UNCLASSIFIED

Supporting Data FY 1999 Budget Estimate
Submitted to Congress - February 1998

DESCRIPTIVE SUMMARIES OF THE

DISTRIBUTION STATEMENT A
Approved for public release
Distribution Unlimited

19980319 098

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"

DTIC QUALITY INSPECTED 3

VOLUME II

UNCLASSIFIED

DESCRIPTIVE SUMMARIES FOR PROGRAM ELEMENTS OF THE RESEARCH, DEVELOPMENT, TEST AND EVALUATION, ARMY FY 1999 FEBRUARY 1998

VOLUME II
Budget Activities 4 and 5

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

DTIC QUALITY INSPECTED 3

i

THIS PAGE INTENTIONALLY LEFT BLANK

FY 1999 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 (Budget Item Justification Sheet) and R-3 (RDT&E Program Element/Project Cost Breakdown) Exhibits which provide narrative information on all RDT&E program elements and projects for the FY 1997, 1998 and 1999 time period.

2. Relationship of the FY 1999 Budget Submission to the FY 1998 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
0601102A/S13, S14	Tele-Medicine/Soldier Status	0601102A/S19
0602105A, 0602120A,0602211A, 0602270A, 0602303A, 0602601A, 0602622A, 0602624A, 0602709A, 0602784A, 0602786A, 0603004A	Army After Next (AAN) Applied Research	0602308A/636
0602787A/870, 874, 878, 879	Tele-Medicine/Advanced Technology	0602787A/869
0602720A/829	National Defense Center for Environmental Excellence	0708045A/E31
0605601A/D699, 0605604A/D734, 0605706A/M542	Army Evaluation Center	0605716A/D302
0605802A/798	Armament Group Support	0605801A/M76
0203758A/D398	Force XXI Battle Command Brigade and Below (FBCB2)	0203759A/D120
0203802A/D701	Hydra 70 Engineering and Manufacturing Development	0604802A/D705

B. FY 1999 Developmental Transitions.

FROM PE/PROJECT	PROJECT TITLE	TO PE/PROJECT
0603313A/387	Multi-Purpose Individual Munition	0604802A/284

C. Establishment of New FY 1999 Program Elements/Projects. There are no major system new starts. Minor new initiatives for FY 1999, in addition to Congressionally directed initiatives for FY 1998, are shown below with asterisks. The remaining programs listed are outyear initiatives or restructures beyond FY 1999 or were previously funded from other Defense appropriations.

TITLE	PE/PROJECT
Passive Millimeter Wave Camera*	0602120A/A142
Dual Use Application Program (DUAP)	0602805A/A105
Commercial Technology to Reduce Costs*	0602720A/A908
Agriculturally Based Bioremediation*	0602720A/AF26
Computer Based Land Management*	0602720A/A917
Shortstop*	0602270A/A936
Best Centers*	0602720A/821
Pollution Prevention	0602720A/895
Themophotovoltaic Generator*	0602705AAJ04
Air Defense Alerting Device on Bradley Stinger*	0602601A/AH72
Simulation Laboratory*	0602601A/H74
Joint Robotic Development*	0602601A/AH58
Plastic Cased Ammo*	0602624A/AJ03
Climate Change Fuel Cell Technology*	0602784A/AT46
Hardened Materials*	0602105A/AHM1
Center for Geosciences and Atmospheric Research (CGAR)*	0602784A/AT48
Orthopedic Implant Research	0602787A/D919
Prostate Cancer Research*	0602787A/D920
Ovarian Cancer Research*	0602787A/D921
Joint Tactical Radio System	0604280A/D152
Outrider Unmanned Aerial Vehicle*	0603003A/464
Trajectory Correctable Munition*	0603004A/A233
ASTAMIDS*	0603606A/A674

C. Establishment of New FY 1999 Program Elements/Projects. (continued)

TITLE	PE/PROJECT
Stinger Universal Launcher*	0603003A/D448
Palletized Landing System Commercial Engine*	0603005A/A507
Metal Matrix Composites*	0603005A/A506
Volume Angiocat*	0603002A/D934
WRMAC Catheterization Lab*	0603002A/D931
Cooperative Teleradiology*	0603002A/D930
Artificial Lung Technology*	0603002A/D929
Advanced Trauma Care*	0603002A/D924
Prostate Diagnostic Image*	0603002A/D923
Emergency Telemedicine	0603002A/D922
Hypervelocity Missile TD	0603313A/A655
Commercial Operating and Support Savings Initiative (COSSI)	0604824A/D112
Auto Test Equipment Development	0604746/DL65
Combat Service Support Equipment – Engineering Development	0604804/DL43
Net Assessment Directorate	0605803A/M735
Munitions Survivability & Logistics	0605805A/D297
Tactical Unmanned Aerial Vehicle	0605204A/D114
Reliability, Maintainability and Sustainability (RMS)	0708045A/DE27

D. FY 1999 programs for which funding was shown in the FY 1998 President's Budget Submit (February 1997), but which are no longer funded.

PE/PROJECT	TITLE	BRIEF EXPLANATION
0602624A/H36	Fuze Technology	Program terminated
0603774A/598	LTASS	Funds transferred to system line.

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

0203735A/DC64	0602786A/AC60	0603322A
0203806A	0603003A/DB38/D391	0603710A/DC63/DC65
0203808A	0603005A/DC62/DC66	0603851A
0301359A	0603009A	0603854A/DC68
0602601A/AC83/DC84	0603013A	0604649A/DG15
0602104A	0603017A	0604328A/DC71
0602122A	0603018A	
0602712A/AC61	0603020A	

Department of the Army
FY 1999 RDT&E Program

Exhibit R-1

Summary

Date: Feb 1998

	Thousands of Dollars		
	FY 1997	FY 1998	FY 1999
Summary Recap of Budget Activities			
Basic Research	174,763	180,643	200,760
Applied Research	541,944	654,051	511,285
Advanced Technology Development	653,525	657,518	483,595
Demonstration and Validation	539,607	562,811	466,009
Engineering and Manufacturing Development	1,145,529	1,162,405	1,269,124
RDT&E Management Support	1,144,658	1,129,057	1,076,593
Operational Systems Development	715,889	678,794	773,179
Total Research Development Test & Eval Army	4,915,915	5,025,279	4,780,545

THIS PAGE INTENTIONALLY LEFT BLANK

Department of the Army
FY 1999 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test & Eval Army

Date: Feb 1998

Line No	Program Element Number	Item	Act	FY 1997	FY 1998	FY 1999
				Thousands of Dollars		
1	0601101A	IN-HOUSE LABORATORY INDEPENDENT RESEARCH	1	14,108	13,678	14,902
2	0601102A	DEFENSE RESEARCH SCIENCES	1	117,041	121,827	137,399
3	0601104A	UNIVERSITY AND INDUSTRY RESEARCH CENTERS	1	43,614	45,138	48,459
		Basic Research		174,763	180,643	200,760
4	0602104A	TRACTOR ROSE	2	2,987	0	6,000
5	0602105A	MATERIALS TECHNOLOGY	2	14,339	12,415	10,137
6	0602120A	SENSORS AND ELECTRONIC SURVIVABILITY	2	19,140	25,855	18,738
7	0602122A	TRACTOR HIP	2	7,796	7,018	11,685
8	0602211A	AVIATION TECHNOLOGY	2	20,637	22,211	29,746
9	0602270A	EW TECHNOLOGY	2	14,845	18,925	16,249
10	0602303A	MISSILE TECHNOLOGY	2	28,677	24,238	25,180
11	0602308A	MODELING & SIMULATION TECHNOLOGY	2	20,107	20,339	27,981
12	0602601A	COMBAT VEHICLE AND AUTOMOTIVE TECHNOLOGY	2	34,272	60,162	40,107
13	0602618A	BALLISTICS TECHNOLOGY	2	39,248	40,042	31,115
14	0602622A	CHEMICAL, SMOKE AND EQUIP DEFEATING TECHNOLOG	2	2,193	3,577	5,116
15	0602623A	JOINT SERVICE SMALL ARMS PROGRAM	2	4,388	9,000	5,229
16	0602624A	WEAPONS AND MUNITIONS TECHNOLOGY	2	20,993	29,905	29,489
17	0602705A	ELECTRONICS AND ELECTRONIC DEVICES	2	23,756	24,464	22,329
18	0602709A	NIGHT VISION TECHNOLOGY	2	16,935	16,712	19,157
19	0602712A	COUNTERMINE SYSTEMS DEVELOPMENT	2	7,052	10,272	10,715
20	0602716A	HUMAN FACTORS ENGINEERING TECHNOLOGY	2	15,781	16,723	13,369
21	0602720A	ENVIRONMENTAL QUALITY TECHNOLOGY	2	50,019	56,131	13,842
22	0602782A	COMMAND, CONTROL, COMMUNICATIONS TECHNOLOGY	2	13,893	16,197	19,746
23	0602783A	COMPUTER AND SOFTWARE TECHNOLOGY	2	6,419	658	2,185
24	0602784A	MILITARY ENGINEERING TECHNOLOGY	2	37,505	50,802	37,488
25	0602785A	MANPOWER/PERSONNEL/TRAINING TECHNOLOGY	2	9,196	8,736	8,602
26	602786A	WARFIGHTER TECHNOLOGY	2	23,513	18,088	18,661
27	0602787A	MEDICAL TECHNOLOGY	2	106,131	160,376	67,255
28	0602789A	ARMY ARTIFICIAL INTELLIGENCE TECHNOLOGY	2	2,122	1,205	1,164
29	0602805A	DUAL USE APPLICATIONS PROGRAM	2	0	0	20,000
		Applied Research	2	541,944	654,051	511,285

Department of the Army
FY 1999 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test & Eval Army

Date: Feb 1998

Line No	Program Element Number	Item	Act	FY 1997	FY 1998	FY 1999
				Thousands of Dollars		
30	0603001A	WARFIGHTER ADVANCED TECHNOLOGY	3	23,211	34,361	32,969
31	0603002A	MEDICAL ADVANCED TECHNOLOGY	3	195,884	176,737	11,012
32	0603003A	AVIATION ADVANCED TECHNOLOGY	3	54,901	89,467	30,048
33	0603004A	WEAPONS AND MUNITIONS ADVANCED TECHNOLOGY	3	27,661	25,444	24,555
34	0603005A	COMBAT VEHICLE AND AUTOMATIVE ADVANCED TECH	3	28,160	40,796	54,435
35	0603006A	COMMAND, CONTROL, COMM ADVANCED TECHNOLOGY	3	29,627	25,708	20,109
36	0603007A	MANPOWER, PERSONNEL AND TRAINING ADV TECH	3	4,289	2,910	3,021
37	0603009A	TRACTOR HIKE	3	16,123	13,441	9,873
38	0603013A	TRACTOR DIRT	3	2,679	0	57
39	0603017A	TRACTOR RED	3	8,221	5,399	4,590
40	0603020A	TRACTOR ROSE	3	4,845	10,859	2,016
41	0603105A	MILITARY HIV RESEARCH	3	17,080	2,629	5,710
42	0603238A	AIR DEFENSE/PRECISION STRIKE TECHNOLOGY	3	19,291	12,773	9,973
43	0603270A	EW TECHNOLOGY	3	6,480	7,929	11,508
44	0603313A	MISSILE AND ROCKET ADVANCED TECHNOLOGY	3	93,739	90,468	86,096
45	0603322A	TRACTOR GEM	3	6,123	5,991	4,408
46	0603606A	LANDMINE WARFARE AND BARRIER ADV TECHNOLOGY	3	26,899	31,581	21,944
47	0603607A	JOINT SERVICE SMALL ARMS PROGRAM	3	8,825	9,015	5,173
48	0603654A	LINE-OF-SIGHT TECHNOLOGY DEMO	3	9,533	4,845	20,099
49	0603710A	NIGHT VISION ADVANCED TECHNOLOGY	3	28,584	18,705	23,960
50	0603734A	MILITARY ENGINEERING ADVANCED TECHNOLOGY	3	19,678	19,574	13,564
51	0603772A	ADV TACTICAL COMPUTER SCIENCE & SENSOR TECH	3	21,692	18,886	18,456
52	0603780A	SERDP/ENVIRONMENT SECURITY TECHNOLOGY PROGRAM	3	0	0	54,419
53	0604280A	JOINT TACTICAL RADIO SYSTEM	3	0	10,000	15,600
		Advanced Technology Development		653,525	657,518	483,595
54	0603018A	TRACTOR TREAD	4	2,267	0	0
55	0603308A	ARMY MISSILE DEFENSE SYSTEMS INTEGRATION	4	68,205	73,304	12,240
56	0603619A	LANDMINE WARFARE AND BARRIER - ADV DEV	4	27,164	24,299	6,778
57	0603627A	SMOKE, OBSCURANT AND TARGET DEFEATING SYS-AD	4	5,573	0	0
58	0603639A	ARMAMENT ENHANCEMENT INITIATIVE	4	56,687	37,127	26,526
59	0603640A	ARTILLERY PROPELLANT DEVELOPMENT	4	8,103	8,258	0
60	0603645A	ARMORED SYSTEMS MODERNIZATION-ADVANCED DEVEL	4	1,612	1,945	0

Appropriation: 2040 A Research Development Test & Eval Army — Date: Feb 1998

Line No	Program Element Number	Item	Act	Thousands of Dollars FY 1997	FY 1998	FY 1999
61	0603649A	ENGINEER MOB EQUIP ADVANCED DEV	4	498	0	0
62	0603653A	ADVANCED TANK ARMAMENT SYSTEM	4	11,144	8,704	8,928
63	0603713A	ARMY DATA DISTRIBUTION SYTEM	4	25,699	20,526	17,281
64	0603745A	TACTICAL ELECTRONIC SUPPORT SYSTEMS - ADV DEV	4	3,837	0	0
65	0603747A	SOLDIER SUPPORT AND SURVIVABILITY	4	6,487	7,324	7,581
66	0603766A	TAC EXPLOIT OF NAT CAP (TENCAP)-DEM/VAL TIARA	4	24,714	19,566	0
67	0603774A	NIGHT VISION SYSTEMS ADVANCED DEVELOPMENT	4	2,254	2,848	2,681
68	0603790A	NATO RESEARCH AND DEVELOPMENT (H)	4	9,495	8,866	11,161
69	0603801A	AVIATION - ADV DEV	4	10,648	13,696	7,487
70	0603804A	LOGISTICS AND ENGINEER EQUIPMENT - ADV DEV	4	7,100	6,574	17,478
71	0603805A	CBT SERVICE SUPPORT CONTROL SYS EVAL & ANALYS	4	15,479	7,280	14,353
72	0603807A	MEDICAL SYSTEMS - ADV DEV	4	9,730	6,555	11,414
73	0603851A	TRACTOR EARL	4	2,922	1,851	966
74	0603854A	ARTILLERY SYSTEMS DEMONSTRATION/VALIDATION	4	232,288	314,017	313,166
75	0603856A	SCAMP BLOCK II (SPACE)	4	7,701	71	7,969
		Demonstration and Validation		539,607	562,811	466,009
76	0604201A	AIRCRAFT AVIONICS	5	17,706	31,660	7,878
77	0604220A	ARMED, DEPLOYABLE OH-58D	5	1,100	0	0
78	0604223A	COMANCHE	5	325,299	272,187	367,823
79	0604270A	EW DEVELOPMENT	5	69,067	84,180	85,989
80	0604321A	ALL SOURCE ANALYSIS SYSTEM	5	37,463	26,094	28,081
81	0604325A	FOLLOW-ON TO TOW	5	5,934	13,449	48,106
82	0604328A	TRACTOR EARL	5	1,484	11	1,788
83	0604604A	MEDIUM TACTICAL VEHICLES	5	5,719	3,614	0
84	0604609A	SMOKE, OBSCURANT AND TARGET DEFEATING SYS-ED	5	0	0	706
85	0604611A	JAVELIN (AWWS-M)	5	5,855	7,771	5,277
86	0604619A	LANDMINE WARFARE	5	25,355	19,189	23,189
87	0604622A	FAMILY OF HEAVY TACTICAL VEHICLES	5	4,906	4,845	0
88	0604633A	AIR TRAFFIC CONTROL	5	7,086	4,533	1,737
89	0604640A	ADVANCED COMMAND AND CONTROL VEHICLE	5	7,545	10,532	0
90	0604641A	TACTICAL UNMANNED GROUND VEHICLE	5	2,728	2,604	2,468
91	0604642A	LIGHT TACTICLE WHEELED VEHICLE	5	3,409	0	0

Department of the Army
FY 1999 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test & Eval Army

