFCS is fully compatible with the Advanced Field Artillery Tactical Data System (AFATDS), making mortars an integral part of Force XXI and Army 2010 and beyond fire support network. This will increase situational awareness and reduce the probability of fratricide. Additional funding in FY2000 funds the development and test of a low-cost 60mm full range training round (XM769). This round will decrease the cost of training while increasing safety and lowering environmental impact. FY 2001 begins a Pre-planned Product Improvement (P3I) to the MFCS to develop a variant of the system for use with 81mm mortars and the 120mm towed mortars.

FY 1999 Accomplishments:

- 7063 Continued contractor software development and hardware integration; provided units for Production Qualification Tests (PQT)
- 1419 Government hardware integration
- 455 Support and management
- 140 Development test preparation

Total 9077

FY 2000 Planned Program:

- 1853 Complete contractor software development (MFCS)
- 2023 Government hardware integration
- 2013 Support and management (MFCS 1818K and XM769 240K)
- 750 Conduct development test (MFCS)
- 160 Operational test preparation (MFCS)
- 2160 Developmental engineering (XM769)
- 725 Developmental tests/Operational tests (DT/OT) (XM769)

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT D613

FY 2000 Planned Program: (continued)

- 350 Test hardware (Ammunition destructive tests) (XM769)
- 3000 Buy MAPAM test hardware
- 550 Conduct comparative test (500 rounds)
- 2521 Conduct prototype classification tests (2500 rounds)
- 600 Type classify
- 463 Small Business Innovative Research /Small Business Technology Transfer Programs

Total 17168

FY 2001 Planned Program:

- 2200 Complete operational testing
- 320 Test reports and type classification
- 1380 Support and management
- 1169 Begin development of light forces MFCS varient

Total 5069

B. Other Program Funding Summary	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDT&E: 0603802.DAS4-Mortar System PDRR	0	0	0	0	6739	7804	0	0	0	14653
Other Procurement, Army-2-: K99300 (MFCS)	0	0	0	7341	29720	29724	38147	38540	Cont	Cont
Procurement, Ammunition, Army: E92200 XM769 60mm Full Range Practice Round	0	0	0	2969	3595	3113	3064	3126	Cont	Cont

C. **Acquisition Strategy:** The Mortar Fire Control System was approved as a two year Warfighting Rapid Acquisition Program (WRAP) effort. FY 1997 funds were realigned to this program from PE 0203758A (Horizontal battlefield Digitization) in FY 1997. FY 1998 WRAP funding was aligned to this PE in the FY 1998 DoD Appropriations Bill, at the Army's request. Development will be accomplished by the prime contractor (L3 Communications-formerly AlliedSignal Corp. of Teterboro, NJ) teamed with a number of subcontractors. Initial production, scheduled for FY 2001, is planned as an option to the development contract. Development of a light forces variant of the MFCS system will begin in FY 2001. This variant will apply MFCS technology to the 81mm and towed 120mm mortars. The XM769 60mm full range practice round will be developed in house at TACOM-ARDEC, using the 120mm M931 program as a model. Components that are common to other 60mm programs (shell body, fin, and propulsion system) will be provided as GFM to the Load, Assemble, and Pack (LAP) contractor. The LAP may be bundled with the LAP of the M720A1 and M768 High Explosive rounds.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D613

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Mortar Fire Control System							
Engineering & Manufacturing Dev (heavy)			End 2Q				
Critical Design Review-hardware	1Q						
Critical Design Review-software	4Q						
Operational Test (heavy)		4Q					
Type classify- heavy (MS III)			1Q				
First unit equipped (heavy)				3Q			
Preplanned Product Improvement-MFCS Light							
EMD-light			Start 1Q		End 4Q		
Type Classify-light					4Q		
FUE-light							1Q
60 mm Full Range Practice Round XM769							
Development engineering		Start 1Q	End 2Q				
Design Review		4Q					
Performance Test			1Q				
Type Classify			2Q				
60mm Mortar anti-Personnel/Anti-Materiel							
Procure NDI hardware for evaluation		3Q					
Conduct comparative test			1Q				
Perform PQT			2-3Q				
Type classify			4Q				

Remark: The XM769 60mm Full Range Practice Round (FRPR) is a government in-house development program.

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D613

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Mortar Fire Control System										
a.	C/CPAF	L3 Communications, Teterboro, NJ	17934	1853	Jan 00	0	N/A	0	19787	
b.	C/CPAF	To be determined						3500	3500	
c.	MIPR	TACOM-ARDEC	700	2023	N/A	1200		1600	5523	
d.	MIPR	Other govt agencies	28	0	N.A	0	N/A	0	28	
XM769 60mm FRPR										
e.	Project Order	ARDEC- Picatinny Arsenal, NJ		2160	Jan 00	0	N/A	0	2160	
Subtotal Product Development:			18662	6036		1200		5100	30998	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Mortar Fire Control System										
e.	MIPR	TACOM-ARDEC Picatinny Arsenal, NJ	2652	854	Jan 00	640	Jan 01	17	4163	
f.	MIPR	TACOM-ACALA Rock Island, IL	333	407	Jan 00	90	Jan 01	1	831	
g.	Comp T & M	Various	10	744	Jan 00	110	Jan 01	0	864	
h.	MIPR	OGA	344	203	Jan 00	50	Jan 01	8	605	
Subtotal Support Costs:			3339	2208		890		26	6463	

Remark: Because the XM769 is a training round only, the testing need only prove out that 1)the round is safe to use, and 2) the round accurately simulates the tactical round. Formal operational testing is greatly modified. Test hardware is for components that are common to other 60mm rounds. This hardware will be procured by exercising options on existing production contracts.

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D613

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Mortar Fire Control System										
a.		TECOM	110	700	Jan 00	320	N/A	460	1590	
b.		TEXCOM	62	160	Jan 00	0	N/A	20	242	
c.		OPTEC	50	50	Jan 00	2200	N/A	2205	4505	
XM731 60mm FRPR:										
d. Performance Test	MIPR	TECOM	0	703	Jun 00	0		0	703	
e. Test Hardware	Options	Various	0	350	Jun 00	0		0	350	
MAPAM										
Foreign comparative test	MIPR	TECOM	0	550	Jun 00	0		0	550	
Prototype qualification test	MIPR	TECOM	0	2522	Jun 00	0		0	2522	
Test hardware-foreign	SS/FP	Swiss Munitions Corp.	0	2000	Jun 00	0		0	2000	
Test hardware- U.S.	Options	Various	0	1000	Jun 00	0		0	1000	
Subtotal Management Services:			222	8035		2520		2685	13462	

Remark: Because the XM769 is a training round only, the testing need only prove out that 1) the round is safe to use, and 2) the round accurately simulates the tactical round. Formal operational testing is greatly modified. Test hardware is for components that are common to other 60mm rounds. This will be procured by exercising options on existing production contracts.

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Mortar Fire Control System										
d.	In-house	PM Mortars	577	264	Oct 99	259	Oct 00	528	1628	
e.	Time & Material	Robbins Gioia Corp. Alex, VA	601	225	Jan 00	100	N/A	200	1126	
f.	Time & Material	Various	45	100	Jan 00	100	Jan 01	200	445	
XM769 60mm FRPR	In-house	PM Mortars-Picatinny	0	100	Jan 00	0		0	100	
MAPAM	In-house	PM Mortars-Picatinny	0	200	Apr 00	0		0	200	
Subtotal Management Services:			1223	889		459		928	3499	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D613

			Total PYs Cost	FY 2000 Cost		FY 2001 Cost		Cost To Complete	Total Cost	
Project Total Cost:			23446	17168		5069		8739	54422	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT D695

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D695 XM982 Projectile	6585	11784	0	0	0	0	0	0	20378

A. Mission Description and Budget Item Justification: Excalibur (XM982) is a family of extended range, precision guided 155mm artillery projectiles. The first variant carried 64 Dual Purpose Improved Conventional Munitions (DPICM) with self-destruct capability. The second variant will deliver two (2) Product Improved SADARM submunitions. The third variant is a bunker busting Unitary warhead. It will be compatible with all current and future 155mm artillery systems in the U. S. inventory. The XM982 will extend the range of the M198, 155mm Paladin (M109A6), and the lightweight Howitzer to approximately 37 kilometers. The XM982 with the Modular Artillery Charge System (MACS) extends the Crusader range to 47 kilometers. The Excalibur will allow greater stand-off from threats and faster defeat of potential threats, increasing soldier survivability. FY 2001-FY 2005 funds have been transferred to PE 64814.D708.

FY 1999 Accomplishments:

•	1278	Continued design of projectile and structural assembly. Built prototype sub-systems for test evaluation
•	1562	Continued design of guidance and instrumentation systems, and simulations. Built prototype sub-systems for evaluation.
•	1595	Continued development of system requirements and subsystem requirement allocation. Conducted laboratory and field testing and evaluation
•	2150	Purchased 43 EMD test articles
Total	6585	

FY 2000 Planned Program:

•	3186	Continue design of projectile assembly and structural analysis. Build prototype sub-systems for evaluation
•	3039	Continue design of guidance and instrumentation systems, and simulations. Build prototype sub-systems for evaluation for evaluation
•	2756	Continue development of system requirements and subsystem requirement allocation. Conduct laboratory and field testing and evaluation
	1000	Purchase 25 EMD test articles
	1500	M795E1 development
	303	Small Business Innovative Research /Small Business Technology Transfer Programs
Total	11784	

FY 2001 Planned Program: XM982 projectile program and funding transferred to PE 0604814A.D708 beginning in FY 2001.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT D695

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
Procurement Ammunition, Army: E80100						27621	27595	Cont.	Cont.
RDT&E: PE 0604814A.D708			31805	64114	66444	56245	28204	Cont.	Cont.

C. **Acquisition Strategy:** The approved Acquisition Strategy was to award the EMD contract (FY98-01) to a systems contractor through full and open competition utilizing formal source selection. As a result of this strategy, a contract was awarded to Raytheon-TI Systems, Inc., Lewisville, TX on 23 January 1998 for the design, development, fabrication, and engineering services in support of the development and testing of the 155MM ER DPICM XM982 Projectile, with options for the development of a SADARM and UNITARY variant. Two low rate production fixed price ceiling price options were also included in the award for the first year's buy of 3,400 each and the second year's buy of 4,900 each. Additional XM982-D scope identified in FY 1999 (including test rounds for qualification in the Crusader System) will lead to a revised acquisition strategy and a contract restructure.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Initiate Platform Integration Kits effort	1Qtr*						
Integrated Baseline Review (IBR)	2Qtr*						
Initiate Guidance components Gun Hardening tests	2Qtr*						
Award DPICM EMD contract restructure Modification		2Qtr					
Initiate Crusader Compatibility Test Firings		3Qtr					
Award M795E1 contract		2Qtr					
M795E1 structural integrity test		2Qtr					

*Denotes a completed milestone

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D695

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
XM982-D development	C/CPIF	Raytheon Systems Tucson, AZ	5600	6590	Oct 99				12190	
a. Platform Integration Systems Contractor	C/FPI	TBD								
b. XM982-S EMD option	SS/CPIF	Raytheon Systems Tucson								
c. XM982-U EMD option	SS/CPIF									
d. M795E1 development	Option	Chamberlain Mfg Co. Scranton, PA		350	Mar 00				350	
e. M795E1 Basebleed	SS/CPIF	Tally Industries, AZ		350	Mar 00				350	
Subtotal Product Development:			5600	7290					12890	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
f. XM982	Allot	PM ARMS	719	653					1372	
g. Gov't support-XM982-D	MIPR	ARDEC, Picatinny Arsenal, NJ	3210	2118	Multi				5328	
h. Govt support-Ft. Sill	MIPR	Ft. Sill, OK	15	15	Oct 99				30	
i. XM982-D misc		TBD		303					303	
j. T250 Support	SS/FP	SAVIT Parsippany, NJ	19						19	
k. Platform integration	MIPR	ARDEC- Picatinny	110	105	Multi				215	
l. Govt support-M795E1	MIPR	ARDEC- Picatinny		200					200	
Subtotal Support Costs:			4073	3394					7467	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D695

II. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TECOM Testing	MIPR	YPG, Yuma, AZ	200	400	Nov 99				600	
b. Army Research Labs	MIPR	ARL, Adelphia, MD	79	100	Nov 99				179	
c. XM982-D test support	MIPR	Ft. Sill, OK	15						15	
d. M795E1 test support	MIPR	YPG, Yuma, AZ		600	Aug 00				600	
Subtotal Support Costs:			294	1100					1394	

IV. Management Services: Not applicable

Project Total Cost:			9967	11784					21751	20378

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT DAS1

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DAS1 Small Arms Improvement	2510	7844	3043	3163	6658	14823	10728	Continuing	Continuing

A. **Mission Description and Budget Item Justification:** This project addresses the modernization of existing Small Arms Weapon systems. This program provides funds to develop existing and emerging technology to enhance lethality, target acquisition, fire control, training effectiveness, and reliability for small arms weapon systems and munitions. Current small arms include a variety of personal defense weapons (.38 caliber, .45 caliber; 9mm), individual weapons (5.56mm), crew-served weapons (5.56mm-40mm) and related equipment such as fire control, training devices, hand grenades and ammunition. Current efforts focus on the Rifle Launched Entry Munition, improvements to the M249 Squad Automatic Weapon, M16/M4 Rifle, M203 Grenade Launcher, MK19 Grenade Machine Gun, M240B Medium Machine Gun, ammunition, and hand grenades.

FY 1999 Accomplishments:

•		**Rifle Launched Entry Munition**
•	25	Market survey/Program documentation
•	150	Program documentation/MS I/II
•	150	RFP and source selection
•	1950	Contract award
•	235	Fabrication of DT/OT hardware
Total	2510	

FY 2000 Planned Program:

		Lightweight Tripod for Light Machine Gun
•	420	Solicitation and evaluation of proposals
•	120	Contract award
		M249 Rails/BIPOD/Handguard
•	60	Contract award
•	69	Procure materials
•	190	Prototype designs
•	100	Prototype fabrication
		MK19 Modern Mount
•	270	Evaluate hardware samples

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT DAS1

FY 2000 Planned Program: (continued)

•	80	Prepare RFP and performance specifications
•	50	Program management
		MK19 Remote Platform
•	310	Complete and release RFP; evaluate proposals
•	730	Award EMD contract
		Small Arms Fire Control System
•	1789	Contract award
•	350	Development/Engineer/ILS support
•	150	PM management
		Enhanced Cal. 50 Machine
•	400	Contract award
•	445	Hardware design
•	400	Customer test
•	700	Technical test
		Rifle Launched Entry Munition
•	75	Continue hardware fabrication
•	700	DT/OT
•	225	MS III/TC-STD
•	211	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	7844	

FY 2001 Planned Program:

		Lightweight Tripod for Light Machine Gun
•	155	Hardware design
•	221	Fabricate prototypes
•	190	Engineering testing
•	170	Prototype modification
		M249 Rails/BIPOD/Handguard
•	90	Fabricate prototype
•	75	Developmental tests
•	52	Finalize design

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT DAS1

FY 2001 Planned Program: (continued)

•	180	Technical/user tests
		M249 Machine Gun Barrel Life Extension Program
•	40	Prepare and release RFP
•	30	Receive/evaluate proposals; award contract
•	300	Contract execution, design and fabrication
•	40	Technical data preparation
		MK19 Modern Mount
•	620	Contract for production qualification hardware
•	280	Production qualification hardware
		MK19 Remote Platform
•	600	Design and fabrication (EMD)
Total	3043	

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
WTCV, GZ1290, Squad Auto Wpn (MODS)	0	8289	9956	5422	4110	4834	0		32611
WTCV, GZ2800, M16 Rifle MODS	5197	7148	9592	2087	0	2417	2411		21852
WTCV, GB3000, MK19 MODS	0	1971	1813	741	2737	3865	3857		14984
WTCV, GZ1300, Med MG (MODS)	0	0	495	742	0	2995	2990		7222
PAA, E93500, Rifle Launched Entry Munition	400	0	3478	2777	2725	0	0		9380

C. **Acquisition Strategy:** Primary strategy is to mature and finalize design, award RDTE hardware contracts, and test and evaluate system with ultimate goal of type classification and production award.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Lightweight Tripod for Light Machine Gun							
Solicitation		3Qtr					
Contract award		4Qtr					
Design/fabricate prototypes			2-3Qtr				
Test prototypes			3-4Qtr	1-2Qtr			
Fabricate test hardware				3-4Qtr			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: DAS1

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Development Test					1-2Qtr		
Operational Test					2-3Qtr		
Type Classify					4Qtr		
M249 Rails/BIPOD/Handguard							
Award contract		2 Qtr					
Procure materials		3 Qtr					
Prototype designs		3-4Qtr					
Prototype fabrication		4 Qtr	1Qtr				
Developmental Tests			1Qtr				
Final design			2Qtr				
Technical Tests			3-4Qtr				
User Evaluation			3-4Qtr				
Engineering change approval			4 Qtr				
M249 RAM Improvement/Weight Reduction							
Award contract						2 Qtr	
Long lead procurements						3 Qtr	
Prototype designs						3-4 Qtr	
Prototype fabrication							1-2 Qtr
Engineering tests							2-3 Qtr
Final design							4 Qtr
Hardware fabrication							4Qtr
M249 MG Barrel Life Extension Program							
Prepare and release RFP			1-2 Qtr				
Receive proposals, evaluate, award contract			2-3 Qtr				
Contract execution, design/fabrication			3-4 Qtr	1-4 Qtr			
Technical testing & evaluation				4 Qtr	1 Qtr		
User Evaluation					1-2 Qtr		
Finalize design					2 Qtr		
Tech data preparation			3-4 Qtr	1-4 Qtr	1-3 Qtr		
Approval of ECP					3 Qtr		
M249 Low Cost Training Ammunition							
Contract award				1Qtr			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: DAS1

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Manufacturing				1Qtr			
DT/OT				1-2 Qtr			
Performance spec				3Qtr			
Safety certification				4Qtr			
Independent assessment reports					1Qtr		
Prepare packages					1-2Qtr		
Staff packages					3Qtr		
MS III IPR/TC					3Qtr		
M203 Upgrade							
Finalize requirements					1Qtr		
Competitive contractor selection/award					2-3 Qtr		
Technical assessments/risk reduction					4 Qtr	1-4Qtr	
Fabricate prototype						1-4Qtr	
Finalize prototype							1-3 Qtr
DT/OT							4 Qtr
MK19 Modern Mount							
Prepare solicitation and concept definition	3Qtr						
Contract award (test hardware samples)	4Qtr						
Engineering test-hardware samples		1-2Qtr					
Prepare solicitation, performance specs, evaluation		3-4Qtr	1-2Qtr				
Contract award			3Qtr				
Production qualification hardware fabrication			4Qtr	1Qtr			
Testing-production qualification hardware				1-3Qtr			
Evaluate data, prepare MS III package				4Qtr	1Qtr		
MK19 Remote Platform							
Program planning and documentation	1-4Qtr						
Modeling and simulation (FY98 c/o)	1-4Qtr	2Qtr					
Requirement analysis and system spec (FY98 c/o)	1-4Qtr						
RFP preparation and release (FY98 c/o)	4Qtr	1-2Qtr					
Evaluate proposal		3Qtr					
Award EMD contract		4Qtr					
Design, fabricate (EMD)			1-4Qtr	1-3Qtr			

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: DAS1

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Vehicle integration				3-4Qtr	1Qtr		
Test and evaluate				1-4Qtr	1-4Qtr		
Type classification					4Qtr		
MK19 Stabilized Platform							
RFP preparation, release, and proposal evaluation						1-4Qtr	
EMD contract award						4 Qtr	
Design and fabrication							1-4Qtr
Small Arms Fire Control System							
Award contract		4Qtr					
Design hardware (FY00 c/o)		4Qtr	1-4Qtr				
Build hardware (FY00 c/o)		4Qtr	1-4Qtr				
MK19 Self-Destruct Cartridge							
Update program documentation/market survey							1Qtr
Performance Specification							1Qtr
Small purchase							2-3Qtr
Technical evaluation							3Qtr
Prepare procurement package							4Qtr
Source selection							4Qtr
M240 Weight Reduction							
Contract award					3Qtr		
Design Review						1Qtr	
Receive hardware						4Qtr	
Technical test						4Qtr	1 Qtr
User test							2-3 Qtr
Report/ECP							4Qtr
M240 Improved MG Barrel							
Contract award						3 Qtr	
Design review							1 Qtr
Receive hardware							2 Qtr
Test							3 Qtr
Report/ECP							4 Qtr

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: DAS1

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Enhanced Cal .50 Machine Gun							
Contract award		4Qtr					
Customer test complete (FY00 c/o)			2Qtr				
Technical test complete (FY00 c/o)			4Qtr				
Lightweight Hand Grenade							
Update Concussion/Mini-Frag (C/M-F) prog dev/market survey					1Qtr		
Award C/M-F grenades eng development option					1Qtr		
C/M-F grenades engineering development					1-3Qtr		
C/M-F final dev test and Critical Design Review					4Qtr		
Award C/M-F grenades Qual Lot fab option						1Qtr	
C/M-F qual hardware mfg						1-3Qtr	
Initiate C/M-F final development- DT/OT/LFT						4Qtr	
Complete C/M-F DT/OT/LFT							1-2Qtr
Prepare C/M-F MS III IPR Package							3-4Qtr
C/M-F MS III IPR/TC-STD							4Qtr
Update Obscuration/Signaling O/S) grenades program documentation/Market survey							1Qtr
Award O/S grenades eng dev option							1-3Qtr
O/S grenades engineering development							3-4Qtr
Non-Toxic Ammo							
Market Survey/program documentation					1 Qtr		
Prepare RFP					1-2 Qtr		
Bid sample testing for 9mm					3 Qtr		
Source selection					3-4 Qtr		
Contract award—Toxic free primer development					4 Qtr		
Award contracts for all projectile/cartridge dev						1Qtr	
Toxic free primer development						1-4 Qtr	
Projectiles/cartridges development						1-4Qtr	
Final development test for toxic free primer							1Qtr
Final development test for projectiles/cartridges							1-2Qtr
Modify cart cont f/ integration of toxic free primer							2Qtr

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT DAS1

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Integration of toxic free primer							3-4Qtr
Critical design review (CDR)							4Qtr
Award qual lot fabrication option for 9mm							4Qtr
Rifle Launched Entry System							
Market survey	2Qtr						
Program documentation/MS I/II	4Qtr	1Qtr					
RFP and source selection	4Qtr	1Qtr					
Contract award		2Qtr					
Fabrication of DT/OT hardware		2-3Qtr					
Continue hardware fabrication		4Qtr					
DT/OT (FY00 c/o)			1-2Qtr				
MS III IPR/TC-STD (FY00 c/o)			3Qtr				

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: DAS1

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Hardware Development	FP	Multi	1103	1801	3474	Multi	1632	Multi	28366	36376	
Subtotal Product Development:			1103	1801	3474		1632		28366	36376	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
b. Development	MIPR	ARDEC	1635	438	1752	Multi	690	Multi	15919	20434	
c. ILS	MIPR	ACALA	34	0	200	Multi	45	Multi	1350	1629	
d. HRED	MIPR	APG	24	22	36		10		677	769	
Subtotal Support Costs:			1693	460	1988		745		17946	22832	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
e. DT	MIPR	TECOM	294	50	1586	Multi	130	Multi	10130	12190	
f. OT	MIPR	OPTEC	0	0	0		275	Multi	4052	4327	
g. SBIR/STTR					211				0	211	
h. Validation testing	MIPR	TECOM	0	100	0		0		0	100	
Subtotal Support Costs:			294	150	1797		405		14182	16828	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PGM Management	ALLOT	PM Small Arms	318	99	450	Multi	206	Multi	4728	5801	
b. Travel	ALLOT	PM Small Arms	17	0	135		55	Multi	1350	1557	
Subtotal Management Services:			335	99	585		261		6078	7358	

Project Total Cost:			3425	2510	7844		3043		66572	83394	

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	26620	22844	20457	17664	15560	26882	33869	Continuing	Continuing
DH01 Combat Engineer Equipment - Engineering Development	7171	2743	823	923	1023	12959	18839	Continuing	Continuing
DH02 Tactical Bridging - Enginering Development	332	0	643	1110	828	1981	1980	Continuing	Continuing
DH14 Materials Handling Equipment - Engineering Development	3741	102	595	593	591	592	591	Continuing	Continuing
DL39 Water, Maintenance and Environmental Eqiupment - Engineering Development	2621	2112	4529	2989	901	1455	1451	Continuing	Continuing
DL41 Fuels Handling Equipment - Engineering Development	1024	5288	6338	7285	5492	4594	4025	Continuing	Continuing
DL42 Camouflage System - Engineering Development	754	388	380	327	343	486	1456	Continuing	Continuing
DL43 Engineer Support Equipment - Engineering Development	182	53	578	250	1206	542	1188	Continuing	Continuing
D194 Engine Driven Generators - Engineering Development	4702	7892	5124	2980	2481	1514	1516	Continuing	Continuing
D279 Airdrop Equipment - Engineering Development	3230	0	0	0	0	0	0	0	3230
D429 Rigidwall Shelter - Engineering Development	899	0	0	0	0	0	0	0	2305
D461 Marine Oriented Logistics Equipment - Engineering Development	1964	4266	1447	1207	2695	2759	2823	Continuing	Continuing

A. Mission Description and Budget Item Justification: Included within this program element is the development of military tactical bridging, materiel handling equipment, water purification equipment, petroleum distribution equipment, mobile electric power and water craft.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY **5 - Engineering and Manufacturing Development**	PE NUMBER AND TITLE **0604804A Logistics & Engineer Equipment - Engineering Development**

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	25820	22996	16074
Appropriated Value	26002	22996	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-182		
b. SBIR / STTR	-619		
c. Omnibus or Other Above Threshold Reductions		-90	
d. Below Threshold Reprogramming	+1523		
e. Rescissions	-104	-62	
Adjustments to Budget Years Since FY 2000/2001 PB			+4383
Current Budget Submit (FY 2001 PB)	26620	22844	20457

Change Summary Explanation: Funding - FY 2001: Increase (+4383) to support Improved Environmental Control Unit development.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development PROJECT DH01

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
DH01 Combat Engineer Equipment - Engineering Development	7171	2743	823	923	1023	12959	18839	Continuing	Continuing

A. Mission Description and Budget Item Justification: This project supports the engineering and manufacturing development (EMD) of military tactical bridging for wet and dry gap bridging requirements such as the Common Bridge Transporter (CBT), the Improved Ribbon Bridge (IRB) Bays, Heavy Dry Support Bridge (HDSB), and Bridge Erection Boat (BEB). All bridging work is in support of the increased capabilities of the Multi-Role Bridge Company (MRBC). The completion of the MRBC EMD effort is essential to implement bridging modernization programs, allowing planned force structure reductions. This project also provides for market investigations of engineer construction equipment.

FY 1999 Accomplishments:

•	2051	Prepared and fabricated HDSB EMD System Support Package including Technical Publications & Training.
•	923	Completed contractor testing of HDSB EMD Prototype. (Qty – 2)
•	2810	Conducted Production Qualification Test (PQT) of HDSB.
•	395	Prepared HDSB Production Solicitation.
•	210	Modified Bridge Erection Boat (BEB) for engineering evaluation. (Qty –1)
•	300	Initiated IRB Flotation Modeling and Simulation.
•	482	Conducted market investigation, revised performance specifications, performed Non-Developmental Item (NDI) testing , etc. for reprocurements of construction equipment.
Total	7171	

FY 2000 Planned Program:

•	700	Completion of HDSB prototype contracts. (Qty – 2)
•	705	Complete PQT of HDSB.
•	414	Fabricate Bridge Erection Boat (BEB) prototypes. (Qty – 4)
•	250	Complete IRB Flotation Modeling and Simulation.
•	600	Conduct market investigation, revise performance specifications, perform Non-Developmental Item (NDI) testing, etc. for reprocurements of construction equipment.
•	74	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	2743	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development PROJECT DH01

FY 2001 Planned Program:

- 313 Conduct market investigation for reprocurements of construction equipment.
- 300 Revise performance specifications for reprocurements of construction equipment.
- 210 Perform Non-Developmental Item (NDI) testing for reprocurements of construction equipment.

Total 823

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA3, G82400, Heavy Dry Support Bridge		15326	19224	20592	44474	44972	44923	Cont	Cont
OPA3, GA1200,Bridge Site Mobility						6844	7225	Cont	Cont
OPA3, M26800, Bridge, Float-Ribbon, Transporter	9558	21095	7844	18170	23668	29366	29335	Cont	Cont
OPA3, M26600, Bridge, Float-Ribbon, Interior Bays		2975	7825	9771	10094	10895	9922	Cont	Cont
OPA3, M26700, Bridge, Float-Ribbon, Ramp Bays		1275						Cont	Cont
OPA3, M27200, Float Bridge Propulsion			1942	1939	4409	7224	7068	Cont	Cont
OPA3, M06600, Crane Shovel Crawler		3849	3127	3170	3245	2312	678	Cont	Cont
OPA3, M03900, Loader, Scoop Type		7704	1444	10090	11531	4008	4067	Cont	Cont
OPA3, M06100, Tractor, Full Tracked Low Sp				5839	14243	12058	12193	Cont	Cont
OPA3, M06000, Tractor, Sectionalized,				6326	6953			Cont	Cont
OPA3, M06400, Loader, Scoop 2.5 Cu Yd.					13732	15408	15392	Cont	Cont
OPA3, M07000, Crushing/Screen Plan	8127	7328	89	7646	7632	4044		Cont	Cont
OPA3, R02800, Scraper, Earthmoving 14-18 Cu					3961	1926	1924	Cont	Cont
OPA3, R14200, Scraper, Elevating, 9 Cu Yd				7185	5965	6121	6175	Cont	Cont
OPA3, R03801, Grader, Mtzd, Hvy				9305	17446	17534	17515	Cont	Cont
OPA3, R03806, Grader, Airborne					2159	6715	3957	Cont	Cont

C. **Acquisition Strategy:** HDSB - Competitive RDTE followed by competitive procurement. IRB – Limited RDTE followed by competitive procurement. BEB – Limited RDTE followed by competitive procurement

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development PROJECT DH01

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2004	FY 2005
Conducted HDSB PPQT	3Q*	1Q						
HDSB Production Contract Award/MS IIIA		2Q						
HDSB PVT/IOT&E Complete/MS Full Rate			3Q	2Q				
HDSB FUE				4Q				
Conducted IRB Flotation Model and Simulation	3Q*	1Q						
IRB Production Contract Award/MS IIIA		2Q						
IRB PVT / MS III Full Rate			2Q	1Q				
IRB FUE				3Q				
BEB Prototype Contract Award/MSII		4Q						
BEB Production Contract Award/MS IIIA				4Q				
BEB PVT Complete/ MS III Full Rate					4Q			
BEB FUE						4Q		
Market Investigations, Testing, Perf Spec Updating, etc for Construction Equipment	4Q*	4Q	4Q	4Q	4Q	4Q	4Q	4Q

* Milestone Completed

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development PROJECT DH02

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
DH02 Tactical Bridging - Enginering Development	332	0	643	1110	828	1981	1980	Continuing	Continuing

A. **Mission Description and Budget Item Justification**: This project supports the development and transition to procurement of military tactical bridge site mobility equipment to meet requirements such as the Anchorage System for the Ribbon Bridge and Improved Ribbon Bridge (IRB), Access Egress Roadway System (AERS) for bridge approaches, and performance upgrades to the Bridge Erection Boat (BEB).

FY 1999 Accomplishments:

- 100 Conducted market investigation for Bridge Erection Boat (BEB).
- 232 Obtained BEB to prove out the specification and prepared for FY01 production in RFP.

Total 332

FY 2000 Planned Program: Project not funded in FY 2000.

FY 2001 Planned Program:

- 100 Conduct Market investigation for Access Egress Roadway System (AERS).
- 543 Award EMD contract for AERS.