Date: Feb 1998

Line No	Program Element Number	Item	Act	FY 1997	FY 1998	FY 1999
				Thousands of Dollars		
92	0604645A	ARMORED SYSTEMS MODERNIZATION (ASM)-ENG DEV	5	6,408	0	4,500
93	0604649A	ENGINEER MOBILITY EQUIPMENT DEVELOPMENT	5	44,225	50,585	63,069
94	0604710A	NIGHT VISION SYSTEMS - ENG DEV	5	33,970	35,052	21,311
95	0604713A	COMBAT FEEDING, CLOTHING, AND EQUIPMENT	5	73,404	60,053	62,218
96	0604715A	NON-SYSTEM TRAINING DEVICES - ENG DEV	5	46,142	82,965	64,035
97	0604716A	TERRAIN INFORMATION - ENG DEV	5	6,969	2,825	2,999
98	0604726A	INTEGRATED METEOROLOGICAL SUPPORT SYSTEM	5	0	1,887	1,790
99	0604739A	JTT/CIBS-M (TIARA)	5	4,588	4,360	4,447
100	0604741A	AIR DEFENSE C2I - ENG DEV	5	19,577	21,181	6,476
101	0604746A	AUTOMATIC TEST EQUIPMENT DEVELOPMENT	5	8,868	8,220	7,030
102	0604760A	DISTRIBUTIVE INTERACTIVE SIMULATIONS ENG DEV	5	17,618	20,249	2,766
103	0604766A	TAC EXPLOIT NAT CAP (TENCAP)-EMD (TIARA)	5	14,839	17,807	44,674
104	0604768A	BRILLIANT ANTI-ARMOR SUBMUNITION(BAT)	5	161,583	229,389	134,858
105	0604770A	JOINT SURVEILLANCE/TARGET ATTACK RADAR SYSTEM	5	9,406	6,726	5,503
106	0604778A	POSITIONING SYS DEVEL (SPACE)	5	417	407	379
107	0604780A	COMBINED ARMS TACTICAL TRAINER (CATT)	5	29,420	12,880	7,533
108	0604801A	AVIATION - ENG DEV	5	4,331	4,951	6,599
109	0604802A	WEAPONS AND MUNITIONS - ENG DEV	5	21,567	14,611	37,725
110	0604804A	LOGISTICS & ENGINEER EQUIPMENT - ENG DEV	5	19,061	27,174	26,002
111	0604805A	COMMAND, CONTROL, COMMUNICATIONS SYSTEMS - ED	5	13,315	10,710	16,404
112	0604807A	MEDICAL MATERIEL/MED BIO DEFENSE EQUIPMENT ED	5	4,570	4,345	5,338
113	0604808A	LANDMINE WARFARE/BARRIER - ENG DEV	5	9,342	13,818	46,905
114	0604814A	SENSE AND DESTROY ARMOR - ENG DEV	5	9,677	10,847	20,813
115	0604816A	LONGBOW	5	10,762	0	0
116	0604817A	COMBAT IDENTIFICATION	5	16,889	19,026	13,471
117	0604818A	ARMY TACTICAL COMM & CONT HARDWARE & SOFTWARE	5	35,495	19,184	32,929
118	0604820A	RADAR DEVELOPMENT	5	0	0	2,786
119	0604823A	FIREFINDER	5	2,430	2,484	19,822
120	0604824A	COSSI	5	0	0	33,600
121	0604854A	ARTILLERY SYSTEMS - ENGINEERING DEVELOPMENT	5	0	0	100
		Engineering and Manufacturing Development		1,145,529	1,162,405	1,269,124

Department of the Army
FY 1999 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test & Eval Army

Date: Feb 1998

Line No	Program Element Number	Item	Act	FY 1997	FY 1998	FY 1999
				Thousands of Dollars		
122	0604256A	THREAT SIMULATOR DEVELOPMENT	6	11,146	16,480	11,935
123	0604258A	TARGET SYSTEMS DEVELOPMENT	6	9,661	11,328	13,127
124	0604759A	MAJOR TEST & EVALUATION INVESTMENT	6	39,698	39,200	40,284
125	0605103A	RAND ARROYO CENTER	6	20,550	16,534	16,718
126	0605301A	ARMY KWAJALEIN ATOLL	6	140,078	120,918	142,710
127	0605326A	CONCEPTS EXPERIMENTATION	6	0	0	17,441
128	0605502A	SMALL BUS INV RSCH/SMALL BUS TECH PILOT PROG	6	99,082	0	0
129	0605601A	ARMY TEST RANGES AND FACILITIES	6	128,036	118,327	119,553
130	0605602A	ARMY TECHNOLOGY & SUSTAINING INSTRUMENTATION	6	20,761	32,160	33,439
131	0605604A	SURVIVABILITY/LETHALITY ANALYSIS	6	29,362	31,308	30,498
132	0605605A	DOD HIGH ENERGY LASER SYS TEST FAC (HELSTF)	6	29,227	28,965	15,022
133	0605606A	AIRCRAFT CERTIFICATION	6	2,415	2,828	2,924
134	0605702A	METEOROLOGICAL SUPPORT TO RDT&E ACTIVITIES	6	6,278	6,235	6,691
135	0605706A	MATERIEL SYSTEMS ANALYSIS	6	14,006	27,755	9,711
136	0605709A	EXPLOITATION OF FOREIGN ITEMS	6	6,962	7,523	4,031
137	0605712A	SUPPORT OF OPERATIONAL TESTING	6	44,900	76,807	66,320
138	0605716A	ARMY EVALUATION CENTER	6	0	0	25,526
139	0605801A	PROGRAMWIDE ACTIVITIES	6	58,310	79,626	64,588
140	0605802A	INTERNATIONAL COOPERATIVE RESEARCH AND DEV	6	1,494	0	0
141	0605803A	TECHNICAL INFORMATION ACTIVITIES	6	16,465	14,673	16,251
142	0605805A	MUNITIONS STANDARDZION EFFECTIVENESS & SAFETY	6	3,083	11,064	8,497
143	0605853A	ENVIRONMENTAL CONSERVATION	6	1,874	1,723	3,195
144	0605854A	POLLUTION PREVENTION	6	13,413	5,187	8,694
145	0605856A	ENVIRONMENTAL COMPLIANCE-RDT&E	6	52,716	56,576	44,116
146	0605876A	MINOR CONSTUCTION (RPM) - RDTE	6	4,148	4,258	4,205
147	0605878A	MAINTENANCE AND REPAIR (RPM) - RDTE	6	66,869	83,751	49,233
148	0605879A	REAL PROPERTY SERVICES (RPS)	6	88,190	86,199	87,172
149	0605896A	BASE OPERATIONS-RDT&E	6	217,667	224,593	230,029
150	0605898A	MANAGEMENT HEADQUARTERS (RSCH & DEVELOPMENT)	6	18,035	25,039	4,683
151	0909999A	CLOSED ACCOUNT ADJUSTMENT	6	232	0	0
		RDT&E Management Support		1,144,658	1,129,057	1,076,593

Department of the Army
FY 1999 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test & Eval Army

Date: Feb 1998

Line No	Program Element Number	Item	Act	FY 1997	FY 1998	FY 1999
				Thousands of Dollars		
152	0102419A	AEROSTAT JOINT PROGRAM	7	25,680	33,011	103,937
153	0203726A	ADV FIELD ARTILLERY TACTICAL DATA SYSTEM	7	37,507	37,455	35,111
154	0203735A	COMBAT VEHICLE IMPROVEMENT PROGRAMS	7	203,653	161,497	94,756
155	0203740A	MANEUVER CONTROL SYSTEM	7	27,166	24,510	28,923
156	0203744A	AIRCRAFT MODIFICATIONS/PRODUCT IMPROV PROGRAM	7	21,836	21,567	26,681
157	0203752A	AIRCRAFT ENGINE COMPONENT IMPROVEMENT PROGRAM	7	3,734	2,849	2,948
158	0203758A	DIGITIZATION	7	98,124	94,103	45,007
159	0203759A	FORCE XXI BATTLE CMD, BRIGADE & BELOW	7	0	0	52,469
160	0203761A	FORCE XXI WARFIGHTING RAPID ACQUISITION PGM	7	16,640	43,126	99,528
161	0203801A	MISSILE/AIR DEFENSE PRODUCT IMPRV PROGRAM	7	60,882	30,443	11,252
162	0203802A	OTHER MISSILE PRODUCT IMPROVEMENT PROGRAMS	7	13,570	1,216	1,248
163	0203806A	TRACTOR RUT	7	3,030	2,046	0
164	0203808A	TRACTOR CARD	7	6,588	6,373	3,993
165	0208010A	JOINT TACTICAL COMMUNICATIONS PROG (TRI-TAC)	7	17,747	21,105	35,941
166	0208053A	JOINT TACTICAL GRD STATION (TIARA)	7	2,022	5,001	12,229
167	0301359A	SPECIAL ARMY PROGRAM	7	10,929	7,315	6,537
168	0303140A	COMMUNICATIONS SECURITY (COMSEC) EQUIPMENT	7	3,048	11,771	7,433
169	0303142A	SATCOM GROUND ENVIRO (SPACE)	7	37,665	48,939	53,897
170	0303150A	ARMY GLOBAL C2 SYS	7	18,877	14,581	17,543
171	0305114A	TRAFFIC CNTL/APPROACH/LANDING SYS (JPALS)	7	0	728	0
172	0305128A	SECURITY AND INTELLIGENCE ACTIVITIES	7	464	484	950
173	0305204A	TACTICAL UNMANNED AERIAL VEHICLE	7	0	0	75,636
174	0603778A	MLRS PRODUCT IMPROVEMENT PROGRAM	7	61,721	36,171	20,244
175	0708045A	MANUFACTURING TECHNOLOGY	7	45,006	64,278	30,511
176	1001018A	NATO JSTARS - TIARA	7	0	10,225	6,405
		Operational Systems Development		715,889	678,794	773,179
Total		Research Development Test & Eval Army		4,915,915	5,025,279	4,780,545

TABLE OF CONTENTS

	PE	PROGRAM ELEMENT TITLE	PAGE
#1 - BASIC RESEARCH			
1	0601101A	In-House Laboratory Independent Research	1
2	0601102A	Defense Research Sciences	11
3	0601104A	University and Industry Research Centers	75
#2 - APPLIED RESEARCH			
4	0602105A	Materials Technology	97
5	0602120A	Sensors and Electronic Survivability	101
6	0602211A	Aviation Technology	111
7	0602270A	Electronic Warfare (EW) Technology	121
8	0602303A	Missile Technology	129
9	0602308A	Modeling and Simulation Technology	135
10	0602601A	Combat Vehicle and Automotive Technology	143
11	0602618A	Ballistics Technology	163
12	0602622A	Chemical, Smoke and Equipment Defeating Technology	173
13	0602623A	Joint Service Small Arms Program	175
14	0602624A	Weapons and Munitions Technology	177
15	0602705A	Electronics and Electronic Devices	187
16	0602709A	Night Vision Technology	195
17	0602712A	Countermine Applied Research	199
18	0602716A	Human Factors Engineering Technology	203
19	0602720A	Environmental Quality Technology	209
20	0602782A	Command, Control, Communications Technology	237
21	0602783A	Information and Communication Technology	243
22	0602784A	Military Engineering Technology	249
23	0602785A	Manpower/Personnel/Training Technology	267
24	0602786A	Warfighter Technology	273
25	0602787A	Medical Technology	285
26	0602789A	Army Artificial Intelligence Technology	313

TABLE OF CONTENTS

	PE	PROGRAM ELEMENT TITLE	PAGE
#2 - APPLIED RESEARCH - Continued			
27	0602805A	Dual Use Applications Program	315
#3 - ADVANCED TECHNOLOGY DEVELOPMENT			
28	0603001A	Warfighter Advanced Technology	317
29	0603002A	Medical Advanced Technology	331
30	0603003A	Aviation Advanced Technology	357
31	0603004A	Weapons and Munitions Advanced Technology	371
32	0603005A	Combat Vehicle and Automotive Advanced Technology	379
33	0603006A	Command, Control and Communications Advanced Technology	393
34	0603007A	Manpower, Personnel and Training Advanced Technology	407
35	0603105A	Military Human Immunodeficiency Virus (HIV) Research	411
36	0603238A	Air Defense/Precision Strike Technology	413
37	0603270A	Electronic Warfare (EW) Technology	419
38	0603313A	Missile and Rocket Advanced Technology	425
39	0603606A	Landmine Warfare and Barrier Advanced Technology	449
40	0603607A	Joint Service Small Arms Program	455
41	0603654A	Line-of-Sight Technology Demonstration	459
42	0603710A	Night Vision Advanced Technology	461
43	0603734A	Military Engineering Advanced Technology	469
44	0603772A	Advanced Tactical Computer Science and Sensor Technology	477
45	0603780A	Strategic Environmental Research and Development Program/Environmental Security Technology	485
46	0604280A	Joint Tactical Radio System	489
#4 - DEMONSTRATION AND VALIDATION			
47	0603308A	Army Missile Defense Systems Integration	491
48	0603619A	Landmine Warfare and Barrier - Advanced Development	501
49	0603627A	Smoke, Obscurant and Target Defeating System - Advanced Development	511

TABLE OF CONTENTS

	PE	PROGRAM ELEMENT TITLE	PAGE
#4 - DEMONSTRATION AND VALIDATION - Continued			
50	0603639A	Armament Enhancement Initiative	515
51	0603640A	Artillery Propellant Development	523
52	0603645A	Armored Systems Modernization - Advanced Development	527
53	0603649A	Engineering Modification Equipment - Advanced Development	535
54	0603653A	Advanced Tank Armament System	539
55	0603713A	Army Data Distribution System	545
56	0603745A	Tactical Electronic Support Systems - Advanced Development (TIARA)	557
57	0603747A	Soldier Support and Survivability	561
58	0603766A	Tactical Exploitation of National Capabilities (TENCAP) - Demonstration/Validation (TIARA)	577
59	0603774A	Night Vision Systems - Advanced Development	581
60	0603790A	NATO Research & Development	585
61	0603801A	Aviation - Advanced Development	595
62	0603804A	Logistics and Engineering Equipment - Advanced Development	609
63	0603805A	Combat Service Support Control Systems Evaluation and Analysis	637
64	0603807A	Medical Systems - Advanced Development	647
65	0603854A	Artillery Systems Advanced Development	661
66	0603856A	SCAMP BLKII (SPACE)	667
#5 - ENGINEERING AND MANUFACTURING DEVELOPMENT			
67	0604201A	Aircraft Avionics	671
68	0604220A	Armed, Deployable OH-58D	677
69	0604223A	Comanche	680
70	0604270A	Electronic Warfare (EW) Development	690
71	0604321A	All Source Analysis System (TIARA)	716
72	0604325A	Follow-On To TOW	728
73	0604604A	Medium Tactical Vehicles	732
74	0604609A	Smoke, Obscurant and Target Defeating System - Engineering Development	736
75	0604611A	Javelin	740

TABLE OF CONTENTS

	PE	PROGRAM ELEMENT TITLE	PAGE
#5 - ENGINEERING AND MANUFACTURING DEVELOPMENT - Continued			
76	0604619A	Landmine Warfare	744
77	0604622A	Family of Heavy Tactical Vehicles	748
78	0604633A	Air Traffic Control	754
79	0604640A	Advanced Command and Control Vehicle	758
80	0604641A	Tactical Unmanned Ground Vehicle	762
81	0604642A	Light Tactical Wheeled Vehicle	766
82	0604645A	Armored Systems Modernization (ASM) - Engineering Development	774
83	0604649A	Engineer Mobility Equipment Development	780
84	0604710A	Night Vision Systems - Engineering Development	792
85	0604713A	Combat Feeding, Clothing, and Equipment	808
86	0604715A	Non-System Training Devices - Engineering Development	834
87	0604716A	Terrain Information - Engineering Development (TIARA)	846
88	0604726A	Integrated Meteorological System (IMETS) (TIARA)	852
89	0604739A	JTT/CIBS-M (TIARA)	856
90	0604741A	Air Defense Command, Control, Intelligence - Engineering Development	860
91	0604746A	Automatic Test Equipment Development	864
92	0604760A	Distributive Interactive Simulations - Engineering Development	872
93	0604766A	Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)	886
94	0604768A	Brilliant Anti-Armor (BAT) Submunition	890
95	0604770A	Joint Surveillance/Target Attack Radar System	910
96	0604778A	Positioning Systems Development (SPACE)	916
97	0604780A	Combined Arms Tactical Trainer (CATT)	920
98	0604801A	Aviation - Engineering Development	924
99	0604802A	Weapons and Munitions - Engineering Development	930
100	0604804A	Logistics & Engineer Equipment - Engineering Development	960
101	0604805A	Command, Control, Communications Systems - Engineering Development	1002
102	0604807A	Medical Materiel - Engineering Development	1020

TABLE OF CONTENTS

	PE	PROGRAM ELEMENT TITLE	PAGE
#5 - ENGINEERING AND MANUFACTURING DEVELOPMENT - Continued			
103	0604808A	Landmine Warfare/Barrier - Engineering Development	1034
104	0604814A	Sense and Destroy Armor Munition - Engineering Development	1042
105	0604816A	Longbow	1050
106	0604817A	Combat Identification - Engineering & Manufacturing Development	1060
107	0604818A	Army Tactical Command and Control Hardware & Software	1074
108	0604820A	Radar Development	1084
109	0604823A	Firefinder	1088
110	0604824A	Commercial Operating & Support Savings Initiative (COSSI)	1094
111	0604854A	Artillery Systems - Engineering Development	1096
#6 - MANAGEMENT AND SUPPORT			
112	0604256A	Threat Simulator Development	1100
113	0604258A	Target Systems Development	1102
114	0604759A	Major Test and Evaluation Investment	1108
115	0605103A	Rand Arroyo Center	1116
116	0605301A	Army Kwajalein Atoll	1120
117	0605326A	Concept Experimentation Program	1124
118	0605601A	Army Test Ranges and Facilities	1126
119	0605602A	Army Test Technology and Sustaining Instrumentation	1142
120	0605604A	Survivability/Lethality Analysis	1150
121	0605605A	DOD High Energy Laser System Test Facility (HELSTF)	1168
122	0605606A	Aircraft Certification	1170
123	0605702A	Meteorological Support to Research, Development, Testing & Evaluation Activities	1172
124	0605706A	Materiel Systems Analysis	1176
125	0605709A	Exploitation of Foreign Items	1186
126	0605712A	Support of Operational Testing	1190
127	0605716A	Army Evaluation Center	1206
128	0605801A	Programwide Activities	1208