Total 643

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA3, GA1200, Bridge Site Mobility						6844	7225	Cont	Cont
OPA3, M27200 Float Bridge Propulsion			1942	1939	4409	7224	7068	Cont	Cont

C. **Acquisition Strategy**: Anchorage System and Competitive RDTE AERS contracts followed by procurement. BEB-Limited RDTE develop performance specification followed by competitive procurement to specification.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development
	PROJECT: DH02

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
BEB Market Investigation complete	4Q*							
BEB Develop Specification		2Q						
AERS Market Investigation complete			1Q					
AERS EMD award			4Q					

* Milestone Completed

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development PROJECT DH14

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
DH14 Materials Handling Equipment - Engineering Development	3741	102	595	593	591	592	591	Continuing	Continuing

A. Mission Description and Justification: This project supports development of Material Handling Equipment (MHE) that support Combat Service Support units with MHE for world wide rapid movement of supplies including container handling equipment, forklifts, and other cargo handling related items. Necessary efforts include validating requirements, developing acquisition strategies, developing performance specifications and test and evaluation planning.

FY 1999 Accomplishments:

•	53	Developed performance specifications for Rough Terrain Container Crane.
•	40	Conducted pre-award contract efforts for buy Rough Terrain Container Crane and Spreader Bars.
•	3648	Awarded contract for the Rough Terrain Container Handler (RTCH) prototype vehicles. (Qty – 2)
Total	3741	

FY 2000 Planned Program:

•	20	Monitor Production Qualification test (PQT) testing of the Rough Terrain Container Handler (RTCH).
•	37	Develop performance specification for Electric Forklift.
•	42	Prepare/update All Terrain Lifting Army System (ATLAS) purchase description for FY01 buy.
•	3	Small Business Innovation Research (SBIR) Program
Total	102	

FY 2001 Planned Program:

•	50	Preparation of program documentation for Non-Developmental Item (NDI) MHE procurements.
•	45	Updating performance specifications for use in upcoming NDI MHE procurements.
•	500	Procurement and testing of NDI prototype 50K Rough Terrain Forklift. (Qty – 1)
Total	595	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development
	PROJECT DH14

C. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE, 0603804.DG14, Logistics Support Equipment, Advanced Development	95	105	188	199	194	195	195	Cont	Cont
OPA3, M41200, Forklift, DE, PT, RT, 50K lbs.(RTCH)	20416	0	40031	43083	45227	15996	15731	Cont	Cont
OPA3, M41800, All Terrain Lifting Army System (ATLAS)	18805	23469	24407	29931	29791	30073	28462	Cont	Cont
OPA3, X00900, Rough Terrain Container Crane(RTCC)	1124	10883	2056	0	0	0	0	Cont	Cont
OPA3, ML5365, Items Less Than $5.0M (MHE)	1732	1756	1231	1478	1493	1433	1444	Cont	Cont

D. Acquisition Strategy: RDT&E Logistics Support Engineering Equipment – Competitive formal source selection for prototype equipment. RTCH – Competitive procurement for prototype and sole source for production using NDI integration of commercial components. ATLAS – The current contract was competitive award; FY01 new start to be sole source. RTCC – Sole source procurement to original manufacturer. Items less than $5M – Competitive procurements for various MHE.

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Market Investigation	1Q-3Q*	1Q-3Q	1Q-3Q	1Q-3Q	1Q-3Q	1Q-3Q	1Q-3Q
Performance Specifications	2Q-4Q*	2Q-4Q	2Q-4Q	2Q-4Q	2Q-4Q	2Q-4Q	2Q-4Q
Testing of development systems	3Q-4Q*	1Q			3Q	3Q	
Pre-award contract efforts	2Q*						

* Milestone Completed

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development PROJECT DL39

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
DL39 Water, Maintenance and Environmental Eqiupment - Engineering Development	2621	2112	4529	2989	901	1455	1451	Continuing	Continuing

A. **Mission Description and Justification:** Program develops and transition to procurement water purification equipment, maintenance equipment and environmental control units (ECU) that do not use ozone depleting refrigerants.

FY 1999 Accomplishments

•	1128	Engineering and management support of 1500 Gallons Per Hour (GPH) Tactical Water Purification System (TWPS) EMD contract effort.
•	200	Completed 1500 GPH TWPS Source Selection Evaluation Board (SSEB).
•	698	Awarded EMD contract for design and fabrication 1500 GPH TWPS EMD prototype. (Qty – 2)
•	55	Prepared and initiate Production Qualification Testing (PQT)/Engineering User Testing (EUT) for 1500 GPH TWPS.
•	200	Developed purchase description for 18K BTU/H ECU.
•	220	Developed purchase description for large diesel heaters (250K + BTU/H).
•	120	Completed testing of large heater prototypes. (Qty –2)
Total	2621	

FY 2000 Planned Program:

•	175	Engineering and management support of the 1500 GPH PQT/EUT.
•	355	Contractor support of PQT and completion of 1500 GPH TWPS EMD contract.
•	150	Engineering and management support of 1500 GPH TWPS EMD contract effort.
•	850	Complete PQT/EUT for 1500 GPH TWPS.
•	69	Initiate 1500 GPH TWPS production contract solicitation and MS III IPR.
•	240	Complete Purchase Description for Improved Environmental Control Units (IECU) Family
•	100	Complete testing of 18K BTU/H ECU prototypes.
•	118	Complete MS I/II IPR for IECU
•	55	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	2112	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development PROJECT DL39

FY 2001 Planned Program:

- 3200 Award EMD contract for IECU family.
- 1005 Engineering and management support of EMD contract for IECU.
- 324 Test Support for EMD contract for IECU.

Total 4529

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA 3, R05600, Water Purification Systems		10352	40727	40259	45291	21889	22140	Cont	Cont
OPA3, MF9000, Environmental Control Units (ECU)	6057	5955	6348	7051	16541	8933	8923	Cont	Cont

C. **Acquisition Strategy:** Development and transition to competitive procurement for all items under this project.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY2005
Award EMD contract for 1500 TWPS.	2Q*						
Conduct CDR for the 1500 TWPS	3Q*						
Complete 1500 TWPS prototype fabrication.		2Q					
Complete contractor testing on 1500 TWPS.		2Q					
Complete PQT/EUT on 1500 TWPS		4Q					
Conduct MS III on 1500 TWPS			2Q				
Completed in-house testing of 18K IECU ECU	3Q*						
MS I/II IPR for IECU		2Q					
Release EMD RFP for IECU		3Q					
Award EMD contract for IECU			1Q				
Award follow-on EMD contract				1Q			
Complete Testing for IECU				4Q			
MS III/TCRP for IECU				4Q			
Production RFP Released					1Q		

* Milestone Completed.

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DL39

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. 1500 GPH TWPS	In-House	TARDEC	2721	663	Dec 99					Cont	3384	
b. 1500 GPH TWPS	C-CPFF	SFA, Inc.		795	Jan 99	300	2Q			Cont	1095	
d. Complete Large Heater Purchase Description (PD)	In-house	US Army CECOM, Ft. Belvoir, VA		183	Dec 99						183	
e. Complete Family IECU PD	In-house	US Army CECOM, Ft. Belvoir, VA				600					600	
f. Engr. IECU EMD	In-house	US Army CECOM, Ft. Belvoir, VA						474			474	
g. IECU EMD	C-CPFF	Contractor TBD						3200	1Q		3200	
Subtotal Product Development:			2721	1641		900		3674			8936	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Large Heater PD	Time & Material	US Army CECOM, Ft. Belvoir, VA		20	Dec 99						20	20
b. IECU PD	Time & Material	US Army CECOM, Ft. Belvoir, VA		533		20	1Q	20	1Q		573	20
Subtotal Support Costs:				553		20		20			593	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PQT (1500 TWPS)	MIPR	TECOM (ATC)	20	55	Apr 99	887	Dec 00			Cont	962	
b. Engineering tests of heater	in-house	US Army CECOM, Ft. Belvoir, VA		225							225	
c. ECU component tests	in-house	US Army CECOM, Ft. Belvoir, VA		107							107	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DL39

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
d. Engineering tests of IECU prototypes	in-house	US Army CECOM, Ft. Belvoir, VA				250		700			950	
Subtotal Test and Evaluation:			20	387		1137		700			2244	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. IECU management	In-house	US Army CECOM, Ft. Belvoir, VA		40				135			175	
b. SBIR/STTR						55					55	
Subtotal Management Services:				40		55		135			230	

Project Total Cost:			2741	2621		2112		4529			12003	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development PROJECT DL41

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
DL41 Fuels Handling Equipment - Engineering Development	1024	5288	6338	7285	5492	4594	4025	Continuing	Continuing

A. **Mission Description and Justification:** The Army has the mission to supply fuel for all land-based forces, including the Marines and the Air Force. This developmental program provides the capability to perform battlefield sustainment operations, including receiving and transferring petroleum from trucks, ships, and permanent and temporary storage facilities; moving petroleum between storage to and within corps and division areas; quality surveillance testing; and dispensing in support of tactical operations, including rapid refueling of airfields. In FY01 this project also includes the development and transition to procurement of water purification equipment which has previously been accomplished in project DL39.

FY 1999 Accomplishments:

•	305	Updated Petroleum Quality Surveillance Lab (PQSL) system specification, program documents and plans.
•	90	Initiated pre-planned product improvements in testing capability for Petroleum Quality Analysis laboratory (PQAS).
•	307	Initiated development of advanced fuel filter-separators and coalescer elements.
•	109	Demonstrated modular fuel farm concept.
•	213	Conducted testing of improved PQAS hardware components.
Total	1024	

FY 2000 Planned Program:

•	2750	Award and administer development contract and conduct test/evaluation of PQAS prototypes.
•	2037	Award incrementally-funded contract for lightweight pipeline alternatives.
•	361	Program management and general support.
•	140	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	5288	

FY 2001 Planned Program:

•	933	Continue development and test/evaluation of PQAS EMD prototypes.
•	250	Continue development of pre-planned improvements to PQAS components.
•	2389	Award and administer EMD contract for Petroleum Quality Surveillance Lab (PQSL) prototypes.
•	1032	Award second increment for lightweight pipeline alternatives. Complete test and evaluation.
•	800	Program management and general support.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development PROJECT DL41

FY 2001 Planned Program: (continued)

- 300 Conduct IOT&E for 1500 GPH Tactical Water Purification System (TWPS).
- 100 Conduct MS III IPR for 1500 GPH TWPS.
- 534 Evaluate Pre-Planned Product Improvements (P3I) for water purification systems.

Total 6338

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE, 0603804.DK41, POL Distribution Equipment Advanced Development	781	862	2195	2318	2320	2491	2487	2900	2900
OPA 3, MB6400, Quality Surveillance Equipment	0	6225	7120	7580	40458	2452	2566	Cont	Cont
OPA 3, RO5600, Water Purification Systems	0	10352	40727	40259	45291	21889	22140	Cont	Cont

C. **Acquisition Strategy:** Development of and transition to competitive procurement for all items under this project.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Completed PQAS specification and program documentation.	3Q-4Q*						
Demonstrated concept for modular fuel farm.	4Q*						
Award contract for the lightweight pipeline alternatives.		2Q					
Award PQAS EMD contract.		3Q					
Evaluate P3I for water purification systems			1Q-4Q				
Complete evaluation of FBTT & XRF as screening methods for PQAS.			4Q				
Conduct 1500 TWPS IOT&E Testing and MS III			2Q-4Q				
Complete DT/OT of pre-production PQAS prototypes.			3Q				
Award PQSL contract.			2Q				
Award second increment for lightweight pipeline alternatives. Test & Evaluate.			2Q-4Q				

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DL41

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Complete technical evaluation of FTIR spectroscopy as screening tool for PQAS.				4Q			
Prepare specification for POL Quality Analyzer.				1Q			
Award POL Quality Analyzer.				3Q			
Complete PQSL DT/OT.					2Q		
Conduct PQSL MS III IPR.					3Q		
Complete Dev Test POL Quality Analyzer.					2Q		
Develop Force XXI and AAN Tactical Petroleum Distribution System.						1Q-4Q	
Award and test Tactical Petroleum Distribution System.							1Q-4Q

* Milestone Completed.

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DL41

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PQAS	In-House	TARDEC	1569	258	Dec 98	150	Jan 00	183	Dec 00	Cont	2160	
b. PQAS	C-CPFF	Contractor TBD	2172			2255	Jan 00	400	Dec 00		4827	
c. PQAS P3I	In-House	TARDEC		15	Dec 98			150	Jan 01	Cont	165	
d. PQAS P3I	C-Work Dir	TFLRF		75	Sep 99			100	Jan 01		175	
e. PQSL	In-House	TARDEC						150	Dec 00	Cont	150	
f. PQSL	C-CPFF	Contractor TBD						2089	May 01		2089	
g. Advance Fuel Filtration	In-House	TARDEC		257	Dec 98						257	
h. Modular Fuel Farm	C-FP	Oshkosh Truck Corp		109	Oct 98						109	
i. Lightweight Pipeline	In-House	TARDEC				150	Dec 99	150	Dec 00	Cont	300	
j. Lightweight Pipeline	C-CPFF	Contractor TBD				1887	May 00	582	Apr 01		2469	
k. Improved PAWS hardware components	In-House	TACOM		186							186	
l. 1500 TWPS	In-House	TARDEC						600	Jan 01	Cont	600	
m. 1500 TWPS hardware	C-CPFF	SFA, Inc						534	Jan 01		534	
n. SIBR/STTR						140					140	
Subtotal Product Development:			3741	900		4582		4938			14161	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PQAS	In-House	TACOM	270	74	Dec 98	361	Dec 99	300	Dec 00	Cont	1005	
b. PQSL	In-House	TACOM						100	Jan 01	Cont	100	
c. Advance Fuel Filtration	In-House	TACOM		50	Dec 98						50	
Subtotal Support Costs:			270	124		361		400			1155	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DL41

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PQAS DT	MIPR	TECOM	187			345	Jun 00				532	
b. PQAS OT	MIPR	TEXCOM						350	Mar 01		350	
c. PQSL	MIPR	TECOM						50	May 00		50	
d. Lightweight Pipeline	MIPR	TECOM						300	Dec 00		300	
e. 15500 GPH TWPS	MIPR	OTC						300	Jan 01		300	
Subtotal Test and Evaluation:			187			345		1000			1532	
Project Total Cost:			4198	1024		5288		6338			16848	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development PROJECT DL42

COST *(In Thousands)*	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
DL42 Camouflage System - Engineering Development	754	388	380	327	343	486	1456	Continuing	Continuing

A. **Mission Description and Justification:** Project DL42 provides for development and transition to procurement low cost, low observable systems for suppression of visual, near-infrared, thermal, radar, and acoustic signatures of highly mobile and semi-mobile weapon assets.

FY 1999 Accomplishments:

•	190	Prepared Test Plan for Woodlands Ultra-Lightweight Camouflage Net System (ULCANS).
•	190	Completed Type Classification Actions for Woodlands ULCANS.
•	374	Completed Woodland ULCANS Production Qualification testing (PQT)/Operational Test (OT).
Total	754	

FY 2000 Planned Program:

•	191	Complete Desert ULCANS PQT/OT testing.
•	100	Finalize test report.
•	86	Prepare final Desert ULCANS Engineering Change Proposal (ECP).
•	11	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	388	

FY 2001 Planned Program:

•	280	Prepare draft ECP for Urban ULCANS.
•	100	Prepare Urban ULCANS PQT/OT test plan.
Total	380	

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE, 0602712.AH35, Camouflage Technology	1956	2094	2410	2465	2520	2676	2799	Cont	Cont

C. **Acquisition Strategy:** Develop camouflage systems for the Services and transition items to competitive procurement.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development PROJECT DL42

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2004	FY 2005
Complete Desert ULCANS P3I MDR PQT/OT Test, and test report		4Q						
Prepare draft ECP for Snow ULCANS and Snow ULCANS PQT/OT test plan			4Q					

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DL43

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
DL43 Engineer Support Equipment - Engineering Development	182	53	578	250	1206	542	1188	Continuing	Continuing

A. **Mission Description and Justification**: Project develops Engineer Support Equipment (CSSE) such as small boats, diving equipment, well drilling machines, firetrucks, tool outfits, large power generator plants, electrical distribution systems, and floodlights which are used for field operations.

FY 1999 Accomplishments:

- 29 Conducted market investigation and developed performance specification for the 88.6 cfm Compressor.
- 51 Conducted market investigation and developed performance specification for the Deep Sea Diving Sets.
- 56 Conducted market investigation and developed performance specification for the Underwater Cutting and Welding Set.
- 46 Conducted market investigation, developed performance specification and conducted testing of general purpose survey sets.

Total 182

FY 2000 Planned Program:

- 20 Develop performance specification for outboard motors.
- 19 Conduct market investigation for outboard motors.
- 13 Conduct market investigation testing for outboard motors.
- 1 Small Business Innovation Research (SBIR) Program

Total 53

FY 2001 Planned Program:

- 55 Conduct market investigation, develop performance specifications and conduct evaluation of commercial components for diving equipment.
- 433 Conduct market investigation, develop performance specifications and conduct evaluation of commercial components for a 500KW electric power system, power distribution system and power control station.
- 90 Conduct market investigation and develop performance specifications for a 7 man assault boat.

Total 578

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DL43

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA 3, ML5325/MA8050, Items Less than $5.0M (CSS Equipment)	6447	2543	1909	10976	5639	12049	25003	Cont	Cont
OPA 3, MA8800, Items Less than $5.0M (Generator Equipment)	0	0	0	2648	2721	4482	3696	0	13547
OPA 3, M59100, Secondary Distribution System 150 KW	0	0	0	2779	2850	1679	0	0	7308
OPA 3, M56400, Generator Set, DE, 750KW 60HZ	0	0	0	2966	3039	6536	6346	0	18887

C. **Acquisition Strategy:** EMD and transition to production.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2004	FY 2005
Conduct market investigation and testing for diving equipment	4Q*							
Conduct market investigation and testing for outboard motors		4Q						
Develop performance specifications for 500KW and 750KW Electric Power Systems			2Q					
Develop performance specifications for Power Distribution and Control System			2Q					
Conduct market investigation testing for Power Distribution and Control System			4Q					
Conduct market investigation testing for 500KW and 750KW Electric Power Systems			4Q					

* Milestone Completed.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development PROJECT D194

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D194 Engine Driven Generators - Engineering Development	4702	7892	5124	2980	2481	1514	1516	Continuing	Continuing

A. **Mission Description and Budget Item Justification:** Develop and transition to procurement a series of diesel engine driven generator sets/auxiliary power units and provide continual modernization of fielded sets in order to meet federally mandated environmental statutes with reduced weight and size with reduced thermal signatures.

FY 1999 Accomplishments:

- 935 Completed development and testing for the 3kW generator set (Qty – 8).
- 2274 Completed hardware and development of Deployable Power Generation & Distribution System (DPGDS) (Qty – 2).
- 222 Initiated 100/200kW program.
- 1271 Initiated evaluation of 5-60kW Advanced Medium Sized Mobile Power Sources (AMMPS) generator designs.

Total 4702

FY 2000 Planned Program:

- 462 Complete DPGDS test and evaluation and transition to procurement.
- 4367 Initiate hardware development and testing for 100 & 200kW TQG. (Qty – 8)
- 2862 Design and fabricate prototype 5-60kW AMMPS. (Qty – 8)
- 201 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs

Total 7892

FY 2001 Planned Program:

- 2675 Continue hardware development & testing for 100 & 200kW TQG. (Qty – 28).
- 2449 Complete fabrication and initiate evaluation and test of 5-60kW AMMPS prototypes. (Qty – 9).

Total 5124

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDT&E:PE0603804A/Advanced Electrical Energy Concepts Advanced Development(DG11)	1303	988	726	607	1038	639	639	Cont	Cont
Other Procurement, Army BA Generators & Assoc. Equip (MA9800)	65552	79589	85886	58856	70697	67084	58678	Cont	Cont

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development
	PROJECT D194

C. **Acquisition Strategy**: Develop and transition to competitive procurement all items in this project.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Design prototype fabrication & testing of DPGDS	1Q*						
Award Phase II EMD for DPGDS	2Q*						
Complete procurement package and issue RFP for 100/200kW	4Q*						
Complete testing 3kW generator set	4Q*						
Award competitive contract(s) for design, prototype fabrication & testing of 100/200kW TQG/Phase I)		2Q					
Transition 3kW TQG to procurement (MS III)		2Q					
Complete testing of DPGDS		3Q					
Award contract for AMMPS proof of principle prototype		2Q					
Milestone III of DPGDS		3Q					
Award Phase II EMD for fabrication of PPQT 100/200kW TQG sets			2Q				
Complete fabrication 5-60kW AMMPS proof of principle prototype			3Q				
Initiate testing of AMMPS proof of principle prototype			3Q				
Develop solicitation package for AMMPS				2Q			
Complete AMMPS prototype testing				4Q			
Transition 100/200kW TQG to Procurement (Milestone III)					2Q		
Award Phase I contracts for AMMPS: Develop military system					2Q		
Complete Phase I contracts and downselect to one AMMPS contract						4Q	
Award Phase II contract for AMMPS family							1Q

* Milestone Completed

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D194

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DPGDS EMD	C-CPFF (2nd increment)	Radian –Alexandria, VA	1800	1964	Mar99					36	3800	
b. 100/200kW	C-CPFF	TBD				3800	Dec99	2075	Mar01		5875	
c. AMMPS(5-60kW)	Small Purchase	TBD		200	Mar99						200	
d. AMMPS(5-60kW)	C-CPFF	TBD		671	Jan99	2200	Dec99	1327	Jan01	6040	10238	
e. 3kW			4500								4500	
Subtotal Product Development:			6300	2835		6000		3402		6076	24613	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total Pys Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. 3kW		CECOM-In-house	440	220	Oct98						660	
b. AMMPS(5-60kW)		CECOM-In-house		300	Oct98	430	Oct99	400	Oct00	2100	3230	
c. 100/200kW		CECOM-In-house		122	Oct98	395	Oct99	450	Oct00	300	1267	
d. DPGDS		CECOM-In-house	520	260	Oct98	50	Oct99				830	
Subtotal Support Costs:			960	902		875		850		2400	5987	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total Pys Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DPGDS		Eglin AFB, FL				362	Nov99			57	419	
b. 100/200kW		TBD								3697	3697	
c. 3kW		APG, MD	1500	300	Feb99						1800	
d. 3kW		TEXCOM		315	Feb99						315	
e. AMMPS(5-60kW)		TBD				75	Mar00	522	Mar01	3000	3597	
Subtotal Test and Evaluation:			1500	615		437		522		6754	9828	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D194

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total Pys Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. DPGDS		CECOM-In-house	300	50	Oct98	50	Oct99				400	
b. 100/200kW		CECOM-In-house	100	100	Oct98	172	Oct99	150	Oct00	150	672	
c. 3kW		CECOM-In-house	200	100	Oct98						300	
d. AMMPS(5-60kW)		CECOM-In-house	200	100	Oct98	157	Oct99	200	Oct00	600	1257	
e. SBIR/STTR						201					201	
Subtotal Management Services:			800	350		580		350		750	2830	
Project Total Cost:			9560	4702		7892		5124		15980	43258	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development PROJECT D279

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D279 Airdrop Equipment - Engineering Development	3230	0	0	0	0	0	0	0	3230

A. Mission Description and Justification: Develop and transition to procurement cargo and personnel parachutes, airdrop containers and other aerial deliver equipment to improve safety and efficiency of airborne operations.

FY 1999 Accomplishments:

- 307 Conducted planning for Developmental Testing of Advanced Reserve Parachute System.
- 1023 Conducted Developmental Testing of Advanced Reserve Parachute System.
- 130 Purchased Universal Static Line test items for Developmental and Operational Testing.
- 340 Conducted planning for Developmental and Operational Testing of Universal Static Line.
- 1124 Conducted Developmental Testing of Universal Static Line.
- 306 Conducted Operational Testing of Universal Static Line.

Total 3230

FY 2000 Planned Program: Program funded in 0604713A/DC40

FY 2001 Planned Program: Program funded in 0604713A/DC40

B. Other Program Funding Summary: Not applicable

C. Acquisition Strategy: Not applicable

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Conduct Advanced Reserve Parachute System Developmental Testing	4Q*						

* Milestone Completed

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D429

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D429 Rigidwall Shelter - Engineering Development	899	0	0	0	0	0	0	0	2305

A. **Mission Description and Justification**: Develops a series of Rigid Wall Shelters (RWS) with added capabilities and enhanced survivability.

FY 1999 Accomplishments:

- 899 Completed Milestone I/II for Cargo Bed Cover HMMWV (Type I) and 1.5 ton trailer variants (Type II). Awarded LRIP/production contract for Type I and Type II variants, built LRIP items, conducted First Article Testing and initiated field evaluations. Completed Government testing of commercial Cargo Bed Cover Type I. The Lightweight Maintenance Shelter program was terminated per sponsoring PM. Funds placed on Cargo Bed Cover program procured additional LRIP items.

Total 899

FY 2000 Planned Program: Program funded in 0604713A/DC40

FY 2001 Planned Program: Program funded in 0604713A/DC40.

B. Other Program Funding Summary: Not applicable

C. Acquisition Strategy: Not applicable

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Completed Milestone I/II for CBC HMMWV (Type I) and 1.5 ton trailer (Type II).	4Q*						
Awarded LRIP/Production contract for CBC HMMWV (Type I) and 1.5 ton trailer (Type II).	2Q*						
Completed testing of commercial CBC HMMWV (Type I)	1Q*						

* Milestone Completed

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D461

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D461 Marine Oriented Logistics Equipment - Engineering Development	1964	4266	1447	1207	2695	2759	2823	Continuing	Continuing

A. **Mission Description and Justification:** Provides funds for the engineering and pre-production development of equipment in support of the Army's Logistics-Over-The-Shore (LOTS), In-theatre Port Control, and Intercoastal/Riverine Logistics missions. Efforts in FY99 are centered on the completion of Containerized Maintenance Facility (CMF) development (this item replaces current Floating Machine Shops) and pre-production activity on the Logistics Support Vessel acquisition. Componentry Container/Shelter Configuration and Packaging Configurations for the CMF required additional development. Strategy was to complete remaining developmental activity, then immediately commence acquisition, assembly and packaging in the same fiscal year. Activity along these lines is ongoing. The program also provided for minor development work on the Logistics Support Vessel (LSV) prior to the FY 00 procurement. For FY 00, the project supports engineering development for the Joint Modular Lighterage System (JMLS) with the Navy, and the Army's Rapidly Installed Breakwater (RIB) Project; both of which are aimed at allowing defense forces to continue to offload critical equipment and supplies under challenging sea state conditions. Funds support pre-production activity on the LSV Extended Service Program (ESP)/Upgrade including CAIV analysis. Efforts complete the RIB development and center on the Port Communications and Control Center (PCCC). The PCCC program will provide for the safe and effective management of Army and Joint Port Operations during deployment of forces; both under Logistics Over The Shore (LOTS) conditions and operations in existing port facilities. Future year effort completes development efforts on the Landing Craft Utility (LCU) ESP, the Combat Logistics Vessel (CLV), Operating & Support Cost Reduction Hardware, and the New Large Tug.

FY 1999 Accomplishments:

•	1081	Completed design specifications and documentation required prior to Milestone III (full-scale production) approval for the Containerized Maintenance Facility (CMF).
•	883	Completed performance specifications, purchase description, and other documentation for Logistics Support Vessel (LSV).
Total	1964	

FY 2000 Planned Program:

•	1731	Complete development of Joint Modular Lighterage System (JMLS) (Sea State 3 Capable) with Navy.
•	500	Develop performance specifications, purchase description and other pre-production documents for the LSV ESP/Upgrade.
•	1924	Complete final development and testing for Rapidly Installed Breakwater (RIB) Project.
•	111	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	4266	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development
	PROJECT D461

FY 2001 Planned Program:

- 615 Complete programmatic documentation for production effort for RIB Project.
- 832 Complete final development and testing for Port Communications and Control Center (PCCC).

Total 1447

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE, 0603804A, D526, Marine Oriented Logistics, Advanced Development	10577	4368	2302	2004	1791	3827	3913	Cont	Cont
OPA 3, R97500, Causeway, Systems	16856	16669	17227	12601	12751	14034	13912	Cont.	Cont.
OPA 3, M11200, Logistic Support Vessel (LSV)	0	18844	0	21198	28994	0	0	Cont.	Cont.

C. **Acquisition Strategy:** Develop and transition to competitive procurement all items in this project.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Containerized Maintenance Facility Award	2Q*						
Logistics Support Vessel (LSV) Award	2Q*						
Joint Modular Lighterage System (JMLS) Award		1Q-2Q					
Rapidly Installed Breakwater (RIB) Awards		1Q-2Q	1Q-2Q				
LSV ESP/Upgrade Awards		1Q-3Q					
Port Communications & Control Center (PCCC) Contract Award			2Q-4Q				
LCU Parameters and Performance Characteristics				2Q-4Q			
Combat Logistics Vehicle Concept Development					2Q-4Q		
Operations & Support Cost Reduction Study						2Q-4Q	
EPP Utility Craft Assessment							2Q-4Q
New Large Tug							2Q-4Q

* Milestone Completed

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D461

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. LSV	MIPR	Modern Technologies Inc, Warren, MI		350	Feb-May					Cont	350	
b. LSV	MIPR	Navy (NSWC), Suffolk, VA		300	Jan-May					Cont	300	
c. CMF	MIPR	TACOM ARDEC, Rock Island Arsenal		316	Mar					Cont	316	
d. CMF	FC-FP	SAIC, Warren, MI		531	Apr					Cont	531	
e. RIB	FC-FP	Modern Technologies Inc, Warren, MI				477	Jan	311	Feb		788	
f. JMLS	MIPR	Navy (PM JMLS), Hueneme, CA				1181	Dec			Cont	1181	
g. RIB	MIPR	Corps of Engineers (WES), Vicksburg, MI				1504	Dec	213	Dec	Cont	1717	
h. LSV ESP/Upgrade	MIPR	Navy (NSWC), Suffolk, VA				333	Dec				333	
i. PCCC	MIPR	Industrial Operations Command, Rock Island Arsenal						277	Dec		277	
j. PCCC	FC-FP	Conley & Associates, St. Louis, MO						401	Feb	Cont	401	
Subtotal Product Development:				1497		3495		1202			6194	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. CMF	MIPR	TACOM IMMC, Warren, MI		10	Jan					Cont	10	
b. LSV	MIPR	TACOM IMMC, Warren, MI		26	Jan						26	
c. LSV	MIPR	Rock Island Arsenal, IL		5	Jul						5	
d. JMLS	MIPR	TACOM IMMC, Warren, MI				23	Dec				23	
e. RIB	MIPR	TACOM IMMC, Warren, MI				25	Dec	7	Dec		32	
f. LSV ESP/Upgrade	MIPR	TACOM IMMC, Warren, MI				25	Dec				25	
g. PCCC	MIPR	TACOM IMMC, Warren, MI						23	Dec		23	
h. OSD withhold				10							10	
Subtotal Support Costs:				51		73		30			154	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D461

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. CMF	MIPR	TECOM , ATC		271	Sep					Cont	271	
b. LSV	MIPR	TECOM , ATC		20	May-Sep						20	
c. JMLS	MIPR	TECOM , ATC				40	Apr				40	
d. RIB	MIPR	TECOM , ATC				60	Apr	29	Apr		89	
e. LSV ESP/Upgrade	MIPR	TECOM , ATC				10	Feb				10	
f. PCCC	MIPR	TECOM , ATC						42	Apr		42	
Subtotal Test and Evaluation:				291		110		71			472	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. CMF	MIPR	Watercraft Systems Management Office, TACOM, Warren, MI			Jan-May					Cont		
b. LSV	MIPR	Watercraft Systems Management Office, TACOM, Warren, MI		125	Jan-Jul						125	
c. JMLS	MIPR	TARDEC, Warren, MI				176	Oct				176	
d. RIB	MIPR	TARDEC, Warren, MI				186	Oct	52	Oct		238	
e. LSV ESP/Upgrade	MIPR	Watercraft Systems Management Office, TACOM, Warren, MI				115	Oct				115	
f. PCCC	MIPR	Watercraft Systems Management Office, TACOM, Warren, MI						92	Oct		92	
g. SBIR/STTR						111					111	
Subtotal Management Services:				125		588		144			857	

Project Total Cost:				1964		4266		1447			7677	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	19618	23836	49316	97718	60598	78489	64036	Continuing	Continuing
D097 C3I Interoperability Network Activity	4693	3122	1896	1907	1814	1818	1823	Continuing	Continuing
D098 Tactical Radio Accessories	451	0	2186	0	0	0	0	0	2637
D485 C4I Systems Certification	4559	5268	3998	3985	3853	3851	3850	Continuing	Continuing
D589 Army Systems Engineering & Warfighter Technical Support	9915	7709	8411	8422	8609	8669	8667	Continuing	Continuing
D591 Weapons System Technical Architecture	0	1055	2455	2395	2363	1320	1319	Continuing	Continuing
D615 JTRS Ground Domain Integration	0	4867	28542	79171	42117	62831	48377	80000	345905
D629 Tactical Communications System-Engineering Development	0	1815	1828	1838	1842	0	0	0	7323

A. Mission Description and Justification: This PE supports efforts to develop interoperability of Army programs and products, horizontally and vertically for the digitized battlefield. Project D097 supports development of the C4I Interoperability Network. Also included is the Army portion of engineering development efforts is support of the Combat Survivor Evader Locator System (CSEL) in Project D098. This includes follow-on programs to demonstrated technologies evolving from Wireless Network Access, Communications Network Planning and Management and initiatives to establish a Multiband Radio Integrated testbed. Project D485 supports C4I Systems Certification. It evaluates system's interoperability for the Army XXI battlefield digitization effort, in support of the Vice Chief of Staff of the Army (VCSA) and Army Acquisition Executive (AAE), to identify interoperability issues, develop certification recommendations, and provide architecture assessments by the Digital Integration Lab (DIL). Project D589 Army Systems Engineering & Warfighter Technical Support efforts is recommended by the Army Science Board and directed by the Army Acquisition Executive (AAE) and Vice Chief of Staff of the Army (VCSA). The ASE provides essential technology expertise on all Systems Engineering and Technical Architecture (SE/TA) matters critical to gain Information Dominance and foster interoperability among all Army systems. The Weapons Systems Technical Architecture, Project D591, supports development of the Joint Technical Architecture-Army (JTA-A) which provides the 'building code" foundation for designing, building, fielding, and supporting interoperable systems in an expedient and cost-effective manner. The Near -Term Digital Radio System (NTDRS) is not a new start: It was funded in PE0603713A, D370 in FY1999 & prior and in D615 FY2000. The Army development effort for the Joint Tactical Radio System (JTRS) hardware is funded in D615 in FY 2001-2005. Project D629, Tactical Communications System – Demonstration Validation, provides for insertion of selected proven communications technology from program elements 0602782A, Project AH92 applied research and 0603006A, advanced technology development, into the next phase of development. Note: This is not a new start effort, previously this effort was funded under PE/Proj. 0603805A/D246.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY **5 - Engineering and Manufacturing Development**	PE NUMBER AND TITLE **0604805A Command, Control, Communications Systems - Engineering Development**

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	16280	23987	23842
Appropriated Value	16404	23987	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-124		
b. SBIR / STTR	-335		
c. Omnibus or Other Above Threshold Increases	+1500	-82	
d. Below Threshold Reprogramming	+2237		
e. Rescissions	-64	-69	
Adjustments to Budget Years Since FY 2000/2001 PB			+25474
Current Budget Submit (FY 2001 PB)	19618	23836	49316

Change Summary Explanation: Funding - FY 1999 funds increased to support high priority requirements for Force XXI Experimentation
FY2001: Funds increase of 23531 in D615 to support critical Army Unique Joint Tactical Radio developmental efforts and increase of 2200 in D098 to support the CSEL LRIP Army requirements.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development / PROJECT: D097

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D097 C3I Interoperability Network Activity	4693	3122	1896	1907	1814	1818	1823	Continuing	Continuing

A. Mission Description and Justification: Project D097 - C3I Interoperability Network: Support warfighter systems' interoperability with a virtual command, control, communications, computer, intelligence, electronic warfare and sensor (C4IEWS) Digital Integration Lab (DIL) to help integrate the Army's programs and products, horizontally and vertically for the digitized battlefield, by replicating current and future tactical battlefield environments and enabling/facilitating comprehensive evaluations of new prototypes, evolutionary system developments, new technologies, commercial products, software and systems interoperability. Develop and operate the communications Army Interoperability Network (AIN) to electronically interconnect remote C4IEWS systems, labs/testbeds, field/integration sites, develops facilities and Battle Labs. Develop and apply protocol test tools to assure the capability to support and assess interoperability and compliance with the Joint/Army Technical Architecture's Variable Message Format (VMF) and MIL-STD-188-220 protocol standards suites.

FY 1999 Accomplishments:

- 490 Provided external DIL connectivity to remote battlefield digitization sites for digitization experimentation and tests.
- 331 Upgraded, operated and supported secure DIL Evaluation & Certification Testbed and other facilities supporting experiments/certifications needed for battlefield digitization for Army FDD, Y2K, Joint as well as STO/ACTD/ATD experimentation and evaluation.
- 100 Acquired/updated DIL hardware and software interfacing systems, test tools, and supporting systems for 1st Digitized Division and TA/SA evaluations
- 125 Acquired DIL automated scenario drivers and test analysis tools for FDD evaluations and TA/SA evaluations.
- 350 Developed Prototype Test Tool (PTT) Monitor/decoder V2.1 capabilities to support the Technical Architecture's MIL-Std-188-220B Sync mode, and conformance testing.
- 100 Developed and fielded lower Tactical Internet PTT network Analyzer capability to support MIL-STD-188-220B network operation and performance analysis in FDD
- 260 Developed and fielded VMF test tool, Rel.5, to support correct C4IEWS systems implementation of Technical Architecture's VMF test tool populated with Joint Re-issue 3 database.
- 140 Developed message generation scripting capability for VMF Test Tool (VTT) to support First Digitized Division (FDD), second Digitized Division and the First Digitized Corps.
- 1080 Began Operating Environment (OE) Implementation and COE Process Maturation by defining the OE extensions, identified 3 Application Program Interface (API) implementations, participating in the DII COE RT TWG, and began developing a conformance plan and test suites.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development PROJECT D097

•	417	Developed a functional description for the EBC Weapon Interface. Processed the EBC Weapon Interface Requirements into DOORs. Completed the Draft EBC API.

FY 1999 Accomplishments: (continued)

•	500	Developed User Interface Standards by defining user interface requirements specification, updating the style guide, defining the common component specification, describing the environment and operations for common screens, and implementing agreement for JVMF messages
•	800	Developed Army Weapon COE concept and continued maturing Joint Real Time DII COE kernel
Total	4693	

FY 2000 Planned Program:

•	834	Provide external DIL connectivity to remote battlefield digitization sites for digitization experimentation and tests.
•	830	Upgrade, operate and support DIL Evaluation & Certification Testbed and other facilities supporting experiments/certifications needed for battlefield digitization for Army FDD, Y2K, Joint (e.g. Joint Contingency Force AWE) as well as STO/ACTD/ATD experimentation and evaluations.
•	367	Acquire/update DIL hardware and software interfacing systems, test tools, and supporting systems for 1st Digitized Division and TA/SA evaluations
•	150	Acquire DIL automated scenario drivers and test analysis tools for FDD evaluations and TA/SA evaluations.
•	100	Develop PTT Monitor/Decoder V2.2 to support Technical Architecture's Mil-Std-188-220B remaining features
•	125	Develop PTT Conformance Tester V2.1 to add full generation capability
•	250	Develop PTT Network Analyzer V2 (full capability) for Mil-Std-188-220B CNR network operation & performance
•	200	Develop VMF test tool, Rel 6, to support correct C4IEWS system implementations of Technical Architecture's VMF Reissue 4+
•	200	Develop VMF Reissue 4+ VMF database
•	66	Small Business Innovation Research/Small Business Technology Transfer(SBIR/STTR) Programs
Total	3122	

FY 2001 Planned Program:

•	596	Provide external DIL connectivity to remote battlefield digitization sites for digitization experimentation, and tests.
•	400	Upgrade, operate and support DIL Evaluation & Certification Testbed and other facilities supporting experiments/certifications needed for battlefield digitization for Army Second Digitized Division (SDD) and First Digitized Corps (FDC) digitization efforts, Joint, Allied as well as STO/ACTD/ATD experimentation and evaluations.
•	250	Acquire/update DIL hardware and software interfacing systems, test tools, and supporting systems for SDD and FDC TA/SA evaluations
•	50	Acquire DIL automated scenario drivers and test analysis tools for SDD and FDC evaluations and TA/SA evaluations.
•	300	Develop graphical interface and integrate background map, automate analysis function, and re-certify

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development
	PROJECT: D097

•	300	Develop monitor decode V.3., develop conformance test V.3.1 for 188-220C standard version.
Total	1896	

B. Other Program Funding Summary: None

C. Acquisition Strategy: The efforts funded in this project are non-system specific, supporting interoperability across multiple systems. The contractual efforts/services are obtained from existing competitive omnibus support services contracts.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2004	FY 2005
Maintain and upgrade remote connectivity between digitization sites	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
DIL Testbed support for DAWE, FDD, JCF, SDD & FDC	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Acquire DIL testbed systems to support message compliance certification	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Develop, maintain, certify Protocol Test Tool	4Q	4Q	4Q					
Develop, maintain, certify VMF Test Tool	4Q	4Q	4Q					

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

PROJECT: D097

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Labor (internal Govt)		USACECOM FM NJ	908	664	01/01/99	1020	01/01/00	710	01/01/01	Cont'd	3302	
b. Travel		USACECOM FM NJ	36	15	01/01/99	25	01/01/00	15	01/01/01	Cont'd	91	
c. Systems Management		USA TARDEC Warren MI	7								7	
d. Systems Engineering		USA AMCOM Huntsville AL	325	2797							3122	
e. Systems Engineering	MIPR	USA TACOM Picatinny, NJ	143								143	
f. Contract Services												
1)Surge Support Contract	C/CPFF	DCS Corp. Alexandria VA	500								500	
2)Systems & Software Engineering	C/CPFF	SAIC Corp. San Diego CA	90								90	
3) Battlefield Automated Sys. Engrg Spt (BASES)	C/CPFF	EER System Corp Lanham MD	60								60	
g. Inflation Withhold												
Subtotal Product Development:			2069	3476		1045		725			7315	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Software Development	C/CPFF	Arinc, Ft Monmouth NJ	1543	649		525	3/99	490	03/00	Cont'd	3207	
b. Software Development	C/CPAF	Telos, Ft Monmouth NJ	699	323		518	*	100	03/00	Cont'd	1640	
c. Development Support	C/CPFF	CSC, Ft Monmouth NJ	150	34		280	*	150	03/00	Cont'd	614	
d. Development Support	C/CPFF	C3I, Ft Monmouth NJ	150	147		300	*	301	03/00	Cont'd	898	
e. Technical Support	C/CPFF	Nations, Monmouth NJ	21	29		20	7/99	30	03/00	Cont'd	100	
f. Equipment	FFP	USA CECOM	450	35		354		100		Cont'd	939	
g. Telecommunications	MIPR	USASC Ft Huachuca AZ	40			80	1/00	0	1/01	Cont'd	120	
Subtotal Support Costs:			3053	1217		2077	*	1171	*		7518	

ARMY RDT&E COST ANALYSIS (R-3)	DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development
	PROJECT: D097

Remark: *Contracts cited are 5 year (1 base year + 4 option years). Future award dates imply future competitive award, contractor TBD.

III. Test and Evaluation: Not applicable

IV. Management Services: Not applicable

			Total PYs Cost	FY 1999 Cost		FY 2000 Cost		FY 2001 Cost		Cost To Complete	Total Cost	
Project Total Cost:			5122	4693		3122		1896		Cont'd	14833	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development PROJECT D098

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D098 Tactical Radio Accessories	451	0	2186	0	0	0	0	0	2637

A. Mission Description and Justification: Project D098 - Tactical Radio Accessories: This project will provide for PM participation in the development efforts for the Combat Survivor Evader Locator System (CSEL), a joint program led by the Air Force. This program will provide service, joint, and/or composite operational recovery/rescue forces with the capability to pinpoint the location of and establish communication with downed personnel in need of extraction from hostile territories. The CSEL system will include the capability to pass data directly into the standard warfighter command, control, communications, computer, and intelligence (C4I) systems. The user's equipment will consist of a small hand-held unit used for geopositioning, over-the-horizon data communications, and two-way line-of-sight voice communications.

FY 1999 Accomplishments:

- 451 Program Management Support

Total 451

FY 2000 Planned Program: Project funded in FY2000.

FY 2001 Planned Program:

- 692 Program Support
- 310 Test Support/Analysis
- 1184 LRIP Contract

Total 2186

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
ARMY, OPA2 B03200, Combat Survivor Evader Locator (CSEL)	0	0	0	13169	23840	19864	19843	57000	133741

C. Acquisition Strategy: The joint Air Force led acquisition strategy is a research and development approach for the handheld unit

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development
	PROJECT: D098

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
USAF Option 1 Deliveries	2Q						
CT/OA 2		4Q					
Army LRIP Decision			1Q				
USAF Option 2 Contract Award (LRIP)			1Q				
USAF Option 2 Deliveries (LRIP)				1Q			
USAF Option 3 Contract Award				1Q			
CT 3				1Q			
IOTE				2Q			
Milestone Decision III				4Q			

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

PROJECT: D098

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Engineering / Manufacturing Development*	SS	Boeing North America Los Angeles AFB						1184	1Q	0	1184	1184
Subtotal Product Development:								1184			1184	

Remark: * LRIP Contract, quantity 100.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Battery Analysis Study	MIPR	JPO, Los Angeles AFB						250	2Q		250	
b. Technical Support	MIPR	CECOM C2SID						60	2Q		60	
Subtotal Support Costs:								310			310	

III. Test and Evaluation: Not Applicable

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Management Support**	MIPRs	Miscellaneous	4179	451	1-4Q			692	1Q		5322	
Subtotal Management Services:			4179	451				692			5322	

Remark: ** A portion of the FY1999 funding is being carried over to FY2000 to support program management requirements for CSEL.

Project Total Cost:			4179	451				2186			6816	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development / PROJECT: D485

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D485 C4I Systems Certification	4559	5268	3998	3985	3853	3851	3850	Continuing	Continuing

A. Mission Description and Justification: C4I Systems Certification: Evaluate system's interoperability for the Army XXI battlefield digitization effort, in support of the Vice Chief of Staff of the Army (VCSA) and Army Acquisition Executive (AAE), to identify interoperability issues, develop certification recommendations, and provide architecture assessments by the Digital Integration Lab (DIL). Interoperability certification recommendations and assessments are provided to the Army Digitization Office (ADO) and Army System Engineer. Establish and sustain interoperability between Army C4I systems, and between the Army and Joint/Allied C4I communities in support of DOD 4630.5, DODI 4630.8, CJSCI 6212.01, and AR73-1. Provide the Army focal point for the review, staffing, coordination, and development of Army positions for interface interoperability standards and specifications. Participate in Joint/Allied and intra-Army interoperability certification testing and represent the Army in the Joint/Allied Configuration Management Process. Develop and configuration manage two key elements of the Joint/Army Technical Architectures - the Variable Message Format (VMF) message and the MIL-STD-188-220 protocol standards, in support of Army Science Board directive and approved Technical Architectures.

FY 1999 Accomplishments:

•	640	Evaluated and certified IT/C4ISR systems interoperability for FDD, Joint experiments to assure compliance with the Technical and System Architectures
•	560	Provided DIL System Engineering and Integration support for conduct of experiments and evaluations to support FDD, Joint Contingency Force AWE, & Joint Tests.
•	330	Provided systems engineering, integrated support & field support for identification and resolution of systems' discrepancies and inconsistencies identified during evaluations.
•	300	Evaluated and validated Technical and Systems Architectures, including development of tools for compliance evaluation.
•	545	Developed and published 188-220B and 47001B application header standards.
•	325	Developed/Approved Army/Joint VMF messages.
•	332	Obtained Joint Approvals for (43) Army's VMF ICP's for FDD and Y2K
•	65	Updated and Maintained VMF data base for evolving standards and provided two new versions to customers
•	110	Conducted 6 Army and Joint Configuration control boards
•	609	Evaluated, processed and obtained approval of 1100 change proposals
•	650	Conducted 10 Joint Certification Testing to include 24 operational systems, and developed over 500 problem reports for analysis by Joint services
•	93	Represented the Army in over 24 Joint TADILs, USMTF, OSD tactical data link management plan TDLMP, Joint Interface Requirements
Total	4559	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development PROJECT D485

FY 2000 Planned Program:

•	609	Evaluate and certify IT/C4ISR systems interoperability for FDD, Joint experiments to assure compliance with the Technical and System Architectures
•	550	Provide DIL System Engineering & Integration support for conduct of experiments & evaluations to support FDD, JCF AWE, & Joint Tests.
•	200	Provide systems engineering, integrated support & field support for identification and resolution of systems' discrepancies and inconsistencies identified during evaluations.
•	200	Evaluate and validate Technical and Systems Architectures, including development of tools for compliance evaluation.
•	325	Develop, evolve and approve Army/Joint VMF TIDP
•	325	Obtain joint approvals for Army's VMF ICPs for FDD and other battlefield digitization requirements
•	90	Update VMF databases per evolving VMF standards
•	575	Develop 'C' versions of Mil-Stds 188-220 & 2045-47001 for TA and evolving Battlefield Digitization requirements
•	608	Provide engineering evaluations and Army CM of TADIL joint messages
•	605	Provide engineering evaluations and Army CM of USMTF joint messages
•	708	Direct & manage Army's joint certification testing/analysis for system certifications; represent Army's consolidated positions at JARPs
•	100	TDLMP Management
•	250	NATO message development/harmonization support
•	123	Small Business Innovation Research/Small Business Technology Transfer(SBIR/STTR) Programs
Total	5268	

FY 2001 Planned Program:

•	500	Evaluate and certify IT/C4ISR systems interoperability for SDD, and FDC as well as conduct Joint experiments to assure compliance with the Technical and System Architectures
•	450	Provide DIL System Engineering and Integration support for conduct of experiments and evaluations to support SDC & FDC, and Joint tests
•	150	Provide systems engineering, integrated support & field support for identification and resolution of systems' discrepancies and inconsistencies identified during evaluations.
•	150	Evaluate and validate Technical and Systems Architectures, including development of tools for compliance evaluation.
•	412	Develop and publish 188-220D/47001D
•	640	Develop/Joint Approve new VMF messages and change proposals
•	70	Update/maintain VMF database and provide two new versions to customers
•	120	Conduct Army and Joint configuration control boards
•	550	Evaluate, process and obtain Joint Approval of TADIL (A,B,J, USMTF) change proposals

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development PROJECT D485

FY 2001 Planned Program: (continued)

- 836 Conduct joint certification testing for system implementing TADILs (A, B, J, VMF, and USMTF), generate associated trouble reports and convene Joint analysis review panels.
- 120 Represent the Army in Joint TADILs, USMTF, OSD Tactical Data Link Management Plan (TDLMP), joint interface requirement reviews.

Total 3998

B. Other Program Funding Summary: None

C. Acquisition Strategy: The efforts funded in this project are non-system specific, interoperability experimentation, evaluation and certification across multiple systems. The contractual efforts/services are obtained from existing competitive omnibus support services contracts.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2004	FY 2005
Evaluate, certify systems for & support DAWE	1-4Q							
Evaluate, certify systems for and support FDD	4Q	1-4Q	1-2Q					
Evaluate, certify systems for and support Joint Contingency Force AWE	1-4Q	1-4Q						
Evaluate, experiment, and provide systems integration for testing of ACTD, ATD & STO's.	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Complete FDD CMP/DII COE evaluation Capability	3Q							
Experiment/Evaluate Joint Interoperability in conjunction with CIPO initiatives	4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
DIL/CUBE Testing/experimentation of AFATDS/TBMCS interoperability for Spiral and JEFX Tests	4Q	1-4Q						
Evaluate, certify systems for and support SDD & FDC		4Q	1-4Q	1-4Q				
Develop and maintain Joint VMF Standards and standard databases	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Joint approval/publication of 188-220 & 47001 series standards	1-4Q	1-4Q	1-4Q					

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development PROJECT D485

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2004	FY 2005
Joint Certification testing, and configuration management and control of TADIL/USMTF standards	1-4Q	1-4Q	1-4Q					

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

PROJECT: D485

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Labor (internal Govt)		USACECOM FM NJ	3232	1307	01/01/99	1380	01/01/00	1380	01/01/01	Cont'd.	7299	
b. Travel		USACECOM FM NJ	70	25	01/01/99	25	01/01/00	25	01/01/01	Cont'd.	145	
c. Inflation Withhold												
Subtotal Product Development:			3302	1332		1405		1405			7444	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Development Support	C/CPFF	Arinc, Ft Monmouth NJ	2613	1011	10/93	1433	3/99	1018	*	Cont'd	6075	
b. Development Support	C/CPAF	Telos, Ft Monmouth NJ	2002	834	12/95	1110	3/99	800	*	Cont'd	4746	
c. Development Support	C/CPFF	CSC, Ft Monmouth NJ	1310	765	03/95	722	3/99	250	*	Cont'd	3047	
d. Development Support	C/CPFF	C3I, Ft Monmouth NJ	850	85	07/96	250	3/99	172	*	Cont'd	1357	
e. Development Support	SS/CPFF	Mitre, Ft Monmouth NJ	280	0	10/98	0		0			280	
f. Technical Support	C/CPFF	Marconi, Ft Monmouth NJ	72	38	12/95	38		38			186	
g. Equipment	Reqn	USACECOM	85	206	*	150	1/00	150		Cont'd	591	
h. Equipment (Development Support)	FFP	GTE, Tauton MA	0	128							128	
i. Telecommunications	MIPR	USASC Ft Huachuca AZ	500	160		160	1/00	165		Cont'd	985	
Subtotal Support Costs:			7712	3227		3863		2593			17395	

Remark: *Contracts/awards cited are 5 year (1 base year + 4 option years). Future award dates imply future competitive award, contractor TBD.

III. Test and Evaluation: Not applicable

IV. Management Services: Not applicable

Project Total Cost:			11014	4559		5268		3998			24839	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development PROJECT D589

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D589 Army Systems Engineering & Warfighter Technical Support	9915	7709	8411	8422	8609	8669	8667	Continuing	Continuing

A. Mission Description and Justification: Army Systems Engineering & Warfighter Technical Support: The ASE provides essential technology expertise on all Systems Engineering and Technical Architecture (SE/TA) matters critical to gain Information Dominance and foster interoperability among all Army systems. The Joint Technical Architecture-Army (JTA-A) provides the 'building code" foundation for designing, building, fielding, and supporting interoperable systems in an expedient and cost-effective manner. Army System Engineer (ASE) supports CIO/DISC4/ADO in defining and maintaining the JTA-A and technically influences development and implementation of the JTA. ASE identifies new and emerging standards for integration of new technologies into existing Army Systems and ATD/ACTDs to support Army 2010. The ASE's work efforts associated with the development and implementation of the JTA-A under this project are critical path elements to achieve the Army's DIV XXI, CORPS XXI, and Army XXI digitization mission, provide the ability to fight and win on tomorrow's battlefield, and assure compatibility with both Joint and Coalition Warfighters. WTS provides essential technical field expertise, on-site architectural/system analysis and execution planning to integrate emerging technologies and support the next generation of digitization across all 21st Century Battlefield Operating Systems. Promotes joint experiments in conjunction with Joint C4ISR Battle Center (JBC) to foster interoperability between Army Systems and those of other services both joint and coalition. WTS conducts interservice coordination to identify candidate systems, provides expert analysis to define appropriate architecture, evaluates notional designs and conducts performance/cost benefit analysis to recommend viable tradeoffs. Selects target architecture and works with warfighter to engineer appropriate field experiments (Battlelab Warfighter Experiments (BLWE), Army Warfighter Experiments (AWE) and warfighter rotations) to allow selection of appropriate systems and sub-systems for follow-on development and acquisition. Performs technical coordination/integration activities to accelerate system enhancements providing solutions to current user problems in the field capturing soldier ingenuity through on-the-spot soldier input/feedback. Supports development of the operational architecture and implementation of new warfighter information technologies throughout the force structure to achieve Army Enterprise Architecture (AEA) objectives. Develops notional technology driven C4ISR architectures for Army After Next (AAN) in support of AEA.

FY 1999 Accomplishments:

- 1269 Conducted Major design evaluations for Joint Technical Architecture-Army (JTA-A) Interoperability. (Future Scout Calvary System, Tactical UAV,WIN-T, Army Battle Command System Version 5.0)
- 1280 Ensured JTA-A Interop Implementation and Assess JTA-A compatibility for Army and S&T Programs (1st. Lt. Division Force Sys. Architecture, 1st. Digitized Corps system Architecture)
- 800 Assessed JTA-A interop for Army Systems, (I3A, AMC-ISA)
- 600 Technically influenced the development/implementation of Joint Technical Architecture (JTA)
- 382 Maintained existing JTA-A Information Technical Standards
- 400 Investigated information technical standards for inclusion in JTA-A/JTA

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development PROJECT D589

FY 1999 Accomplishments: (continued)

•	169	Technically influenced commercial and international standards forums
	280	Developed preliminary JMTK Reference Architecture and upgraded Mapping API for the Weapon System Technical Architecture Working Group COE. Participated in the DII COE MCG&I. Updated WSTA framework, adding economic factors, and a JTA impact assessment was completed. Developed the Weapon System Technical Architecture Working Group Long Range PM plan.
•	2554	Developed Joint Contingency Force (JCF) experimentation plans. Proposed enroute mission planning and rehearsal (EMPRS) initiative and coordinated technical efforts for the same. Developed EMPRS System Architecture – Detail (SA-D) (net vis implementation). Developed major bill of materials (MBOM) for EMPRS. Integrated EMPRS into JCF architecture. Supported synchronization of wideband information data management.
•	700	Identified joint experiments and provided inter-service coordination and experimentation design support to Joint Battle Center (JBC). Supported JCF Army Warfighting Experiment (AWE) with joint coordination, early planning and implementation of JCF initiatives. Engineered Joint Intelligence Surveillance and Reconnaissance (JISR) and LINK 16 joint experiments. Conducted Army portion of All Service COMBAT ID Evaluation and Test
•	354	Planned and integrated C4ISR concepts for wargames for Army After Next (AAN) exercises. Aligned tech base programs with emerging Army user requirements for 2025 Hybrid Force. Integrated EMPRS as Light Force initiative for Strike Force C4IEWS technology driven architecture concepts.
•	243	Conducted information exchange meetings with other services, and provided field engineering support to user experiments and engineered product improvement/technical insertion into post Force XXI AWE systems
•	884	Developed and updated the Open Environment Application Program Interface and build prototype efforts to API for WSTAWG DII COE real time prototype effort
Total	9915	

FY 2000 Planned Program:

•	1260	Conduct Major design evaluations for Joint Technical Architecture-Army (JTA-A) Interoperability.
•	1292	Ensure JTA-A Interop Implementation and Assess JTA-A compatibility for Army and S&T Programs.
•	779	Assess JTA-A interop for Army Systems.
•	808	Technically influence the development/implementation of Joint Technical Architecture (JTA).
•	591	Maintain existing JTA-A Information Technical Standards.
•	608	Investigate information technical standards for inclusion in JTA-A/JTA.
•	469	Technically influence commercial and international standards forums.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development PROJECT D589

- 616 Engineer joint Strike Force C4IEWS research & development experiment with upgraded EMPRS. Extend JCF architecture into the joint architecture in conjunction with Atlantic Command and the Joint Battle Center. Participate in other Joint Architecture development.
- 730 Introduce early C4IEWS AAN concepts into existing programs. Conduct requirements oriented review of next generation tech base programs. Develop plans for the establishment of new ATDs, ACTDs that address emerging architectural deficiencies.

FY 2000 Planned Program: (continued)

- 392 Integrate digitization technology down to soldier. Provide field engineering support to user experiments. Discover architectural deficiencies through participation in final stages of experiment and continue to enhance solutions to refine the architecture.
- 164 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs

Total 7709

FY 2001 Planned Program:

- 1350 Conduct Major design evaluations for Joint Technical Architecture-Army (JTA-A) Interoperability.
- 1321 Ensure JTA-A Interop Implementation and Assess JTA-A compatibility for Army and S&T Programs.
- 800 Assess JTA-A interop for Army Systems.
- 815 Technically influence the development/implementation of Joint Technical Architecture (JTA).
- 623 Maintain existing JTA-A Information Technical Standards.
- 640 Investigate information technical standards for inclusion in JTA-A/JTA.
- 469 Technically influence commercial and international standards forums.
- 950 Support early Strike Force field experimentation. Extend digitization experiment to joint/coalition forces. Support the development of conceptual joint/coalition experiment of digitization across all force levels – Light, Strike and Heavy
- 850 Plan and integrate early AAN with total force digitized/network centric concept. Plan for next generation digitization systems. Incorporate after action; lesson learned transition into Strike Force.
- 593 Implement distributive/network centric concepts to Force XXI. Engineer product improvement/technical insertion to Strike Force Systems Headquarters and subordinate systems.

Total 8411

B. Other Program Funding Summary: None

C. Acquisition Strategy: The efforts funded in the project are non-system specific, therefore no acquisition strategy is provided.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

PROJECT: D589

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
TA – JTA-A 6.0	4Q	1Q					
TA – JTA 3.0	4Q						
TA – JTA-A 7.0		2Q					
TA – JTA 4.0		2Q					
TA – JTA-A 8.0, A.X			3Q	3Q	3Q		
TA – JTA 5.0			3Q				
SA – 1DFSA Updates	3Q	3Q	3Q	3Q	3Q	3Q	
SA – 1LDFSA	4Q						
SA – AMC-ISA	4Q	3Q	3Q	3Q	3Q	3Q	
SA – I3A	4Q						
SA – 1DCSA Updates		2Q	2Q	2Q	2Q	2Q	
SA – I3A Updates		3Q	3Q				
EMPRS SA-D	3Q						
ASCIET Joint Experiment	2Q						
JCF AWE R&D Architecture	2Q						
AAN Planning Conference 1	1Q						
JCF AWE Initiative Implementation		2Q					
JCF AWE Support		2Q					
AAN Concept Introduction		1Q					
Joint STRIKE Force Initiatives		1Q					
JCF AWE After Action Technology Insertions			3Q				
STRIKE Force AWE			3Q				
AAN Joint/Coalition concept integration			1Q	2Q	3Q	3Q	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

PROJECT: D589

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Government Systems Engineering Support		ASEO, Ft Monmouth, NJ	3095	1678		1775		1766		Con't	8314	
Engineering Support		ISEC, Ft Huachuca, AZ	592	592		400		400		Con't	1984	
Engineering Support		AMCOM, Huntsville Al.	0	280							280	
Engineering Support		USA TACOM, Warren MI.	0	84							84	
Contract Systems Engineering Support	C & FPI	CSC, Eatontown, NJ	2083	1308	1 Oct 98	1462	1 Oct 99	1518	1 Oct 00	0	6371	
	SS & FP	MITRE, Tinton Falls, NJ	1215	1167	1 Oct 98	1370	1 Oct 99	1370	1 Oct 00	0	5122	
	C & FP	Battelle, Alexandria, VA	100	100	30 Nov 98	200	30 Nov 99	200	30 Nov 00	0	600	
	C & FP	SRC, Atlanta GA.	170	100	30 Nov 98	100	30 Nov 99	100	30 Nov 00	0	470	
	C & FP	GTE Internetworking, Cambridge, MA	0			300	1 Nov 99	300	1 Nov 00	0	600	
	TBD	UDLP, Minn. MN.	0	400						0	400	
	TBD	Rayethon, Dallas Tx.	0	300						0	300	
	TBD	DCS, Alexandria Va.	0	100						0	100	
Systems Engineering and Integration		WTS – ISIO CECOM, Ft Monmouth, NJ	951	1361		866		1149		Con't	4327	
	C & T&M-WR	C3ISGI, Tinton Falls, NJ(Sole Source in 98)	706	1105	9 Sep 98	700	9 Sep 98 (3 yrs)	980	9 Sep 98 (3 yrs)	0	3491	
	C & T&M	LSI, Lakehurst, NJ	0	405	05/28/99					0	405	
	C & T&M	SAIC, Falls Church VA	0	374	07/21/99					0	374	
Travel		ASEO/ISIO CECOM, Ft Monmouth, NJ	489	333		330		330		Con't	1482	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

PROJECT: D589

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Overhead		ASEO/ISIO CECOM, Ft Monmouth, NJ	340	228		206		298			1072	
Subtotal Product Development:			9741	9915		7709		8411			35776	

II. Support Costs: Not applicable

III. Test and Evaluation: Not applicable

IV. Management Services: Not applicable

Project Total Cost:			9741	9915		7709		8411			35776	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development PROJECT D591

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D591 Weapons System Technical Architecture	0	1055	2455	2395	2363	1320	1319	Continuing	Continuing

A. **Mission Description and Justification:** **Weapons System Technical Architecture:** The Joint Technical Architecture-Army (JTA-A) provides the 'building code" foundation for designing, building, fielding, and supporting interoperable systems in an expedient and cost-effective manner. The Weapons System Technical Architecture (WSTA) identifies new and emerging standards for integration of new technologies into existing Army Weapon Systems in support of Army digitization efforts. WSTA will define weapon system domain exceptions and extensions to the JTA and JTA-Army. It will promote an open systems approach in Army weapon systems. It will work to expand the Defense Information Infrastructure Common Operation Environment concept to properly accommodate Army weapon systems.