TABLE OF CONTENTS

	PE	PROGRAM ELEMENT TITLE	PAGE
#6 - MANAGEMENT AND SUPPORT - Continued			
129	0605802A	International Cooperative Research and Development	1214
130	0605803A	Technical Information Activities	1216
131	0605805A	Munitions Standardization Effectiveness and Safety	1232
132	0605853A	Environmental Conservation	1244
133	0605854A	Pollution Prevention	1250
134	0605856A	Environmental Compliance - Research, Development, Testing & Evaluation	1258
135	0605876A	Minor Construction - Research, Development, Testing & Evaluation	1266
136	0605878A	Maintenance and Repair - Research, Development, Testing & Evaluation	1274
137	0605879A	Real Property Services (RPS)	1282
138	0605896A	Base Operations - Research, Development, Testing & Evaluation	1288
139	0605898A	Management Headquarters (Research and Development)	1296
#7 - OPERATIONAL SYSTEM DEVELOPMENT			
140	0102419A	Aerostat Joint Program	1300
141	0203726A	Advanced Field Artillery Tactical Data System	1306
142	0203735A	Combat Vehicle Improvement Programs	1316
143	0203740A	Maneuver Control System	1342
144	0203744A	Aircraft Modifications/Product Improvement Program	1350
145	0203752A	Aircraft Engine Component Improvement Program	1362
146	0203758A	Digitization	1368
147	0203759A	Force XXI Battle Command, Brigade and Below(FBCB2)	1374
148	0203761A	Force XXI Warfighter Rapid Acquisition Program (WRAP)	1378
149	0203801A	Missile/Air Defense Product Improvement Program	1392
150	0203802A	Other Missile Product Improvement Programs	1404
151	0208010A	Joint Tactical Communications Program (TRI-TAC)	1420
152	0208053A	Joint Tactical Ground Station (TIARA)	1424
153	0303140A	Communications Security (COMSEC) Equipment	1428
154	0303142A	Satellite Command (SATCOM) Ground Environment	1438

TABLE OF CONTENTS

	PE	PROGRAM ELEMENT TITLE	PAGE
#7 - OPERATIONAL SYSTEM DEVELOPMENT - Continued			
155	0303150A	Army Global Command and Control System (AGCCS)	1466
156	0305114A	Joint Precision Approach Landing System (JPALS)	1472
157	0305128A	Security and Intelligence Activities	1474
158	0305204A	Tactical Unmanned Aerial Vehicles	1478
159	0603778A	Multiple Launch Rocket System Product Improvement Program	1480
160	0708045A	Army Industrial Preparedness Manufacturing Technology	1498
161	1001018A	NATO Joint STARS	1510

Program Element Title	PE	PAGE
Advanced Command and Control Vehicle	0604640A	758
Advanced Field Artillery Tactical Data System	0203726A	1306
Advanced Tactical Computer Science and Sensor Technology	0603772A	477
Advanced Tank Armament System	0603653A	539
Aerostat Joint Program	0102419A	1300
Air Defense Command, Control, Intelligence - Engineering Development	0604741A	860
Air Defense/Precision Strike Technology	0603238A	413
Air Traffic Control	0604633A	754
Aircraft Avionics	0604201A	671
Aircraft Certification	0605606A	1170
Aircraft Engine Component Improvement Program	0203752A	1362
Aircraft Modifications/Product Improvement Program	0203744A	1350
All Source Analysis System (TIARA)	0604321A	716
Armament Enhancement Initiative	0603639A	515
Armed, Deployable OH-58D	0604220A	677
Armored Systems Modernization - Advanced Development	0603645A	527
Armored Systems Modernization (ASM) - Engineering Development	0604645A	774
Army Artificial Intelligence Technology	0602789A	313
Army Data Distribution System	0603713A	545
Army Evaluation Center	0605716A	1206
Army Global Command and Control System (AGCCS)	0303150A	1466
Army Industrial Preparedness Manufacturing Technology	0708045A	1498
Army Kwajalein Atoll	0605301A	1120
Army Missile Defense Systems Integration	0603308A	491
Army Tactical Command and Control Hardware & Software	0604818A	1074

ALPHABETICAL LISTING

Program Element Title	PE	PAGE
Army Test Ranges and Facilities	0605601A	1126
Army Test Technology and Sustaining Instrumentation	0605602A	1142
Artillery Propellant Development	0603640A	523
Artillery Systems - Engineering Development	0604854A	1096
Artillery Systems Advanced Development	0603854A	661
Automatic Test Equipment Development	0604746A	864
Aviation - Advanced Development	0603801A	595
Aviation - Engineering Development	0604801A	924
Aviation Advanced Technology	0603003A	357
Aviation Technology	0602211A	111
Ballistics Technology	0602618A	163
Base Operations - Research, Development, Testing & Evaluation	0605896A	1288
Brilliant Anti-Armor (BAT) Submunition	0604768A	890
Chemical, Smoke and Equipment Defeating Technology	0602622A	173
Comanche	0604223A	680
Combat Feeding, Clothing, and Equipment	0604713A	808
Combat Identification - Engineering & Manufacturing Development	0604817A	1060
Combat Service Support Control Systems Evaluation and Analysis	0603805A	637
Combat Vehicle and Automotive Advanced Technology	0603005A	379
Combat Vehicle and Automotive Technology	0602601A	143
Combat Vehicle Improvement Programs	0203735A	1316
Combined Arms Tactical Trainer (CATT)	0604780A	920
Command, Control and Communications Advanced Technology	0603006A	393
Command, Control, Communications Systems - Engineering Development	0604805A	1002
Command, Control, Communications Technology	0602782A	237

Program Element Title	PE	PAGE
Commercial Operating & Support Savings Initiative (COSSI)	0604824A	1094
Communications Security (COMSEC) Equipment	0303140A	1428
Concept Experimentation Program	0605326A	1124
Countermine Applied Research	0602712A	199
Defense Research Sciences	0601102A	11
Digitization	0203758A	1368
Distributive Interactive Simulations - Engineering Development	0604760A	872
DOD High Energy Laser System Test Facility (HELSTF)	0605605A	1168
Dual Use Applications Program	0602805A	315
Electronic Warfare (EW) Technology	0603270A	419
Electronic Warfare (EW) Technology	0602270A	121
Electronic Warfare (EW) Development	0604270A	690
Electronics and Electronic Devices	0602705A	187
Engineer Mobility Equipment Development	0604649A	780
Engineering Modification Equipment - Advanced Development	0603649A	535
Environmental Compliance - Research, Development, Testing & Evaluation	0605856A	1258
Environmental Conservation	0605853A	1244
Environmental Quality Technology	0602720A	209
Exploitation of Foreign Items	0605709A	1186
Family of Heavy Tactical Vehicles	0604622A	748
Firefinder	0604823A	1088
Follow-On To TOW	0604325A	728
Force XXI Battle Command, Brigade and Below(FBCB2)	0203759A	1374
Force XXI Warfighter Rapid Acquisition Program (WRAP)	0203761A	1378
Human Factors Engineering Technology	0602716A	203

ALPHABETICAL LISTING

Program Element Title	PE	PAGE
In-House Laboratory Independent Research	0601101A	1
Information and Communication Technology	0602783A	243
Integrated Meteorological System (IMETS) (TIARA)	0604726A	852
International Cooperative Research and Development	0605802A	1214
Javelin	0604611A	740
Joint Precision Approach Landing System (JPALS)	0305114A	1472
Joint Service Small Arms Program	0603607A	455
Joint Service Small Arms Program	0602623A	175
Joint Surveillance/Target Attack Radar System	0604770A	910
Joint Tactical Communications Program (TRI-TAC)	0208010A	1420
Joint Tactical Ground Station (TIARA)	0208053A	1424
Joint Tactical Radio System	0604280A	489
JTT/CIBS-M (TIARA)	0604739A	856
Landmine Warfare	0604619A	744
Landmine Warfare and Barrier - Advanced Development	0603619A	501
Landmine Warfare and Barrier Advanced Technology	0603606A	449
Landmine Warfare/Barrier - Engineering Development	0604808A	1034
Light Tactical Wheeled Vehicle	0604642A	766
Line-of-Sight Technology Demonstration	0603654A	459
Logistics & Engineer Equipment - Engineering Development	0604804A	960
Logistics and Engineering Equipment - Advanced Development	0603804A	609
Longbow	0604816A	1050
Maintenance and Repair - Research, Development, Testing & Evaluation	0605878A	1274
Major Test and Evaluation Investment	0604759A	1108
Management Headquarters (Research and Development)	0605898A	1296

Program Element Title	PE	PAGE
Maneuver Control System	0203740A	1342
Manpower, Personnel and Training Advanced Technology	0603007A	407
Manpower/Personnel/Training Technology	0602785A	267
Materials Technology	0602105A	97
Materiel Systems Analysis	0605706A	1176
Medical Advanced Technology	0603002A	331
Medical Materiel - Engineering Development	0604807A	1020
Medical Systems - Advanced Development	0603807A	647
Medical Technology	0602787A	285
Medium Tactical Vehicles	0604604A	732
Meteorological Support to Research, Development, Testing & Evaluation Activities	0605702A	1172
Military Engineering Advanced Technology	0603734A	469
Military Engineering Technology	0602784A	249
Military Human Immunodeficiency Virus (HIV) Research	0603105A	411
Minor Construction - Research, Development, Testing & Evaluation	0605876A	1266
Missile and Rocket Advanced Technology	0603313A	425
Missile Technology	0602303A	129
Missile/Air Defense Product Improvement Program	0203801A	1392
Modeling and Simulation Technology	0602308A	135
Multiple Launch Rocket System Product Improvement Program	0603778A	1480
Munitions Standardization Effectiveness and Safety	0605805A	1232
NATO Joint STARS	1001018A	1510
NATO Research & Development	0603790A	585
Night Vision Advanced Technology	0603710A	461
Night Vision Systems - Advanced Development	0603774A	581

ALPHABETICAL LISTING

Program Element Title	PE	PAGE
Night Vision Systems - Engineering Development	0604710A	792
Night Vision Technology	0602709A	195
Non-System Training Devices - Engineering Development	0604715A	834
Other Missile Product Improvement Programs	0203802A	1404
Pollution Prevention	0605854A	1250
Positioning Systems Development (SPACE)	0604778A	916
Programwide Activities	0605801A	1208
Radar Development	0604820A	1084
Rand Arroyo Center	0605103A	1116
Real Property Services (RPS)	0605879A	1282
Satellite Command (SATCOM) Ground Environment	0303142A	1438
SCAMP BLKII (SPACE)	0603856A	667
Security and Intelligence Activities	0305128A	1474
Sense and Destroy Armor Munition - Engineering Development	0604814A	1042
Sensors and Electronic Survivability	0602120A	101
Smoke, Obscurant and Target Defeating System - Advanced Development	0603627A	511
Smoke, Obscurant and Target Defeating System - Engineering Development	0604609A	736
Soldier Support and Survivability	0603747A	561
Strategic Environmental Research and Development Program/Environmental Security Technology	0603780A	485
Support of Operational Testing	0605712A	1190
Survivability/Lethality Analysis	0605604A	1150
Tactical Electronic Support Systems - Advanced Development (TIARA)	0603745A	557
Tactical Exploitation of National Capabilities (TENCAP) - Demonstration/Validation (TIARA)	0603766A	577
Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)	0604766A	886
Tactical Unmanned Aerial Vehicles	0305204A	1478

Program Element Title	PE	PAGE
Tactical Unmanned Ground Vehicle	0604641A	762
Target Systems Development	0604258A	1102
Technical Information Activities	0605803A	1216
Terrain Information - Engineering Development (TIARA)	0604716A	846
Threat Simulator Development	0604256A	1100
University and Industry Research Centers	0601104A	75
Warfighter Advanced Technology	0603001A	317
Warfighter Technology	0602786A	273
Weapons and Munitions - Engineering Development	0604802A	930
Weapons and Munitions Advanced Technology	0603004A	371
Weapons and Munitions Technology	0602624A	177

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	68205	73304	12240	12226	12202	15240	15458	Continuing	Continuing
D989 Nautilus/THEL	46392	49385	0	0	0	0	0	0	62849
D990 Space and Missile Defense (SMD) Integration	2748	2602	2989	3048	3110	3171	3236	Continuing	Continuing
D997 Space and Missile Defense Battle Lab (SMDBL)	19065	21317	9251	9178	9092	12069	12222	Continuing	Continuing

Mission Description and Budget Item Justification: In an 18 April 1997 Memorandum of Agreement between the US Army Training and Doctrine Command (TRADOC) and the US Army Space and Strategic Defense Command (USASSDC), USASSDC was designated the specified proponent for space and National Missile Defense (NMD) and the overall integrator for Theater Missile Defense (TMD). In response to this designation, the Missile Defense Battle Integration Center (MDBIC) and other existing USASSDC 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. In addition, this program element funds the integration and synchronization of the functions, activities, events, and actions associated with space and NMD Doctrine, Training, Leader development, Organization, Materiel development and Soldiers (DTLOMS) development and implementation; as well as, the systems analysis, studies, and experimentation designed to validate and integrate the pillars of TMD: active defense, passive defense, attack operations, and battle management/command, control, communications, computers, and intelligence functions. Finally, this program element funds the completion of the joint U.S./Israeli Tactical High Energy Laser (THEL) Advanced Concept Technology Demonstration (ACTD). Work in this program element is dedicated to efforts to demonstrate general military utility to include demonstration and validation in the area of TMD and is appropriately funded in Budget Activity 4.

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D989

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D989 Nautilus/THEL	46392	49385	0	0	0	0	0	0	62849

A. **Mission Description and Justification:** These funds will complete 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.

Acquisition Strategy: The THEL ACTD has been assigned an urgent priority by the Secretary of Defense. A sole source letter contract was executed with TRW, Inc. to deliver the THEL demonstrator by 31 Mar 1998. The letter contract was definitized on 19 Jan 97. A change order to this contract is planned to include field testing of the demonstrator at HELSTF, to be completed by 1 Oct 98.

FY 1997 Accomplishments:

•	41181	Continued THEL ACTD design and fabrication.
•	1500	Conducted system engineering, analysis and subsystem integration activities.
•	2611	Conducted program management.
•	1100	Provided government furnished property.
Total	46392	

FY 1998 Planned Program:

•	7700	Complete the THEL demonstrator integration and testing at TRW.
•	8257	Conduct system engineering, analysis, system integration activities, and field test support.
•	29600	Complete integration at HELSTF and conduct field testing.
•	2590	Conduct program management.
•	1238	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	49385	

FY 1999 Planned Program: Project not funded in FY 1999

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY **4 - Demonstration and Validation**	PE NUMBER AND TITLE **0603308A Army Missile Defense Systems Integration**
	PROJECT **D989**

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	44058	16457	0
Appropriated Value	44058	50957	
Adjustments to Appropriated Value	+2334	-1572	
FY 1999 President's Budget	46392	49385	0

Change Summary Explanation: Funding: FY 1998 Congress added field testing at HELSTF (+34500); undistributed Congressional reductions (-1,572).

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
THEL ACTD OSD PE 0603750D	3520								3520
THEL - Israel	14500	14100							28600
THEL – HELSTF PE 0605605		9461							9461

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Initiate Long Leads & Fabrication	X*											
Complete Fabrication/Integration						X						
Complete TRW THEL ACTD Testing						X						
Complete HELSTF field testing								X				

*Milestone Complete

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D989

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
THEL Demonstrator	43781	46795	
Program Management	2611	2590	
Total	46392	49385	

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
TRW	Letter/Sole Source	4th Qtr 96	78481	78481		41181	37300			78481
various	various	TBD	12095	12095		2600	9495			12095
Support and Management Organizations										
Govt Support and Support Contracts	MIPR CPFF	Various		5201		2611	2590			5201
Test and Evaluation Organizations										

Government Furnished Property: Environmental Enclosures.

Subtotal Product Development	43781	46795		90576
Subtotal Support and Management	2611	2590		5201
Subtotal Test and Evaluation				
Total Project	46392	49385		95777

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D990

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D990 Space and Missile Defense (SMD) Integration	2748	2602	2989	3048	3110	3171	3236	Continuing	Continuing

A. Mission Description and Justification: In an 18 April 1997 Memorandum of Agreement between the US Army Training and Doctrine Command (TRADOC) and the US Army Space and Strategic Defense Command (USASSDC), USASSDC was designated the specified proponent for space and National Missile Defense (NMD) and the overall integrator for Theater Missile Defense (TMD). This project funds the Force Development and Integration Center, a major support element of USASSDC, created to execute the integration and synchronization of the functions, activities, events, and actions associated with space and NMD Doctrine, Training, Leader development, Organization, Materiel development and Soldiers (DTLOMS) development and implementation. In addition, this project funds systems analysis, studies, and experimentation designed to validate and integrate the pillars of TMD: active defense, passive defense, attack operations, and battle management/command, control, communications, computers, and intelligence functions. Finally, this project funds the production of hardware and software solutions, doctrinal and procedural solutions, interfaces, and architectures for TMD. These inter-pillar and intra-pillar products, required to accomplish the integrated TMD mission, exceed the scope of other programs. This program supports the milestone decisions for active defense missile and C4I systems, as well as Aviation and Artillery attack operation systems and passive missile defense materiel solutions.

Acquisition Strategy: Program is continuous. Planned accomplishments will be conducted by various performers.

FY 1997 Accomplishments:

•	2748	Planned, developed, and conducted management oversight of testing and exercise prototypical hardware and software related to integrated TMD operations, enhancements to models and simulations, systems analysis and studies regarding TMD issues.
Total	2748	

FY 1998 Planned Program:

•	2536	Integrate and synchronize the functions, activities, events, and actions associated with space and NMD DTLOMS development and implementation; and plan, develop, and conduct management oversight of testing and exercise prototypical hardware and software related to integrated TMD operations, enhancements to models and simulations, systems analysis and studies regarding TMD issues.
•	66	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	2602	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603308A Army Missile Defense Systems Integration PROJECT D990

FY 1999 Planned Program:

•	2989	Integrate and synchronize the functions, activities, events, and actions associated with space and NMD DTLOMS development and implementation; and plan, develop, and conduct management oversight of testing and exercise prototypical hardware and software related to integrated TMD operations, enhancements to models and simulations, systems analysis and studies regarding TMD issues.
Total	2989	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	2823	2685	2663
Appropriated Value	2823	2685	
Adjustments to Appropriated Value	-75	-83	
FY 1999 President's Budget	2748	2602	2989

Change Summary Explanation: Funding: FY 1999 increased (+326) to cover civilian pay.