FY 1999 Accomplishments: Project not funded in FY 1999

FY 2000 Planned Program:

•	100	Provide Weapons Domain Analysis by developing the reference architecture for weapons mapping software.
•	340	Conduct an interoperability demonstration with PEO IEW. Develop interoperability threads for Weapon Interoperability Certification Tests.
•	586	Compile Version 3.0 OE API to include distributed comms for interoperability and Version 2.0 Map Server API with complete weapon requirements.
•	29	Small Business Innovation Research/Small Business Technology Transfer(SBIR/STTR) Programs
Total	1055	

FY 2001 Planned Program:

•	350	Update the WSTAWG Framework Version 4.0, develop reference architecture, and perform cost analyses.
•	610	Mature the Mapping API and OE API.
•	450	Conduct an interoperability demonstration with STRICOM. Continue maturation of interoperability threads, and update the EBC Draft API.
•	310	Develop Security Architecture and continue to work with NSA on security certification of an RTOS.
•	735	Develop the Weapon COE Prototype and conduct Life Cycle Software Engineering.
Total	2455	

B. **Other Program Funding Summary**: Not Applicable

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development PROJECT D591

C. **Acquisition Strategy:** The efforts funded in this project are non-system specific, interoperability experimentation, evaluation and certification across multiple systems. The contractual efforts/services are obtained from existing competitive omnibus support services contracts.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Develop/refine reference Architecture for Weapons mapping software		1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Conduct interoperability demonstration		2-3Q	2-3Q				
Complete Version 3.0 OE		4Q					
Update WSTAWG Framework Version 4.0			1-4Q				
Develop Weapon Common Operating Environment Prototype			2-4Q				
Insert/update new computer science technology advances into weapon system software			3-4Q	1Q		3-4Q	
Institutionalize processes for life cycle software maintenance					1-4Q		1-4Q

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

PROJECT: D591

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Product Development	MIPR	US Army AMCOM, Huntsville, AL				1055	TBD	2455	TBD	Cont	3510	
Subtotal Product Development:						1055		2455			3510	

II. Support Costs: Not applicable

III. Test and Evaluation: Not applicable

IV. Management Services: Not applicable

Project Total Cost:						1055		2455			3510	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development PROJECT D615

COST (In Thousands)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D615 JTRS Ground Domain Integration	0	4867	28542	79171	42117	62831	48377	80000	345905

A. **Mission Description and Justification:** The Near-Term Digital Radio System (NTDRS) program is a Research and Development Program that maximizes the use of Non-Development Item (NDI) and Commercial Off-The-Shelf (COTS) hardware and software. The program provides an interim solution to the long term Army need for greatly enhanced data capacities at Tactical Operations Centers. NTDRS will provide the Army's Tactical Internet Tactical Operation Center (TOC) to Tactical Operation Center (TOC) data distribution from Battalion to Brigade and for all mobile TOC platforms from Division and below in the First Digitized Division and may serve as the proof of concept leading to the integration of the NTDRS waveform/network into the Joint Tactical Radio System (JTRS) Program. FY 2000 funding is the final year of the RDTE dollars in support of the NTDRS. Funding for the NTDRS in FY 1999 and prior resides in PE0603713A, D370. The JTRS Software Architecture Development effort is the responsibility of the JTRS Joint Program Office and is funded under PE0604280A. Beginning in FY 2001, Project D615 supports the Army unique initiatives for the JTRS program. The JTRS is a Research and Development program that will lead to the Services acquiring a family of affordable, scaleable, high-capacity, interoperable Line of Sight (LOS) and Beyond Line of Sight (BLOS) tactical radios. JTRS activity in this program element supports the Army hardware development and testing. The Army must develop hardware that is built to JTRS architecture standards, supports an open standards architecture and a set of software-based, and legacy tactical waveforms. Together, the architecture, the hardware, and the software will yield software programmable and hardware configurable digital radio systems that provide increased interoperability, flexibility and adaptability. The open standards based architecture will also provide the path for future hardware and software growth of delivered systems at minimal cost by allowing the Services to take advantage of advances in technology being realized in the commercial wireless communications marketplace. The JTRS will provide operational forces with an upgraded communications capability for more effective battlespace management and interoperability among Command, Control, Communications, Computers and Intelligence (C4I) Systems supporting the warfighters' goal of realizing a fully digitized battlespace.

FY 1999 Accomplishments: The NTDRS program was funded under PE 0603713A, project D370 prior to FY2000.

FY 2000 Planned Program:

•	1022	NTDRS Program Management
•	606	Completion of NTDRS Testing
•	2515	Completion of NTDRS Engineering Development and deployment to FDD
•	593	NTDRS System Integration/Program Technical Support
•	131	Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR)
Total	4867	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development PROJECT D615

FY 2001 Planned Program:

- 1613 JTRS PMO Support
- 500 Army Integration – Hardware
- 1875 Army Integration – JTRS Software/Labs
- 2254 JTRS System – Power Amp, COSITE, Antenna, etc.
- 22300 JTRS Hardware Development and Cost of Prototypes

Total 28542

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA, Army, ADDS, BU1400/EPLRS*	46855	53003	32675	31920	33857	39657	19143	17657	795183
OPA, Army, ADDS, BU1400/JTRS*							20472	1583443	1603915
RDTE, JTRS, 0603280A/D155	13404								13404
RDTE, JTRS, 0604280A/D162		36520	62218	80065	65691	50917	40121	0	335532

Note: *The BU1400 BLIN is established to procure EPLRS through the FY04 timeframe, which will meet the current AAO. This same BLIN will be used as the core procurement funding line for JTRS, as "productionized" systems become available. Transition to the procurement of JTRS in lieu of EPLRS may occur sooner than FY 05; if segments of the JTRS evolve to a point where production can be initiated earlier (FY03 or FY04).

C. **Acquisition Strategy:** The NTDRS program maximizes the use of Non-Developmental Item (NDI) and Commercial Off-the-Shelf (COTS) hardware and software. An RDTE contract was awarded competitively in January 1996. The NTDRS was successfully tested in the Division XXI AWE in November 1997, Electronic Proving Ground (EPG) Field Test I in February 1998, and the FBCB2 LUT in August 1998. During FY1999, NTDRS was successfully tested at EPG in Feb/Mar 1999 and successfully participated in other experimental exercises, such as the Navy/USMC Urban Warrior and Navy Fleet Battle Experiment Echo. NTDRS successfully provided TOC-to-TOC data communications capability at the NTC-99-05 rotation in March 1999. This is the first digital data network to enable the ATCCS hosts to intercommunicate between Brigade and Battalion and fight the battle-on-the-move, covering a geographical area of over 1800 square kilometers using only 19 radios for the NTC-99-05. In FY2000 NTDRS will complete design and testing efforts and the NTDRS will participate in the FBCB2 EPG Field Test, FDTE/Limited User Test II (LUTII) and Joint Contingency Force (JCF) exercises to provide the Army's Tactical Internet TOC-TOC data communications. Planned distribution of the NTDRS into the FDD for continued experimentation purposes is scheduled for 4Q FY 2000. Beginning in FY2001 project D615 will support JTRS Army Unique hardware development. The JTRS will support an evolutionary acquisition strategy. The JTRS Joint Program Office (JPO) is responsible for common core activities including developing, maintaining, and evolving the JTRS open standards architecture, providing re-coded versions of legacy waveforms to operate on JTRS architecture compliant hardware, and providing a certifying infrastructure for hardware/software compliance. Following the architecture's validation and a market survey of industry's capabilities, a program review will occur. Following that review, the Services, which retained acquisition and weapon system integration responsibility, will begin

acquiring scaleable JTRS systems commensurate with

Service migration plans. The Army portion of the system integration effort will be performed within this Project. Through industry teaming, the JTRS program and architecture will capitalize on previous government sponsored software definable radio activity such as NTDRS, EPLRS, SPEAKeasy, JCIT, TCDL, GLOMO, ULTRACOM, and WRN as well as similar efforts occurring in the commercial wireless information transfer sector. The development of this open standards architecture will foster and facilitate increased competition at all levels for initial acquisitions as well as for future hardware and software upgrades. Further procurement actions will be made by the services to acquire this "proven certified" technology in production configurations to replace the legacy radios in the DoD inventory today.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
ABCS SE-00-01 (NTDRS Participation)		1Q					
FDTE & LUTII		3Q					
EPG NTDRS FTIII		3/4Q					
JCF Army Warfighting Experiment		4Q					
ABCS SE-00-02 (Participation)		4Q					
Complete NTDRS FDD Deployment		4Q					
JTRS Architecture Provided by JPO		4Q					
JPO MDAP Review			1Q				
Army Milestone II Review			1Q				
JTRS Block II Army Ground & Airborne Domain EMD/LRIP Award			2-3Q				
JTRS Block I EPG Field Test				1-2Q			
JTRS Army Block III Dismountable & Handheld Domain EMD/LRIP Award					2-3Q		
IOT&E for JTRS Block II Army Ground & Airborne Domain					3-4Q		
Army Milestone III Review for JTRS Block II Ground & Airborne Domain						1Q	
IOT&E for JTRS Army Block III Dismountable & Handheld Domain							2-3Q
Full Rate Production Award JTRS Block II Airborne Domain							2-3Q
Army Milestone III Review for JTRS Block III Dismountable & Handheld Domain							4Q

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

PROJECT: D615

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. NTDRS CPIF/T&M Efforts (Projected)	C/T&M/CPIF	ITT Ft. Wayne				2515	2Q				2515	
b. JTRS Army Integration – Software/LABS	MIPR	TBD						1875	2/3Q		1875	
c. JTRS Army Integration – Hardware	MIPR	TBD						500	2/3Q		500	
d. JTRS System – Power Amp, COSITE, Antenna, etc.	TBD	TBD						2254	2/3Q		2254	
e. JTRS Hardware Development and Cost of Prototypes	TBD	TBD						22300	2/3Q		22300	
Subtotal Product Development:						2515		26929			29444	

Remark: *NTDRS - prior to FY 2000 were charged against 0603713A, D370.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. NTDR System Integration	MIPR	TBD				134	TBD				134	
b. Test Support	MIPR	RDEC				132	2Q				132	
c. Training Support	PWD	EPS				61	2Q				61	
d. Frequency Allocation	MIPR	Joint Spectrum Mgmt				11	2Q				11	
e. Test/Installation Spt	PWD	Ventronnix				69	2Q				69	
f. Technical Spt	PWD	C3I				186	2Q				186	
Subtotal Support Costs:						593					593	

Remark: *NTDRS - prior to FY 2000 were charged against 060713A, D370.

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

PROJECT: D615

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. NTDRS Field Testing	MIPR	EPG, Ft. Huachuca				606	TBD				606	
Subtotal Test and Evaluation:						606					606	

Remark: *NTDRS - prior to FY 2000 were charged against 0603713A, D370.

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
c. NTDRS Program Support	MIPR	Ft. Monmouth, NJ				1022	TBD				1022	
d. JTRS PMO Support	MIPR	TBD						1613	1/2Q		1613	
e. SBIR/STTR Taxes						131					131	
Subtotal Management Services:						1153		1613			2766	

Remark: *NTDRS - prior to FY 2000 were charged against 0603713A, D370.

Project Total Cost:						4867		28542			33409	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development PROJECT D629

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D629 Tactical Communications System-Engineering Development	0	1815	1828	1838	1842	0	0	0	7323

A. Mission Description and Justification: This program's focus is on the evaluation of emerging communication protocols and enhancements in a controlled lab/testing environment for future Army networks beyond the First Digitized Division (FDD). This approach also provides a method to address and discover interoperability issues early in the development cycle. By providing continuous feedback to the Army System Engineering Office, it is anticipated that technologies can be selected for future versions of the Joint Technical Architecture – Army (JTA-A) faster and with more confidence. Technologies and products come from a variety of sources to include Commercial Industry, Standards Bodies, DARPA, and the Army Communications Science & Technology programs. Execution of this mission is a critical step in the evolution and maturation of communications networks beyond FDD, while at the same time enhancing the Army's tactical communications and demonstrating interoperability within the Army and Joint Community. Output from this task will directly feed future versions of the JTA-A and the Weapons System Technical Architecture Working Group (WSTAWG).

Note this program was previously funded under PE/Project 0603805A/D246.

FY 1999 Accomplishments: Project was funded under PE/Project 0603805A/D246.

FY 2000 Planned Program:

•	1688	Evaluate/integrate emerging new protocols/technologies (i.e., IPV6, reliable multicast, etc.) to enhance the Army's tactical communications. Provide recommendations to the Army System Engineering Office (ASEO) for incorporation into the JTA-A and Weapons System Technical Architecture working group.
•	100	Evaluate emerging standards for interfaces with different echelons and platforms related to Airborne networking/communications technologies.
•	27	Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR)
Total	1815	

FY 2001 Planned Program:

•	1728	Evaluate interoperability and evaluate advanced technologies (i.e., mobile technologies, quality of service, (QOS), etc.) for the Army tactical communications. Provide recommendations/assessments to the Army System Engineering Office (ASEO) for incorporation into the JTA-A and Weapons System Technical Architecture working group.
•	100	Evaluate architectural capabilities, feasibility, and interoperability transmission capabilities of emerging protocols for higher data rate communications on an airborne platform. Provide recommendations to ASEO for inclusion into the JTA-A.
Total	1828	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development
	PROJECT D629

B. Other Program Funding Summary: Not Applicable

C. Acquisition Strategy: The objective of this program is to validate new TI Capabilities required for Force XXI. In FY97, laboratory integration testing was conducted to reduce risk for Task Force XXI AWE. Similar laboratory was performed in FY98 for Division XXI and for the FBCB2 Limited User Test (LUT). In FY99 new services and components will be added and tested to validate critical technologies for Force XXI beyond FDD.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
System Integration		4Q	3Q	3Q			
Address Architecture Issues		2-4Q	2-4Q	2-4Q			
Laboratory Testing		1-4Q	1-4Q	1-4Q	1-4Q		
Systems Integration (Airborne Communications)		4Q	2-4Q				
Video Demonstration		4Q	4Q				

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

PROJECT: D629

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
b. Systems Engineering	PO	CECOM RDEC, Ft. Monmouth, NJ				1355	01/01/00	1368	01/01/01	Cont'd	2723	
c. Contract Services												
1)	Rqmts	MITRE				410	12/30/99	410	12/30/00	Cont'd	820	
2)	C-T&M PSLA	LSI				50	03/01/00	50	03/01/01	Cont'd	100	
Subtotal Product Development:						1815		1828			3643	

Remark: ***NOTES:***

Performing Activity & Location
MITRE – MITRE, Eatontown, NJ
LSI – Lear Sigler Inc, Lakehurst, NJ

Contract Method and Type
C-T&M – Competitive, Time and Materials
-Rqmts-Requirements

II. Support Costs: Not applicable

III. Test and Evaluation: Not applicable

V. Management Services: Not applicable

Project Total Cost:						1815		1828			3643	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604807A Medical Materiel - Engineering Development

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	5160	9636	6318	8971	13797	11961	12319	Continuing	Continuing
D812 Military Human Immunodeficiency Virus (HIV) Vaccine and Drug-Engineering Development	290	2354	152	1647	5558	3284	3639	Continuing	Continuing
D832 Combat Medical Materiel-Engineering Development	2292	3369	2234	3153	3305	3503	3505	Continuing	Continuing
D834 Soldier System Protection-Engineering Development	895	680	686	883	1547	1830	1828	Continuing	Continuing
D849 Infectious Disease Drug and Vaccine-Engineering Development	1683	3233	3246	3288	3387	3344	3347	Continuing	Continuing

A. Mission Description and Justification: This Engineering and Manufacturing Development Program funds: (1) improved medical equipment and drugs essential to counteracting lethal and human performance degrading effects of infectious diseases and (2) medical equipment essential to meeting medical requirements on the integrated battlefield, with emphasis on decreased size and weight, yet supporting large numbers of combat casualties. Additionally, foreign medical materiel may be procured for exploitation of advanced technology and development to meet Army medical defense goals. This program element supports the full-scale development of vaccines, prophylactic and therapeutic drugs, resuscitation fluids, and drug products for acquired immune deficiency syndrome (AIDS). This program funds engineering and manufacturing development for both large and small combat casualty care end items for location of casualty, diagnosis, rapid intensive care delivery, intensive care evacuation platforms, and rapidly mobile, lightweight surgical facilities and equipment. Additionally, the program element funds engineering and manufacturing development of medical equipment that provides protection against physiological, psychological or environmental factors that degrade physical performance. This program is primarily managed by the U.S. Army Medical Research and Materiel Command.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604807A Medical Materiel - Engineering Development

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	5299	9705	9448
Appropriated Value	5338	9705	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-39		
b. SBIR / STTR	-121		
c. Omnibus or Other Above Threshold Adjustments		-38	
d. Below Threshold Reprogramming	+4		
e. Rescissions	-22	-31	
Adjustments to Budget Years Since FY 2000/2001 PB			-3130
Current Budget Submit (FY 2001 PB)	5160	9636	6318

Change Summary Explanation: Funding – FY 2001: Funds realigned from 0604807A, project 812, Military HIV Vaccines and Drug Development to 0603807A, project 811, Military HIV Vaccines and Drug Development.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604807A Medical Materiel - Engineering Development PROJECT D812

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D812 Military Human Immunodeficiency Virus (HIV) Vaccine and Drug-Engineering Development	290	2354	152	1647	5558	3284	3639	Continuing	Continuing

A. Mission Description and Justification: This project funds Congressionally mandated, militarily relevant human immunodeficiency virus (HIV) medical countermeasures. This provides for engineering and manufacturing development of sufficient candidate vaccines and drugs to permit large-scale field testing and education/training materials. Efforts are directed to answer militarily unique needs affecting manning, mobilization, and deployment. The major contractor is Henry M. Jackson Foundation for the Advancement of Military Medicine, Rockville, MD.

FY 1999 Accomplishments:

•	290	Provided regulatory affairs support for New Drug Application submission of GP120 recombinant protein HIV vaccine, required for FDA licensure.
Total	290	

FY 2000 Planned Program:

•	2290	Conduct epidemiological studies to identify locations and cohorts necessary for a large Phase 3 trial for GP120 and GP160.
•	64	Small Business Innovative Research/Small Business Technology Transfer Research Programs.
Total	2354	

FY 2001 Planned Program:

•	152	Continue epidemiological studies to identify locations and cohorts necessary for a Phase 3 trial for GP120 and GP160.
Total	152	

B. Other Program Funding Summary: Not applicable.

C. Acquisition Strategy: Test and evaluate commercially developed vaccine candidates in government-managed trials.

D. Schedule Profile: Not applicable.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604807A Medical Materiel - Engineering Development PROJECT D832

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D832 Combat Medical Materiel-Engineering Development	2292	3369	2234	3153	3305	3503	3505	Continuing	Continuing

A. **Mission Description and Justification:** The project supports engineering and manufacturing development to field new and improved medical materiel essential for combat casualty care to reduce the logistical support requirements and minimize loss. The major contract is United Defense Limited Partnership, San Jose, CA.

FY 1999 Accomplishments:

- 90 Completed initial prototype and development of Special Operations Resuscitation and Surgical Suite.
- 248 Conducted transportability evaluation of Critical Care System for Trauma and Transport (CSTAT).
- 1885 Conducted a Milestone (MS) I/II for Armored Medical Evacuation Vehicle (AMEV). Incorporated test recommendation from National Training Center rotation in redesign of AMEV for engineering and manufacturing development (EMD) vehicle.
- 33 Completed final evaluation of Patient Movement Item (litter/gurney for Special Forces).
- 36 Initiated sample analysis of clinical data related to Hypertonic Saline Dextran.

Total 2292

FY 2000 Planned Program:

- 498 Conduct technology cost-benefit trade-off analysis and initiate formal acquisition program for CSTAT device.
- 1696 Receive delivery of AMEV EMD vehicle and conduct limited user test.
- 1015 Conduct an MS I In-Process Review (IPR) for Hemostatic Dressing, select best products to move into Food and Drug Administration (FDA) approval process and initiate Phase 1 safety trials.
- 71 Complete in vitro and in vivo studies for FDA submittal of the Thawed Blood Processing System (TBPS). Conduct MS I/II
- 89 Small Business Innovative Research/Small Business Technology Transfer Research Programs.

Total 3369

FY 2001 Planned Program:

- 843 Complete safety trials of Hemostatic Dressing, hold a MS II In-Process Review (IPR), and initiate efficacy trials in human elective surgery clinical trials.
- 121 Conduct clinical trials on Next Generation Jet Injector.
- 51 Prepare initial operational test and evaluation for Warrior Medic program and conduct a MS II/III IPR.
- 1021 Conduct product qualification test, logistics demonstration and low rate initial production IPR for AMEV.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604807A Medical Materiel - Engineering Development PROJECT D832

FY 2001 Planned Program: (continued)

- 123 Submit and attain FDA approval of the TBPS.
- 75 Conduct an MS III for the CSTAT.

Total 2234

B. Other Program Funding Summary: Not applicable.

C. Acquisition Strategy: Evaluate commercially developed materiel in government-managed trials.

D. Schedule Profile	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
AMEV				MS I/II 3QTR					MS III 3QTR	
CSTAT						MS III 4QTR				
Warrior Medic						MS II/III 4QTR				
Hemostatic Dressing					MS I 4QTR	MS II 4QTR			MS III 4QTR	
Next Generation Jet Injector							MS II/III 3QTR			
TBPS					MS I/II 3QTR		MS III 1QTR			
Medium Armored Vehicle - Medical									MS II 1QTR	
10-week Blood								MS III 2QTR		
Hemostatic Foam									MS II 4QTR	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604807A Medical Materiel - Engineering Development

PROJECT: D832

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. AMEV	MIPR	PM Bradley, Warren MI	1938	1929	Nov 98	3369	Nov 99	1766	Nov 00	Continue	9002	
Subtotal Product Development:			1938	1929		3369		1766			9002	

II. Support Costs: No product/contract costs greater than $1M individually

III. Test and Evaluation: No product/contract costs greater than $1M individually

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. No product/contract costs greater than $1M individually			260	363				468		Continue	1091	
Subtotal Management Services:			260	363				468			1091	
Project Total Cost:			2198	2292		3369		2234			10093	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604807A Medical Materiel - Engineering Development PROJECT D834

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D834 Soldier System Protection-Engineering Development	895	680	686	883	1547	1830	1828	Continuing	Continuing

A. Mission Description and Justification: This project supports engineering development of preventive medicine materiel, including devices, pharmacologicals, and other tools to provide protection, sustainment, and enhancement of the physiological and psychological capabilities of soldiers in the face of combat operations under all environmental conditions. Focus is on reduction in the incidence of personnel losses due to preventable disease and nonbattle injuries through development of environmental and physiological performance monitors and other preventive medicine countermeasures. A major contractor is Stanford Research Institute, Palo Alto, CA.

FY 1999 Accomplishments:

•	629	Provided system engineering support for system integration with the Force XXI Battle Command - Brigade and Below (FBCB2) and Ground Combat Support System. Conduct MS III.
•	266	Provided hardware infrastructure support for Theater Medical Information Program (TMIP) block 1 initial operational test and evaluation (IOT&E). Conduct MS III.
Total	895	

FY 2000 Planned Program:

•	201	Provide engineering contract support for TMIP-A block 2 IOT&E. Conduct MS III
•	461	Provide manufacture support of *Leishmania* skin test antigen (LSTA) kits for Phase 2 clinical trials.
•	18	Small Business Innovative Research/Small Business Technology Transfer Research Programs.
Total	680	

FY 2001 Planned Program:

•	200	Provide engineering contract support for TMIP-A block 3 IOT&E. Conduct MS III.
•	486	Provide manufacture support of *Leishmania* skin test antigen (LSTA) kits for Phase 2 clinical trials.
Total	686	

B. Other Program Funding Summary: Not applicable.

C. Acquisition Strategy: Test and evaluate in-house and commercially developed vaccine candidates in government-managed trials to meet FDA requirements.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604807A Medical Materiel - Engineering Development

PROJECT: D834

D. Schedule Profile	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
TMIP block 1				MS III 3QTR						
TMIP block 1 infrastructure support				MS III 3QTR						
TMIP block 2					MS III 3QTR					
TMIP block 2 infrastructure support					MS III 3QTR					
TMIP block 3						MS III 3QTR				
TMIP block 3 infrastructure support						MS III 3QTR				
LSTA									MS III 4QTR	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604807A Medical Materiel - Engineering Development
	PROJECT: D849

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D849 Infectious Disease Drug and Vaccine-Engineering Development	1683	3233	3246	3288	3387	3344	3347	Continuing	Continuing

A. **Mission Description and Justification:** This project funds engineering and manufacturing development of sufficient candidate medical countermeasures to permit large-scale field testing and complete studies required for Food and Drug Administration (FDA) licensure. Work performed in laboratories and among troop populations is directed to prevention, diagnosis, and treatment of viral, bacterial, and parasitic diseases to prevent casualties, sustain operational performance, and minimize deaths and disability of armed forces during military operations.

FY 1999 Accomplishments:

- 672 Initiated Phase 3 study in Egyptian infants and children of enterotoxigenic *Escherichia coli* (ETEC) vaccine.
- 319 Initiated Phase 3 pivotal trial in Israel of ETEC vaccine.
- 640 Completed Phase 2 clinical rechallenge study for adjuvant Campylobacter vaccine.
- 52 Obtained agreement of two separate European manufacturers to investigate FDA licensing for tickborne encephalitis (TBE) vaccine.

Total 1683

FY 2000 Planned Program:

- 103 Conduct Phase 2 efficacy study for improved dose regiment of adjuvanted Campylobacter vaccine.
- 188 Conduct Phase 1 safety trials of new adjuvant lot of Campylobacter vaccine.
- 191 Initiate Phase 2 efficacy study for new adjuvant lot of Campylobacter vaccine.
- 1180 Initiate three Phase 3 long-term prophylaxis clinical drug trials on Tafenoquine, an antimalarial drug.
- 83 Complete and analyze Indonesia trial on Primaquine, an antimalarial drug.
- 50 Conduct a Milestone (MS) 0/II In-Process Review (IPR) on Primaquine.
- 90 Prepare an Investigational New Drug application (IND) on Primaquine.
- 50 Conduct a MS I/II IPR on Malarone; complete Phase 3 clinical trial in Indonesia.
- 457 Continue Phase 3 study in Egyptian infants and children with ETEC vaccine.
- 203 Continue 2-year rat carcinogenicity study of Tafenoquine (initiated in FY 1999, see Project D808).
- 181 Prepare IND application for TBE vaccine.
- 386 Continue Phase 3 trial in Israel of ETEC vaccine.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604807A Medical Materiel - Engineering Development PROJECT D849

FY 2000 Planned Program: (continued)

•	71	Small Business Innovative Research/Small Business Technology Transfer Research Programs.
Total	3233	

FY 2001 Planned Program:

•	133	Complete Phase 3 study in Egyptian infants and children.
•	499	Complete Phase 3 pivotal trial in Israel of ETEC vaccine.
•	174	Complete expanded Phase 2 efficacy study for new adjuvant lot of Campylobacter vaccine.
•	204	Plan and initiate Phase 3 pivotal trial for new adjuvant lot of Campylobacter vaccine.
•	1056	Continue six clinical drug trials on Tafenoquine, an antimalarial drug.
•	51	Submit New Drug Application to the FDA on Primaquine.
•	50	Conduct a MS III IPR on Primaquine.
•	179	Prepare Biologics License Application on TBE vaccine and submit to the FDA.
•	50	Conduct a MS III IPR on TBE vaccine.
•	200	Prepare Pre-Market Application for Malaria Rapid Diagnostic Device.
•	50	Conduct a MS II IPR for Malaria Rapid Diagnostic Device.
•	600	Complete 2-year rat carcinogenicity study of Tafenoquine.
Total	3246	

B. Other Program Funding Summary: Not applicable.

C. Acquisition Strategy: Test and evaluate in-house and commercially developed vaccine candidates in government-managed trials to meet FDA requirements.

D. Schedule Profile	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Leishmania skin test									MS III 4QTR	
Camouflage face paint								MS III 4QTR		
Tafenoquine antimalarial								MS III 2QTR		

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604807A Medical Materiel - Engineering Development

PROJECT: D849

D. Schedule Profile	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Dengue rapid diagnostic device								MS II/III 4QTR		
ETEC vaccine								MS III 2QTR		
Malaria Rapid Diagnostic Device								MS III 2QTR		
Primaquine antimalarial					MS II 2QTR	MS III 4Q0TR				
Malarone antimalarial					MS II 2QTR		MS III 4QTR			
TBE vaccine						MS III 4QTR				
Scrub typhus diagnostic device							MS II 4QTR	MS III 2QTR		

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604807A Medical Materiel - Engineering Development

PROJECT: D849

I. Product Development	Contract Method & Type	Performing Activity & Location	Total Pys Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. No product/contract costs greater than $1M individually			43								43	
Subtotal Product Development			43								43	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. No product/contract costs greater than $1M individually			29	58		98		98		Continue	283	
Subtotal Support Costs:			29	58		98		98			283	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. No product/contract costs greater than $1M individually			677	1036		2010		2048		Continue	5771	
Subtotal Test and Evaluation:			677	1036		2010		2048			5771	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. No product/contract costs greater than $1M individually			380	589		1138		1142		Continue	3249	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604807A Medical Materiel - Engineering Development

PROJECT: D849

Subtotal Management Services:			380	589		1138		1142			3249	

			Total PYs Cost	FY 1999 Cost		FY 2000 Cost		FY 2001 Cost			Total Cost	
Project Total Cost:			1129	1683		3246		3288			9346	

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604808A Landmine Warfare/Barrier - Engineering Development

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	37467	29893	69584	60600	87009	110369	119170	Continuing	Continuing
D016 Mine Systems Engineering Development	26213	18225	0	2686	30831	49011	46694	Continuing	Continuing
D415 Mine Neutralization/Detection	11254	11668	33246	25292	29838	17561	22395	Continuing	Continuing
D434 Anti-Personnel Landmine Alternatives	0	0	12538	6355	0	0	0	0	18893
D443 APL-A Mixed Systems	0	0	23800	26267	26340	43797	50081	0	170285

A. Mission Description and Budget Item Justification: This program element provides for engineering and manufacturing development of mine and countermine systems. Project D016, Mine Systems Engineering Development, provides for the increased tactical effectiveness and responsiveness of landmines by supporting the development of a minefield command and control (C2) system for the Wide Area Mine (WAM), the Intelligent Combat Outpost (Raptor), the Area Denial Artillery Munition (ADAM)/Remote Anti-Armor Mine (RAAM) Upgrade (which has been renamed the Remote Area Denial Artillery Munition – RADAM), Non-Self-Destructing Anti-Personnel Landmine Alternatives (NSD-A), and an upgrade for the Volcano Dispenser Control Unit. Project D415, Mine Neutralization/Detection Engineering Development, is the engineering and manufacturing development for the Airborne Standoff Minefield Detection System (ASTAMIDS), Ground Standoff Mine Detection System (GSTAMIDS), Handheld Stand-off Mine Detection System (HSTAMIDS), and Countermine Contingency Stock (CMCS). It provides a group of mutually supported mine detection and neutralization devices to counter a variety of threat mines, minefields and obstacles necessary for implementing the Army's Countermine Modernization Plan. Project D434 continues effort on Non-Self-Destructing Anti-Personnel Landmine Alternatives (NSD-A). Project D443 provides for alternatives to anti-personnel (AP) submunitions used in mixed anti-tank (AT) and AP systems.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY **5 - Engineering and Manufacturing Development**	PE NUMBER AND TITLE **0604808A Landmine Warfare/Barrier - Engineering Development**

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	52680	40916	39187
Appropriated Value	52905	30120	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-225		
b. SBIR / STTR	-684		
c. Omnibus or Other Above Threshold Reductions		-123	
d. Below Threshold Reprogramming	-10427		
e. Recessions	-4102	-104	
Adjustments to Budget Years Since FY 2000/2001 PB			+30397
Current Budget Submit (FY 2001 PB)	37467	29893	69584

Change Summary Explanation: Funding - FY 1999: Explosive Standoff Minefield Clearer program was terminated. $10.5M was reprogrammed to other higher priority Army programs. Congress increased the program by $6.0M. However, $4.0M was rescinded to support the Non-self Destruct Antipersonnel mixed system replacement studies.

FY 2001: Additional program support was provided in support of the H-STAMIDS EMD effort (+30397).

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604808A Landmine Warfare/Barrier - Engineering Development

PROJECT: D016

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D016 Mine Systems Engineering Development	26213	18225	0	2686	30831	49011	46694	Continuing	Continuing

A. Mission Description and Justification: Provides for engineering and manufacturing development of new smart munitions and intelligent/autonomous coordination of their use for increased effectiveness. Also addresses Presidential directive to eliminate reliance on the use of Anti-Personnel Landmines.

FY 1999 Accomplishments:

- 8805 Provided test hardware (1540 articles) for prototype assessment test (PAT) for NSD-A program
- 3051 Provided NSD-A PAT instrumentation, execution, analysis, down select for MSI/II.
- 3557 Provided remote Area Denial Artillery Munition (RADAM) hybrid design/development
- 1100 Completed Load, Assemble and Pack (LAP) Plant facilitation for RADAM
- 500 Completed Fabrication of RADAM process prove-out hardware (200 test items)
- 5700 Conducted process prove-out and technical tests for RADAM
- 1500 Fabricated RADAM Technical Test Hardware (1000 test items)
- 2000 Provided studies of NSD-A designs/ Mixed System replacement

Total 26213

FY 2000 Planned Program:

- 12509 Award NSD-A EMD contract to initiate NSD-A tactical design efforts
- 3070 Provide engineering support for NSD-A design productibility/manufacturing development
- 2155 Provide general engineering support for NSD-A design efforts
- 491 Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)

Total 18225

FY 2001 Planned Program: Project not funded in FY 2001.

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE, BA4, PE 0603619A, Proj D005	1100	4068	12761	11376	0	0	0	Cont	Cont
Remote Area Denial Artillery Munition E67505		7967	47674	47621	47543			150805	
Non-Self Destruct Anti-Pers Landmine E91700				60811	121809	121562	121448	425630	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604808A Landmine Warfare/Barrier - Engineering Development PROJECT D016

C. **Acquisition Strategy:** For Raptor, decision to go sole source or competitive will be based on evaluation of sole source PDRR contractor results. For NSD-A, 12 solicitation respondents were requested to submit proposals for their alternative concept. Cost Plus Incentive Fee (CPIF) contracts for two of the best concepts were awarded for the Early User Experiment (EUE) phase. At the conclusion of the EUE one contractor or a team will be selected to continue into the EMD and Production phases. For ADAM/RAAM Armament Research, Development and Engineering Center (ARDEC) (In-house) will lead the design and development effort. A government owned Load, Assemble, and Pack (LAP) facility will develop processes and tooling for the download of ADAM and RAAM and the creation of the hybrid projectile

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Complete NSD-A PAT		2Q							
NSD-A MS I/II		2Q							
NSD-A MS III				4Q					
RADAM MS III			1Q						
RADAM Material release				1Q					

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604808A Landmine Warfare/Barrier - Engineering Development

PROJECT: D016

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
NSD-A Test Hardware	CPIF	Textron	0	3844	Nov98						3844	
NSD-A Test Hardware	CPIF	Alliant	0	4965	Nov98						4965	
NSD-A EMD	CPIF	Alliant	0	0		6350	Mar 00		Oct 00	0	6350	
NSD-A EMD	CPIF	Textron				6350	Mar 00				6350	
NSD-A EMD		Misc.				624	various				624	
RADAM EMD	N/A	ARDEC	0	7498	Oct 98	0	0	0		0	7498	
RADAM test hardware/facilitation	CP	LAP Facility	0	3100	Dec 98	0	0	0		0	3100	
NSD-A Design/mixed System replacement		Various (TBD)		2000							2000	
Subtotal Product Development:				21407		13324					34731	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Eng. support NSD-A		ARDEC	0	1900	Oct 98	2600	Oct 99			0	4500	
b. Eng. Support NSD-A		OGA Misc.	0	0		1564	various			0	1564	
Subtotal Support Costs:				1900		4164					6064	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PAT support NSD-A		Government (TBD)	0	1056	Jan 99	0				0	1056	
b. Process Prove-out test RADAM		TECOM	0	1450	May 99	0					1450	
Subtotal Test and Evaluation:				2506							2506	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604808A Landmine Warfare/Barrier - Engineering Development

PROJECT: D016

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
NSD-A and RADAM Program Management		PM-MCD	0	400	Oct 98	246	Oct 99			0	646	
SBIR/STTR						491					491	
Subtotal Management Services:				400		737					1137	
Project Total Cost:				26213		18225					44438	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604808A Landmine Warfare/Barrier - Engineering Development PROJECT D415

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D415 Mine Neutralization/Detection	11254	11668	33246	25292	29838	17561	22395	Continuing	Continuing

A. **Mission Description and Justification:** This project provides engineering and manufacturing development for the Airborne Standoff Minefield Detection System (ASTAMIDS), Handheld Stand-off Mine Detection System (HSTAMIDS), Ground Standoff Mine Detection System (GSTAMIDS), and Anti-Personnel Obstacle Breaching System (APOBS). It also includes the Countermine Contingency Stock (CMCS) program that will provide immediate incremental increases in countermine capability to deployed units. The CMCS improves the capability to conduct route and area clearance operations with improvements to detection, marking, neutralization, and C4I. It provides a group of mutually supported mine detection and neutralization devices to counter a variety of threat mines, minefields and obstacles necessary for implementing the Army's Countermine Modernization Plan.

FY 1999 Accomplishments:

•	103	Explosive Standoff Minefield Clearer (ESMC) termination
•	145	APOBS Type Classification
•	3406	Conducted GSTAMIDS Block 0 MSII and prepared contract solicitation package
•	1000	Conducted source selection for GSTAMIDS Block 0 and awarded EMD contract
•	6600	Completed GSTAMIDS Block 0 preliminary design
Total	11254	

FY 2000 Planned Program:

•	5000	Complete GSTAMIDS block 0 detailed design
•	5254	Conduct GSTAMIDS block 0 system integration
•	1100	Conduct GSTAMIDS Block 0 contractor tests
•	314	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	11668	

FY 2001 Planned Program:

•	5470	Fabricate two GSTAMIDS block 0 prototypes
•	5400	Conduct GSTAMIDS contractor/ government testing
•	3004	Initiate HSTAMIDS component design
•	2381	Fabricate HSTAMIDS components and subsystems for contractor design verification test

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604808A Landmine Warfare/Barrier - Engineering Development
	PROJECT D415

FY 2001 Planned Program: (continued)

- 364 Continue to develop HSTAMIDS documentation
- 1333 Conduct initial HSTAMIDS contractor component and subsystem tests
- 6400 Procure test hardware (mini flails, plows/rollers, magnetic mine countermeasures, wheeled protection for 5T and PLS trucks.
- 2194 Identify and upgrade M1 chassis for Panther II
- 2000 Improve and test mine information recording system software
- 2300 Fabricate test hardware
- 1900 Design/fabricate full width mine roller system for Panther II
- 500 Test Engineer Change Proposal to HEMMS kits

Total 33246

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
PE 0603619A, Project D606, Countermine/Barrier Advanced Development	6702	6866	10042	19397	8222	4851	7888	Cont	Cont
E72800, APOBS	0	5602	6540	4961	4956	0	0	0	22059
R68200, HSTAMIDS	0	0	0	0	0	5803	6838	Cont	Cont
R68101, GSTAMIDS	0	0	0	10189	15931	11528	0	Cont	Cont
M80100, IVMMD	3726	0	0	0	0	0	0	0	15878
S11500, ASTAMIDS	0	0	0	0	6036	0	0	Cont	Cont

C. Acquisition Strategy: ASTAMIDS EMD contractor will be competitively selected for development of Block 0 (helicopter) and Block I (tactical UAV) configurations. EMD contractor will also be awarded production contract for limited quantity Block 0 systems. HSTAMIDS, contractors (two for each project) competitively selected for PDRR phase competition that will lead to a down select for the EMD phase. GSTAMIDS will leverage the Vehicle Mounted Mine Detector ATD effort with two competitively selected contractors for a total of five competing contractors in PDRR. One contractor will continue into EMD. Successful EMD contractors will be awarded initial production contract (sole source) with multiple option year buys. CMCS will use Non-developmental (NDI), Commercial off-the-shelf (COTS), and foreign developed equipment to meet the immediate need.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
GSTAMIDS Block 0 MS II	1Q*								
GSTAMIDS Block 0 MSIII				4Q					
GSTAMIDS Block I MS I**		2Q							

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604808A Landmine Warfare/Barrier - Engineering Development PROJECT D415

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
GSTAMIDS Block I MS II				4Q					
HSTAMIDS MS II		4Q							
HSTAMIDS MS III					4Q				
CMCS MS III			4Q						

** MS Decision will be conducted upon completion of tech base (PE63606/608) effort.

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604808A Landmine Warfare/Barrier - Engineering Development

PROJECT: D415

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
GSTAMIDS EMD.	CPIF	EG&G Systems Inc.	0	6600	Apr 99	6000	Oct 99	4000	Oct 00	Cont	Cont	
HSTAMIDS EMD	CPIF	TBD	0	0		0	Dec99	5500	Oct00	Cont	Cont	
CMCS EMD	CPIF	TBD	0	0		0		12287	Dec 00	Cont	Cont	
Subtotal Product Development:				6600		6000		21787		Cont	Cont	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Eng. support GSTAMIDS		NVESD/ CECOM	0	1945	Dec 98	1500	Oct 99	1000	Oct 00	Cont	Cont	
Eng support GSTAMIDS		Other (multiple)		1709	Nov98	1597	Oct99	1786	Oct00	Cont	Cont	
Eng. support HSTAMIDS		NVESD/ CECOM	0			0	Oct 99	1300	Oct00	Cont	Cont	
Eng Support CMCS		NVESD/CECOM	0	0		0		1300	Dec 00	Cont	Cont	
Subtotal Support Costs:				3654		3097		5386		Cont	Cont	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Test support GSTAMIDS		TECOM	0	200	Jan 99	1070	Dec 99	2850	Apr 01	Cont	Cont	
Test support HSTAMIDS		TECOM	0	0		0	Apr00		Jan01	Cont	Cont	
Test Support CMCS		TECOM	0	0		0		1500	Apr01	Cont	Cont	
Subtotal Test and Evaluation:				200		1070		4350		Cont	Cont	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Program management		PM-MCD	0	800	Oct 98	1187	Oct 99	1723	Oct 00	Cont	Cont	
SBIR/STTR						314				Cont	Cont	
Subtotal Management Services:				800		1501		1723		Cont	Cont	

Project Total Cost:				11254		11668		33246		Cont	Cont	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604808A Landmine Warfare/Barrier - Engineering Development

PROJECT: D434

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D434 Anti-Personnel Landmine Alternatives	0	0	12538	6355	0	0	0	0	18893

A. Mission Description and Budget Item Justification: Program provides for development of alternative systems for non self destruct anti-personnel landmines (APLs). The overall goal is to pursue an aggressive program to field alternative system(s) by 2006. This may allow the U.S. to sign the Ottawa Convention.

FY 1999 Accomplishments: Project not funded in FY 1999

FY 2000 Planned Program: Project not funded in FY 2000

FY 2001 Planned Program:

- 2750 Continue Non-Self Destruct Alternatives (NSD-A) government design efforts (initiated under D016)
- 8323 Continue NSD-A contractor design producibility/manufacturing development (initiated under D016)
- 1465 Provide general engineering support for NSD-A design efforts

Total 12538

B. Other Program Funding Summary	FY 1999	BY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
PE 64808/D016	26213	18225	0	2686	30831	49011	46694	cont	cont
SSN E91700				60811	121809	121562	121448	0	425630

C. Acquisition Strategy: Will competitively solicit for two contracts for development of system level prototypes. At the completion of prototype testing and evaluation, will downselect to the one contractor for continuation of EMD design effort. Option(s) for initial production will be included in contract following downselect.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
NSD-A MS III				4Q			

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604808A Landmine Warfare/Barrier - Engineering Development

PROJECT: D434

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. NSD-A EMD	CPIF	TBD	0	0		0		8323	Nov00	Cont	8323	
b. NSD-A EMD		ARDEC	0	0		0		2450	Oct00	Cont	2450	
Subtotal Product Development:								10773			10773	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Eng support NSD-A		ARDEC	0	0		0		1465	Oct00	Cont	1465	
Subtotal Support Costs:								1465			1465	

III. Test and Evaluation: Not applicable

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Mgmt NSD-A		PM-MCD	0	0		0		300	Oct00	Cont	300	
Subtotal Management Services:								300			300	

Project Total Cost:								12538			12538	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604808A Landmine Warfare/Barrier - Engineering Development PROJECT D443

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D443 APL-A Mixed Systems	0	0	23800	26267	26340	43797	50081	0	170285

A. **Mission Description and Budget Item Justification:** Provides alternatives to anti-personnel submunitions used in mixed anti-tank (AT)/anti-personnel (AP) Systems and possibly the entire mixed landmine system. The overall goal is to pursue an aggressive program to field alternative system(s) by 2006. This may allow the U.S. to sign the Ottawa Convention

FY 1999 Accomplishments: Project not funded in FY 1999

FY 2000 Planned Program: Project not funded in FY 2000

FY 2001 Planned Program:

- 8800 Complete concept exploration studies for Mixed System alternatives
- 2500 Conduct Distributed Modeling of tactics and procedures
- 6000 Model and develop advanced sensors and robotic technology
- 6500 Conduct concept definition and risk reduction tasks

Total 23800

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
PE64808/D434			12538	6355					
SSN: E91701							20000		

C. **Acquisition Strategy:** To be determined.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Mixed system MS I/II*		4Q					
Mixed system MS III							4Q

*MSI/II will be based on efforts funded under PE63606 in FY00.

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604808A Landmine Warfare/Barrier - Engineering Development

PROJECT: D443

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Mixed System EMD	CPIF	TBD	0	0		0		18000	Dec 00	cont	cont	
Subtotal Product Development:								18000		Cont	Cont	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Eng. Support		ARDEC	0	0		0		2500	Oct 00	cont	cont	
b. Eng. Support		Other (multiple)	0	0		0		3000	Various	cont	cont	
Subtotal Support Costs:			0	0		0		5500		cont	cont	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal Test and Evaluation:			0	0		0				cont	cont	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Mgmt.		PM-MCD	0	0		0		300	Oct 00	cont	300	
Subtotal Management Services:								300			300	

Project Total Cost:			0	0		0		23800		cont	cont	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY **5 - Engineering and Manufacturing Development**	PE NUMBER AND TITLE **0604814A Sense and Destroy Armor Munition - Engineering Development**

COST *(In Thousands)*	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	30305	24128	52848	66968	66444	56245	28204	Continuing	Continuing
D644 Generic SADARM Engineering Development	30305	24128	21043	2854	0	0	0	0	1030145
D708 XM982 Projectile	0	0	31805	64114	66444	56245	28204	Continuing	Continuing

A. Mission Description and Budget Item Justification: Sense and Destroy Armor (SADARM) munitions will provide an enhanced fire/counterfire capability for 155mm howitzer delivery systems. SADARM can attack targets well beyond the Forward Line of Troops (FLOT) in a fire-and-forget mode. SADARM can be used in day and night, inclement weather and degraded battlefield conditions.

These capabilities will be enhanced by the SADARM Product Improvement (PI) program which began in FY 1997. The PI SADARM submunition will have an enlarged footprint (permitting each submunition to cover approximately three times the area of the Basic SADARM), and improved infrared sensor to see targets from higher altitudes. As a result, the PI SADARM will be more effective against all of its targets. When ejected from the 155mm projectile, the PI SADARM submunitions deploy and descend toward the ground at a constant velocity and spin rate. The submunitions contain an improved sensing mechanism which combines a dual-mode millimeter wave sensor with an improved infrared sensor array. If a target is present within the scan area, the submunition detects and destroys the target. The SADARM Product Improvement Program is in direct support of the new Army Vision/Transformation.

The XM982 (Excalibur) is a family of precision guided, extended range 155mm artillery projectiles with modular payloads of Dual Purpose Improved Conventional Munitions (DPICM), PI-SADARM, and Unitary. It will extend the range of the M190A6, 155mm Paladin and the Lightweight 155mm Howitzer to approximately 37 kilometers, with the Modular Artillery Charge System (MACS) in Crusader extending the range to 47 kilometers. Prior to FY01, funding for the XM982 Program is in Program Element 0604802, Project D695.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604814A Sense and Destroy Armor Munition - Engineering Development

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	31602	19366	9775
Appropriated Value	31813	24366	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-211		
b. SBIR / STTR	-832		
c. Omnibus and Other Above Threshold Reductions		-98	
d. Below Threshold Reprogramming	-339		
e. Rescissions	-126	-140	
Adjustments to Budget Years Since FY 2000/2001 PB			+34073
New Army Transformation Adjustment			+9000
Current Budget Submit (FY 2001 PB)	30305	24128	52848

Change Summary Explanation: FY 2001: Transfer from SADARM Procurement to RDTE to fund a restructured PI SADARM program (+11394); Excalibur XM982 Projectile funding transferred from 604802.D695 to 604814.D708 to support Excalibur XM982-D and initiate XM982-S development.
Project D644 increased (+9000) in support of the New Army Transformation.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604814A Sense and Destroy Armor Munition - Engineering Development
	PROJECT: D644

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D644 Generic SADARM Engineering Development	30305	24128	21043	2854	0	0	0	0	1030145

A. Mission Description and Justification: Sense and Destroy Armor (SADARM) munitions will provide an enhanced fire/counterfire capability for 155mm howitzer delivery systems. SADARM can attack targets well beyond the Forward Line of Troops (FLOT) in a fire-and-forget mode. SADARM can be used in day and night, inclement weather and degraded battlefield conditions.

These capabilities will be enhanced by the SADARM Product Improvement (PI) program which began in FY 1997. The PI SADARM submunition will have an enlarged footprint (permitting each submunition to cover approximately three times the area of the Basic SADARM), improved infrared sensor to see targets from higher altitudes. As a result, the PI SADARM will be more effective against all of its targets. When ejected from the 155mm projectile, the PI SADARM submunitions deploy and descend toward the ground at a constant velocity and spin rate. The submunitions contain an improved sensing mechanism which combines a dual-mode millimeter wave sensor with an improved infrared sensor array. If a target is present within the scan area, the submunition detects and destroys the target. The SADARM Product Improvement Program is in direct support of the new Army Vision/Transformation.

FY 1999 Accomplishments:

•	1000	Continue simulation efforts with Hardware in the Loop (HWIL) to conduct hardware/software trade studies for PI SADARM.
•	4698	Select optimum warhead design and begin lethal mechanism range firings.
•	12738	Sensor Development: Prototype development and initial fabrication of component level sensor hardware. Testing to assure gun survivability of sensor components.
•	4128	Continued procurement and fabrication of test hardware.
•	7741	Continued government support to Initial Production Test (IPT) design and gun survivability testing.
Total	30305	

FY 2000 Planned Program:

•	750	Support HWIL for the qualification of the improved sensor electronics.
•	14189	Continued sensor design effort and fabrication of system test hardware consisting of sensor units and inert flight hardware.
•	4460	Limited User Testing.
•	4091	Government support to IPT, and gun survivability testing .
•	638	Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604814A Sense and Destroy Armor Munition - Engineering Development PROJECT D644

Total 24128

FY 2001 Planned Program:

- 700 HWIL support for qualification of improved electronics..
- 11786 Fabricate captive flight special test equipment, conduct testing and qualify electronics.
- 1445 Fabrication of system level test hardware consisting of inert flight hardware and tactical projectiles.
- 7112 Government support to IPTs and ballistic ejection testing ..

Total 21043

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
Procurement Ammunition, Army, SSN E66300 Proj Arty 155mm SADARM M898	31275	14938	14907						294796

C. **Acquisition Strategy:** The Cost Plus Incentive Fee (CPIF) contracts were awarded in FY 1986 to Aerojet Electrosystems and Honeywell. In FY 1991, a design select eliminated the Honeywell competition. Aerojet then selected Honeywell (now Alliant Techsystems) as their prime sub-contractor and they have continued this relationship into production. The Engineering and Manufacturing Development contract with Aerojet has been completed.

The SADARM Submunition Product Improvement Program was awarded on 24 February 1997 to GenCorp Aerojet, Azusa, CA for the design, development, fabrication, integration, and testing of improvements on a sole source basis in accordance with FAR 6.302-1, Only One Responsible Source. Due to a funding decrement in FY98, contract restructure modification P00013 was signed on 19 March 1998 reflecting a no cost 5-month period of performance extension (from April 2001 to September 2001). Currently, a contract restructure is in progress to reflect scope changes due to the impacts of additional testing, modeling and simulation efforts required by the user community and the limitations of funding in FY 00.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2004	FY 2005
Complete Contract Restructure		2 Qtr						
Limited Users Test (LUT)		3 Qtr						
Initiate System Test 1 (ST1)			4 Qtr					
Complete PI EMD Contract			4 Qtr					

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604814A Sense and Destroy Armor Munition - Engineering Development

PROJECT: D644

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Prod Improv: Contract	SS/CPAF	Aerojet- Azusa, CA	10612	21564	OCT 98	14189	OCT 99	13231	OCT 00		59596	
b. Basic SADARM Contract	C/CPIF	Aerojet- Azusa, CA	436202	0		0		0		0	436202	
c. Government Support			60493	0		0		0			60493	
d. Basic SADARM Contract	C/CPIF	Alliant Tech Sys Hopkins, MN	188038	0		0		0		0	188038	
e. MLRS Rocket Integration	SS/CPIF	Loral Vought Sys Dallas, TX	90535	0		0		0		0	90535	
f. Miscellaneous	MIPR		7645	0		350		0		0	7995	
Subtotal Product Development:			793525	21564		14539		13231			842859	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PM SADARM	Allot	Picatinny Arsenal, NJ	761	430		614		657		450	2912	
b. ARDEC Eng Support	MIPR	Picatinny Arsenal, NJ	16918	4666	Multi	2597	Multi	3025	Multi	875	28081	
c. MLRS Rocket Integration	MIPR	PMO-MLRS, Huntsville, AL	16266	0		0		0		0	16266	
d. Miscellaneous	MIPR		8868	78	Multi	638		0	Multi	229	9813	
Subtotal Support Costs:			42813	5174		3849		3682		1554	57072	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604814A Sense and Destroy Armor Munition - Engineering Development

PROJECT: D644

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Projectile Testing	MIPR	YPG Yuma, AZ	21117	90	DEC 99	240	DEC 99	1710	DEC 00	500	23657	
b. Rocket Testing	MIPR	WSMR New Mexico	26487	0		0		0		0	26487	
c. Limited User Test	MIPR	ATEC, Ft Sill, OK,	0	70	NOV 99	4235	JAN 00	0		0	4305	
d. Miscellaneous	MIPR		67118	207		405		640	DEC 00	0	68370	
e. HWIL PI SADARM	MIPR	MICOM, Huntsville, Ala	755	1000	JAN 99	750	DEC 99	700	DEC 00	300	3505	
f. Army Research Lab	MIPR	Adelphi, MD	0	1817		0	DEC 99	1080	DEC 00	500	3397	
g. Instrumented Rounds	SS/FFP	Aerojet-Azusa, CA	0	383	Multi	110	JAN 00	0		0	493	
Subtotal Test and Evaluation:			115477	3567		5740		4130		1300	130214	

IV. Management Services: None

Project Total Cost:			951815	30305		24128		21043		2854	1030145	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604814A Sense and Destroy Armor Munition - Engineering Development PROJECT D708

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D708 XM982 Projectile	0	0	31805	64114	66444	56245	28204	Continuing	Continuing

A. Mission Description and Budget Item Justification: XM982 (Excalibur) is a family of extended range, precision guided 155mm artillery projectiles. The first variant carries 64 Dual Purpose Improved Conventional Munitions (DPICM) with a self-destruct capability. The second variant will deliver two (2) Product Improved SADARM submunitions. The third variant is a bunker busting unitary warhead. It will be compatible with M109A6 Paladin, Joint Lightweight Howitzer and Crusader. The XM982 (Excalibur) will extend the range of the 155mm Paladin (M109A6), and the Lightweight Howitzer to approximately 37 kilometers. The Excalibur (XM982) with the Modular Artillery Charge System (MACS) extends the Crusader range to 47 kilometers. The XM982 (Excalibur) will allow for greater standoff from threats and faster defeat of potential threats, increasing soldier survivability. Funding for FY 2001 and beyond has been transferred to 604814 D708 from 604802 D695.

FY 1999 Accomplishments: Project funded in PE 0604802A D695

FY 2000 Planned Program: Project funded in PE 0604802A D695

FY 2001 Planned Program:

- 5000 Initiates the SADARM variant projectile integration, structural analysis, and testing, and conduct contract option IPR.
- 6445 Complete design of projectile assembly, continued structural analysis. Build prototype subsystems for test evaluation.
- 7543 Complete design of guidance and instrumentation systems. Build prototype subsystems for evaluation, and conducts initial gun fired guidance testing.
- 4000 Complete development of system requirements and subsystem requirement allocation. Conduct laboratory and field testing and evaluation. Conduct simulation validation.
- 3264 Award systems contract for development of Platform Integration Kit and Enhanced Portable Inductive Artillery Fuze Setter (E-PIAFS)
- 5553 Purchase 115 EMD Test Articles

Total 31805

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
Procurement Ammunition Army: E80100						27621	27595	Cont	Cont
EMD Test Articles - Quantity			115	55	259	494	18		

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE February 2000	
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development			PE NUMBER AND TITLE 0604814A Sense and Destroy Armor Munition - Engineering Development						PROJECT D708
RDT&E: PE 0604802A.D695	6585	11784	0	0	0	0	0	0	20378

C. **Acquisition Strategy:** The approved Acquisition Strategy was to award the EMD contract (FY98-01) to a systems contractor through full and open competition using formal source selection. As a result of this strategy, a contract was awarded to Raytheon-TI Systems, Inc., Lewisville, TX on 23 January 1998 for the design, development, fabrication, and engineering services in support of the development and testing of the 155MM ER DPICM XM982 Projectile, with options for the development of a SADARM and UNITARY variant. Two low rate production fixed price ceiling price options were also included in the award for the first year's buy of 3,400 each and the second year's buy of 4,900 each. Additional XM982-D scope identified in FY 1999 (including test rounds for qualification in the Crusader System) will lead to a revised Acquisition Strategy and a contract restructure.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Award Platform Integration & E-PIAFS Systems Contract			2 Qtr				
Initiate Guidance System Test Firings			3 Qtr				
Extended Range Demonstration				4 Qtr			
Contractor Pre-Qualification Tests					2 Qtr		
Complete Contractor Developmental Testing					2 Qtr		
Critical Design Review (CDR)					3 Qtr		
Start Developmental Test and Evaluation					3 Qtr		
Independent Program Review (IPR)					4 Qtr		
Award LRIP1 Contract						1 Qtr	
Complete Developmental Test and Evaluation							2 Qtr
First Article Test							3 Qtr

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604814A Sense and Destroy Armor Munition - Engineering Development

PROJECT: D708

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost*	FY 1999 Award Date	FY 2000 Cost*	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. XM982-D Development	C/CPIF	Raytheon Systems, Tucson, AZ						14123	Oct 00	Cont.	Cont.	
b. Platform Integration Systems Contractor	C/FPI	TBD						2200	Jan 01	Cont.	Cont.	
c. XM982-S EMD Option	SS/CPIF	Raytheon Systems, Tucson, AZ								Cont.	Cont.	
d. XM982-U EMD Option	SS/CPIF	Raytheon Systems, Tucson, AZ								Cont.	Cont.	
Subtotal Product Development:								16323		Cont.	Cont.	

*Program funding for FY 1999 and 2000 resides in 604802.D695.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost*	FY 1999 Award Date	FY 2000 Cost*	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. XM982	Allot	PM ARMS						800		Cont.	Cont.	
b. Gov't Support-XM982-D	MIPR	ARDEC, Picatinny Arsenal, NJ						4826	Multi	Cont.	Cont.	
c. Gov't Support- Ft Sill	MIPR	Ft. Sill, OK						300	Oct 00	Cont.	Cont.	
d. T250 Support	SS/FP	SAVIT, Parsippany, NJ								Cont.	Cont.	
e. Gov't Support- XM982-S	MIPR	ARDEC, Picatinny Arsenal, NJ						4792	Dec 00	Cont.	Cont.	
f. Gov't Support- XM982-U	MIPR	ARDEC, Picatinny Arsenal, NJ								Cont.	Cont.	
g. Platform Integration	MIPR	ARDEC, Picatinny Arsenal, NJ						1064	Multi	Cont.	Cont.	
Subtotal Support Costs:								11782			Cont.	

*Program funding for FY 1999 and 2000 resides in 604802.D695.

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604814A Sense and Destroy Armor Munition - Engineering Development

PROJECT: D708

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost*	FY 1999 Award Date	FY 2000 Cost*	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TECOM Testing	MIPR	YPG, Yuma, AZ						3000	Nov 00	Cont.	Cont.	
b. Army Research Labs	MIPR	ARL, Adelphia, MD						700	Nov 00	Cont.	Cont.	
c. XM982-D Test Support	SS/FP	TBD								Cont.	Cont.	
Subtotal Test and Evaluation:								3700			Cont.	

*Program funding for FY 1999 and 2000 resides in 604802.D695.

IV. Management Services: Not applicable

Project Total Cost:								31805		Cont.	Cont.	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604817A Combat Identification

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	15520	8566	5362	0	0	0	0	0	139032
D482 Ground Combat Identification (CID)	8153	7125	2380	0	0	0	0	0	121179
D902 Dismounted Soldier CID	7367	1441	2982	0	0	0	0	0	17853

A. Mission Description and Budget Item Justification: The dominant maneuver tactics that allow smaller, more lethal, forces to succeed on the modern battlefield also increase the potential for friendly fire casualties. Thus, a key enabler of complex warfare is the rapid, reliable identification of friends, foes and neutrals. Positive identification at the point-of-engagement is complicated by the capabilities of modern weapons that allow engagements well beyond the range where visual identification is possible, significantly increasing the potential for fratricide. This program is directed toward the design and development of distinct systems to help minimize this battlefield deficiency within the overall Combat Identification architecture. Project D482 addresses the ground-to-ground vehicle mounted mission and Project D902 addresses the dismounted soldier-to-soldier mission.

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	13379	8658	2395
Appropriated Value	13471	8658	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-92		
b. SBIR/STTR	-341		
c. Omnibus or Other Above Threshold Reductions		-63	
d. Below Threshold Reprogramming	+2536		
e. Rescissions	-54	-29	
Adjustments to Budget Years Since FY 2000/2001 PB			+2967
Current Budget Submit (FY 2001 PB)	15520	8566	5362

Change Summary Explanation: Funding - FY99: Funding was reprogrammed to Project D902 to support the redesign of CIDDS helmet electronics and weight reduction effort.

FY01: Funding adjustment is for Project D902 to complete CIDDS program based on successful realignment of FY 2000 funding.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)			DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604817A Combat Identification		PROJECT D482

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D482 Ground Combat Identification (CID)	8153	7125	2380	0	0	0	0	0	121179

A. Mission Description and Justification: The Battlefield Combat Identification System (BCIS) is an all weather, day/night, millimeter wave, Low Probability of Intercept/Low Probability of Detection (LPI/LPD), digitally encrypted question and answer system that provides positive identification of friendly platforms out to 5.5 km (clear weather). BCIS was developed to minimize fratricide while maximizing combat effectiveness given rapidly changing and intense tactical situations. BCIS provides positive identification of friendly platforms to aid the gunner or commander to make a rapid shoot/don't shoot decision at the point of engagement. BCIS also provides short range, LPI/LPD situational awareness messages at the platoon level. Any target identification data received by BCIS will be sent through the platform Force XXI Battle Command Brigade and Below (FBCB2) to update the situational awareness database. BCIS has been designated as an Army Horizontal Technology Integration Modernization program and coordinates A-kit integration with 27 host platforms.