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

D. **Schedule Profile:** Due to the continuous nature of these efforts, milestones or events are not applicable.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D990

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Program Management Support	2748	2602	2989
Total	2748	2602	2989

B. Budget Acquisition History and Planning Information:

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Support and Management Organizations										
Govt Support and Support Contracts	MIPR CPFF	Monthly	N/A	N/A		2748	2602	2989	Cont	8339
Test and Evaluation Organizations										

Government Furnished Property:

Subtotal Product Development										
Subtotal Support and Management						2748	2602	2989		8339
Subtotal Test and Evaluation										
Total Project						2748	2602	2989		8339

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D997

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D997 Space and Missile Defense Battle Lab (SMDBL)	19065	21317	9251	9178	9092	12069	12222	Continuing	Continuing

A. **Mission Description and Justification:** This project funds the Space and Missile Defense Battle Lab (SMDBL), (formerly the Missile Defense Battle Integration Center (SMDBIC).The SMDBL is chartered to develop warfighting concepts, focus military science and technology research, and conduct warfighting experiments. It will provide users and materiel developers a synthetic battlefield context for integrating missile defense and space assets; supporting requirement activities and providing distributed, netted computing resources, models and simulations efforts for warfighter exercises, analytical and virtual prototyping activities. To accomplish this, the SMDBL will concentrate on: Experiments, Exercises and Training; Modeling and Simulation (M&S); Concepts and Initiatives; Analysis; the Synthetic Battlefield Environment (SBE); the Extended Air Defense Testbed (EADTB); and the Extended Air Defense Simulation (EADSIM).

Acquisition Strategy: Program is continuous. Planned accomplishments will be conducted by various performers.

FY 1997 Accomplishments:

- 6100 Participated in/supported Army and joint exercises/training and warfighting experiments, including Optic Windmill, Prairie Warrior, the Confederation Test, Coherent Defense, Army Experiment 4, and JTFEX 98-1.
- 4193 Completed additional development of the SBE, to include various interfaces to enhance the realism and fidelity of missile defense training, exercises, and testing.
- 2078 Conducted "stand alone" training and further developed AAR capabilities for Force XXI command and control entities.
- 3943 Performed missile defense studies and analyses by providing enhancements/developments to advanced models and simulations, incorporating existing testbeds and migrating to the DoD's High-Level Architecture (HLA).
- 2751 Provided modeling, simulation, and advanced visualization capabilities for senior decision makers via the Warfighting Analysis and Integration Center (WAIC).

Total 19065

FY 1998 Planned Program:

- 6235 Participate in and/or conduct space and missile defense related experiments and demonstrations, including Corps AWE, Space support to Corps Deep Operations Control Cell (DOCC), Space Based Imagery evaluations, Force Warring of Ballistic Missiles, and others. Includes development of experiment hardware/software integration Center (HSIC).

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603308A Army Missile Defense Systems Integration PROJECT D997

FY 1998 Planned Program: (continued)

•	4156	Provide for development and/or enhancements of space and missile defense models, simulations, and advanced visualization capabilities, including the Synthetic Battlefield Environment (SBE) .
•	6230	Participate in/support Army and joint exercises including (Roving Sands 98, Ulchi Focus Lens, Home Station Training, etc.).
•	2078	Provide space and missile defense analytical support, studies, evaluations, and assessments to, Army, and DoD elements
•	2084	Provide the SMDBL with M&S infrastructure to support experimentation, exercise, training, and analysis programs, including conversion to HLA, V&V of models and simulations, M&S domain management, M&S master plans.
•	534	Small Business Innovation Research/Small Business Technology Transfer Programs.
Total	21317	

FY 1999 Planned Program:

•	5594	Conduct battle lab experiments and exercises focusing on space and missile defense operational and integration issues.
•	1360	Continue development of virtual prototypes of potential battlefield systems and high fidelity synthetic battlefield environments.
•	930	Implement and utilize long-haul, distributed after action review capabilities; maintain M & S infrastructure required for experimentation, exercise & analysis programs.
•	1367	Conduct follow-on missile defense and space operation support studies and analyses.
Total	9251	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	19581	4996	9974
Appropriated Value	19581	21996	
Adjustments to Appropriated Value	-516	-679	
FY 1999 President's Budget	19065	21317	9251

Change Summary Explanation: Funding: FY 1998 Congressional increase (+17000) for the SMDBL; undistributed Congressional reductions (-679).

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

D. Schedule Profile: Due to the continuous nature of these efforts, milestones or events are not applicable.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603308A Army Missile Defense Systems Integration PROJECT D997

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
SMDBL Operations	19065	21317	9251
Total	19065	21317	9251

B. Budget Acquisition History and Planning Information: Not Applicable.

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	27164	24299	6778	3877	6546	7628	8504	Continuing	Continuing
D005 Landmine Advanced Development	0	9650	3946	3877	0	0	0	0	17473
D606 Countermine/Barrier Advanced Development	27164	14649	2832	0	6546	7628	8504	Continuing	Continuing

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 Non-Self-Destructing Anti-Personnel Landmine Alternatives (NSD-A) and 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 Airborne Stand-off Minefield Detection System (ASTAMIDS), the Handheld Stand-off Minefield Detection System (HSTAMIDS), Ground Stand-off Minefield Detection System (GSTAMIDS) and for mine neutralization with the Explosive Stand-off Minefield Breacher (ESMB) , and Anti-personnel Obstacle Breaching System (APOBS). This program element supports Program Definition and Risk Reduction (PDRR) efforts used to demonstrate and validate general military utility and is, therefore, appropriately placed in Budget Activity 4.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603619A Landmine Warfare and Barrier - Advanced Development
	PROJECT D005

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D005 Landmine Advanced Development	0	9650	3946	3877	0	0	0	0	17473

A. **Mission Description and Justification:** Intelligent Combat Outpost (Raptor) will improve the capability of smart mines/munitions used by the United States Army and will enhance the effectiveness of current and future mines/munitions by providing real time targeting data, increased situational awareness, and coordinated attack capabilities while eliminating the need for overwatch forces. NSD-A program will identify and develop alternatives to Non-Self Destructing Anti-Personnel landmines.

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. For NSD-A 12 solicitation respondents will be requested to submit proposals for their alternative concepts. CPIF contracts for two of the best proposals will be awarded for the Early User Experiment (EUE) Phase. At the conclusion of the EUE one contractor will be selected to continue into the EMD and Production Phases.

FY 1997 Accomplishments: Project not funded in FY 1997

FY 1998 Planned Program:

•	1000	Conduct Raptor interoperability study, trade-off analysis, system integration/analyses, and evaluate methods for Identification, Friend or Foe (IFF).
•	1265	Initiate design and development of Raptor gateway, advanced acoustic sensor, and control station.
•	950	Initiate Raptor software algorithm development.
•	344	Raptor Test and evaluation.
•	2000	NSD-A solicitation preparation, white paper evaluations, and alternative concept proposal preparation and evaluation
•	4000	NSD-A Early User Experiment
•	91	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	9650	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603619A Landmine Warfare and Barrier - Advanced Development PROJECT D005

FY 1999 Planned Program:

•	987	Continue design and development of gateway, advanced acoustic sensor, and control station.
•	963	Continue software algorithm development.
•	850	Fabricate components for test and evaluation.
•	500	Conduct gateway, sensor and control station test and evaluation.
•	646	System integration and analysis.
Total	3946	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/99 President's Budget	0	3767	4258
Appropriated Value		3767	
Adjustments to Appropriated Value		5883	
FY 1999 President's Budget	0	9650	3946

Change Summary Explanation:
Funding: FY98 increase of 5883 is a 6000 reprogramming for NSD-A and a reduction of 117 due to undistributed Congressional reductions.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, A Budget Activity 5 PE 0604808, Project D016, Mine Systems Engineering Development	7242	5500	20000	19000	18436	12198	22321	Cont	Cont

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Complete Raptor Tradeoff Studies											X					
Conduct Raptor contractor testing																X
NSD-A MS II															X	

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D005

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Primary Hardware Development		6515	1793
Test and Evaluation		344	1100
Government Engineering Support		2213	853
Government Program Management		487	200
SBIR/STTR		91	
Total	0	9650	3946

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
TBD	TBD	TBD					6515	1793	Cont	8308
Support and Management Organizations										
ARDEC							2213	853	Cont	3066
PM-MCD							578	200	Cont	778
Test and Evaluation Organizations										
TECOM							344	1100	Cont	1444

Government Furnished Property: None

Subtotal Product Development	6515	1793		8308
Subtotal Support and Management	2791	1053		3844
Subtotal Test and Evaluation	344	1100		1444
Total Project	9650	3946		13596

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D606

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D606 Countermine/Barrier Advanced Development	27164	14649	2832	0	6546	7628	8504	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 Airborne Stand-off Minefield Detection System (ASTAMIDS), the Handheld Stand-off Minefield Detection System (HSTAMIDS), Ground Stand-off Minefield Detection System (GSTAMIDS), Explosive Stand-off Minefield Breacher (ESMB), and Anti-personnel Obstacle Breaching System (APOBS). The program provides for proof-of-principle for these systems.

Acquisition Strategy: : ASTAMIDS, HSTAMIDS, and GSTAMIDS - competing contractors (2 for each project) competitively selected for PDRR phase which will lead to a down select for the EMD phase. Successful EMD contractor will be awarded initial production contract (sole source) with multiple option year buys. ESMB competitively selected PDRR phase contractor will be awarded a sole source EMD contract upon completion of PDRR phase and MDA approval. Sole source Production contract with multiple options is anticipated for successful EMD contractor.

FY 1997 Accomplishments:

- 7980 Completed initial PDRR design for HSTAMIDS
- 1445 Fabricated HSTAMIDS Test hardware
- 2700 Conducted System Trade off analysis and complete ESMB PDRR design
- 3000 Fabricated ESMB Test hardware and conduct contractor/government testing
- 551 Prepared ESMB MS II IPR documentation
- 10145 Completed ASTAMIDS design, fabricate hardware, and conduct EUT&E
- 1300 Evaluated Alternative ASTAMIDS Minefield Detection /Sensor Technologies
- 43 Prepared APOBS MS III and contract solicitation documentation

Total 27164

FY 1998 Planned Program:

- 5344 Complete HSTAMIDS PDRR design and conduct contractor testing
- 1393 Conduct TT/EUT&E for HSTAMIDS
- 805 Prepare HSTAMIDS MS II documentation and EMD contract solicitation
- 3507 Fabricate GSTAMIDS prototype hardware and contractor management

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603619A Landmine Warfare and Barrier - Advanced Development PROJECT D606

FY 1998 Planned Program: (continued)

•	1032	Prepare GSTAMIDS MS II documentation and EMD contract solicitation
•	1000	Evaluate GSTAMIDS Technology and Hardware at ATD/ Conduct Source Selection Evaluation Board
•	1200	ESMB System Tradeoff/Risk Reduction Analysis and MSII Documentation Preparation
•	368	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	14649	

FY 1999 Planned Program:

•	500	Conduct source selection board for GSTAMIDS EMD
•	2332	Develop GSTAMIDS Test targets and generate data deliverables
Total	2832	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/99 President's Budget	27860	15115	6956
Appropriated Value	28464	15115	
Adjustments to Appropriated Value	-1300	-466	
FY 1999 President's Budget	27164	14649	2832

Change Summary Explanation:

Funding: In FY 99 funding decrease (-4124) relates to transfer of funds from GSTAMIDS 0603619A/D606 to GSTAMIDS 0604808A/D415 in anticipation of accelerated PDRR phase.

Schedule : GSTAMIDS MS II rescheduled from 3QFY01 to 2QFY99

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, A Budget Activity 5									
PE 0604808A, Project D415, Mine Neutralization/ Detection	2100	8318	26905	29389	42727	26636	24562	Cont	Cont
OPA 3, A Appropriation									
E72800, APOBS				5749	6681				12430
M80300, ESMB					290	432	440		

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D606

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
R68200, HSTAMIDS					11207	13107	13448		
R68100, GSTAMIDS						19068	19086		
AMMO, A Appropriation									
E81400, ESMB					2990	6642	6589		

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Completed ASTAMIDS Developed/Fabricated of Prototype		X*										
Initiated Development Tests and Early User Tests of ASTAMIDS			X*									
Milestone II Review for ESMB							X					
Conducted MS I for GSTAMIDS				X*								
Conduct MS II for GSTAMIDS									X			
Complete TT/IOT&E for HSTAMIDS							X					
Conduct MS II for HSTAMIDS								X				

*Denotes completed effort

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D606

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Development Primary Hardware	18484	8242	1832
Test and Evaluation	2633	2125	0
Government Engineering	4711	3224	700
Government Program Management	1336	690	300
SBBR/STTR		368	
Total	27164	14649	2832

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Raytheon	CPIF	Nov 93	29452	29452	25204	4248			0	29452
Northrop/ Grumman	CPIF	Nov 93	19129	19129	17929	1200			0	19129
Coleman Research	CPIF	May 96	5886	5886	873	3007	2006		0	5886
GDE	CPIF	May 96	9349	9349	1645	5168	2536		0	9349
Tracor	CPIF	Dec 95	14518	14518	10695	2623	1200			14518
Computer Devices	CPIF	Nov 97	891	891	0	0	891			891
TBD	TBD	TBD					700	1832	Cont	2532
Misc.	Various	Various				2238	909		Cont	3147
Support and Management Organizations										
NVESD/CECOM						3562	2847	700	Cont	7109
Misc.						2455	1435	300	Cont	4190
Test and Evaluation Organizations										
TECOM						2663	2125		Cont	4788

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY **4 - Demonstration and Validation**	PE NUMBER AND TITLE **0603619A Landmine Warfare and Barrier - Advanced Development**
	PROJECT **D606**

Government Furnished Property: None

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	56346	18484	8242	1832		84904
Subtotal Support and Management		6017	4282	1000		11299
Subtotal Test and Evaluation		2663	2125			4788
Total Project	56346	27164	14649	2832		100991

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603627A Smoke, Obscurant and Target Defeating System - Advanced Development

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	5573	0	0	0	0	0	4473	Continuing	Continuing
DE78 Target Defeating Systems	0	0	0	0	0	0	4473	Continuing	Continuing
DE79 Smoke, Obscurant - Advanced Development	5573	0	0	0	0	0	0	0	5573

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. These program elements support the demonstration/validation (DEMVAL) 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 project smoke systems. The smoke obscuration technologies supported by this program enhance smoke systems as combat multipliers. This program element focuses on efforts associated with advanced technology development used to demonstrate general military utility to include demonstration and validation in the area of Smoke, Obscurant & Equip Systems Engineering and is correctly placed in Budget Activity 4.

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603627A Smoke, Obscurant and Target Defeating System - Advanced Development

PROJECT: DE79

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DE79 Smoke, Obscurant - Advanced Development	5573	0	0	0	0	0	0	0	5573

A. Mission Description and Budget Item Justification: The Light Vehicle Obscuration Smoke System (LVOSS) is a self-defense smoke/obscurant device externally mounted on the vehicle. The LVOSS is expected to counter threat weapon systems operating in the visual and near infrared portions of the electro-magnetic spectrum. The LVOSS consists of the XM7 lightweight discharger and installation kits for the infantry HMMWV equipped TOW and MP HMMWV variants.

Acquisition Strategy: Project DE79 Smoke, Obscurant-Advanced Development: The Light Vehicle Obscurant Smoke System (LVOSS) is an in-house effort and was type classified from the demonstration/validation phase.

FY 1997 Accomplishments:

- 1588 LVOSS-Fabricated Production Qualification Test (PQT) Hardware.
- 2258 LVOSS-Conducted PPQT and Systems Operational Modeling.
- 1727 LVOSS-Completed Systems Engineering, Planning and Documentation.

Total 5573

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program: Project not funded in FY 1999

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	6246	0	0
Appropriated Value	6125		
Adjustments to Appropriated Value	-552		
FY 1999 President's Budget	5573	0	0

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603627A Smoke, Obscurant and Target Defeating System - Advanced Development

PROJECT: DE79

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE,A Budget Activity 5 PE 0604609A Project D200 Smoke/Obscurant	0	0	706	947	2593	4910	8567	Cont'd	Cont'd
Other Procurement, Army, Activity 3 (OPA-3)									
M99104 – M157A2 Smoke Generator	3403	0	0	0	0	0	0	0	3403
G70700 – LVOSS	0	2114	4633	2248	0	0	0	0	8995

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
LVOSS-Fabricated PQT Hardware		X*										
LVOSS-Conducted PQT			X*									
LVOSS-Systems Engineering Evaluation And Documentation Completed			X*									
LVOSS-Completed Milestone III				X*								

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1998
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603627A Smoke, Obscurant and Target Defeating System - Advanced Development / PROJECT: DE79

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
Primary Hardware Development	385		
Development Spt Equipment Acquisition	85		
Systems Engineering	505		
Integrated Logistics Support	115		
Quality Assurance	145		
Reliability, Maintainability and Availability	136		
Configuration Management	175		
Technical Data	260		
Production Qualification Test	1725		
Operational Excursion	1200		
Contractor Engineering Support	150		
Government Engineering Support	367		
Program Management	325		
Total	5573	0	0

B. Budget Acquisition History and Planning Information: Not applicable.

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603639A Armament Enhancement Initiative

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	56687	37127	26526	37231	43000	38258	48099	Continuing	Continuing
D643 Project 643	39389	22594	26526	37231	43000	38258	48099	Continuing	Continuing
D656 X-ROD	17298	14533	0	0	0	0	0	0	155474

Mission Description and Budget Item Justification: The Armament Enhancement Initiative (AEI) is a comprehensive program to accelerate fielding of advanced tank ammunition and ensure the continued lethality of the U.S. tank fleet despite rapid worldwide development of armored vehicle protection technology. The AEI 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, including associated training ammunition, and smart top attack rounds with an anti-helicopter capability. Future efforts include paced initiatives leading to new developments or upgrades to existing and future weapons platforms. To date, four rounds of tank ammunition have completed development and entered production. All tank ammunition development funds are combined into one program element PE to facilitate transition between phases, avoid administrative delays, and allow realignment of funds from less to more promising areas. Budget Activity 4, Demonstration and Validation, is the most appropriate budget activity for the projects within this PE.

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603639A Armament Enhancement Initiative

PROJECT: D643

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D643 Project 643	39389	22594	26526	37231	43000	38258	48099	Continuing	Continuing

A. Mission Description and Justification: Kinetic energy cartridges provide the primary anti-tank capability for the armor force. Providing lethal 120mm munitions is essential in maintaining the overmatch capabilities of the Abrams tank. This point is particularly important since the Army will proceed with limited improvements to the Abrams after the Systems Enhancement Program (SEP), and because the future tank (Future Combat System) is not expected to enter the fleet in quantity until after the 2020 timeframe. Therefore, the 120mm Abrams tank will likely make up the bulk of our tank inventory for at least the next 25 years. The focus of the AEI program is first on the development and production of the M829E3 KE cartridge to defeat the growing advanced KE reactive armor threat. Additionally, production of the M829E3 is critical in maintaining the health of the Depleted Uranium (DU) industrial base. The Army was developing a Smart Target Activated Fire and Forget (STAFF) top attack smart munition. However, for cost reasons the STAFF program is being terminated in FY 98.

Acquisition Strategy: M829E3 & STAFF These projects have used a streamlined acquisition strategy since inception. Schedule and fielding have been paramount while keeping costs low. Integrated Product Teams (IPTs) are being used for both the STAFF and M829E3 programs. A development system contractor, Alliant Techsystems, was selected from a limited number of munitions production base contractors to develop STAFF. The M829E3 will follow the same procedure once the program matures to that point. STAFF will terminate after 2QFY98.

FY 1997 Accomplishments:

		KE
•	7409	Manufactured high energy propulsion system for velocity improvements
•	2150	Performed producability engineering and design optimization of projectile
•	9430	Prototype manufacturing and ballistic testing accomplished
•	3200	Continued optimization of penetrator
		STAFF
•	8300	Built and tested final subsystem hardware
•	6700	Built tactical demonstration hardware
•	2200	Tested tactical demonstration hardware
Total	39389	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603639A Armament Enhancement Initiative / PROJECT: D643

FY 1998 Planned Program:

		KE
•	3846	Initiate optimization propellant for velocity and vulnerability response
•	3000	Finalize penetrator selection
•	250	Initiate concept studies for trainer
•	500	Downselect to a system contractor and award multiphase contract
•	10952	Cartridge integration and projectile optimization
		STAFF
•	3500	Program termination (tailored critical design review (CDR)) for close-out
•	546	Small Business Innovative Research/Small Business Technology Transfer Program
Total	22594	

FY 1999 Planned Program:

		KE
•	7564	Finalize propellant optimization
•	18212	Optimization of cartridge configuration
•	500	Conduct counter measure studies
•	250	Finalize concept studies for trainer
Total	26526	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	45467	40313	18982
Appropriated Value	46561	23313	
Adjustments to Appropriated Value	-7172	-719	
FY1999 President's Budget	39389	22594	26526

Change Summary Explanation: Funding: FY 1997-Undistributed congressional reductions/rescissions (-1078); funds reprogrammed to higher priority requirements (-5000)
FY 1999 increase due to acceleration of M829E3 development (+7544).

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603639A Armament Enhancement Initiative

PROJECT: D643

C. Other Program Funding Summary

Procurement Ammunition, Army 120MM Tank	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
E73300	54502	60635	60386	49921	49146	48793	47843	Cont	Cont
E73400	115406	116676	129914	126383	94006	115847	103444	Cont	Cont
E78001	103488	71286	9732	5326	19090	39945	70174	Cont	Cont
E78007	30943	7821	0	0	0	0	0	0	523175
Total	304339	256418	200032	181630	162242	204585	221461	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
KE												
Manufacture propellant				X*								
Producibility engineering and design optimization of projectile				X*								
Prototype mfg. & testing				X*								
Optimize Propellant for Velocity/Vulnerability Response								X				
Downselect to one system contractor								X				
Cartridge integration and optimize Proj.								X				
Optimize cartridge configuration												X
Finalize propellant configuration												X
STAFF												
Build of qualification test hardware		X*										
Build system performance test hardware			X*									
Sensor activated ballistic roll control and sensor algorithm captive flight test verification		X*										
Build and Test final subsystem hardware			X*									
Build tactical demonstration hardware			X*									
Test Initial Tactical hardware				X*								
Completed test demonstration				X*								
Program close out						X						

*Denotes completed effort

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603639A Armament Enhancement Initiative

PROJECT: D643

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Engineering and Contractor Support	19780	6500	15270
Program Management Support	16666	6629	3750
SBIR/STTR		546	
Test and Evaluation Support	1714	7919	7256
Miscellaneous	1229	1000	250
Total	39389	22594	26526

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Alliant & Primex	CPFF	Dec 96			0	6370	6500	15270	CONT	28140
Alliant & Primex	CPFF	Sep 90			21602	13410	0	0	CONT	35012
Support and Management Organizations										
PM TMAS	Multiple	Multiple			3445	2375	5189	1000	CONT	12009
ARDEC	MIPR	Multiple			10092	5055	1120	2000		18267
Miscellaneous	MIPR	Multiple			11072	9236	320	750		21378
SBIR/STTR							546			546
Test and Evaluation Organizations										
YPG, APG					4033	1714	7919	7256	CONT	20922
Miscellaneous						1229	1000	250	CONT	2479

Government Furnished Property: Not Applicable

Subtotal Product Development	21602	19780	6500	15270	63152
Subtotal Support and Management	24609	16666	7175	3750	52200
Subtotal Test and Evaluation	4033	2943	8919	7506	23401
Total Project	50244	39389	22594	26526	138753

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603639A Armament Enhancement Initiative

PROJECT: D656

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D656 X-ROD	17298	14533	0	0	0	0	0	0	155474

A. Mission Description and Budget Item Justification : The X-Rod, now known as the Tank Extended Range Munition - KE (TERM-KE) is a 120mm tank ammunition development effort which will use a standard kinetic energy penetrator boosted by a rocket motor and millimeter wave radar fire-and-forget guidance. The TERM-KE will provide greater hit probability at extended ranges, increasing overall kill probability and battle space.

Acquisition Strategy: This program uses a streamlined acquisition strategy. The program is in the Proof of Principle 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 (formerly Hercules). In FY 96 the Army terminated the TERM-KE program for affordability reasons. Termination was to take place in FY 97. However, the program continued through congressional plus-up received in FY 97 legislation. This last year was used to package the results of testing for a possible future Tank Extended Range Munition (TERM) advanced technology demonstration.

FY 1997 Accomplishments:

•	4025	Interior ballistics exit criteria
•	3412	Met Guide-to Hit exit criteria
•	6311	Demonstrated in-flight discard exit criteria
•	3550	System analysis and concept baseline for TERM performed
Total	17298	

FY 1998 Planned Program:

•	1050	Interior ballistics exit criteria
•	4800	Lethality demonstrations
•	3900	Unguided All Up Round (UAUR) exit criteria
•	4418	System analysis and system design baseline for TERM
•	365	Small Business Innovative Research/Small Business Technology Transfer Program
Total	14533	

FY 1999 Planned Program: Project not funded in FY 1999

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603639A Armament Enhancement Initiative

PROJECT: D656

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	17773	0	0
Appropriated Value	18160	15000	
Adjustments to Appropriated Value	-862	-467	
FY 1999 President's Budget	17298	14533	0

C. Other Program Funding Summary: Not applicable

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Guide-to-hit exit criteria met				X*								
Interior ballistics exit criteria met							X					
System Requirements Review					X*							
In-flight discard exit criteria met					X*							
Lethality demonstrations							X	X				
System Design Review									X			
Preliminary Design Review												X

*Denotes completed effort

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603639A Armament Enhancement Initiative

PROJECT: D656

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Engineering and Contractor Support	16636	11983	0
Miscellaneous	662	2185	0
SBIR/STTR		365	
Total	17298	14533	

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Alliant Tech Sys.	SS-CPFF	SEP 87	123283	122253	99653	12600	10000	0	0	122253
ARDEC	MIPR	N/A	25044	25044	18758	4036	1983	0	0	24777
Misc.	MIPR	N/A	7812	7812	5232	662	2185	0	0	8079
SBIR/STTR							365			365

Government Furnished Property: Not applicable

Subtotal Product Development	123643	17298	14533	155474
Subtotal Support and Management				
Subtotal Test and Evaluation				
Total Project	123643	17298	14533	155474

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603640A Artillery Propellant Development

PROJECT: DB91

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DB91 Artillery Propellant Development	8103	8258	0	0	0	0	0	0	115847

A. Mission Description and Budget Item Justification: This program element focuses on the development of the Modular Artillery Charge System (MACS), intended for use with fielded 155mm field artillery systems equipped with M199 and M284 39 caliber cannons and the XM297 cannon under development for use on Crusader. The MACS includes two different types of charge increments - the XM231 designed to achieve ranges in zones 1 and 2, and the XM232 designed to achieve ranges in zones 3-6. Each increment contains propellant, an ignition system, and performance enhancing additives that are loaded in a combustible case. Funding for this effort transitions to PE 0603854A, Project D505 in FY 1999. This program element focuses on the technology demonstration and validation of the MACS and is correctly placed in Budget Activity 4.

Acquisition Strategy: Not applicable

FY 1997 Accomplishments:

•	6637	Continued development of MACS for type classification.
•	442	Provided project management support and management engineering services.
•	1024	Initiated preliminary testing for 39 caliber type classification.
Total	8103	

FY 1998 Planned Program:

•	5883	Continue development of MACS for type classification.
•	368	Project management support and management engineering services.
•	1800	Conduct safety verification testing for type classification of XM231 MACS for 39 caliber.
•	207	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	8258	

FY 1999 Planned Program: Funded under PE 0603854A, Artillery Systems Advanced Development, Project D505, Crusader - AD

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	8322	8521	0
Appropriated Value	8500	8521	
Adjustments to Appropriated Value	-397	-263	
FY 1999 President's Budget	8103	8258	0

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603640A Artillery Propellant Development

PROJECT: DB91

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Comp	Total Cost
Procurement, Ammo, Army, ER 8021				27911	38892	61763	64215	Cont	Cont
RDTE, BA4, Army, PE 0603854, D505	229561	312019	310881	305967	125129			0	1283557
RDTE, BA5, Army, PE 0604854, D503				50000	327021	429225	260928	Cont	Cont
Procurement, WCTV, Army, G83500						42341	97356	Cont	Cont
Procurement, WCTV, Army, G83600						33548	81763	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones												
Milestone III IPR (MACS - XM231)								X				
Engineering Milestones												
Conducted Initial Production Readiness Review XM231/XM232	X*											
Initiated Safety Verification/Human Factors Testing XM231				X*								
Conducted Critical Design Review XM231				X*								
Complete Safety Verification/Human Factors Testing XM231						X						
Production Readiness Review XM231							X					

* Milestone completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603640A Artillery Propellant Development

PROJECT: DB91

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Product Development	6637	5883	0
Support and Management	442	368	0
Test and Evaluation	1024	1800	0
SBIR/STTR		207	
Total	8103	8258	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
ARMTEC Defense Products, Coachella, CA	SS/CPIF	Aug 92	5513	5513	5513				0	5513
ARMTEC Defense Products, Coachella, CA	FF	Oct 96	2170	2170		2170	150		0	2320
Olin Corp, St. Petersburg, FL	FF	Jul 94	640	640	640				0	640
Primex Corp, Marion, IL (Load Assembly & Pk)	FF	Sep 94	2816	2816	1584	1082			0	2666
DSTI, Greenbelt, MD	FF	May 94	2223	2223	2223				0	2223
Hi Shear, Torrence, CA	FF	Mar 95	147	147	147				0	147
Other contracts ($100K or less)					1359	488	874		0	2721

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603640A Artillery Propellant Development

PROJECT: DB91

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
ARDEC, Picatinny Arsenal, NJ, Rock Island, IL, Watervliet Arsenal, NY	PO				69746	2132	3771		0	75649
Radford Army Ammunition Plant, VA, Hercules Inc.	FFP				4047	175	100		0	4322
Army Research Laboratory, Adelphi, MD	PO				4035	590	718		0	5343
Wright-Paterson AFB, Dayton, OH	PO				151		270		0	421
Various activities ($100K or less)					1089				0	1089
Support and Management Organizations										
ARDEC, Picatinny Arsenal, NJ, Various activities	PO				3558	442	368		0	4368
SBIR/STTR							207			207
Test and Evaluation Organizations										
TECOM, Yuma, AZ	PO				4397	805	1400		0	6602
ARDEC, Picatinny Arsenal, NJ	PO				997	219	400		0	1616
Government Furnished Property: None										
Subtotal Product Development					90534	6637	5883			103054
Subtotal Support and Management					3558	442	575			4575
Subtotal Test and Evaluation					5394	1024	1800			8218
Total Project					99486	8103	8258			115847

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603645A Armored Systems Modernization - Advanced Development

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	1612	1945	0	5274	31439	39507	49639	Continuing	Continuing
DQ19 Future Combat System	1612	0	0	2004	24843	28877	38457	Continuing	Continuing
D018 Future Scout Vehicle (FSV) - Advanced Development	0	1945	0	0	0	0	0	0	1945
DQ21 DQ21	0	0	0	3270	6596	10630	11182	Continuing	Continuing

Mission Description and Budget Item Justification: Project DQ19, Future Combat System, invests in high pay-off advanced technologies for the next tank beyond the M1A2. Several candidate technologies are being currently evaluated in the science and technology base. Project D018, Future Scout Vehicle, funds the development and demonstration phase of the Future Scout Vehicle (FSV), now known as the Future Scout and Cavalry System (FSCS). The FSCS will replace the current ground scout systems in the battalion/brigade and division/regiment levels. This project will fund finalization of requirements definition, design definition, sensor maturation, and software integration efforts. All projects in this program element fund the advanced development phase of Army combat systems and are therefore correctly placed in Budget Activity 4.

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603645A Armored Systems Modernization - Advanced Development

PROJECT: DQ19

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DQ19 Future Combat System	1612	0	0	2004	24843	28877	38457	Continuing	Continuing

A. Mission Description and Justification: The Future Combat System (FCS) will be the Army's replacement for the Abrams Main Battle Tank. The M1A2 System Enhancement Program (SEP) tank (see Project D330) is expected to continue in service until 2015 or later. The FCS will feature leap ahead capabilities in mobility, survivability, lethality, and sustainability. In FY 97 Congress provided a plus-up to initiate Future Combat System studies and investigate improvements to the M1A1 and M1A2 tanks. The main effort before FY 00 is now being conducted in early S&T (PEs 0601104A, 0602618A, 0602601A, 0602624A). Ongoing S&T programs are developing and maturing competing main armament concepts, such as electromagnetic, electrothermal-chemical, and conventional technologies. The size, power and weight differences of any of these concepts is the major system design driver for FCS.

Acquisition Strategy: At this stage, the focus is on maturing candidate technologies in the tech base, prior to enter system development. The acquisition strategy will stress competition in development and production.

FY 1997 Accomplishments:

•	1612	Initiated Future Combat System concept studies
Total	1612	

FY 1998 Planned Program: Program not funded in FY 98

FY 1999 Planned Program: Program not funded in FY 99

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	7803	0	0
Appropriated Value	8000		
Adjustments to Appropriated Value	-6388		
FY 1999 President's Budget	1612	0	0

Change Summary Explanation: FY 97 decrease (-6000) due to Congressional rescission in FY 98 appropriation; -197 for undistributed Congressional reductions.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603645A Armored Systems Modernization - Advanced Development / PROJECT: DQ19

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Abrams IOTE (D2UT)	97	0	0	0	0	0	0	0	97
Abrams Improvement Program (D330)	69187	38559	6421	2982	3973	9923	34805	Con't	Con't

D. Schedule Profile: Not applicable

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603645A Armored Systems Modernization - Advanced Development

PROJECT: DQ19

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
FCS Concept Analyses	1612		
Total	1612	0	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Booz Allen &Ham McLean, VA	C-CPFF	Aug 97				20			Cont'd	20
Other Contracts		Aug 97				779			Cont'd	779
Support and Management Organizations										
Other Gov Agency	MIPR					813			Cont'd	813
Test and Evaluation Organizations: Not applicable										
Government Furnished Property	Not Applicable									
Subtotal Product Development						799				799
Subtotal Support and Management						813				813
Subtotal Test and Evaluation										
Total Project						1612				1612

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603645A Armored Systems Modernization - Advanced Development

PROJECT: D018

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D018 Future Scout Vehicle (FSV) - Advanced Development	0	1945	0	0	0	0	0	0	1945

A. Mission Description and Justification: The Future Scout Vehicle (FSV), now known as the Future Scout and Cavalry System (FSCS), is the Army's next generation ground reconnaissance and intelligence gathering, combat vehicle system. FSCS will provide Army reconnaissance elements a platform with significant improvements in vehicle mobility, survivability, lethality, target acquisition and communication capabilities through integration of advanced technologies. Advanced sensors and communication systems, combined with sophisticated vehicle signature management, will significantly enhance the scout's capability to rapidly detect, identify, recognize, and hand-off multiple targets to field commanders under all conditions and in all environments.