FY 1999 Accomplishments:

- 3792 Conducted upgrade, assembly and contractor test of fully functional engineering development models for platform (M1A1/M2A2 ODS) test, log demonstration and government technical test to include NSA certification. Efforts resulted in attaining a Low Rate Initial Production (LRIP) decision.
- 2061 Conducted development, design, and fabrication of installation kits (A-kit) for the Abrams/Bradley (M1A1/M2 ODS) vehicles for platform compatibility test.
- 955 Conducted A-kit design and development for host platforms (M4 C2V, HMMWV M1114/M998, M113A2 APC, M1064 Mortar Vehicle, and M1068) in coordination with fielding to 1/22 INF Battalion, 1st Bde, 4th ID, identified as First Unit Equipped in FY02.
- 145 Validation, verification and accreditation of Battlefield Identification System Environment and Performance Simulator (BISEPS).
- 1200 All Services Combat Identification Exercise Training (ASCIET).

Total 8153

FY 2000 Planned Program:

- 280 Complete upgrade, assembly and contractor test of fully functional engineering development models for platform (M1A1/M2A2 ODS) test, log demonstration and government technical test.
- 4224 Continue host platform A-kit design for vehicles in 1st Bde, 4th ID for fielding (M9 ACE, M88 ARV, M109A6, M992, Avenger, M6 Linebacker, etc.).
- 672 Complete development, design, and fabrication of installation kits (A-kit) for the Abrams/Bradley (M1A1/M2 ODS) vehicles for platform compatibility test.
- 250 Conduct logistics verification demonstration (MANPRINT, maintenance, manuals, etc.).
- 911 Conduct platform compatibility technical testing.
- 400 Complete development of the North Atlantic Treaty Organization (NATO) Standardization Agreement (STANAG) 4579 for Battlefield Target ID Devices (BTID) and perform modeling to assess vulnerability risk.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604817A Combat Identification
	PROJECT D482

FY 2000 Planned Program: (continued)

- 200 Complete validation, verification and accreditation of BISEPS.
- 188 Small Business Innovative Research/Small Business Technology Transfer Programs.

Total 7125

FY 2001 Planned Program:

- 1915 Complete host platform A-kit design and development effort for the remaining vehicle types (M93A1, HMETT, and MLRS) in 4th ID for fielding.
- 65 Provide technical support for Initial Operational Test & Evaluation (IOT&E).
- 400 Develop NATO STANAG Annex for Combat Identification for rotary wing and Dismounted Soldier capabilities.

Total 2380

B. Other Program Funding Summary:	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE, A BA 5, PE 0203735, Proj 330, Abrams Tank Improve Prog		14929							14929
RDTE, A BA 5, PE 0203735, Proj 371, Bradley Base Sustainment		7585							7585
RDTE, A, PE 0604649, Proj G25 M1 Breacher Dev		765							765
OPA2, SSN BA0510 Combat Identification Prog	4832	7533	13096	13096	13188	14450	4995	Cont	Cont
MSLS, SSN C67500 MLRS Mods		16							16
OPA1, SSN DV0210, HMMWV		412							412
SPARES, SSN MA4501, M9 ACE Mod Kits		122							123
WTCV, SSN GA0400, Howitzer Mod		47							47
WTCV, SSN GZ3000, AVLB Mod		152							152
WTCV, SSN GZ2300, FIST Vehicle Mod		176							176
WTCV, SSN GZ2400, BFVS Series (Mod)		2639	2564	2619	2606	1314	545		12287
WTCV, SSN GA0700, M1 Abrams Tank Mod		1989	3140	3045	2991	3019	1372		15556
WTCV, SSN GA8010, FAASV PIP		114							114
WTCV, SSN GA0925, Mods Less Than $5M		191							191

BCIS is an Army Horizontal Technology Integration (HTI) program. Above funding does not represent total funding for the SSN level but represents the BCIS portion only of the funding.

C. **Acquisition Strategy:** RDTE efforts are on going to provide for integration of BCIS on multiple platforms. LRIP quantities are sole source to the EMD producer on a new contract, and a competitive, firm fixed-price, full rate production contract is scheduled for FY03.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604817A Combat Identification

PROJECT: D482

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
LRIP ASARC	4Q						
LRIP Award	4Q						
Log Demo/Technical Testing		2-3Q					
Major Force-on-Force Simulation			1Q				
LRIP Option SIPR			2Q				
Initial Operational Test & Evaluation (IOT&E)			3-4Q				
Milestone III				3Q			
FUE				3Q			

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604817A Combat Identification

PROJECT: D482

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. B-Kit Development	C/CPAF	TRW, CA	64398	3792	1 Q	719	1Q	375	1 Q		69284	69284
b. A-Kit Devel (Abrams)	CPFF	GDLS, MI	9225	1279	3 Q	500	2Q				11004	11004
c. A-Kit Devel (Bradley)	CPFF	United Defense, CA	2366	476	2 Q	172	2Q				3014	3014
d. A-Kit Devel (Various)	MISC	E&S, TRW, UDLP, AM General, Boeing	1593	306	2 Q	4091	2Q	1730	1 Q		7720	7720
e. SBIR/STTR						188					188	188
Subtotal Product Development:			77582	5853		5670		2105			91210	91210

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Matrix Support	MIPR	CECOM	7765	319	1 Q	131	1Q	42	1Q		8257	8257
b. Sys Eng/Tech Assistance	T&M/MIPR	SYTEX, MTC, etc.	7057								7057	7057
c. Test Planning	MIPR	NVES, CECOM	0	191	2 Q	121	1Q	65	1 Q		377	377
Subtotal Support Costs:			14822	510		252		107			15691	15691

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Technical Test, Log Demo, etc.	MIPR	TECOM, YPG, AZ	1850	145	2 Q	1040	1 - 2Q				3035	3035
b. Limited User Test	MIPR	TEXCOM	673								673	673
c. ASCIET	MIPR	Misc	3973	1200	3 Q						5173	5173
Subtotal Test and Evaluation:			6496	1345		1040					8881	8881

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Management		PM, Combat ID	4621	445	1 Q	163	1 Q	168	1Q		5397	5397
Subtotal Management Services:			4621	445		163		168			5397	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604817A Combat Identification

PROJECT: D482

			Total PYs Cost	FY 1999 Cost		FY 2000 Cost		FY 2001 Cost		Cost To Complete	Total Cost	Target Value of Contract
Project Total Cost:			103521	8153		7125		2380			121179	121179

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604817A Combat Identification / PROJECT: D902

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D902 Dismounted Soldier CID	7367	1441	2982	0	0	0	0	0	17853

A. **Mission Description and Justification:** The Combat Identification System Dismounted Soldier (CIDDS) system is a lightweight, laser-based, question and answer type system, used by the individual soldiers to positively identify friendly soldiers. The system includes a compact, eyesafe laser interrogator; a laser detector assembly; an electronic processor unit; and an omni-directional RF responder. The laser transmitter also includes an aiming laser pointer for aiming the soldier's weapon at night when using Night Vision Goggles and provides an embedded training capability that is interoperable with MILES/MILES 2000 training systems. The system will provide combat identification beyond the effective range of the weapon and will exceed the soldier's target acquisition capability under degraded atmospheric conditions. The system will also be directly interoperable with the combat ID functions to be embedded in the Land Warrior equipment suite. The system will fulfill requirements stated in the Operational Requirements Document for use by Army, Marine and Special Operations applications.

FY 1999 Accomplishments:

- 1329 Completed hardware and software design.
- 578 Completed weapons integration kit design.
- 3000 Initiated redesign of helmet electronics and weight reduction.
- 500 Completed fabrication/testing of five prototypes for user evaluation.
- 650 Procured long lead items for fabrication of 148 systems.
- 1310 Initiated laser interrogator fabrication.

Total 7367

FY 2000 Planned Program:

- 1140 Complete redesign of helmet electronics and weight reduction.
- 6973 Complete fabrication, assembly and test of 148 EMD hardware systems to support technical/operational testing.
- 223 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs

Total 8336

Note: FY00 Planned Program reflects the $6.895M that was moved from PE 63001.J51 via Internal Reprogramming approved and signed 28 Dec 99. This is not yet reflected in the database.

FY 2001 Planned Program:

- 2242 - Conduct Initial Operational Test.
- 500 - Data reduction and analysis from government test.
- 240 - In-Process Review/Milestone III preparation.

Total 2982

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604817A Combat Identification PROJECT D902

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA2, SSN BA0515 Combat ID/Aiming Light	0	0	8040	16469	13412	16028	16011	60100	130060

C. **Acquisition Strategy:** A competitive, cost plus incentive fee (CPIF) contract for the design, fabrication and testing of 148 units for IOT was awarded in July 1997. A follow-on, Fixed Price (FP), sole source, Low Rate Initial Production (LRIP) contract, based on demonstrated technical test results, will be awarded in January 2001 to provide an orderly ramp up to production. A full rate production contract will be awarded in FY02.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Complete fabrication of 148 hardware systems		4 Q					
Govt. Technical Test		4 Q					
LRIP IPR			2 Q				
LRIP Award			2 Q				
Initial Operational Test & Evaluation (IOT&E)			3 Q				
FUE (Production representative EMD units)			3 Q				
Milestone III				1 Q			

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604817A Combat Identification

PROJECT: D902

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Hardware	C/CPIF	Motorola, Scottsdale, AZ	5396	6476	1 Q	7424	1 - 2 Q				19296	19296
a. SBIR/STTR						223					223	223
Subtotal Product Development:			5396	6476		7647					19519	19519

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Sys Eng/Tech Assist	C/T&M	Misc	120								120	120
b. Matrix Support	MIPR	Misc	306	282	1Q						588	588
Subtotal Support Costs:			426	282							708	708

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value.0f Contract
a. Test Planning/Execution	MIPR	CECOM, TECOM, WSMR, SLAD, etc		213	1 Q	539	1 – 2 Q	400	1Q		1152	1152
b. IOTE		TEXCOM, ATEC EAC						2342	2Q		2342	2342
Subtotal Test and Evaluation:				213		539		2742			3494	3494

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Management		PM Combat ID	241	396	1 Q	150	1 Q	240	1 Q		1027	1027
Subtotal Management Services:			241	396		150		240			1027	1027

Project Total Cost:			6063	7367		8336		2982			24748	24748

Note: FY00 Planned Program reflects the $6.895M that was moved from PE 63001J51 via Internal Reprogramming approved and signed 28 Dec 99. This is not yet reflected in the database.

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604818A Army Tactical Command and Control Hardware & Software

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	33993	38970	33420	37335	35713	23230	23441	Continuing	Continuing
DC34 Army Tactical C2 Systems(ATCCS) Engineering	18936	17727	16214	16497	16653	8764	8979	Continuing	Continuing
DC39 Tactical Operations Centers(TOCs)	4679	6234	6027	7896	5968	0	0	Continuing	Continuing
D323 Common Hardware Systems	10378	15009	6569	8243	8316	8958	8898	Continuing	Continuing
D334 Common Software	0	0	4610	4699	4776	5508	5564	Continuing	Continuing

A. Mission Description and Budget Item Justification: The umbrella program to exploit automation technology for the conduct of combat operations is the Army Tactical Command and Control System (ATCCS) program which is a component of the Army Battle Command System (ABCS). The ATCCS program provides automation in the five battlefield functional areas (BFAs) with the following specific systems: (1) Maneuver Control System (MCS); (2) Advanced Field Artillery Tactical Data System (AFATDS); (3) All Source Analysis System (ASAS) for Intelligence/Electronic Warfare; (4) Forward Area Air Defense Command, Control and Intelligence System (FAADC2I); and (5) Combat Service Support Control System (CSSCS) and to other Army Joint and Allied systems. To provide an overall technically sound, cost effective, and operationally responsive approach, the design and development of ATCCS must be accomplished on a total systems basis. The ATCCS Engineering program provides the required systems engineering to assure integrated Army tactical command and control, and the utilization of common hardware and software throughout the five ATCCS nodal systems. This project includes the Central Technical Support Facility (CTSF) which provides a single technical "center of mass" for software checkout and physical system integration. The Common Hardware Software (CHS) project provides common hardware and software to customers to meet their developmental and fielding needs. The Tactical Operations Centers (TOCs) project designs and develops the TOCs that form the structural backbone of the Army's digitized fielding concept.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY **5 - Engineering and Manufacturing Development**	PE NUMBER AND TITLE **0604818A Army Tactical Command and Control Hardware & Software**

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	32548	35299	33620
Appropriated Value	32929	39799	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-381		
b. SBIR / STTR	-786		
c. Omnibus or Other Above Threshold Reprogrammings		-650	
d. Below Threshold Reprogramming	2361		
e. Rescissions	-130	-179	
Adjustments to Budget Years Since FY 2000/2001 PB			-200
Current Budget Submit (FY 2001 PB)	33993	38970	33420

Change Summary Explanation: Funding – FY 2000: Transfer of funds (-500) to O&M, Defense-wide as directed in Section 219 of the Omnibus Consolidation Appropriation to help complete the Washington Square project, initiated by the Department of Defense in previous years.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604818A Army Tactical Command and Control Hardware & Software — PROJECT: DC34

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DC34 Army Tactical C2 Systems(ATCCS) Engineering	18936	17727	16214	16497	16653	8764	8979	Continuing	Continuing

A. **Mission Description and Budget Item Justification: Project DC34 – Army Tactical C2 Systems (ATCCS) Engineering:** The Air/Land Battle Doctrine requires military leaders to make sound and timely command and control decisions to direct the activities of assigned and supporting units. The umbrella program to exploit automation technology in support of this mission is the ATCCS program, a component of the Army Battle Command System (ABCS). The effort to achieve horizontal integration of the ATCCS BFAs, although going on independently in each BFA, was not disciplined enough to address all connections and needs within the entire spectra of command, control, and communications. Therefore, to ensure this horizontal integration effort is complete and fully automated, a significant management, systems engineering and integration effort is required. Within the SE&I line, requirements accomplished are Common Look & Feel/Common Tactical Picture, Joint Common Data Base/Interoperability, Inter-TOC Data Distribution, and Security Engineering (Protection of the Force). In addition, a key component of the overall effort is the Central Technical Support Facility (CTSF) which provides a centralized on-the-ground capability to ensure interoperability among various digitized platforms and serves as the final integration and maturation facility for Common Operating Environment (COE). The CTSF is the Warfighters "Edge" that acts as an enabler for rapid integration of dissimilar software and hardware systems through real time on-site integration of soldiers, contractors, testers, Program Managers, and the requirements community. The CTSF provides a single technical "center of mass" for software checkout and system integration and provides a controlled environment with connectivity to other C4I systems either on-site or through the Army Interoperability Network (AIN) to support digital integration and fielding.

FY 1999 Accomplishments

•	200	Conducted and supported system configuration management /development and support
•	1750	Continued ABCS/ABCS Integrated Logistics Support
•	1000	Continued ABCS/AWE Testing and Evaluation of all BFA fielded software
•	525	Continued ABCS/AWE Fielding/Scheduling
•	1797	Continued ABCS/AWE information engineering
•	374	Conducted and supported system interoperability engineering
•	150	Continued exploring state of the art technology insertion in support of the ABCS program
•	175	Continued development and implementation of the ABCS information assurance
•	1839	Continued ABCS/AWE System Engineering and Integration
•	1560	Continued development of ABCS/AWE System Architecture
•	1541	Central Technical Support Facility (CTSF) Fort Hood Operations
•	8025	Central Technical Support Facility (CTSF-TD) efforts to meet the Army's digital fielding requirements.
Total	18936	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604818A Army Tactical Command and Control Hardware & Software PROJECT DC34

FY 2000 Planned Program:

•	194	Conduct and supported system configuration management /development and support
•	1690	Continue ABCS/ABCS Integrated Logistics Support
•	964	Continue ABCS/AWE Testing and Evaluation of all BFA fielded software
•	508	Continue ABCS/AWE Fielding/Scheduling
•	1735	Continue ABCS /AWE information engineering
•	362	Conduct and supported system interoperability engineering
•	145	Continue exploring state of the art technology insertion in support of the ABCS program
•	170	Continue development and implementation of the ABCS information assurance
•	1257	Continue ABCS/AWE System Engineering and Integration
•	988	Continue development of ABCS/AWE System Architecture
•	1489	Central Technical Support Facility (CTSF) Fort Hood Operations
•	7748	Central Technical Support Facility (CTSF-TD) efforts to meet the Army's digital fielding requirements.
•	477	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	17727	

FY 2001 Planned Program:

•	200	Conduct and supported system configuration management /development and support
•	1750	Continue ABCS/ABCS Integrated Logistics Support
•	925	Continue ABCS/AWE Testing and Evaluation of all BFA fielded software
•	525	Continue ABCS/AWE Fielding/Scheduling
•	1797	Continue ABCS/AWE information engineering
•	374	Conduct and supported system interoperability engineering
•	150	Continue exploring state of the art technology insertion in support of the ABCS program
•	175	Continue development and implementation of the ABCS information assurance
•	528	Continue ABCS/AWE System Engineering and Integration
•	561	Continue development of ABCS/AWE System Architecture
•	1229	Central Technical Support Facility (CTSF) Fort Hood Operations
•	8000	Central Technical Support Facility Technical Division (CTSF-TD) efforts to meet the Army's digital fielding requirements.
Total	16214	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604818A Army Tactical Command and Control Hardware & Software
	PROJECT DC34

B. Other Program Funding Summary: Not applicable

C. Acquisition Strategy: This project provides the technical and programmatic disciplines required for systems engineering and integration, experimentation, acquisition management, testing, software development, interoperability, fielding, and sustainment to insure an interoperable and affordable ATCCS. The Program Executive Officer for Command , Control, and Communications (PEO C3S) has planned an evolutionary approach to fielding ATCCS as soon as possible.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
CORPS/JTF	1Q						
NTC 99-05	2Q						
PRAIRIE WARRIOR 99	3Q						
ABCS INTEROPERABILITY TEST	3Q						
CORPS UFL	4Q						
DIGITAL TOC DELIVERIES (Begin)		1Q					
ABCS 6.0 SOFTWARE INTEGRATION		2Q					
Prairie Warrior 00		3Q					
ABCS 6.1 SOFTWARE INTEGRATION		3Q					
JCF AWE		4Q					
FDD UPGRADE BASELINE		4Q					
UFL		4Q					
ABCS 6.2 SOFTWARE INTEGRATION		4Q					
NTC 01-1			1Q				
ABCS 7.0 SOFTWARE INTEGRATION				2Q			
NTC 00-05				2Q			
SE 01-2				1Q & 3Q			
Second Digitized Division (2DD)					4Q		
Digitized Corps						4Q	
101ST AA (Air Assault)							2Q
Digitize XVIII Corps							3Q

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604818A Army Tactical Command and Control Hardware & Software

PROJECT: DC34

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TRW	PWD	Fort Mon/Fort Hood	1000			80	Apr 00	80	Dec 00	Cont	1160	
b. CSC	PWD	Fort Mon/Fort Hood	10132	4550	Jan 99	4800	Jan 00	4450	Jan 01	Cont	23932	
c. MITRE	MIPR	Ft Mon/Eatontown, NJ	1904	3752	Dec 98	4000	Dec 99	4200	Dec 00	Cont	13856	
d. MANTECH	PWD	Fort Mon/Fort Hood		4525	Jan 99	3725	Jan 00	3375	Jan 01	Cont	11625	
e. EPG	MIPR	Fort Huachuca		350	Jul 99	800	Apr 00	800	Apr 01	Cont	1950	
f. CAMBER	PWD	Fort Hood		179	Dec 98	184	Dec 99	194	Dec 00	Cont	557	
g. TELOS	PWD	Fort Monmouth		182	Apr 99	180	Apr 00	180	Apr 01	Cont	542	
h. ROBBINS-GIOIA	PWD	Fort Mon/Fort Hood		371	Apr 99	420	Apr 00	420	Apr 01	Cont	1211	
i. RAYTHEON	PWD	Fort Mon/Fort Hood		200	Dec 98	210	Dec 99	225	Dec 00	Cont	635	
j. EWA	MIPR	Fort Hood		265	Mar 99	200	Mar 00	150	Mar 01	Cont	615	
k. GTE	PWD	Fort Hood		80	Dec 98	80	Dec 99	80	Dec 00	Cont	240	
l. Misc Contracts	PWD	Fort Mon/Fort Hood	2500	2841	Jan 99	1247	1Q-2Q	295	1Q-2Q	Cont	6883	
Subtotal Product Development:			15536	17295		15926		14449			63206	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. In-House Support	MIPRs	Fort Mon/Fort Hood	3406	641	Dec 98	801	Dec 99	840	Dec 00	Cont	5688	
Subtotal Support Costs:			3406	641		801		840			5688	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
	PWD	Fort Mon/Fort Hood		1000	Apr 99	1000	Dec 99	925	Dec 00	Cont	2925	
Subtotal Test and Evaluation:				1000		1000		925			2925	

response to your survey IV. Management Services: Not applicable

Project Total Cost:			18942	18936		17727		16214			71819	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604818A Army Tactical Command and Control Hardware & Software
	PROJECT: DC39

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DC39 Tactical Operations Centers(TOCs)	4679	6234	6027	7896	5968	0	0	Continuing	Continuing

A. **Mission Description and Budget Item Justification:** The Army Tactical Operations Center (TOC) program provides commanders and staff (all echelons of command from Battalion to Corps) with integrated digitized command and control facilities to exploit the enhanced situational awareness and force multiplier effect gained through digitization. The objective is battlefield dominance using interoperable, robust Army Battle Command System (ABCS) components operating in a Defense Information Infrastructure (DII)/Common Operating Environment (COE) compliant architecture. This RDTE program provides continued support to prototype TOCs developed for Division XXI AWE and develops/matures the enabling technologies required to meet the "objective" requirements of the ABCS Capstone Requirements Document (CRD). Examples include TOC wireless LANs and Command Information Center (CIC) intercoms to meet the CRD requirement for a "virtual" TOC (i.e., a TOC which can be widely dispersed, but digitally connected so that each dispersed element is virtually face-to-face and has the same operational picture and situational awareness). Other efforts include a new Command Information Center shelter that meets the mobility, functionality, set up time, and protection requirements. This project also provides funds for the First Digitized Division (FDD) and First Digitized Corps (FDC) TOC integration and required design and engineering of TOC platforms and shelters. The Army TOC program is critical to the success of Army Digitization Modernization and to provide warfighters with the tools to win the information war.

FY 1999 Planned Program:

•	2000	Sustain Division XXI prototype TOCs
•	1679	System and design engineering, technology assessments, and technology integration for First Digitized Division (FDD)
•	1000	Program planning, integrated logistics support, program management, test planning, and program integration for FDD.
Total	4679	

FY 2000 Planned Program:

•	1500	Sustain Division XXI prototype TOCs
•	3046	Develop enabling technologies and technology insertion.
•	1520	System and design engineering for FDD and III Corps
•	168	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	6234	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604818A Army Tactical Command and Control Hardware & Software
	PROJECT DC39

FY 2001 Planned Program:

- 1500 Sustain Division XXI prototype TOCs.
- 2282 System and design engineering for III Corps
- 2245 Develop enabling technologies and technology insertion.

Total 6027

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
Other Procurement Army 2 – SSN: BZ9865	33995	27969	17260	29348	32231	0	0	Cont	Cont

C. Acquisition Strategy: The acquisition strategy awarded a contract for design, integration, assembly, test, training, and fielding of FDD and 1st Cav Div TOCs via full and open competition. Sustainment of existing prototype Div XXI AWE TOCs continues by sole source to the prototype contractor. Army TOC contracts for FDC and beyond will be awarded by full and open competition.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Design Reviews	4Q	4Q	4Q	4Q	4Q		
Interoperability Demonstration		3Q	3Q	1Q			

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604818A Army Tactical Command and Control Hardware & Software

PROJECT: DC39

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TRW	SS/CPFF	Huntsville, AL		2062	Jan 99	1500	Dec 99	1500	Dec 00	Cont	Cont	
b. Motorola	C/CPFF	Huntsville, AL		2025	Feb 99	3407	Mar 00	3299	Feb 01	Cont	Cont	
c. In-House/Gov't Support	Various	Various		492		959		1028		Cont	Cont	
d. SBIR/STTR						168					168	
Subtotal Product Development:				4579		6034		5827		Cont	Cont	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. SETA	Various	Various		100	Mar 99	200	Feb 00	200	Feb 01	Cont	Cont	
Subtotal Support Costs:				100		200		200		Cont	Cont	

III. Test and Evaluation: Not applicable

IV. Management Services: Not Applicable

Project Total Cost:				4679		6234		6027		Cont	Cont	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604818A Army Tactical Command and Control Hardware & Software PROJECT D323

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D323 Common Hardware Systems	10378	15009	6569	8243	8316	8958	8898	Continuing	Continuing

A. **Mission Description and Justification: Project D323 Common Hardware/Software (CHS):** CHS is the program through which the Army builds its integrated efforts for tying together the Army Battle Command Systems (ABCS). The project provides vehicles (contracts) through which customers can acquire state-of-the-art common hardware/software and associated peripherals to meet developmental and fielding needs. The project also provides software technology support and command post internal structures within shelters. The common software supports Army, other Services and Joint systems. The CHS program is instrumental in digitizing the battlefield. The DII COE project will be established under PE 64818A D334 in FY01. The split of funds is still in effect with the FY99 and FY00 funding breakout for PE 64818 D323.

FY 1999 Planned Program:

•	3459	Continued management of the acquisition and delivery of CHS-2/LCU equipment in support of customer requirements.
•	1255	Continued execution of common hardware, software technology and software reuse programs
•	520	Continued supporting customers testing efforts with CHS equipment
•	200	Continued exploring state of the art technology insertion in support of ABCS programs
•	4944	Continued developing and upgrading DII COE products/integrate into ABCS systems and other Army systems
Total	10378	

FY 2000 Planned Program:

•	1395	Continue management of the acquisition and delivery of CHS-2 equipment in support of customer requirements
•	3214	Continue execution of common hardware, software technology and software reuse program
•	575	Continue supporting customers testing efforts with CHS equipment
•	510	Continue exploring state of the art technology insertion in support of ABCS programs
•	4985	Continue developing and upgrading DII COE products/integrate into ABCS systems and other Army systems
•	4000	Leverage advanced 3-D display Technologies for Army and other services
•	330	Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) programs
Total	15009	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604818A Army Tactical Command and Control Hardware & Software PROJECT D323

FY 2001 Planned Program:

•	1711	Continue management of the acquisition and delivery of CHS-2 equipment in support of customer requirements and proceed to CHS ABCS Information Technology (AIT) contract award
•	3598	Continue execution of common hardware, software technology and software reuse program
•	617	Continue supporting customers testing efforts with CHS equipment
•	643	Continue exploring state of the art technology insertion in support of ABCS programs
Total	6569	

B. Other Program Funding Summary: Not Applicable

C. Acquisition Strategy: : The overall goal is to improve interoperability and lower life cycle costs by standardizing Battlefield Command and Control (C2) automation through centralized buys of non-developmental items (NDI), standardized protocols and reusable software. Four NDI hardware versions are available to meet specific needs of each Battlefield Functional Area (BFA): handheld, portable, transportable and lightweight computer unit

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
LCU contract expires			3Q				
CHS-2 Technology Insertion (continuous)	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Initiate follow-on CHS ABCS Information Technology (AIT) Contract Requirements effort				1Q			
CHS AIT contract award					2Q		
Delivery of AIT V2 production hardware						3Q	
CHS-2 contract expires							3Q

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604818A Army Tactical Command and Control Hardware & Software

PROJECT: D323

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY1999 Cost	FY1999 Award Date	FY2000 Cost	FY2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Matrix-CECOM	MIPR	Ft. Monmouth	18791	1850	1-2Q	2100	1-2Q	1876	1-2Q	Cont	Cont	Cont'd
b. In-House		PM ATCCS, FM, NJ	18273	1350	N/A	2048	N/A	2188	N/A	Cont	Cont	
c. Primary Contract	FFP/IDIQ	Ft. Monmouth, NJ	6798	200	1-3Q	275	1-3Q	997	1-3Q	Cont	Cont	
d. Misc Contract	Competitive/T &M	Ft. Monmouth, NJ	27378	1404	1-3Q	796	1-3Q	1128	1-3Q	Cont	Cont	
e. CSC	Competitive/T &M	Ft. Monmouth, NJ	6055	4944	1-3Q	4740	1-3Q	0	N/A	0	15739	
f. MITRE (FFRDC)	MIPR	MITRE, Eatontown, NJ	9148	630	Dec 98	720	Dec 99	380	Dec 00	Cont	Cont	
g. 3-D Display Technology	TBD	Concurrent Technology Corp., PA		0	N/A	4000	2Q	0	N/A	4000	8000	
h. SBIR/STRR						330					330	
Subtotal Product Development:			86443	10378		15009		6569		Cont	Cont	

II. Support Costs: Not Applicable

III. Test and Evaluation: Not Applicable

IV. Management Services: Not Applicable

Project Total Cost:			86443	10378		15009		6569		Cont	Cont	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604818A Army Tactical Command and Control Hardware & Software PROJECT D334

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D334 Common Software	0	0	4610	4699	4776	5508	5564	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project D334 Common Software (CS): Common Software is the program through which the Army procures, develops, integrates, and tests common software products and or modules and or components for both the Army and Joint Services through the Defense Information Infrastructure Common Operating Environment (DII COE). The CS project provides state-of-the-art software technologies. The CS program is a cornerstone in the Army's battlefield digitization efforts.

FY 1999 Accomplishments: Project funded in D323

FY 2000 Planned Program: Project funded in D323

FY 2001 Planned Program:

- 1300 Continue the management of the acquisition and delivery of CS and COTS products in support of Army and Joint Service customer requirements.
- 3310 Continue execution of the common software technology and reuse program, continue supporting customer integration and testing, continue the exploration and evaluation of new software technologies in support of the overall CS program and continue developing, upgrading and delivery of DII COE products into Army and Joint Service systems.

Total 4610

B. Other Program Funding Summary: Not applicable

C. Acquisition Strategy: The overall goal is to improve software development, integration and interoperability, and to lower life cycle costs by providing common software products to the Army and Joint Services. This strategy will be realized through defines Application Program Interfaces (APIs), standardized protocols, reusable software and standard commercial products.

D. Schedule Profile: Delivery of software is every six months.

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604818A Army Tactical Command and Control Hardware & Software

PROJECT: D334

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Matrix-CECOM	MIPR	Ft Monmouth, NJ						800	1-3Q	Cont	Cont	
b. In-House		PM ATCCS, FM NJ						500	1-4Q	Cont	Cont	
c. Misc Contracts	MIPR	GSA-FEDSIM Falls Church, VA						165	1-3Q	Cont	Cont	
d. CSC	Competitive with options	Ft Monmouth, NJ						3145	1-3Q	Cont	Cont	
Subtotal Product Development:								4610		Cont	Cont	

II. Support Costs: None

III. Test and Evaluation: None

IV. Management Services: None

Project Total Cost:								4610		Cont	Cont	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)			DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604819A Line-of-Sight Anti-Tank		PROJECT D046

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D046 Line-of-Sight Anti-Tank	0	0	26800	21500	14114	14871	15853	0	93138

A. **Mission Description and Budget Item Justification:** Project D460-LOSAT Engineering & Manufacturing Development: This program focuses on the integration of the Line-of-Sight Anti-Tank (LOSAT) weapon system into an air-mobile configuration in order to help remedy the early entry force lethality shortfall against heavy armor. The LOSAT weapon system consists of a kinetic energy (KE) missile launcher mounted on a heavy High Mobility Multi-purpose Wheeled Vehicle (HMMWV) chassis. LOSAT offers a near-term advanced capability for overwhelming armor destruction with a high rate of fire, increased range, and increased force survivability. LOSAT, deployed in the early entry force, will provide the decisive edge to win swiftly with minimum casualties and provides an assault support weapon capability. LOSAT is strategically and tactically deployable, giving Commanders and decision makers greater flexibility. The performance of this hypervelocity kinetic energy missile (velocity of a mile per second) is not affected by the proliferation of emerging threat active protective systems and enhanced reactive armors which are both rapidly becoming available on the global marketplace. LOSAT was initiated as a DOD-approved Advanced Concept Technology Demonstration (ACTD) program in FY 1998 to position the technology for future acquisition decisions; demonstrate subsystem capabilities in flight tests and dirty battlefield environments; evaluate the utility of the LOSAT technology for the early entry forces; demonstrate an integrated HMMWV-based LOSAT system in-flight test and advanced warfighting experiments; and evaluate affordability issues.