Acquisition Strategy: Plans call for the competitive award of contracts to two US/UK consortia who will be given responsibility for development of an FSCS design concept and fabrication of a demonstration vehicle. Extensive modeling and simulation will be used to meet, verify, validate and finalize system requirements, and establish a design definition baseline. The baseline will support follow-on Engineering and Manufacturing Development (EMD). During the building of the Program Objective Memorandum, this project was restructured, transferring funds to support the FSCS Advanced Technology Demonstration (PE 0603005A) and to fund FSCS EMD (PE 0604645A).

FY 1997 Accomplishments: Project not funded in FY 97

FY 1998 Planned Program:

•	1896	Initiate Project Management (PM); Integrated Product Team Studies
•	49	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	1945	

FY 1998 Planned Program: Project not funded in FY 99

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	2007	2008
Appropriated Value		2007	0
Adjustments to Appropriated Value		-62	
FY 1999 President's Budget	0	1945	0

Change Summary: FY99 reduction (-2008) due to program transition

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603645A Armored Systems Modernization - Advanced Development
	PROJECT D018

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
PE 604645A, D022 - Future Scout Vehicle					4000	54820	109622	Continuing	Continuing
PE 603005A, D440 – Advanced Combat Vehicle Technology		2800	24452	54642	68457	6800	0	Continuing	157151
PE 603005A, D497 – Combat Vehicle Electronics			4795	0	0	0	0	4795	4795

D. Schedule Profile None

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603645A Armored Systems Modernization - Advanced Development

PROJECT: D018

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Project Management		1896	0
SBIR/STTR		49	
Total	0	1945	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations: None										
Support and Management Organizations										
PM Office and IPT	MIPR						1896	0	Cont	1896
SBIR/STTR							49			49
Test and Evaluation Organizations: None										

Government Furnished Property None

Subtotal Product Development										
Subtotal Support and Management							1945			1945
Subtotal Test and Evaluation										
Total Project							1945			1945

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603649A Engineering Modification Equipment - Advanced Development

PROJECT: DG24

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DG24 M1 Breacher	498	0	0	0	0	0	0	0	72956

A. Mission Description and Budget Item Justification: The Grizzly (M1 Breacher) will provide 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 will be capable of moving with, and be as survivable as, the force it is supporting. 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 Grizzly, a single, survivable breach platform, 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. This program element supports Program Definition and Risk Reduction (PDRR) efforts and is appropriately placed in Budget Activity 4.

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. In FY 1997 the project transitioned to PE 0604649A, DG25, for the Engineering and Manufacturing Development (EMD) phase.

FY 1997 Accomplishments:

•	498	Refined and Applied Engineering Changes
Total	498	

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program: Project not funded in FY 1999

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	0	0
Appropriated Value	0		
Adjustments to Appropriated Value	498		
FY 1999 President's Budget	498	0	0

Change Summary Explanation: FY 1997 funding increase was required to extend the Program Definition and Risk Reduction (PDRR) phase. Milestone II was accomplished in December 1996 and approval was received to enter the EMD phase.

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603649A Engineering Modification Equipment - Advanced Development

PROJECT: DG24

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, A Budget Activity 5									
PE 0604649A, Project DG25, M1 Breacher Dev	31304	38521	51420	58745	39210	19294	0	0	244752
PA, WTCV, GZ3200, Breacher MOD	0	0	0	20569	79860	82460	119698	Cont'd	Cont'd
PA, WTCV, GEO175, Breacher Spares	0	0	0	0	0	0	2535	Cont'd	Cont'd
PA, WTCV, G84000, Breacher Trng Dev	0	0	0	0	381	15031	1452	0	16864

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Conduct Milestone II Review	X*											
Award EMD Contract		X*										

* Milestone Completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603649A Engineering Modification Equipment - Advanced Development

PROJECT: DG24

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Development Engineering	498	0	0
Logistics Support	0	0	0
System Test & Evaluation	0	0	0
System Management	0	0	0
Total	498	0	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
United Defense, York, PA	SS-CPIF	Sep 92 (K Mod)	61052	61052	60554	498				61052
Other Contracts	Various	Various			811					811
Support and Management Organizations										
TACOM Warren, MI					6389					6389
ANAD Anniston, AL					250					250
Other Gov't Agencies					1456					1456
Contract Support to Milestone Rev					230					230
Test and Evaluation Organizations										
TECOM APG, MD					1636					1636

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603649A Engineering Modification Equipment - Advanced Development

PROJECT: DG24

Government Furnished Property:

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property									
TACOM Warren, MI	Requisitions	Various	Various	159					159
Support and Management Property	None								
Test and Evaluation Property									
TACOM Warren, MI	Requisitions	Various	Various	973					973
Subtotal Product Development				61524	498				62022
Subtotal Support and Management				8325					8325
Subtotal Test and Evaluation				2609					2609
Total Project				72458	498				72956

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603653A Advanced Tank Armament System

PROJECT: DB99

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DB99 Advanced Tank Armament System	11144	8704	8928	0	0	0	19950	0	62834

A. **Mission Description and Budget Item Justification:** The goal of the Advanced Tank Armament System (ATAS) program is to sustain overmatch superiority over increasingly more capable future enemy tanks. The ATAS program is one of the principal programs supporting tank lethality improvements. The program is developing and demonstrating a number of key gun and fire control technologies which offer significant payoffs in lethality for the current tank fleet, the next upgrade to the M1A2 Abrams tank as well as other future weapon system platforms. However, due to funding reductions and ongoing cost reduction initiatives, the program has been restructured to meet mission needs through CAIV (Cost As an Independent Variable).

The ATAS Program has two main phases. Phase I develops and demonstrates in FY 98, autotarget tracking technology that is applicable to the current M1 Abrams series of tanks. Phase I is a requirements oriented, Combat Developer (user) directed program that increases tank lethality by allowing the tank crew to quickly kill enemy battlefield targets. Phase I technology, when applied to tank training devices, will also reduce tank crew training costs by reducing the amount of training necessary for new gunners to perform proficiently. Phase II demonstrates a highly lethal long 120mm tank main gun that can kill advanced enemy tanks at long range. Phase II also develops advanced fire control system components that give the user the ability to consistently and accurately hit these long range targets. In FY 97, due to a congressional plus-up, the program began the design of the compact autoloader for a possible test demonstration in FY 99 in an M1A2. Maturation of the long 120mm gun and fire control components will continue through FY 98. Gun maturation includes the first application of wear resistant barrel coatings to a 120mm gun tube to reduce gun barrel erosion. Also, the development of a barrel vibration absorber as well as an improved MRS (Muzzle Reference System), thermal shroud and bore evacuator will be pursued. Advanced fire control components including Digital Adaptive Stabilization, modular reuseable software and system simulators will also be developed to increase fire-on-the move accuracy. These items will be completed, tested and integrated into an M1A2 test tank in FY99 for a technology demonstration. ATAS technology may also be applied to Future Weapon Systems platforms such as the Future Scout and Cavalry Vehicle and Future Combat System (FCS) in both large and medium calibers to reduce the overall cost of Army weapon system development. Long 120mm gun Engineering Manufacturing Development (EMD), which was to begin in FY 00 to prepare the cannon for possible integration into the Abrams tank, has been eliminated due to funding constraints.

The ATAS program is conducting prototyping, testing and early operational assessment of critical tank armament systems, subsystems, and components; identifying cost drivers and alternatives using modeling and simulation, and working with the user representative to establish performance objectives and identify cost-schedule-performance trade-offs. ATAS is also demonstrating component performance enhancements for application to future Abrams upgrades, and is appropriately placed in Budget Activity 4.

Acquisition Strategy: The technologies in ATAS will be demonstrated then transferred to PM Abrams for further technical development. Technologies in ATAS may 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.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603653A Advanced Tank Armament System
	PROJECT DB99

FY 1997 Accomplishments:

•	1600	Gun Technology - continued gun maturation program including redesign of the gun mount for low cost M1A2 installation
•	600	Phase I - continued autotarget tracker demonstration preparation
•	6944	Phase II - completed fire control component hardware/software integration, continued turret integration study
•	2000	Initiated ruggedization of the Compact Autoloader design
Total	11144	

FY 1998 Planned Program:

•	200	Phase I - complete vehicle testing
•	82	Phase II - complete coating development
•	2257	Phase II - fabricate long gun prototype hardware & subsystem testing
•	3000	Phase II - begin design & fabrication of the stabilization/Fire Control System
•	3000	Phase II - begin turret modification design
•	165	Small Business Innovative Research/Small Business Technology Transfer Program
Total	8704	

FY 1999 Planned Program:

•	2000	Phase II - complete long gun hardware fabrication & testing
•	2000	Phase II - complete stabilization/fire control system fabrication & test
•	3500	Phase II - complete turret integration
•	1428	Phase II - demonstration & test
Total	8928	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	11395	8982	8928
Appropriated Value	11639	8982	
Adjustments to Appropriated Value	-495	-278	
FY 1999 President's Budget	11144	8704	8928

C. Other Program Funding Summary: Not applicable

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603653A Advanced Tank Armament System
	PROJECT DB99

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Complete Phase II fire control hardware/ software integration				X*								
Award Compact Autoloader Contract		X*										
Complete Gun Tube Coating Effort								X				
Complete Autotracker Demonstration								X				
Begin 120mm Long Gun hardware fab						X						
Begin design/fabricate Stabilization/Fire Control						X						
Begin turret modification design								X				
Complete Ruggedized Autoloader Design								X				
Complete gun/stabilization/fire control system fabrication										X		
Complete turret integration											X	
Vehicle Demonstration - 120mm Long Gun with advanced Stabilization/ Fire Control												X

*Milestone Completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603653A Advanced Tank Armament System

PROJECT: DB99

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Primary Hardware Development/Contractor	7958	5335	5300
Primary Hardware Development/Government	2186	2204	1800
Quality Assurance/ARDEC	500	350	350
Developmental Test & Evaluation	100	200	1028
Program Management (PM-TMAS)	400	450	450
SBIR/STTR		165	
Total	11144	8704	8928

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Texas Instruments	C-CPFF	Sep 90		20575	9668	4158	2700	1800		18326
Benet Laboratories	OGA				2400	1886	2204	1800	12550	20840
Hughes Aircraft	SS-CPFF	Jan 93		240	140	100				240
GDLS						2000	2800	3500		8300
Western Design						1700				1700
Howden										
ARDEC	OGA				200	300				500
Support and Management										
PM-TMAS/ARDEC					1000	900	635	800	2400	5735
SBIR/STTR							165			165
Test and Evaluation										
CSTA					700	100	200	1028	5000	7028

Government Furnished Property: Not Applicable

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603653A Advanced Tank Armament System PROJECT DB99

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	14108	11144	8704	8928	19950	62834
Subtotal Support and Management						
Subtotal Test and Evaluation						
Total Project	14108	11144	8704	8928	19950	62834

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603713A Army Data Distribution System

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	22699	20526	17281	4638	13156	3311	3259	Continuing	Continuing
D370 PJH-PLRS/JTIDS Hybrid*	19255	20526	10981	4638	13156	3311	3259	Continuing	Continuing
D385 JTIDS (LINK 16)	0	0	6300	0	0	0	0	0	6300
D2QT EPLRS/JTIDS Operational Test	3444	0	0	0	0	0	0	0	4105

* FY97 R-1 exhibit contains an administrative error. Funding shown here is correct

Mission Description and Budget Item Justification: The Army Data Distribution System (ADDS), which consists of the Enhanced Position Location Reporting System (EPLRS), the Joint Tactical Information Distribution System (JTIDS), Multifunctional Information Distribution System (MIDS) and the Near Term Digital Radio (NTDR) provides support to the Army's air defense, fire support, maneuver control, intelligence and combat service support automated system. Project D370 is capable of "digitizing data messages" that must be transmitted on the battlefield. It is capable of providing multi-functions; data communications, unit locations and unit identification. The ADDS network automatically utilizes manpack, surface vehicle and airborne vehicle user units to achieve range extension. It has been designated specifically to meet the data communications requirements of emerging tactical automated data processing and sensor based systems. The ADDS will provide reliable, real-time, secure, jam-resistant data communications and position location capabilities to the soldier and his unit commander. These projects focus on efforts associated with advanced technology development used to demonstrate general military utility to include demonstration and validation in the area of Army Data Distribution and are correctly placed in Budget Activity 4.

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603713A Army Data Distribution System

PROJECT: D370

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D370 PJH-PLRS/JTIDS Hybrid*	19255	20526	10981	4638	13156	3311	3259	Continuing	Continuing

A. Mission Description and Budget Item Justification : The Near-Term Digital Radio (NTDR) is a Research and Development program to finance systems for test and experimentation. It will provide the TOC-to-TOC communication function for the First Digitized Corps. The program's vision is to create the Army Communication data backbone for Platoon to Brigade for Force XXI. It is one of the seven major elements which will provide a seamless digital communication capability throughout the fighting force for the Digital battlefield of the 21st century. To allow the NTDR to evolve and to make maximum use of technology insertion, it is based on an open architecture which allows programmability and future expansion. The project will provide reliable, real time, secure, jam-resistant data communications and position location capabilities to the soldier and to his unit commander. This project provides data distribution support to the Army's air defense, fire support, maneuver control, intelligence and combat service support automated systems, and is capable of "digitizing data messages" that must be transmitted on the battlefield. The Joint Tactical Information Distribution Systems (JTIDS)/LINK-16 portion of ADDS program is a joint program representing all services and allied force requirements with the purpose of acquiring a digital information system for tactical inoperability and awareness which complies with the ASD/C3I policy establishing LINK-16 as the DoD Defense Control Centers, and to control air and missile defense weapon engagement operations.

Acquisition Strategy: The NTDR program maximizes the use of Non-Development Item (NDI) and Commercial Off-The-Shelf (COTS) hardware and software. An RDTE contract was awarded competitively in January 1996. In FY97/98, the NTDR units will be utilized for testing and experiments both at Electronic Proving Ground (EPG) and in Division XXI which will focus on enhancing the command and control aspects of maneuver warfare. 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 JTIDS family of high speed data terminals. Remaining effort in FY97 for the EPLRS program is for required Network Control Station - EPLRS (Downsized)(NCS-E(D)) documentation.

FY 1997 Accomplishments:

•	15573	Continued NTDR Program
•	1483	Program Management Activities for NTDR
•	478	MIDS Contract Development/Engineering Support
•	1100	NTDR Testing
•	621	Documentation for EPLRS Net Control Station Downsized (NCS-E(D))
Total	19255	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603713A Army Data Distribution System
	PROJECT D370

FY 1998 Planned Program:

•	2511	Continue MIDS Development/Engineering Support
•	1347	Program Management Activities for NTDR
•	2632	Test Activities (NTDR)
•	13251	Continue/Complete NTDR Program Hardware/Software Development
•	303	Misc (GFE, Travel)
•	482	Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
Total	20526	

FY 1999 Planned Program:

•	1565	Program Management Activities for NTDR
•	3765	Test Activities (NTDR)
•	5341	Continue/Complete NTDR Program Hardware/Software Development
•	310	Misc (GFE, Travel)
Total	10981	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY1998/1999 President's Budget	19632	21214	10049
Appropriated Value	20169	21214	
Adjustments to Appropriated Value	-914	-688	
FY1999 President's Budget	19255	20526	10981

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA2, BU1400	77504	67163	24048	42277	39210	37988	48358	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Class DT/OT/MS Tests Completion	X*											
Class 2M FRP Decision			X*									
Class 2M FRP Contract Award			X*									
Complete FY94 EDM Delivery			X*									
Class 2M LRIP Delivery						X						

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603713A Army Data Distribution System

PROJECT: D370

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Class 2M FRP Delivery										X		
Start Fielding LRIP Terminals						X						
MIDS Development Test						X						
MIDS OT/Multiservice Test										X		
MIDS Transition Decision												X
MIDS Contract Award												X
NTDR Option Award							X					
NTDR EPG Field Test						X						
NTDR Tactical Internet Test								X				
NTDR OT												X

*Event has been completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603713A Army Data Distribution System

PROJECT: D370

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Contractor Engineering Support	16672	15762	5341
Program Management Support	1483	1347	1565
Miscellaneous (NTDR-GFE)	0	303	310
Testing	1100	2632	3765
SBIR/STTR		482	
Total	19255	20526	10981

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Science Application Int'l	MIPR	AUG 96	151	151	151	0	0	0	0	151
MIDSCO	MIPR	SEP 97	2730	2730	0	135	2511	0	0	2646
Venntronix Corp, Eatontown, NJ	MIPR	APR 96	420	420	420	0	0	0	0	420
Lockheed/Martin	MIPR	DEC 96	2001	2001	1380	621	0	0	0	2001
ITT, Ft. Wayne	C/CPIF/FFP	JAN 96	38385	38385	2352	15573	13251	5341	Cont	Cont
VISICOM	SS/CPFF	JUN 96	35	35	35	0	0	0	0	35
Support and Management Organizations										
Misc	MIPR	DEC 95	125	125	125	0	0	0	0	125
Misc (NTDR)	MIPR	FEB 98	8286	8286	604	1319	1550	1773	Cont	Cont
C3I (NTDR)	MIPR	JUN 96	838	838	0	164	0	0	0	164
MITRE	MIPR	NOV 96	180	180	0	180	0	0	0	180
Misc (MIDS)	MIPR	NOV 96	163	163	0	163	0	0	0	163
TRACOR	PWD	MAR 98					100	102	Cont	Cont
SBIR/STTR							482			482
Test and Evaluation Organizations										
EPG	MIPR	MAY 96	7629	7629	84	1100	2632	3765	Cont	Cont
EPG	MIPR	FEB 96	423	423	423	0	0	0	0	423

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603713A Army Data Distribution System PROJECT D370

Government Furnished Property: N/A

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	4338	16329	15762	5341	Cont	Cont
Subtotal Support and Management	729	1826	2132	1875	Cont	Cont
Subtotal Test and Evaluation	507	1100	2632	3765	Cont	Cont
Total Project	5574	19255	20526	10981	Cont	Cont

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603713A Army Data Distribution System

PROJECT: D385

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D385 JTIDS (LINK 16)	0	0	6300	0	0	0	0	0	6300

A. Mission Description and Budget Item Justification: The Joint Tactical Information Distribution (JTIDS)/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. This project is not a new start, but rather a continuation of an effort begun under 0603713A. project D370.