The effort funded in this PE supports the New Army Vision/Transformation by adding additional design activities, providing additional test hardware, and conducting additional qualification and Operational tests concurrent with the ACTD to assure additional design maturity support for entry into Low Rate Initial Production (LRIP) in FY 04. This effort supports the ongoing ACTD effort to assure readiness for entry in LRIP in FY 04 at the conclusion of ACTD test/demonstration phase. This is done in lieu of following the ACTD period with a follow-on EMD effort which would delay LRIP until FY 06 or later. The ACTD effort is funded in PE 0603654A.

FY 1999 Accomplishments: Project not funded in FY 1999.

FY 2000 Planned Program: Funding for New Army Transformation has yet to be determined.

FY 2001 Planned Program:

- 26800 Funds will be used in support of the New Army Vision/Transformation.
  - a. 5023 – Complete Design of Additional User Requirements into Fire Unit Hardware and Software.
  - b. 8459 – Initiate Fabrication of Additional Fire Units and Missiles for Full Qualification Testing During Period.
  - c. 4544 – Provide Additional Logistics Support Analysis to Support Early Fielding of Tactical Hardware.
  - d. 5277 – Accelerate ACTD Development Tasks to reduce subsequent Risk in Qualification Test Period.
  - e. 1041 – Conduct Early Soldier Involvement in Design Reviews, Tactics, Techniques, and Procedures Development.
  - f. 2456 – Initiate Pilot Production Line to Support Delivery of Production Representative Hardware for Limited User Test.

Total 26800

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604819A Line-of-Sight Anti-Tank

PROJECT: D046

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	0	0	0
Appropriated Value			
Adjustments to Appropriated Value			
a. Congressional General Reductions			
b. SBIR / STTR			
c. Omnibus or Other Above Threshold Reductions			
d. Below Threshold Reprogramming			
e. Rescissions			
Adjustments to Budget Years Since FY 2000/2001 PB			0
New Army Vision/Transformation Adjustment		TBD	+26800
Current Budget Submit (FY 2001 PB)	0	0	+26800

Change Summary Explanation: Funding – FY 01: Project 046 was adjusted to reflect the new Army Transformation.

C. Other Program Funding Summary Missile Procurement Army	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
H09100 LOSAT	0	0	0	*9366	*17902	61374	97667	665959	852268

*Procurement funds in FY 02/03 are for ACTD Residual Missile Hardware; LRIP will begin in FY 04.

D. Acquisition Strategy: The Line-of-Sight Anti-Tank additional development and qualification effort to support the New Army Vision/Transformation will be conducted in conjunction with the on-going ACTD effort; and will be contracted by the US Army Aviation and Missile Command (AMCOM). A Milestone Decision Review will be conducted in FY 04 to assess design maturity, and authorize entry into Low Rate Initial Production.

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Award Risk Reduction Design and Test			1QTR				
Preliminary Design Reviews and Material Orders			3QTR				
Complete Component Level Qualifications				1QTR			
Begin Missile and Fire Unit Assembly				2QTR			
Begin System Qualification and Flight Tests				3QTR			
Begin User Experimentation					1QTR		
Complete Qualification and Flight Tests					3QTR		
Limited User Testing					4QTR		
LRIP Decision Milestone						1QTR	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)		DATE: February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604819A Line-of-Sight Anti-Tank	PROJECT: D046

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Fielding and Extended User Evaluation						1-4QTR	1-4QTR

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604819A Line-of-Sight Anti-Tank

PROJECT: D046

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Risk Reduction Program	CPIF	LMVS, Dallas, TX				23625	Nov 00	19114	42739	
b. RDEC Support	TBD	Huntsville, AL				375		1600	1975	
c. Follow-on-Dev Effort	TBD	TBD						26524	26524	
Subtotal Product Development:						24000		47238	71238	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. In-House Support						1025		5925	6950	
b. Functional Govt Support						225		850	1075	
c. OGA						175		825	1000	
d. Misc OGA		Various				175		800	975	
Subtotal Support Costs:						1600		8400	10000	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. In-House Support		Huntsville, AL				150		475	625	
b. Redstone Tech Test Ctr	PO	Huntsville, AL				125		2075	2200	
c. White Sands Msl Range	PO	WSMR, NM				725		2150	2875	
d. Aberdeen Test Ctr	PO	Aberdeen, MD						775	775	
e. TEXCOM	PO	Various						2225	2225	
f. Advanced Research Lab	PO	Various						1250	1250	
g. Misc OGA	PO	Various						750	750	
Subtotal Test and Evaluation:						1000		9700	10700	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604819A Line-of-Sight Anti-Tank

PROJECT: D046

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Sys Eng Tech Assist		Huntsville, AL				200		1000	1200	
Subtotal Management Services:						200		1000	1200	
Project Total Cost:						26800		66338	93138	

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604820A Radar Development

PROJECT: DE10

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DE10 Sentinel	6708	5089	8429	3639	0	0	0	0	159603

A. **Mission Description and Budget Item Justification:** The Sentinel, AN/MPQ-64, consists of a HMMWV towed radar-based sensor with its prime mover/power, identification friend or foe (IFF), and FAAD Command, Control, and Intelligence (C2I) interfaces. The sensor is an advanced three-dimensional battlefield X-Band air defense phased-array radar with an instrumented range of 40 km. The Sentinel is capable of operating day or night, in adverse weather conditions, in the battlefield environments of dust, smoke aerosols, and enemy countermeasures. It provides 360 degree azimuth coverage for acquisition tracking. The Sentinel contributes to the digital battlefield by automatically detecting, classifying, identifying, and reporting targets (cruise missiles, unmanned aerial vehicles, rotary wing and fixed wing aircraft). This Modernization Program will improve Sentinel's capability against evolving threats. The Modernization Program will provide increased capabilities for the Sentinel to keep abreast of the evolving technological threat of small radar cross-section targets such as cruise missiles and unmanned aerial vehicles.

FY 1999 Accomplishments:

- 2299 Conducted Transmitter Prototype Design and Development
- 4000 Passive Adjunct Sensor Development
- 409 Conducted Waveform Prototype Design and Develoment

Total 6708

FY 2000 Planned Program:

- 2437 Continue Transmitter Prototype Design and Development
- 2515 Conduct Waveform Prototype Design and Development
- 137 Small Business Innovation Research/Small Business Transfer (SBIR/STTR) Programs

Total 5089

FY 2001 Planned Program:

- 1377 Complete Transmitter Prototype Design and Development
- 4725 Complete Waveform Prototype Design and Development
- 465 Integration and Test of Waveforms
- 1862 Conduct Target Classification Prototype Design and Development

Total 8429

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604820A Radar Development

PROJECT: DE10

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	6742	5128	8481
Appropriated Value	6786	5128	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-44		
b. SBIR / STTR	-178		
c. Omnibus or Other Above Threshold Reduction		-21	
d. Below Threshold Reprogramming	+170		
e. Rescissions		-18	
Adjustments to Budget Years Since FY 2000/2001 PB	-26		-52
Current Budget Submit (FY 2001 PB)	6708	5089	8429

C. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
Other Procurement, Army 2 (SSN WK 5053)	57475	48257	24188	28497	31882	34672	34635	Continue	Continue
Other Procurement, Army 2 (SSN WK 5057)		0	0	5502	11312	16954	16936	Continue	Continue
Spares (SSN BS 9732)	5102	4334	1922	3192	678	3853	2806	Continue	Continue

D. Acquisition Strategy: The Modernization Program awarded a sole source CPAF contract to the production manufacturer. The effort will aggressively implement the tenets of Cost As Independent Variable (CAIV) to assure Total Ownership Costs of the Sentinel are reduced. The contractor will be incentivized to reduce both acquisition and operational support costs for the Sentinel program. The program will take advantage of already developed items and certain off the shelf technologies to minimize risk while insuring cost schedule and performance goals are achieved.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604820A Radar Development

PROJECT: DE10

E. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Transmitter Initial Design	2Q						
Waveform Prototype Design	2Q						
Waveform Critical Design Review		2Q					
Transmitter Critical Design Review		2Q					
Passive Sensor Development		3Q	1-4Q				
Transmitter Test and Acceptance			2Q				
Waveform Test and Acceptance			2Q				
Target Classification Prototype Design			2Q				
Target Classification Test and Acceptance				1Q			
Integration Test				2Q			

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604820A Radar Development

PROJECT: DE10

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. System Development	C/FFP	Hughes Aircraft Co. Fulleton, CA	56836								56836	56836
b. Technical requirement definition, corrective action & simulation	MIPR	Various AMCOM contractors/locations	18704								18704	
c. Passive Sensor	MIPR	Various other agency contractors/locations		4000			3Q				4000	
d. Misc requirements definition, ECM and survivability efforts.	MIPR	Various other agency contractors/locations	5270								5270	
e. Modernization Developments	SS/CPAF	Raytheon Company El Segundo, CA		1902	2Q	4094	2Q	6334	2Q	1362	13692	13769
f. Misc Mod Developments	MIPR	Various other agency contractors/locations				168	2Q	950	2Q	200	1318	
g. SBIR/STTR	Various	Various				137	2Q				137	
Subtotal Product Development:			80810	5902		4399		7284		1562	99957	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Support Services	MIPR	AMCOM Redstone Arsenal, AL	9945	481	2Q	327	2Q	300	2Q	200	11253	
b. Other Agency Support Services	MIPR	Various	1707	114	3Q						1821	
Subtotal Support Costs:			11652	595		327		300		200	13074	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604820A Radar Development

PROJECT: DE10

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. IOT&E	MIPR	OPTEC Alexandria, VA	24180								24180	
b. Other/Misc Test and Evaluation Activity	MIPR	Various	7703								7703	
c. Technical Test	MIPR	Redstone Technical Test Center Redstone Arsenal, AL	1213					425	2Q	1500	3138	
Subtotal Test and Evaluation:			33096					425		1500	35021	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Product Manager Support	MIPR	PM Sentinel/AMCOM Redstone Arsenal, AL	10180	146	2Q	243	2Q	299	2Q	258	11126	
b. Contractor Support to Product Manager	FP	Vista Tech, Huntsville, AL /TBD		65	2Q	120	2Q	121	2Q	119	425	
Subtotal Management Services:			10180	211		363		420		377	11551	

Project Total Cost:			135738	6708		5089		8429		3639	159603	

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)			DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604823A Firefinder AN/TPQ-47		PROJECT DL85

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
DL85 Firefinder AN/TPQ-47	19601	39860	37363	26838	5995	0	0	0	134487

A. **Mission Description and Justification:** The Firefinder AN/TPQ-47 will replace the AN/TPQ-37 Artillery Locating Radar. This program is in response to the approved Mission Need Statement (MNS) for the Advanced Firefinder System which describes an urgent need for a longer range and less manpower intensive radar. An Operational Requirements Document (ORD) for the Firefinder AN/TPQ-47 was approved 25 Sep 96. The Firefinder AN/TPQ-47 will double the current artillery range performance out to 60km and improve the target throughput up to 50 targets per minute in a highly mobile, transportable and survivable system. The Firefinder AN/TPQ-47 will provide a new capability of missile and rocket detection at ranges of 150-300 km and will be capable of alerting Theater Missile Defense Systems. The system will be capable of C-130 roll-on/roll-off transportability for rapid deployment. Crew size will be reduced from 12 to 8. This program will leverage off the AN/TPQ-36(V)8 Electronics Upgrade program by using the same man-machine interface. The Firefinder AN/TPQ-47 will be integrated into the Army Tactical Command and Control System (ATCCS) by interfacing with the Advanced Field Artillery Tactical Data System (AFATDS).

FY 1999 Accomplishments:

•	417	Completed program planning and conducted Integrated Baseline Review (IBR)
•	927	Began development and ordered parts for the Radar Environmental Simulator System (RESS)
•	1489	Awarded subcontract and began internal design for development of Power Amplifier Modules
•	1408	Awarded subcontract and began development of Joint Technical Architecture-Army (JTA-A) compliant operational software
•	9852	Completed preliminary design and conducted Preliminary Design Review (PDR)
•	611	Continued simulation efforts to develop target and clutter models and initiated effort with Theater Ballistic Missile (TBM) simulations and initiated test planning with test community
•	4897	Procured long lead items
Total	19601	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604823A Firefinder AN/TPQ-47 — PROJECT: DL85

FY 2000 Planned Program:

•	3199	Continue development of the RESS and simulation efforts to develop target and clutter models and incorporate Firefinder into TBM simulations
•	5337	Initiate development to provide early warning and cueing of TBMs
•	8278	Continue development and complete JTA-A compliant operational software design, coding and unit test
•	6189	Complete detailed system design and conduct Critical Design Review (CDR)
•	3937	Continue development and manufacture of Power Amplifier Modules and Sub Array Modules for System #1
•	11034	Complete build of System #1 Antenna Transceiver Group (ATG) and begin integration and test
•	823	Prepare Interactive Electronic Technical Manuals (IETMs) and other logistical data
•	1063	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	39860	

FY 2001 Planned Program:

•	2403	Complete development and Validation & Verification (V&V) of the RESS modeling
•	7874	Continue manufacture of Power Amplifier Modules and Sub Array Modules for Systems #2 and #3
•	13934	Complete build of Systems #2 and #3
•	8616	Complete integration of Systems #2 and #3 and continue contractor engineering test of all systems
•	1551	Prepare training course materials and other logistics data
•	2985	Initiate development of Training Devices
Total	37363	

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	20583	32353	37589
Appropriated Value	20722	40253	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-139		
b. SBIR / STTR	-536		
c. Omnibus or Other Above Threshold Reduction		-163	
d. Below Threshold Reprogramming	-364		
e. Rescissions	-82	-230	
Adjustments to Budget Years Since FY 2000/2001 PB			-226
Current Budget Submit (FY 2001 PB)	19601	39860	37363

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604823A Firefinder AN/TPQ-47

PROJECT: DL85

C. Other Program Funding Summary	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
Other Procurement, Army 2										
SSN: BA5100 Firefinder P3I						93504	105392	102186	522850	823932

D. Acquisition Strategy: The EMD contract was competitively awarded as a 43 month effort beginning 1 Jul 98 to provide three (3) production representative systems; however, an additional year has been added to the EMD phase to reduce program risk and allow for additional simulation and test. The contract was re-baselined in Dec 99 to incorporate a revised 53 month program schedule and a revised program cost estimate.

E. Schedule Profile	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2004	FY 2005
Obtained Milestone II Approval	1Q								
Awarded EMD Contract	3Q								
Conducted Integrated Baseline Review (IBR)		1Q							
Began development of the RESS		2Q							
Completed preliminary hardware/software design and conducted PDR		4Q							
Complete detailed system design and conduct CDR			2Q						
Begin fabrication of System #1 ATG			2Q						
Complete integration and begin test on System #1 ATG			4Q						
Begin fabrication of Systems #2 and #3				1Q					
Complete development of the RESS				2Q					
Initiate development of training devices				2Q					
Complete integration of Systems #2 and #3 and continue contractor engineering test of all systems				4Q					
Begin DT&E					2Q				
Conduct Initial Operational Test & Evaluation (IOT&E)						1Q			
Milestone III Decision						2Q			
Production Contract Award						2Q			

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604823A Firefinder AN/TPQ-47

PROJECT: DL85

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Primary Hardware Dev	C/CPIF	Raytheon Sys, CA/MS	900	15950	1Q-4Q	31450	1Q-3Q	27000	1Q-3Q	10450	85750	
b. Ancillary Hardware Dev	TBD	Various	521	1484	1Q-3Q	1105	1Q-2Q	1971	1Q-2Q	2315	7396	
c. Trainers Dev	SS/TBD	Raytheon Sys, CA/MS						2568	2Q	9574	12142	
d. Sys Engrg (Contractor)	C/FP	Various	1195	159	2Q-3Q	1410	2Q	360	1Q	260	3384	
e. Sys Engrg (Government)	MIPR	Various	454	359	1Q-3Q	484	1Q-2Q	484	1Q-2Q	756	2537	
f. Software Engineering	C/FP	Telos, OK	263	200	3Q	1873	1Q	375	1Q	375	3086	
g. SSEB	MIPR	Various	187								187	
Subtotal Product Development:			3520	18152		36322		32758		23730	114482	

Remark - Primary Hardware Development: As part of the Firefinder AN/TPQ-47 EMD contract, Raytheon Systems committed to an investment of $16.4M. The original contract value was $73.7M, comprised of the Government portion of $57.3M and the contractor investment of $16.4M. To implement the investment, Raytheon billed for only 50% of all allowable costs for the first $32.8M of the program.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Development Support - Contractor	C/FP	Various				0		150	1Q	250	400	
b. Development Support - Government	MIPR	Various	304	157	1Q-2Q	193	1Q-2Q	245	1Q-2Q	509	1408	
c. Integrated Logistics Spt (ILS) - Contractor	TBD	Various	35	10	2Q	89	2Q	192	2Q	234	560	
d. ILS Support-Government	MIPR	CECOM, Ft Mon, NJ	36	55	2Q	83	1Q	149	1Q	574	897	
e. Configuration Mgmt Spt-Government	MIPR	CECOM, Ft Mon, NJ	26	148	1Q-2Q	188	1Q	199	1Q	342	903	
Subtotal Support Costs:			401	370		553		935		1909	4168	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604823A Firefinder AN/TPQ-47

PROJECT: DL85

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Development Test & Evaluation (DT&E)	MIPR	Yuma, AZ WSMR, NM						1250	2Q	3850	5100	
b. IOT&E	MIPR	Various								600	600	
c. Test Support	MIPR	Various	219	202	2Q	276	1Q-2Q	597	1Q-2Q	323	1617	
Subtotal Test and Evaluation:			219	202		276		1847		4773	7317	

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Management - Contractor	C/FP	Various	356	215	1Q-2Q	398	1Q-2Q	423	1Q-2Q	645	2037	
b. Program Management - Government	MIPR	CECOM, Ft Mon, NJ	50	111	1Q	120	1Q	145	1Q	243	669	
c. Product Manger Office - Internal Support		CECOM, Ft Mon, NJ	284	551	1Q-4Q	1128	1Q-4Q	1255	1Q-4Q	1533	4751	
d. SBIR/STTR						1063					1063	
Subtotal Management Services:			690	877		2709		1823		2421	8520	

Project Total Cost:			4830	19601		39860		37363		32833	134487	

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604824A Commercial Operating & Support Savings Initiative (COSSI)
	PROJECT D112

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D112 Commercial Operating & Support Savings Initiative	16351	0	0	0	0	0	0	0	21457

A. Mission Description and Justification: The mission of Commercial Operations and Support Savings Initiative (COSSI) is to reduce Army Operations and Support (O&S) costs by routinely inserting commercial items into fielded military systems. The insertion of commercial items is expected to reduce O&S costs by reducing the costs of parts and maintenance, reducing the need for specialized equipment, increasing reliability, and increasing the efficiency of subsystems. An appropriate fielded military system for a COSSI project is one that has some current operational capability and is not near the end of its useful life. Selected proposals will develop, manufacture, and deliver prototype "kits" to the military for installation into a fielded Army system. Each kit will consist of a commercial item, or a combination of items, and will be ready for insertion or use in a fielded military system. COSSI seeks proposals submitted by firms or teams that include at least one for-profit firm. Proposals must also include the written support of a "Military Customer" who has the authority to modify the system and purchase the kits. COSSI is a two-stage process. In Stage 1 of each selected project, COSSI and the chosen proposer will share the costs of developing and testing the kit, with the proposer contributing at least 25% of the estimated costs of Stage 1. If Stage 1 is successful, Stage II will be initiated. In Stage II, the military customer may then purchase reasonable production quantities of the kit. Payment for the kits and their insertion into the fielded system will be the responsibility of the military customer. The Army further requires that Stage II funding be identified before commencement of Stage I to insure timely transition. COSSI was funded in DOD PE 0603805E through FY1998, transferred to an Army PE 0604824 in FY1999, and is transferred to PE 0708045A in FY2000.

FY 1999 Accomplishments:

- 9136 Aviation – Sand Erosion Resistance Kits for Model 36-155 on Apache/Longbow Helicopter. Adapt commercially available sand erosion resistance components into the inlet particle separator currently installed on the main propulsion turbine engine of the Apache to increase its operational life and reduce Operating & Support costs. Switchable Eyesafe Laser Rangefinder Designator (SELRD) for the Apache AH64 A/D Longbow. Replace the existing AH64 laser that suffers from low power output and parts obsolescence with a commercially developed laser to improve its current capabilities. Install, Integrate and Support Commercial Off-the-Shelf Non-Developmental Item Displays, Digital Map, Stores Management System and Infrared Suppressor to the OH-58DI. This replacement will enhance range/payload capability and crew situational awareness, while significantly reducing Operating & Support costs and improving readiness.
- 1171 Combat Service Support – Remotely Monitored Battlefield Sensor System. Modify a commercially available transceiver for application to the RT-1175A ground sensor repeater resulting in lower maintenance cost. Portable Engine Test Cell Capability. Modify a commercially available JETCAL 2000 portable engine test cell to provide a turn-key portable test set solution for testing installed turbine engines in CH-47 aircraft to reduce engine false removal rates.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604824A Commercial Operating & Support Savings Initiative (COSSI)
	PROJECT D112

FY 1999 Accomplishments: (continued)

- 4871 Horizontal Technology Integration - Integrated Mechanical Diagnostics/Health and Usage Management System. Utilize internal hardware and interface components of a commercial unit, developed for the Sikorsky S-76 and S-92 Helicopters, for use on UH-60 Helicopters. This will reduce the spare parts budget and extend the time between overhauls.
- 1173 Maneuver - Low Cost AGT1500 Compressor Blades. Apply patented, low cost, commercial Metal Injection Molding into 1st and 2nd stage compressor blades for the AGT1500 gas turbine engine on the US Army M1 Abrams Tank. This will enable the use of commercial practices and technologies to develop a lower cost compressor blade and vane manufacturing process to lower O&S costs.

Total 16351

FY 2000 Planned Program: Program funded in PE 0708045A.

FY2001 Planned Program: Program funded in PE 0708045A.

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	21457	0	0
Appropriated Value	21600		
Adjustments to Appropriated Value			
a. Congressional General Reductions	-143		
b. SBIR / STTR	-568		
c. Omnibus or Other Above Threshold Reductions	-275		
d. Below Threshold Reprogramming	-4177		
e. Rescissions	-86		
Adjustments to Budget Years Since (FY 2000/2001 PB)			
Current Budget Submit (FY 2001 PB)	16351	0	0

Change Summary Explanation: Funding – FY 1999 funds realigned (-4177) to higher priority requirements.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604854A Artillery Systems - Engineering Development

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	1059	4782	20105	54832	238310	464900	438221	Continuing	Continuing
D509 Lightweight 155M Howitzer	963	4782	17384	10748	9922	0	0	0	43799
D503 Crusader - Engineering Development	0	0	28	39273	227991	452583	425058	Continuing	Continuing
D2KT Crusader Operational Test	96	0	199	198	397	1190	199	Continuing	Continuing
516 Paladin/FAASV	0	0	2494	4613	0	0	0	0	7107
D523 Future Direct Support Weapon	0	0	0	0	0	11127	12964	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program element supports the Joint Light Weight (LW) 155mm Howitzer Engineering and Manufacturing Development program, the Crusader Engineering and Manufacturing Development program, the Crusader Operational Test program, the Paladin/FAASV Improvement program and the Future Direct Support Weapon System program.

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	1093	65806	327883
Appropriated Value	1100	4800	
Adjustments to Appropriated Value			
a. Congressional General Reductions	-7		
b. SBIR / STTR	-28		
c. Omnibus or Other Above Threshold Reductions		-18	
d. Below Threshold Reprogramming	-2		
e. Rescissions	-4		
Adjustments to Budget Years Since FY 2000/2001 PB			+17020
New Army Transformation Adjustment		TBD	-324798
Current Budget Submit (FY2001 PB)	1059	4782	20105

Change Summary Explanation: Funding – FY01: Projects D503 and D2KT were adjusted to reflect the New Army Transformation.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604854A Artillery Systems - Engineering Development

PROJECT: D509

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D509 Lightweight 155M Howitzer	963	4782	17384	10748	9922	0	0	0	43799

A. **Mission Description and Budget Item Justification:** The LW155 Towed Howitzer, a joint program with the Marine Corps, will provide the replacement for the M198, 155mm Howitzer and achieve significant strategic and tactical mobility improvements. Project D509 supports the EMD Phase for TAD, which is a digital fire control system for the basic LW155 Towed Howitzer and could be applied to other current and developmental towed howitzers.

FY 1999 Accomplishments:

•	963	Draft Towed Artillery Digitization (TAD) Joint Acquisition Strategy Report / Acquisition Plan, Performance Specification, and Request for Proposal.
Total	963	

FY 2000 Planned Program:

•	600	Provide Government matrix engineering program support and participation in Integrated Product Teams (IPTs) for the prime development contract.
•	850	Provide Government Program Management Support and core engineering staff to establish program baseline and conduct Milestone I/II Review.
•	3212	Award EMD contract to develop Towed Artillery Digitization (TAD) System.
•	120	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	4782	

FY 2001 Planned Program:

•	4045	Provide Government matrix engineering program support and participation in Integrated Product Teams (IPTs) for the prime development contract.
•	1200	Provide Government Program Management support and core engineering staff to establish functional and allocated baselines.
•	10389	Continue TAD System EMD contract. Develop the TAD System hardware and software baseline.
•	1750	Fabricate seven sets of test articles. Conduct component level hardware and software testing. Begin system integration efforts.
Total	17384	

B. Other Program Funding Summary	Prior Year	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE, N LW155 Towed How 060363M	70400	31910	27117	13153						142580
PMC LW155 Towed How Prod, Bli 218500				11105	90055	197065	142352	238		440815
Procurement, WTCV, Army, G01700					99	7436	26481	41996	374900	450912

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604854A Artillery Systems - Engineering Development PROJECT D509

C. **Acquisition Strategy:** The overall Joint Acquisition Strategy/Plan parallels the USMC EMD and Production Phases for their LW155 howitzers. The principal strategy for the Army-funded TAD EMD, is to negotiate a CPIF contract with a single contractor to develop, integrate, test and evaluate the TAD System prior to Army LW155 production. This will ensure Army LW155s are fielded with the TAD System already on them. The Marine Corps will monitor, assess and most likely opt to retrofit their fielded LW155 howitzers with TAD. USMC howitzers still in production would then be outfitted with the TAD System prior to fielding.

D. Schedule Profile	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Towed Artillery Digitization (TAD) Milestone I/II					1st Qtr					
TAD System Contract Award					3d Qtr					
TAD System Developmental Testing Begins						2nd Qtr				
TAD System Developmental Testing Ends							4th Qtr			
TAD Multi-service Operational Testing Begins								1st Qtr		
TAD Multi-service Operational Testing Ends								2nd Qtr		
TAD System Milestone III								4th Qtr		
Production of LW155 Howitzer with TAD System									1st Qtr	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604854A Artillery Systems - Engineering Development

PROJECT: D509

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TAD System EMD Contract	CPIF	TBD				3212	3d Qtr	10389		10020	23621	
b. Govt Eng Spt	MIPR	Picatinny Arsenal		963		600	1st Qtr	4045	1st Qtr	4037	9645	
Subtotal Product Development:				963		3812		14434		14057	33266	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PM Management	Allotment	JPM LW155, NJ				850	1st Qtr	1200	1st Qtr	2000	4050	
Subtotal Support Costs:						850		1200		2000	4050	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Developmental Tests	MIPR	TECOM						0		2381	2381	
b. Multi-service Oper Test	MIPR	Various						0		732	7323250	
c. Test Articles	CPIF	TBD						1750		1500		
Subtotal Test and Evaluation:								1750		7323881	7325631	

IV. Management Services:	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. SBIR/STTR						120					120	
Subtotal Mgt Services:						120					120	

Project Total Cost:				963		4782		17384		7339938	7363067	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604854A Artillery Systems - Engineering Development

PROJECT: D2KT

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
D2KT Crusader Operational Test	96	0	199	198	397	1190	199	Continuing	Continuing

A. Mission Description and Justification: This project support Crusader Operational Testing which will be conducted to answer issues relating to system effectiveness and suitability. Testing will be performed using simulations and physical testing to project Crusader capabilities from section level (individual howitzer or resupply vehicles) to platoon, battery and battalion levels to determine Crusader mission effectiveness and force structure suitability.

FY 1999 Accomplishments:

•	96	Planning and preparation for Crusader Early User Experiment.
Total	96	

FY 2000 Planned Program: Project not funded in FY2000.

FY 2001 Planned Program:

•	199	Continuation of planning and preparation for Crusader Early User Experiment.
Total	199	

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Comp	Total Cost
RDTE, BA4, Army, PE 0603854, D505	300429	266158	355309	446674	245250			0	2140620
RDTE, BA5, Army, PE 0604854, D503			28	39273	227991	452583	425058	Cont	Cont
Procurement, WCTV, Army, G83500						24679	94237	Cont	Cont
Procurement, WCTV, Army, G83600						19096	76408	Cont	Cont

C. Acquisition Strategy: Not applicable

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Initiate planning and preparation for Crusader Early User Experiment	4th Qtr						
Conduct Crusader Early User Experiment						4th Qtr	
Conduct Crusader Early User Testing							1st Qtr

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604854A Artillery Systems - Engineering Development

PROJECT: D2KT

I. Product Development: Not applicable

II. Support Costs: Not applicable

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Operational Testing	PO	TECOM (YPG, AZ; CSTA, APG, MD); Ft. Sill, OK; OPTEC, VA		96	Oct-98	0		199	Oct-00	Cont	Cont	
Subtotal Test and Evaluation:				96		0		199		Cont	Cont	

IV. Management Services: Not applicable

Project Total Cost:				96		0		199		Cont	Cont	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604854A Artillery Systems - Engineering Development PROJECT 516

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
516 Paladin/FAASV	0	0	2494	4613	0	0	0	0	7107

A. Mission Description and Budget Item Justification: The Paladin/FAASV project allows for integration of several system improvements which will provide for: automated dispensing of M231/M232 charge in vehicle; replacement of M82 cartridge primer with a laser ignition system; and upgrade of several components of the Automated Fire Control System (AFCS) XXI. These system improvements provide significantly improved mission effectiveness, increased reliability, maintainability and supportability, as well as reduce life cycle costs and obsolescence.

FY 1999 Accomplishments: Project not funded in FY 1999.

FY 2000 Planned Program: Project not funded in FY 2000.