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.

FY 1997 Accomplishments: Project not funded in FY 97

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program:

•	504	Program Activities for MIDS
•	3100	MIDS Testing
•	2696	Continue MIDS Program
Total	6300	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	0	0
Appropriated Value	0		
Adjustments to Appropriated Value	0		
FY 1999 President's Budget	0	0	6300

Change Summary Explanation: Funding: FY 1999 funds reprogrammed from 0603713A, project D370 to support this effort.

C. Other Program Funding Summary: Not applicable.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603713A Army Data Distribution System PROJECT D385

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
MIDS DT/OT											X	

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603713A Army Data Distribution System
	PROJECT D385

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Program Management Support	0	0	504
Contractor Engineering Support	0	0	2696
Test and Evaluation	0	0	3100
Total	0	0	6300

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
TBD	TBD	TBD	504	504	0	0	0	504	0	504
Support and Management Organizations										
TBD	TBD	TBD	2696	2696	0	0	0	2696	0	2696
Test and Evaluation Organizations										
TBD	TBD	TBD	3100	3100	0	0	0	3100	0	3100
Subtotal Product Development								504		504
Subtotal Support and Management								2696		2696
Subtotal Test and Evaluation								3100		3100
Total Project					0	0	0	6300		6300

Government Furnished Property: Not applicable

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603713A Army Data Distribution System

PROJECT: D2QT

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D2QT EPLRS/JTIDS Operational Test	3444	0	0	0	0	0	0	0	4105

A. Mission Description and Budget Item Justification: This project finances the direct costs of planning and conducting operational testing and evaluation of the EPLRS/JTIDS by the Operational Test and Evaluation Command (OPTEC). JTIDS is an Acquisition Category (ACAT) I system with an Initial Operational Test and Evaluation (IOT&E) beginning 1QFY97. Operational Testing is conducted under conditions, as close as possible, to those encountered in actual combat with typical user troops trained to employ the system. OPTEC provides Army leadership with an independent test and evaluation of effectiveness and suitability of the system.

FY 1997 Accomplishments:

- 2890 Conducted JTIDS OT
- 337 JTIDS OT Evaluation
- 217 OT Unit (Test Players) Support

Total 3444

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program: Project not funded in FY 1999

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY1998/1999 President's Budget	3538	0	0
Appropriated Value	3653		
Adjustments to Appropriated Value	-209		
FY1999 President's Budget	3444	0	0

C. Other Program Funding Summary: Not Applicable

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Conduct JTIDS OT	X*											

*Denotes completed milestone

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603713A Army Data Distribution System

PROJECT: D2QT

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Operational Test and Evaluation	3444	0	0
Total	3444	0	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations : None										
Support and Management Organizations: None										
Test and Evaluation Organizations:										
OPTEC, FT BLISS	MIPR	MAR 96	4105	4105	661	3444	0	0	0	4105

Government Furnished Property: None

Subtotal Product Development	0	0	0	0	0	0	0
Subtotal Support and Management	0	0	0	0	0	0	0
Subtotal Test and Evaluation	661	3444	0	0	0	0	4105
Total Project	661	3444	0	0	0	0	4105

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603745A Tactical Electronic Support Systems - Advanced Development (TIARA)

PROJECT: D535

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D535 Intelligence Fusion Analysis Demonstration	3837	0	0	0	0	0	0	0	20000

A. Mission Description and Budget Item Justification: This program funds application and validation of advanced computer software and hardware technologies to intelligence fusion analysis functions and prototype development, integration and evaluation of improved tactical intelligence fusion capabilities. This project supports the urgent requirement for an automated tactical intelligence processing system through technology insertion into, and development and evaluation of, prototype upgrades to the All Source Analysis System (ASAS), both during development and after fielding and therefore is appropriately placed in Budget Activity 4.

Acquisition Strategy: This project consists of studies, prototype development and evaluation of the integration of tactical intelligence fusion capabilities into existing systems. The efforts are for joint advanced technology research via contractors, Joint Propulsion Laboratory (JPL), a federally funded research and development center (FFRDC), and some funds channeling to colleges and universities as grants under JPL oversight.

FY 1997 Accomplishments:

•	500	Continued to investigate, develop and apply advanced software and hardware processing, storage, display and input/output (I/O) technologies to tech base prototypes of high-performance, expanded intelligence fusion capabilities
•	2487	Continued to evaluate, configure and integrate tech base prototype capabilities into operational ASAS prototypes and ASAS Block II development
•	850	Continued to support the development, evaluation and refinement of ASAS operational prototypes and their integration into mainline ASAS development and acquisition per the Joint Prototyping Plan
Total	3837	

FY 1998 Planned Program: Program not funded in FY98

FY 1999 Planned Program: Program not funded in FY99

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY1998/1999 President's Budget	3941	0	0
Appropriated Value	4025		
Adjustments to Appropriated Value	-188		
FY1999 President's Budget	3837	0	0

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603745A Tactical Electronic Support Systems - Advanced Development (TIARA) / PROJECT: D535

C. Other Program Funding Summary: None

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Expanded Tech Base Prototypes												
- Interface Adv Sit Assmt with ASAS Block II			X*									
- Integrate Asset Management into ASAS Block II prototypes				X*								
- Incorporate Adv Correlation Techniques into ASAS Oper Prototypes				X*								
- Integrate Exp Tech Base Capabilities into ASAS Operational Prototypes				X*								
- Integrate IBIS into ASAS				X*								
- Integrate Operational Prototype into ASAS Block II				X*								

*Denotes a completed effort

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603745A Tactical Electronic Support Systems - Advanced Development (TIARA)

PROJECT: D535

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Prototype Development Efforts	3837	0	0
Total	3837	0	0

B. Budget Acquisition History and Planning Information:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
JPL	PWD				10533	3837				14370
EWA	PWD				2940					2940
Misc. Contracts					1624					1624
Support and Management Organizations: None										
Test and Evaluation Organizations: None										
Government Furnished Property: None										
Subtotal Product Development					15097	3837	0	0	0	18934
Subtotal Support and Management					0	0	0	0	0	0
Subtotal Test and Evaluation					0	0	0	0	0	0
Total Project					15097	3837	0	0	0	18934

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603747A Soldier Support and Survivability

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	6487	7324	7581	9140	9348	10884	11376	Continuing	Continuing
DC09 Unit/Organizational Equipment	2124	1895	1609	1851	2254	1804	2224	Continuing	Continuing
D610 Food Advanced Development	1849	2193	2582	3131	3395	3819	3853	Continuing	Continuing
D669 Clothing and Equipment	2514	3236	3390	4158	3699	5261	5299	Continuing	Continuing

Mission Description and Budget Item Justification: Provide advanced development for unit/organizational equipment, improved individual clothing and equipment, 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 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. The projects in this Program Element focus on efforts to demonstrate general military utility, to include demonstration and validation, and are, therefore, correctly placed in Budget Activity 4.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603747A Soldier Support and Survivability PROJECT DC09

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC09 Unit/Organizational Equipment	2124	1895	1609	1851	2254	1804	2224	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.

Acquisition Strategy: Accelerated Product developments and testing which transition to Engineering and Manufacturing Development and/or Production.

FY 1997 Accomplishments:

•	733	Awarded Modular General Purpose Tent System (MGPTS) low rate initial production (LRIP) contract with 4 optional production periods.
•	202	Converted and tested existing Ammunition Solar Shade stock as possible non-materiel alternative to Ammunition Solar Cover requirement.
•	435	Awarded Lightweight Maintenance Enclosure (LME) LRIP contract with 4 optional production periods.
•	322	Completed pre-qualification test for the Ballistic Protective System (BPS)
•	432	Completed development of thermoelectric Space Heater Small (SHS) prototype for improved heat distribution and increased efficiency. Completed development of the Space Heater Arctic (SHA) and the Space Heater Small. Prepared Integrated LRIP/FRP contract.
Total	2124	

FY 1998 Planned Program:

•	100	Conduct shelter/heater habitability study to validate applications for the distribution of the SHA, SHS, and H45.
•	200	Type Classify BPS and prepare performance specification. Prepare LRIP contract with production options.
•	347	Conduct market survey of the Family of Field Latrines (FOFL). Fabricate prototypes of the Follow-On-Latrine. Conduct limited Technical Testing and Type Classify the Performance Specification. Procure prototypes of the Maturing Theater Latrine (MTL) and initiate test and evaluation.
•	600	Procure modified non-developmental item (NDI) prototypes of the Aviation Maintenance Shelter (AMS) and conduct technical testing.
•	300	Complete Ammunition Solar Cover testing, prepare performance specification and prepare LRIP contract.
•	300	Complete testing and field evaluation of the LME and prepare for MS III/production decision.
•	48	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	1895	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603747A Soldier Support and Survivability
	PROJECT DC09

FY 1999 Planned Program:

- 500 Conduct test and evaluation of the FOFL (MTL), complete performance specification and approve production decision.
- 805 Award development contract for prototype air beam technology shelter.
- 304 Conduct market survey for Modular Deck System (MDS), build prototypes, conduct developmental testing.

Total 1609

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	1289	1955	1737
Appropriated Value	1316	1955	
Adjustments to Appropriated Value	+808	-60	
FY 1999 President's Budget	2124	1895	1609

Change Summary Explanation: Funding: FY 1997 funding (+808) realigned from PM Soldier to supports LRIP contract.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0604713.DC40, Unit/Organizational Equipment	1701	1740	1720	1861	2736	2105	2563	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Awarded MGPS contract			X*									
Award LME contract				X*								
convert and test Ammunition Solar Shades			X*									
Type Classify SHA and SHS				X*								
Complete TT/OT for Containerized Self-Service Laundry				X*								
Completed BPS Production Qualification Test				X*								
TC ASC prepare performance specification					X*							
Type Classify Containerized Self-Service Laundry						X						
TC BPS prepare performance specification						X						
Procure and test AMS NDI						X						
Complete LRIP testing of LME							X					

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603747A Soldier Support and Survivability

PROJECT: DC09

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Type Classify FOFL (FOL)								X				
Complete FOSH Habitability Study								X				
Conduct market survey on FOFL. Conduct test and Evaluation on MTL prototypes									X			
Complete AMS testing prepare LRIP contract									X			
Conduct MDS MI build prototypes									X			
Award Development contract airbeam shelter										X		
Type Classify FOFL (MTL)											X	

* Milestones Completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603747A Soldier Support and Survivability
	PROJECT DC09

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Product Development	1949	1618	1425
Support and Management	95	92	66
Test and Evaluation	80	185	118
Total	2124	1895	1609

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
SSCOM	In-House					757	787	711	Cont	Cont
Hunter Mfg	Various	Various				1192	801	690	Cont	Cont
Guild Assoc										
Weatherhaven										
Hansen Weather										
GTS										
ARO	MIPR						30	30	Cont	Cont
TRADOC										
VA Med Ctr										
McClellan AFB										
Army Nat'l Guard										
Support and Management Organizations										
SSCOM						95	92	66	Cont	Cont
Test and Evaluation Organizations										
TECOM/YPG						80	185	118	Cont	Cont

Government Furnished Property: None

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603747A Soldier Support and Survivability PROJECT DC09

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development		1949	1618	1425	Cont	1425
Subtotal Support and Management		95	92	66	Cont	66
Subtotal Test and Evaluation		80	185	118	Cont	118
Total Project		2124	1895	1609	Cont	1609

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603747A Soldier Support and Survivability

PROJECT: D610

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D610 Food Advanced Development	1849	2193	2582	3131	3395	3819	3853	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.

Acquisition Strategy: Developments transition to Engineering and Manufacturing Development and procurement.

FY 1997 Accomplishments:

•	200	Completed study on electronic recipe distribution, modified existing program for Lotus Notes application and started transmission of new and approved recipe database file to the Services.
•	610	Completed field test of new MRE components and obtained OTSG and JSORF approval for fielding; completed testing and transitioned Ration Snack Pack for procurement in emergency contingencies; completed field testing of 12 Meal Cold Weather menu designs and received approval for transitioning to procurement; transitioned procurement documents for medical supplement to the Unitized Group Ration (UGR) to DLA.
•	263	Completed development of four MRE ration prototypes to reduce cost, weight and volume and logistical impact on supply system.
•	160	Developed five new types of Mobility Enhancing Ration Components (MERCs) and commercially produced test components for field evaluation with operational forces. Obtained approval for two Cooperative Research and Development Agreements (CRADAs) for technology transfer.
•	171	Performed technical feasibility testing (TFT) on NDI waste reduction/handling equipment which will reduce the field back-haul and trash removal requirements and transitioned optimum system to procurement.
•	385	Initiated design and fabrication of Marine Corps Rapid Deployment Kitchen (RDK) based on centralized heating technology providing highly mobile, efficient field feeding capability.
•	60	Evaluated Thermally Efficient Field Serving Equipment to optimize food quality and transitioned procurement documentation to Marine Corps.
Total	1849	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603747A Soldier Support and Survivability
	PROJECT D610

FY 1998 Planned Program:

•	298	Fabricate Non-Electric Field Refrigerator prototype, conduct technical user testing and develop performance specification for procurement.
•	536	Complete fabrication and initiate test and evaluation of the Rapid Deployment Kitchen (RDK).
•	229	Complete test and evaluation of future shipboard galley concept incorporating new food service equipment technologies.
•	360	Identify and conduct user testing of improvements for individual and group ration systems to improve acceptability and enhance combat effectiveness. Transition selected heat and serve ration components and MRE improvements, increasing menu variety. Update B-ration menu for Marine Corps.
•	327	Field test MERC to quantify warfighter acceptability / mobility enhancement and transition to procurement for use in MRE menus.
•	214	Field test nutrient optimized MRE ration prototypes to minimize weight/cube/cost and conduct user field test to determine effect on level of acceptance and consumption.
•	87	Procure and conduct technical testing of steam generator to provide immediate enhancement to existing Field Sanitation Systems.
•	87	Initiate Fielded Food Service Equipment Improvement Program.
•	55	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	2193	

FY 1999 Planned Program:

•	280	Fabricate prototype Marine Corps Expeditionary Field Feeding Delivery System, conduct field evaluations and transfer procurement documents.
•	260	Design and fabricate the Catalytic Diesel Vaporizer for specific application to effectively integrate with commercial off the shelf food service equipment.
•	240	Develop company-sized kitchen and fabricate prototype of the Kitchen, Company Level Field Feeding - Future.
•	200	Complete storage studies/demonstrations of glass coated polymeric tray with easy open lid to refine concepts, ensure high acceptability and optimize functionality and affordability.
•	380	Continue to identify and conduct user testing of improvements for individual and group ration systems. Transition selected heat and serve ration components and MRE improvements, increasing menu variety and acceptance.
•	255	Complete field tests in different environments to establish effectiveness of selected performance enhancing ration components (PERCs) and supplements, demonstrate overall producibility and suitability of PERCs-based rations and transition to procurement.
•	369	Complete MRE ration redesign for nutritional optimization and logistical parameters and conduct follow-up field testing to demonstrate improved acceptance/consumption and reduced logistic burden.
•	250	Evaluate emerging food service equipment technology for direct shipboard application to reduce life cycle costs.
•	220	Develop a baseline on which to design future "on demand" feeding systems to reduce logistical burden.
•	128	Continue executing fielded food service equipment improvement program
Total	2582	

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603747A Soldier Support and Survivability

PROJECT: D610

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	1905	2263	2569
Appropriated Value	1946	2263	
Adjustments to Appropriated Value	-97	-70	
FY 1999 President's Budget	1849	2193	2582

C. Other Program Funding Summary:

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0604713.D548, Military Subsistence System	766	857	1300	1661	1794	1914	1930	Cont	Cont
Other Procurement, Army BA 3 MA8050, Items Less Than $2.0M (CSS-EQ)	5701	2020	4071	5110	5789	11747	13927	Cont	Cont
MA5800, Refrigeration Equipment	4274		1930	949	944	954	6443	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Completed Technical Feasibility Testing (TFT) of waste handling equipment				X*								
Fabricate USMC field kitchen based on centralized heating technology				X*								
Conducted user tests of Mobility Enhancing Ration Components (MERC)						X						
Transition heat and serve ration and MRE Improvements to procurement						X						
Complete fabrication/start testing on the RDK						X						
Evaluate prototypes of the Beverage Cooling Device											X	
Complete Technical/User Testing of Non Electric Field Refrigerator								X				
Initiate development of Kitchen Field Fielding – Future									X			

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603747A Soldier Support and Survivability

PROJECT: D610

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Completed Technical Feasibility Testing (TFT) of waste handling equipment				X*								
Fabricate USMC field kitchen based on centralized heating technology				X*								
Conduct field test of logistically effective ration design											X	
Conduct user testing of rations applying glass coating technology											X	
Complete testing of the Catalyctic Diesel Vaporizer												X

* Milestone Complete

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603747A Soldier Support and Survivability

PROJECT: D610

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Product Development	1516	1710	2004
Support and Management	97	113	128
Test and Evaluation	236	370	450
Total	1849	2193	2582

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
SSCOM	In-House					1141	1306	1538	Cont	3985
GTS	Various	Various				375	404	466	Cont	1245
Hunter Mfg										
SSL										
GSA	MIPR									
OGA										
Support and Management Organizations										
SSCOM						97	113	128	Cont	338
Test and Evaluation Organizations										
TECOM/OGA						236	370	450	Cont	1056
Subtotal Product Development						1516	1710	2004		5230
Subtotal Support and Management						97	113	128		338
Subtotal Test and Evaluation						236	370	450		1056
Total Project						1849	2193	2582		6624

Government Furnished Property: None

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603747A Soldier Support and Survivability

PROJECT: D669

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D669 Clothing and Equipment	2514	3236	3390	4158	3699	5261	5299	Continuing	Continuing

A. **Mission Description and 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.

Acquisition Strategy: Developments transition to engineering and manufacturing development (EMD) followed by initial fielding and sustainment.