FY 2001 Planned Program:

- 1314 Perform System Integration and Development of Fire Control TDP Upgrade
- 670 Fabrication of Sub System Components and Cabling
- 190 Perform On-Vehicle Component Testing
- 320 Provide Program Management

Total 2494

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
PA, WTCV, GA0400 Paladin	11244	26824	8060	5337	13850	20115	3984		89414
PA, WTCV, GA8010 FAASV PIP	3131	229	5	18387	2054	8419	62		32287

C. Acquisition Strategy: The Paladin/FAASV project will leverage both Government and Contractor capabilities to accomplish the development of the Paladin/FAASV system improvement projects. Government in-house engineering will perform some component level design and system integration. Final System Level Testing will be performed by Other Government Agencies (OGA). Competitive contracts will be used for many of the component level design and hardware fabrication. To the extent possible, maximum use of existing commercial off-the-shelf hardware and software will be utilized.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604854A Artillery Systems - Engineering Development

PROJECT: 516

D. Schedule Profile	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
Award Contract for Fire Control Upgrade					1st Qtr					
Perform AFCS XXI Development and Hardware Fabrication					4Th Qtr					
Complete AFCS XXI TDP Update					4th Qtr					
Award OGA for MACS Stowage and Handling Development and Hardware Fabrication					4th Qtr					
Perform MACS Stowage and Handling Testing and Evaluation						4th Qtr				
Complete MACS Stowage and Handling TDP							4th Qtr			
Award Development and Hardware OGA's and Contracts for Laser Ignition System						1st Qtr				
Perform Live Fire Testing with Laser Ignition System						4th Qtr				
Complete Laser Ignition TDP							4th Qtr			

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604854A Artillery Systems - Engineering Development

PROJECT: 516

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Component Design	Various	Unknown				900	Nov 00	1545	2445	2445
b. System Integration	MIPR	TACOM-ARDEC, Picatinny, NJ				874	Nov 00	1200	2074	2074
c. TDP Development	MIPR	TACOM-ARDEC, Picatinny, NJ				210	Nov 00	300	510	510
Subtotal Product Development:						1984		3045	5029	5029

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Logistics	MIPR	TACOM-ACALA, Moline, IL				70	Dec 00	300	370	370
Subtotal Support Costs:						70		300	370	370

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Component Level Testing	MIPR	TACOM-ARDEC, Picatinny, NJ				35	Jul 01	350	385	385
b. System Level Testing	MIPR	TECOM, APG, MD				155	Jul 01	468	623	623
Subtotal Test and Evaluation:						190		818	1008	1008

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PMO Support	NA	PM Paladin/FAASV, Picatinny, NJ				250	Oct 00	450	700	700
Subtotal Management Services:						250		450	700	700

Project Total Cost:						2494		4613	7107	7107

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ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0605013A Information Technology Development

	COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
	Total Program Element (PE) Cost	0	0	94170	58633	57098	63159	64739	Continuing	Continuing
087	The Army Distance Learning Program (TADLP)	0	0	4900	4335	4274	5801	4657	Continuing	Continuing
099	SIDPERS-3	0	0	9237	6237	5395	5228	4838	Continuing	Continuing
137	TC-AIMS II	0	0	8079	9853	10033	7066	7691	Continuing	Continuing
184	Installation Support Modules (ISM)	0	0	4677	4674	4670	4666	4662	Continuing	Continuing
185	Army Recruiting Information Support System (ARISS)	0	0	8614	0	0	0	0	8614	8614
193	Medical Communications for Combat Casualty Care	0	0	3221	2194	2067	2254	0	9736	9736
196	Horizontal Technology Integration (HTI)	0	0	1919	2085	2251	2535	2693	Continuing	Continuing
252	TACMIS	0	0	5485	5566	5658	5701	5887	Continuing	Continuing
286	PM Gobal Combat Support System (GCSS) - Army Core	0	0	2400	2407	2411	2453	2495	Continuing	Continuing
299	Joint Computer-Aided Acquistion and Logistics Support (JCALS)	0	0	42156	16822	17469	23476	27854	Continuing	Continuing
316	STACOMP	0	0	3482	4460	2870	3979	3962	0	0

A. **Mission Description and Justification:** Supports efforts to plan, design, develop, and test information technology solutions to fulfill the Army's Warfighter Support Mission and accommodate changing Army requirements while fulfilling future Army needs. Provides for development and acquisition of Combat Service Support (CSS) and business information technology solutions to help arm, sustain, fix, move, train and man the force. Completed development/acquisition efforts will also enhance sustaining base functions and power projection capabilities and facilitate global messaging and electronic data interchange (EDI). Ongoing development efforts support multiple functional areas including logistics, personnel, transportation, training, medical/health protection, and sustaining base.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0605013A Information Technology Development

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	0	0	0
Appropriated Value			
Adjustments to Appropriated Value			
a. Congressional General Reductions			
b. SBIR / STTR			
c. Omnibus or Other Above Threshold Reductions			
d. Below Threshold Reprogramming			
e. Rescissions			
Adjustments to Budget Years Since FY 2000/2001 PB			+94170
Current Budget Submit (FY 2001 PB)			94170

Change Summary Explanation: Funding – FY 2001 funding realigned from Army O&M to Army RDTE appropriation for the development and modernization of information technology systems.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0605013A Information Technology Development

PROJECT: 087

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
087 The Army Distance Learning Program (TADLP)	0	0	4900	4335	4274	5801	4657	Continuing	Continuing

A. Mission Description and Justification: TADLP will provide standard automation and supporting infrastructure to improve Army's ability to train service members and supporting civilian workforce in all Army components. It will enhance institutional and individual training by introducing proven distance learning (DL) enhancements validated by industry and academia into the Army training inventory. TADLP goals include: Providing more efficient training delivery/training support. Travel efficiencies will be garnered through delivery of training to service members at or near their home station. Improving service member morale by allowing members to acquire necessary military training without leaving their home station. Improving efficiency and effectiveness of Army instructors by allowing each instructor to train more students in a shorter period of time. Improving unit readiness due to the reduction in personnel turbulence resulting from long term absence for resident training. This project is not a new start.

FY 1999 Accomplishments: Project funded in O&M Army

FY 2000 Planned Program: Project funded in O&M Army

FY 2001 Planned Program:

- 2256 Program Management
- 314 Logistics Planning
- 1425 Engineering and Technical Support
- 612 Testing
- 293 TADLP Block 3 Engineering Integration
  - TADLP Block 4+ Planning and Design

Total 4900

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA SSN BE4173	18750	8187	21490	21790	12346	19141	22845		
OMA APEs 4326615/432612/432126	10393	31097	19786	25755	30748	32696	35005		

C. Acquisition Strategy: Army will use an incremental acquisition strategy to acquire/deploy TADLP. Increments include:
- Block 1 was completed in FY 1998/99. It provides modern Digital Training Facilities (DTF) incorporating automation and Video-Teletraining (VTT) products to all Army components. These facilities support Army updates to existing courses that emphasize synchronous (direct and immediate) instructor/student interaction using VTT.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0605013A Information Technology Development PROJECT 087

DTFs also include student workstations equipped with personal computers. These PCs can be used for CD-ROM based training. This provides an immediate return on investment by allowing Army instructors to simultaneously provide training to both local and remote students, increasing the class size that can be effectively supported by a single instructor.

- Block 2 through 4 design efforts began in late FY 1999. Block 2 enhances Block 1 DTFs, providing a robust communications/data transmission capability to support expanded asynchronous training by linking students, instructors, and Subject Matter Experts through the Internet and/or other communications media to conduct collaborative training. Block 3 allows automated scheduling of courses and assignment of students to individual courses and locations. Block 4 allows movement from room based televideo to PC based televideo at individual student workstations. and 4 provide additional These efforts also will generate a comprehensive architecture on which to base future TADLP development. Full implementation of these blocks will be completed in FY 2002.
- Design of additional TADLP blocks will begin in FY 2003. Building on successes anticipated for the initial suite of modern tools, Army will redesign its training environment to support a cost-effective mix of synchronous and asynchronous learning tools incorporating lessons learned from industry/academia. Potential enhancements include use of artificial intelligence and other techniques to rapidly tailor courses for individual learning styles and implementing simulation/other automation intensive tools made affordable by technological advances.

D. Schedule Profile	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
Milestone I/II			2Q							
Milestone III (TADLP Blocks 1 and 2)				3Q						
Milestone III (TADLP Block 3)					3Q					
Milestone III (TADLP Block 4)						3Q				
Milestone III (TADLP Block 5)								3Q		
Milestone III (TADLP Block 6)									3Q	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0605013A Information Technology Development

PROJECT: 087

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Block 3 Integration	C/FFP	ACS, VA Beach, VA				293	Dec-00		293	
Subtotal Product Development:						293			293	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Prog Mgmt Support	C/FFP	SRC, Burlington, MA				1150	Jan-01		1150	
b. Engineering/Tech Support	MIPR	ISEC, Ft. Huachuca, AZ				1006	Oct-00		1006	
c. Logistics Planning	C/FFP	SRC, Burlington, MA				314	Jan-01		314	
d. Engineering Tech Support	C/FFP	SRC, Burlington, MA				419	Jan-01		419	
e. PMO Operations	NA	NA				1106	NA		1106	
f.										
Subtotal Support Costs:						3995			3995	

Remark: PMO Operations includes direct pay of PMO government employees, TDY, training, supplies, etc.

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Testing	C/FFP	TBD				612	Dec-00		612	
Subtotal Test and Evaluation:						612			612	

IV. Management Services: Not applicable

Project Total Cost:						4900			4900	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0605013A Information Technology Development

PROJECT: 099

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
099 SIDPERS-3	0	0	9237	6237	5395	5228	4838	Continuing	Continuing

A. Mission Description and Justification SIDPERS-3 replaces SIDPERS 2.5 and 2.75 for Active Army Personnel Operations, and provides the Reserve Components a standard software system for use during mobilization. SIDPERS-3 provides commanders and managers the necessary personnel information to make informed decisions regarding military personnel resources. SIDPERS-3 is a major contributor to the Total Army Personnel Database (TAPDB) and will be the cornerstone of a more reliable and responsive automated personnel information system in support of all Army missions.
This project is not a new start.

FY 1999 Accomplishments: Project funded in O&M Army

FY 2000 Planned Program: Project funded in O&M Army

FY 2001 Planned Program:

- 4171 Post Deployment Software Support (PDSS) - ECPs/SCPs/ICPs
- 5066 PER Pay Lite development – an integrated personnel and pay process using single source data entry

Total 9237

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA SSN W00800	11734	5453	5590	4910	5792	5791	3906		
OMA APE: 432612/432615	9490	8418	1614	773	1790	2046	2111		

C. Acquisition Strategy: This project uses an Integrated Process Team approach; i.e., configuration management, risk management, testing, schedule, and cost. The OSD Information Technology Overarching Integrated Process Team (IT-IIPT) delegated to the Army Corporate Information Officer (CIO) (May 1999) acquisition oversight responsibility of the SIDPERS-3 program. The Acquisition Program Baseline (APB) documents all cost, schedule, and technical performance criteria. Performance goals are defined as task performance of Mission Essential Tasks (MET) and non-METs. Controls are in place to monitor the technical performance of matrix support organizations, including periodic reviews at all management levels. Monthly project status and metrics reports are used. Development, system qualification, and operational and evaluation testing is also conducted. The Test and Evaluation Master Plan (TEMP) established management oversight over the testing program.

D. Schedule Profile	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Milestone III		1Q							
PDSS			1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0605013A Information Technology Development

PROJECT: 099

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PDSS ECPs/SCPs/ICPs	C/FP	Electronic Data Systems, Herndon, VA				4171	Oct-00		4171	
b. Software Development	C/FP	Electronic Data Systems, Herndon, VA				5066	Oct-00		5066	
Subtotal Product Development:						9237			9237	

II. Support Costs: Not applicable

III. Test and Evaluation: Not applicable

IV. Management Services: Not applicable

Project Total Cost:						9237			9237	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0605013A Information Technology Development

PROJECT: 137

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
137 TC-AIMS II	0	0	8079	9853	10033	7066	7691	Continuing	Continuing

A. **Mission Description and Budget Item Justification:** Funding supports design, development, testing, and program management functions for Transportation Coordinators' – Automated Information for Movement System II (TC-AIMS II). Provides standard DoD integrated information transportation system capability for deployment, sustainment, and redeployment operations during both war and peacetime operations for the active and reserve forces.
Integrates unit, installation, and depot-level supply systems to manage inbound/outbound movement, documentation, and requisition information.
Supports routine and surge requirements and automates shipping/receiving, and deployment: sustainment and redeployment processes; produces movement documentation, unit move data; and furnishes timely transportation information to major commands, transportation component commands, United States Transportation Command, and the Joint deployment community. Provides In-Transit Visibility data and control over cargo and passenger movement, as a DoD source movement information system.
This project is not a new start.

FY 1999 Accomplishments: Project funded in O&M Army

FY 2000 Planned Program: Project funded in O&M Army

FY 2001 Planned Program:

- 3972 Begin development of the modules for second increment of TC-AIMS II, Release 3.02 (Unit Move Enhancement).
- 2468 Continue support of Joint Program Management Office Civilian Pay, matrix support and contract services for the software development effort.
- 1639 Provides facilities, supplies, and equipment needed to support continued development.

Total 8079

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA – SSN: BZ8900	2634	18753	10376	25413	1541	4748	4558		
OMA – APE: 432612/432615	11620	22839	7364	7617	7691	7686	7686		

C. **Acquisition Strategy:** TC-AIMS II acquisition strategy is to use an incremental, spiral development strategy in compliance with the Clinger-Cohen Act of 1996. The spiral development effort will break out system functionality into four separate releases. The November 1998 Joint Configuration Management Board (CMB) approved spiral development includes the following releases: 3.01 (Unit Movement), 3.02 (Unit Movement Enhanced), 3.03 (Installation Transportation Office (ITO)/Traffic Management Office), and the P3I which will provide a Theater Operations transportation management capability.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0605013A Information Technology Development

PROJECT: 137

D. Schedule Profile	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Milestone III Fielding Decision (Release 3.01)					1Q				
Milestone III Unit Move Enhanced Module						3Q			
Milestone III ITO Module							4Q		
Milestone III ITO Enhanced Module								1Q	
Milestone III Theatre Operations Module									3Q

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0605013A Information Technology Development

PROJECT: 137

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Release 3.02	C/CPIF	DynCorp (GTE), Springfield, VA				3972	Oct-00		3972	
Subtotal Product Development:						3972			3972	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Rents/Leases	C/FFP	SMART TECH, Springfield, VA				1400	Oct-00		1400	
b. JPMO Contractor Support	C/FFP	Various Fort Belvoir, VA				1454	VAR		1454	
c. JPMO Operations	N/A	N/A				1253			1253	
Subtotal Support Costs:						4107			4107	

Remark: JPMO Operations includes direct pay of JPMO government employees, TDY, training, supplies, etc.

III. Test and Evaluation: Not applicable

IV. Management Services: Not applicable

Project Total Cost:						8079			8079	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0605013A Information Technology Development

PROJECT: 184

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
184 Installation Support Modules (ISM)	0	0	4677	4674	4670	4666	4662	Continuing	Continuing

A. Mission Description and Budget Item Justification Installation Support Modules (ISM) functions encompass all information management resources and activities used to plan, organize, train, equip, mobilize deploy and sustain the force. The ISM mission is to provide more efficient and effective installation operations, thereby minimizing the adverse impact of on-going reductions of resources for this critical mission area. Consists of ten standard, automated software applications packaged into functional modules that integrate day-to-day Army installation business practices and processes. HQDA DISC4 has assigned management of the ongoing ISM sustainment mission to PEO STAMIS. This project is not a new start.

FY 1999 Accomplishments: Project funded in O&M Army

FY 2000 Planned Program: Project funded in O&M Army

FY 2001 Planned Program:

- 225 Independent Validation Verification (IVV) Testing
- 4452 Post Deployment Software Support - ECPs/SCPs

Total 4677

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OMA APE: 432612	18568	14133	9487	9439	9423	9754	10114		

C. Acquisition Strategy: This system is in Post Deployment Software Support (PDSS). The present concept calls for the use of full and open competition to satisfy requirements as defined by the Functional Proponent (Director of Information Systems for Command, Control, Communications, and Computers (DISC4).

D. Schedule Profile	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Post Deployment Software Support			1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0605013A Information Technology Development

PROJECT: 184

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PDSS ECPs/SCPs/ICPs	MIPR	ISSC, Ft Belvoir, VA				4452	Oct-00		4452	
Subtotal Product Development:						4452			4452	

II. Support Costs: Not applicable

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. IVV Testing	MIPR	ISEC, Ft Belvoir, VA				225	Jan-01		225	
Subtotal Test and Evaluation:						225			225	

IV. Management Services: Not applicable

Project Total Cost:						4677			4677	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0605013A Information Technology Development

PROJECT: 185

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
185 Army Recruiting Information Support System (ARISS)	0	0	8614	0	0	0	0	8614	8614

A. **Mission Description and Budget Item Justification:** The Army Recruiting Information Support System (ARISS) will provide a robust integrated automation capability to enhance Army recruiting business processes. ARISS will aid Army to attract highly qualified, capable recruits while reducing individual recruiter workload. Army is using an incremental approach to acquire/deploy the ARISS capability. ARISS provides individual recruiters with powerful multi-media laptop computers to aid in performing assigned missions. Recruiters also receive Recruiter Workstation (RWS) software consisting of Packet Projection and Leads increments. Recruiting management will receive automated tools to improve management of the recruiting mission. Deployment of the RWS Packet Projection Increment began in January 1999. The Leads increment and other planned enhancements will aid Army to meet new accession goals in an era of steadily dwindling resources and a shrinking pool of applicants for military service. This project is not a new start.

FY 1999 Accomplishments: Project funded in O&M Army

FY 2000 Planned Program: Project funded in O&M Army

FY 2001 Planned Program:

- 1384 Program Management
- 767 Engineering and Technical Support
- 340 Testing
- 2596 Headquarters Support System (HSS)/Guidance Counselor Redesign Development
- 1757 Guidance Counselor Redesign Development
- 1770 Integration with Existing Increments

Total 8614

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA SSN: BE4164	14247	8771	6452	5260	8919	8871	9192		
OMA APE: 331715	6383	13269	4823	4652	4762	4902	4963		

C. **Acquisition Strategy:** Army will use an incremental or phased acquisition strategy to acquire and deploy ARISS. Increments include:
JRISS Alpha increment - Provides recruiter workstation (RWS) infrastructure consisting of a mobile multimedia laptop computer with sales presentation and testing, e-mail, and office automation capabilities. Deployment to all recruiters was completed in FY99.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0605013A Information Technology Development PROJECT 185

Recruiter Workstation (RWS) increment - Supports recruiter level missions. The first RWS module, Packet Projection (P/P) has been deployed to all recruiters. The second RWS module, Leads/Reports, is currently being developed and will be tested and deployed in FY 00/01.
USAREC Headquarters Support System (HSS) increment - HSS consists of six modules that provide an operational support system to effectively manage personnel and funding and an analytical data warehouse. The HSS will interface with other Army/DoD recruiting and personnel information systems. HSS modules will be integrated into ARISS as they are completed and will be tested and deployed in FY00/01.
Guidance Counselor Applications/Standard Database. This increment will support business process improvements in processing applicants for enlistment by providing military career information to recruits It will be developed in FY00 and tested and deployed in FY01.

D. Schedule Profile	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
Milestone III (RWS Packet Projection Increment)			2Q							
Milestone III (RWS Leads Increment)				4Q						
Milestone III (Total ARISS Integration)					3Q					

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0605013A Information Technology Development

PROJECT: 185

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. EDS – HSS	SS/Time &Material	Fort Knox, KY				2596	Jan-01		2596	
b. EDS – GC Applications	SS/Time & Material	Fort Knox, KY				1757	Jan-01		1757	
c. EDS – Integration	SS/Time & Material	Fort Knox, KY				1770	Jan-01		1770	
Subtotal Product Development:						6123			6123	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PM Operations	NA	NA				1004	NA		1004	
b. PM Support	C/FFP	VAR				380	Dec-00		380	
c. Engineering/Tech Spt	MIPR	ISEC				767	Oct-00		767	
Subtotal Support Costs:						2151			2151	

Remark: PM Operations includes direct pay of PMO government employees, TDY, training, supplies, etc.

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Testing	MIPR	ATEC				340	Mar-01		340	
Subtotal Test and Evaluation:						340			340	

IV. Management Services: Not applicable

Project Total Cost:						8614			8614	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0605013A Information Technology Development

PROJECT: 193

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
193 Medical Communications for Combat Casualty Care	0	0	3221	2194	2067	2254	0	9736	9736

A. Mission Description and Budget Item Justification: Medical Communication for Combat Casualty Care (MC4) provides support to the medical force structure through the acquisition of digital communications and information technology capabilities for deployable medical forces. MC4 will also integrate Medical Information Systems into the Army Command and Control (C2) structure as it evolves to support Force XXI and Army 2010 and beyond. Initial MC4 efforts are focused on engineering, integrating, testing, and fielding automation infrastructure for Army users of the Joint Theater Medical Information Program (TMIP). FY01 funding supports engineering, integration and testing of information management/information technology to enhance far forward combat casualty care within the First Digitized Division and Corps as well as MC4 project management. This project is not a new start.

FY 1999 Accomplishments: Project funded in O&M Army

FY 2000 Planned Program: Project funded in O&M Army

FY 2001 Planned Program:

- 943 Program Management
- 454 Logistics Support Planning
- 1024 Engineering and Technical Support
- 296 Testing
- 504 TMIP Integration

Total 3221

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA SSN: MA8046	7040	21003	2459	2889	2825	2436	4548		
OMA APE 432612	640	0	482	1071	1259	1459	1589		

C. Acquisition Strategy: MC4 supports a number of Army Medical Information Technology/Communications initiatives. The near and mid-term focus of the MC4 program is to engineer, design, test, acquire and field the Army specific automation/communications infrastructure capability to support DoD standard Theater Medical Information Program (TMIP) application software. MC4 acquisition efforts will mirror the incremental or block approach used by the TMIP PM to develop the TMIP application software.

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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0605013A Information Technology Development PROJECT 193

D. Schedule Profile	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
TMIP Milestone I/II				3Q						
TMIP Block I Milestone III					2Q					
TMIP Block II Milestone III						2Q				
TMIP Block III Milestone III							2Q			
TMIP Full Milestone III								2Q		

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0605013A Information Technology Development

PROJECT: 193

I. Product Development: Not applicable

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PM (Govt) Operations	NA	NA				586	NA		586	
b. PM Support	C/FFP	TBS				357	Feb-01		357	
c. Logistics Planning (Govt)	NA	NA				311	NA		311	
d. Logistics Planning Spt	C/FFP	TBS				143	Feb-01		143	
e. Engineering & Technical Spt (Govt)	NA	NA				767	NA		767	
f. Engineering & Tech Spt	C/FFP	TBS				257	Feb-01		257	
g. TMIP Integration	C/FFP	TBS				504	Feb-01		504	
Subtotal Support Costs:						2925			2925	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Testing	C/FFP	TBS				135	Mar-00		135	
b. PM (Govt) Testing Spt	NA	NA				161	Mar-00		161	
Subtotal Test and Evaluation:						296			296	

IV. Management Services: Not applicable

Project Total Cost:						3221			3221	

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DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0605013A Information Technology Development

PROJECT: 196

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
196 Horizontal Technology Integration (HTI)	0	0	1919	2085	2251	2535	2693	Continuing	Continuing

A. **Mission Description and Budget Item Justification:** Provides interoperability, standardization, and integration across PEO STAMIS logistics systems. Assures sound engineering practices by producing synergy across program lines through reuse of software and hardware; and interoperability between tactical and CSS systems. Introduces new technology and methodologies via tools, techniques and hardware enablers. Supports systems information security essential for data protection in both the sustaining base and tactical environments. Provides PEO STAMIS personnel support for Task Force XXI programs. This project is not a new start.

FY 1999 Accomplishments: Project funded in O&M Army

FY 2000 Planned Program: Project funded in O&M Army

FY 2001 Planned Program:

- 1319 Continue engineering support to PEO STAMIS logistics programs
- 400 Continue information assurance (security) to ensure data protection.
- 200 Continue Task Force XXI support

Total 1919

B. **Other Program Funding Summary:** Not applicable

C. **Acquisition Strategy:** This funding line supports interoperability, standardization, and integration across PEO STAMIS logistics systems by capitalizing on a common approach to software development and through introduction of new technologies and methodologies.

D. Schedule Profile	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Engineering Support					1-4Q	1-4Q	1-4Q	1-4Q	1-4Q

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0605013A Information Technology Development

PROJECT: 196

I. Product Development: Not applicable

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PMO Operations	NA	NA				409			409	
b. TFXXI Engr/Security	NA	NA				633			633	
c. LAN Support	C/FP	FC Business, Falls Church, VA				877	Jan-01		877	
Subtotal Support Costs:						1919			1919	

III. Test and Evaluation: Not applicable

IV. Management Services: Not applicable

Project Total Cost:						1919			1919	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0605013A Information Technology Development

PROJECT: 252

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
252 TACMIS	0	0	5485	5566	5658	5701	5887	Continuing	Continuing

A. Mission Description and Budget Item Justification: The line funds the Tactical Management Information Systems Project Management Office that provides acquisition support to the Combat Service Support programs to include hardware acquisition, fielding, logistics, and contract support. Funding supports civilian pay for 32 civilians, contract and matrix support for logistics, contract administration, and ordering/tracking. PM operations include development training, transportation, communications, printing, office equipment, supplies and training.
This project is not a new start.

FY 1999 Accomplishments: Project funded in O&M Army.

FY 2000 Planned Program: Project funded in O&M Army.

FY 2001 Planned Program:

- 2842 Continue pay of civilians.
- 1143 Continue PM operations.
- 1500 Continue contract and matrix support.

Total 5485

B. Other Program Funding Summary: Not applicable

C. Acquisition Strategy: This budget line funds TACMIS PM operations. This includes acquisition support to all PEO STAMIS Combat Service Support PMs for hardware acquisition, fielding, logistics, and contractual support.

D. Schedule Profile	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Contract/Matrix Support					1-4Q	1-4Q	1-4Q	1-4Q	1-4Q

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0605013A Information Technology Development

PROJECT: 252

I. Product Development: Not applicable

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Technical Services	C/FP	TBS	N/A	N/A	N/A	1500	Mar-01		1500	
b. PM Operations/Engr Spt	NA	NA				3985			3985	
Subtotal Support Costs:						5485			5485	

III. Test and Evaluation: Not applicable

IV. Management Services: Not applicable

Project Total Cost:						5485			5485	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0605013A Information Technology Development

PROJECT: 286

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
286 PM Gobal Combat Support System (GCSS) - Army Core	0	0	2400	2407	2411	2453	2495	Continuing	Continuing

A. Mission Description and Budget Item Justification: Provides management support of ammunition, maintenance, transportation, supply and property accountability. PM operations include development training, transportation, communications, printing, office equipment, supplies and training. Technical support to include network and office automation support; documentation and graphic support.
This project is not a new start.

FY 1999 Accomplishments: Project funded in O&M Army

FY 2000 Planned Program: Project funded in O&M Army

FY 2001 Planned Program:

- 1713 Continue management support of assigned programs.
- 319 Continue PM operations support.
- 368 Continue technical support.

Total 2400

B. Other Program Funding Summary: Not applicable

C. Acquisition Strategy: This budget line funds management support of ammunition, maintenance, transportation, supply and property accountability systems.

D. Schedule Profile	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Management/Technical Support					1-4Q	1-4Q	1-4Q	1-4Q	1-4Q

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0605013A Information Technology Development

PROJECT: 286

I. Product Development: Not applicable

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PMO Operations	NA	NA				1609			1609	
b. Tech Services	C/FP	SRC, Petersburg, VA				368	Dec-00		368	
c. MTS Support	NA	NA				423			423	
Subtotal Support Costs:						2400			2400	

III. Test and Evaluation: Not applicable

IV. Management Services: Not applicable

Project Total Cost:						2400			2400	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0605013A Information Technology Development

PROJECT: 299

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
299 Joint Computer-Aided Acquistion and Logistics Support (JCALS)	0	0	42156	16822	17469	23476	27854	Continuing	Continuing

A. Mission Description and Budget Item Justification The Joint Computer-Aided Acquisition and Logistics Support (JCALS) system provides an infrastructure capable of integrating digitized technical data that supports the weapons systems acquisition and logistics life cycle. The system is data driven and provides an automated information systems architecture independent of application. JCALS will initially meet the Services' goal of automating technical manual processes and functions. The JCALS architecture provides a distributed, open systems environment that makes extensive use of both industry and government standards. The architecture is designed for flexibility and growth, and is capable of accommodating additional systems requirements, technological improvements, and new functionality. The initial application being fielded is Joint Technical Manuals.
This project is not a new start.

FY 1999 Accomplishments: Project funded in O&M Army

FY 2000 Planned Program: Project funded in O&M Army

FY 2001 Planned Program:

- 4257 Government Program Management
- 3253 Prime Contractor Program Management
- 13253 Engineering and Technical Services
- 10548 Testing and Implementation
- 10845 Developed Software Maintenance/Enhancements

Total 42156

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA SSN – WA1000	28801	32161	58791	90724	86993	83474	80389		
OMA APE – 432612/432672	89647	86940	19860	23465	27040	30482	34660		

C. Acquisition Strategy: JCALS will incrementally develop, test, and field up to four software packages (SWP) and implement user desired changes or enhancements through a system improvement process. SWP1 incorporated the majority of the infrastructure capabilities and some interfaces plus selected Joint Technical Manual (JTM) capabilities. SWP2 provided additional infrastructure, interfaces, and JTM capabilities. SWP3 will incorporate additional infrastructure capabilities and interfaces plus

provide expanded capabilities to manage, acquire, improve, publish, stock and distribute JTMs. SWP3 will be implemented in three increments . Following each increment, a test will be conducted prior to fielding. Full Milestone III will be achieved following completion of the third SWP3 increment. SWP3 is an incremental improvement to the JCALS JTM system. SWP4 will enhance JCALS to support processing of secret data.

D. Schedule Profile	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
IPR/Fielding Decision – SWP2 to Air Force				1Q					
IPR/Fielding Decision – SWP3 (Increment 1)					1Q				
IPR/Fielding Decision – SWP3 (Increment 2)					2Q				
JCALS Milestone III					3Q				
System Fielding						1-4Q	1-4Q	1-4Q	1-4Q
Maintenance/Enhancements						1-4Q	1-4Q	1-4Q	1-4Q

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0605013A Information Technology Development

PROJECT: 299

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Developed SW Maintenance/Enhance-ments	C/CPAF	TBS				7683	Oct-00		7683	
b. Developed SW Maintenance/Enhance-ments	C/CPAF	CSC, Marlton, NJ				3162	Oct-00		3162	
Subtotal Product Development:						10845			10845	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. PM Support	C/Time & Materials	TBS				1251	Nov-00		1251	
b. Prime Contractor Program Management	C/Time & Materials	TBS				3523	Oct-00		3523	
c. Engineering & Technical Services	C/Time & Materials	TBS				1874	Nov-00		1874	
d. Engineering & Technical Services	C/CPAF	TBS				5277	Oct-00		5277	
e. PM (Govt) Engineering & Technical Services	NA	NA				6102	NA		6102	
f. PMO Operations	NA	NA				2736			2736	
Subtotal Support Costs:						20763			20763	

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Testing and Implementation	C/Time & Materials	TBS				1981	Nov-00		1981	

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0605013A Information Technology Development

PROJECT: 299

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
b. Testing and Implementation	C/CPAF	TBS				5579	Oct-00		5579	
c. Govt (PM) Testing Efforts	NA	NA				2988	NA		2988	
Subtotal Test and Evaluation:						10548			10548	

IV. Management Services: Not applicable

Project Total Cost:						42156			42156	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0605013A Information Technology Development

PROJECT: 316

COST (*In Thousands*)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
316 STACOMP	0	0	3482	4460	2870	3979	3962	0	0

A. **Mission Description and Budget Item Justification:** Provides acquisition support for STAMIS tactical computers through in-house, matrix and contractual efforts to include: - Matrix support for logistics maintenance and warranty efforts; contract negotiations and legal review; software and hardware evaluation testing. STAMIS Computer Contract II (SCC II) contractor customer support for 24 hour hotline; technical upgrades; order processing/tracking reports; and World Wide Web (WWW) site. Contracted technical services for configuration management; tracking and accountability up to the time of equipment delivery. This project is not a new start.

FY 1999 Accomplishments: Project funded in O&M Army

FY 2000 Planned Program: Project funded in O&M Army

FY 2001 Planned Program:

- 869 Continue providing commercial microcomputer systems for Combat Service Support (CSS) Logistics and Personnel and Sustaining Base systems.
- 1337 Continue providing sustained support in the areas of Integrated Logistics Support maintenance, configuration management, and test and evaluation.
- 1276 Continue procurement strategy of acquiring commercial-off-the-shelf hardware and software to meet the requirements for standard CSS automation Information systems. The SCC II and other existing IDIQ microcomputer contracts are utilized for this purpose.

Total 3482

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
OPA – SSN: W00800			3141	3357	3407	3610	3811		

C. **Acquisition Strategy:** This budget line funds acquisition support for STAMIS tactical computers through in-house, matrix, and contractual efforts.

D. Schedule Profile	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
Configuration Management					1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Test & Evaluation					1-4Q	1-4Q	1-4Q	1-4Q	1-4Q

ARMY RDT&E COST ANALYSIS (R-3)

DATE: February 2000

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0605013A Information Technology Development

PROJECT: 316

I. Product Development: Not applicable

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Technical services	C/FP	TBS	N/A	N/A	N/A	1400	Mar-01	N/A	1400	
b. PMO Operations	NA	NA				1285			1285	
c. SCC II Support	C/FP	GTSI, Chantilly, VA				797	Dec-00		797	
Subtotal Support Costs:						3482			3482	

III. Test and Evaluation: Not applicable

IV. Management Services: Not applicable

Project Total Cost:						3482			3482	