FY 1997 Accomplishments:

•	789	Conduct market investigation, test new materials, develop initial design concepts for Advanced Bomb Suit (ABS) and Cold Weather Canteen.
•	228	Conducted Expert choice model on Operational Requirements Document for Advanced Laser Protective System (ALPS). Completed market survey, developed SOW, acquisition documentation, initial performance specification, and conducted early user evaluation.
	810	Completed Phase III Development Test/Operational Test (DT/OT) and staffed MS III documentation for STEPO.
	687	Program Management
Total	2514	

FY 1998 Planned Program:

•	950	Conduct early user evaluation, freeze design, fabricate test prototypes, and initiate DT/OT of the Advanced Bomb Suit and Cold Weather Canteen.
•	246	Develop initial design concepts with ballistic protective characteristics, conduct technical and early evaluations and downselect design/materials for test for test prototypes for ALPS.
•	225	Conduct market investigation, test materials, develop initial design modular cold weather glove system.
•	290	Refine initial design concepts, conduct technical tests and early user evaluation, down select materials and designs for the Concealable Body Armor, and transition to EMD.
•	400	Conduct early user evaluation of materials and designs for a Combat Clothing P3I and transition to EMD.
•	688	Release performance specification and SOW, award phased contract for ALPS and conduct lab evaluation/fit analysis of ALPS frame design.
•	76	Conduct MS III for STEPO, TC and transition to production.
•	286	PM-Management.
•	75	Small Business Innovative Research/Small Business Technology Transfer
Total	3236	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603747A Soldier Support and Survivability
	PROJECT D669

FY 1999 Planned Program:

•	515	Complete DT/OT and assessment reports, obtain MS III approval and transition the Advanced Bomb Suit and Cold Weather Canteen to production.
•	800	Integrate laser protective capabilities into configuration, conduct user testing for ALPS.
•	1285	Fabricate test prototypes, conduct Phase I of DT/OT, and transition the Combat Clothing P3I, and transition to EMD.
•	245	Complete evaluations and approval of Concealable Body Armor for transitions.
•	545	PM Management, initiate market surveys, operational requirements documentation for programs identified for transition from ATC/ACTD.
Total	3390	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	3347	3339	3374
Appropriated Value	3418	3339	
Adjustments to Appropriated Value	-904	-103	
FY 1999 President's Budget	2514	3236	3390

Change Summary Explanation: Funding: FY 1997 fund reduction of -904 reprogrammed to support higher priority requirements.

C. Other Program Funding Summary:

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0604713.DL40, Clothing & Equipment	4525	3571	4351	3631	4548	4962	5009	Cont	Cont
OMA, 114092000, Central Funding & Fielding	56339	42405	54222	79734	82242	84025	85848	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Complete Phase II of DT/OT and Assessment Reports and Type Classify STEPO					X*							
Develop design concept for ALPS						X*		X				
Review experimental MLS prototypes for feasibility	X*											
Evaluate commercial designs and use CADCAM for BASIC P3I Boot design.				X*								
Conduct market survey for Advanced Bomb Suit (ABS) suit and Cold Weather Canteen.	X*											
Test new materials, develop initial designs for Advanced Bomb Suit and Cold Weather Canteen				X*								

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603747A Soldier Support and Survivability

PROJECT: D669

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Early user evaluation of the ABS suit and the Cold Weather Canteen//Test Items//DT and OT and reports//MS III and transition to procurement.					X*		X			X		X
Initial designs of the Concealable Body Armor//Technical test and early user evaluations//Select materials and early user evaluation and transition to EMD.						X	X	X				
Early user evaluation of materials and designs for the Combat Clothing P3I, Analyze and transition to EMD.					X*			X		X		X

* Completed Milestone

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE: February 1998
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603747A Soldier Support and Survivability	PROJECT: D669

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
Product Development	1017	2950	3390
Support and Management	687	286	
Test and Evaluation	810		
Total	2514	3236	3390

B. Budget Acquisition History and Planning Information: Not applicable

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603766A Tactical Exploitation of National Capabilities (TENCAP) - Demonstration/Validation (TIARA)

PROJECT: D907

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D907 Tactical Exploitation of National Capabilities - Adv Dev	24714	19566	0	0	0	0	0	0	0

A. **Mission Description and Budget Item Justification:** Supports the tactical commander's intelligence requirements for contingency force development and deep battle targeting as stated in Field Manual 100-5. Specific developments are managed within the Army's Tactical Exploitation of National Capabilities (TENCAP) program. The scope of the program is to leverage specific data and capabilities available from existing and emerging National and selected theater capabilities that meet stated Army tactical intelligence information and targeting needs to correct deficiencies, and develop concepts, techniques and prototype processors to exploit critical data for near-real time integration into the appropriate tactical echelon. This project supports the advanced development/enhancement of the Mobile Integrated Tactical Terminal (MITT), Forward Area Support Terminal (FAST), Tactical Exploitation System (TES), and Advanced Electronic Processing and Dissemination System (AEPDS). The Army's emerging TES will incorporate the standards and protocols dictated by the Common Imagery Ground Surface System (CIGSS) program. TES brings all of the existing and emerging Army TENCAP capabilities [AEPDS, Modernized Imagery Exploitation System (MIES), and Enhanced Tactical Radar Correlator (ETRAC)] into an integrated common baseline; downsized modular and scaleable to meet a wide range of contingency requirements. TENCAP Common Baseline addresses common subsystems, planned improvements, key activities and ongoing/planned initiatives determined to have potential application to multiple TENCAP systems, including MIES and ETRAC that are funded under the Defense Airborne Reconnaissance Program (DARP) (PE 0305154D). Specific details are provided in the Tactical Intelligence and Related Activities (TIARA) Congressional Justification Book, Volume II, and in the Army TENCAP Master Plan. This Program Element (PE) focuses on efforts associated with advanced technology development used to demonstrate general military utility to include demonstration and validation in the area of TENCAP and is correctly placed in Budget Activity 4.

Acquisition Strategy: As pioneers in rapid 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, the Army Space Program Office (ASPO) minimizes risk while maximizing efficiency. Strong user involvement, a robust operations and maintenance program and a vigorous technology insertion effort ensure programmatic success. Finally, dedicated cradle to grave Integrated Logistics Support (ILS) for TENCAP systems is accomplished through a coordinated effort by government and contractor personnel and facilities.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603766A Tactical Exploitation of National Capabilities (TENCAP) - Demonstration/Validation (TIARA)
	PROJECT D907

FY 1997 Accomplishments:

•	8054	Continued to pursue technology for the refinement of the TENCAP common baseline for fully exploiting national capabilities to meet emerging worldwide contingency scenarios
•	10027	Initiated advanced development efforts for ground processing technologies for new national sensors capabilities that will be incorporated into TES
•	5054	Continued support to TENCAP program management with administrative activities (e.g., FFRDC (Aerospace), ASPO, SETA, and TEC).
•	1579	Continued support to efforts being developed under PE 0305154D (DARP) Project P531 (e.g., FFRDC (Aerospace), ASPO, SETA, and TEC).
Total	24714	

FY 1998 Planned Program:

•	4731	Continue to pursue technology for the refinement of the TENCAP common baseline for fully exploiting national capabilities to meet emerging worldwide contingency scenarios. In addition to staying current with national and theater capabilities, will include integration of Defense Switched Network (DSN) and migration of Defense Message System (DMS) into the TENCAP systems.
•	9371	Continue advanced development of TES Program
•	3974	Continue support to TENCAP program management with administrative activities (e.g., FFRDC (Aerospace), ASPO, SETA, and TEC).
•	1032	Continue support to efforts being developed under PE 0305154D (DARP) Project P531 (e.g., FFRDC (Aerospace), ASPO, SETA, and TEC).
•	458	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	19566	

FY 1999 Planned Program: Project not funded in FY 1999

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY1998/1999 President's Budget	25354	20920	23714
Appropriated Value	26060	20920	
Adjustments to Appropriated Value	-1346	-1354	
FY 1999 President's Budget	24714	19566	0

Change Summary Explanation:

Funding: FY99 - All efforts funded under this PE/PROJ were consolidated with PE 0604766A, Project D909.

Schedule: Milestones previously scheduled in FY99 under this PE/PROJ have been moved to PE 0604766A, Project D909.

Technical: This PE/PROJ was consolidated with PE 0604766A Project D909 because the majority of TENCAP program is in Engineering Development rather than Advanced Development

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603766A Tactical Exploitation of National Capabilities (TENCAP) - Demonstration/Validation (TIARA)

PROJECT: D907

C. Other Program Funding Summary*

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, A Budget Activity 5									
PE 64766.D909 TENCAP	14839	17807						Cont	
RDTE, D Budget Activity 7									
PE 0305154D Project P531 DARP	49395	0						N/A	
PE 0305208D Project PD8Z DARP	0	30377						Cont	
Other Procurement Army, OPA-2									
BZ7315 TENCAP	1818	1629						Cont	
Procurement, Defense Wide									
PE 0305154D Project P531	89945	0						N/A	
PE 0305208D Project PD8Z DARP	0	94070						Cont	

* FY99-03 reflected in PE 0604766A Project D909

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Initiate Prototype Development for TES												
Complete Adv Dev of DAMA Appliqué into TENCAP Common Baseline SUCCESS Radios					X							
Initiate Integration of DSN and migration of DMS into TENCAP Systems						X						

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603766A Tactical Exploitation of National Capabilities (TENCAP) - Demonstration/Validation (TIARA)
	PROJECT D907

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
Common Baseline (*1)	8054	4731	0
TES	10027	9371	0
ASPO In-House (*2, *3)	2765	2389	0
FFRDC	0	97	0
System Engineering (Contractor) (*2)	2668	1486	0
System Engineering (Government) (*2)	1200	1034	0
SBIR/STTR		458	
Total	24714	19566	0

(*1) TENCAP Common Baseline addresses common subsystems, planned improvements, key activities and ongoing/planned initiatives determined to have potential application to multiple TENCAP systems [including MIES and ETRAC that are funded under the DARP (PE 0305154D)].
(*2) Approximately 40% of program management cost in FY 1997 through FY 1998 support efforts being developed under PE 0305154D.P531 and PE 0305308D.PD8Z.
(*3) The ASPO In-House support in this project also supports efforts being developed under PE 0604766A.D909.

B. Budget Acquisition History and Planning Information: Not Applicable

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D131

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D131 Night Vision Systems Advanced Development	2254	2848	2681	3015	3779	4568	4488	Continuing	Continuing

A. Mission Description and Justification This project encompasses the advanced development phase of the Army acquisition cycle for Night Vision and Electro-Optic (NVEO) devices/systems and prepares them for engineering development. The key objective of this program is to provide NVEO 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 countermeasure and electro-optic sensors for the individual soldiers and combat vehicles to meet stated Army deficiencies such as fratricide reduction. The focus of these efforts is on advanced technology development; therefore, this project is properly placed in Budget Activity 4.

Acquisition Strategy: The advances and improvements for Second Generation FLIR (SGF) utilize development contracts that were competitively awarded using best value source selection procedures.

FY 1997 Accomplishments:

•	286	Completed support for Stingray participation in exercises.
•	255	Qualified SADA II Second Source.
•	1713	Developed advanced SGF "B" kit features (e.g., frame integration, extended range performance and laser protection) for M2A3, M3A3, M1A2 SEP and LRAS3.
Total	2254	

FY 1998 Planned Program:

•	1098	Develop additional Laser Protection for SGF HTI ground "B" Kit to be integrated into M2A3, M3A3, M1A2 SEP, and LRAS3.
•	580	Integrate and demonstrate sight level ground "B" kit advanced capabilities.
•	798	Prepare and demonstrate improved detector capability for aviation systems.
•	308	Evaluate of light weight multispectral sensor package at White Sands Missile Range (WSMR).
•	64	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	2848	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603774A Night Vision Systems - Advanced Development
	PROJECT D131

FY 1999 Planned Program:

- 1259 Integrate and demonstrate sight level ground "B" kit advanced capabilities into M2A3, M3A3, M1A2 SEP, and LRAS3.
- 1120 Demonstrate existing ATR/ATC interface capability with Aviation/Ground "B" kit.
- 302 Prepare and demonstrate sight level Aviation detector capability.

Total 2681

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	2769	2939	2893
Appropriated Value	2769	2939	
Adjustments to Appropriated Value	-515	-91	
FY 1999 President's Budget	2254	2848	2681

Changes Summary Explanation: Funding: FY 1997 (-515) reprogrammed to higher priority requirements, (-450) CIDDS Reprogramming.
Technical: Aviation trade studies project moved from PE 0603774A to PE 0604710A DL69, will analyze strategies for upgrading the FLIR sensor in the Apache Target Acquisition Designation System/Pilot Night Vision System (TADS/PNVS).

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
PE 0602709A/Night Vision and Electro-Optical Technology RDTE, A Budget Activity 3	16935	16712	19157	18796	19368	19638	19969	Continue	Continue
PE 0603710A/Night Vision Advanced Development RDTE, A Budget Activity 3	28584	18705	23960	33487	31553	34244	33268	Continue	Continue
PE 0604710A/Night Vision Devices Engineering Development RDTE, A Budget Activity 5	33970	35052	21311	19022	18992	27756	17842	Continue	Continue

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Conclude participation in AWEs			X*									
Award advanced Ground B kit features		X*										
Qualify SADA II second source				X*								
Prepare/Demonstrate Ground B Kit Advanced Capabilities (Test)					X*	X	X	X				

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D131

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Develop laser protection for vehicles					X*	X	X	X				
Develop advanced optical assembly					X*	X	X	X				
Prepare/Demonstrate integration of Ground B Kit Advanced capabilities on vehicles (Test)									X	X	X	X
Evaluate Light Weight Multispectral Sensor package						X	X	X				
Develop ATR/ATC capability/interface with Aviation and Ground B Kit										X	X	X
Prepare/Demonstrate Aviation Advanced capabilities (Test)										X	X	X

*Milestone Completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1998
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603774A Night Vision Systems - Advanced Development
	PROJECT: D131

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
Primary Hardware Development	1788	1973	2098
Contractor Engineering / Trade Studies	0	0	0
Government Engineering Support	180	205	207
Travel	20	20	20
Miscellaneous	7	3	4
Development Test & Evaluation	259	583	352
Small Business Innovative Research/Tech Transfer Programs		64	
Total	2254	2848	2681

B. Budget Acquisition History and Planning Information: Not applicable

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603790A NATO Research & Development

PROJECT: D691

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D691 NATO Research and Development	9495	8866	11161	11300	11900	12100	12300	Continuing	Continuing

A. **Mission Description and Budget Item 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, signal jamming subsystems, and is therefore correctly placed in Budget Activity 4. The final program will be reported separately as required by 10 USC 2350a(f).

FY 1997 Accomplishments:

- 2877 **Combat Identification (CI) Interoperability Demonstration (Partners: France, Germany, United Kingdom):** Integrated the Battlefield Combat Identification System (BCIS) on armored vehicles, completed interoperability trials with FR, GE, and UK prototype systems in Munster, GE.
- 2005 **Battlefield Command and Control (C2) Systems Interoperability (Partner: Germany):** Implemented, tested and evaluated message exchange through the Intelligent Translation Gateway, over the Defense Simulation Internet and the Digital Interface Lab in a simulated Operational Test.
- 1500 **Adaptive Beamforming Technology (ABFT) for Wide Band Phased Array Radars (Partner: United Kingdom):** Improved detection in severe Electronic CM environments. Extended narrowband ABFT to THAAD radar, developed ABFT architectures and assessed design trade-offs.
- 1200 **Covert Night/Day Operations in Rotorcraft (CONDOR) (Partner: United Kingdom):** Improved helicopter helmet mount display and flight controls. Fabricated Advanced Visionics System (AVS) and Advanced Flight Control System (AFCS) prototypes, system integration and flight tests.
- 1050 **Fighting Vehicle Propulsion Technology Using Ceramic Materials (Partner: Japan):** Developed, tested and characterized advance materials, including ceramics, high temperature combustion optimization, low heat rejection technology, and advanced friction and wear phenomena that provides a breakthrough in fighting vehicle diesel engine designs. Objective is to double combat propulsion system power density and fuel economy.
- 405 **High Technology Switch (Partner: France):** Developed advanced interoperable Asynchronous Transfer Mode (ATM) switches for ATM communications field tests, military networks and test beds, Digital Interoperability Lab (DIL) and Battlefield Information Transition System(BITS).

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603790A NATO Research & Development
	PROJECT D691

FY 1997 Accomplishments: (continued)

- 385 **Extended Air Defense (AD) Command and Control Interoperability (Partner: Germany):** Developed system specification for interoperability between US and GE air defense tactical operations centers. Analyzed interoperability elements and prepared pre-design specifications.
- 73 **Report to Congress:** Pursuant to 10 USC 2350a, prepared and provided to USD(A&T) the Army section of the 1997 Report to Congress on the International Cooperative Research and Development Program

Total 9495

FY 1998 Planned Program:

- 1925 **Battlefield Command and Control (C2) Systems Interoperability (Partner: Germany):** Continue to test and evaluate message exchange through the Intelligent Translation Gateway, over the Defense Simulation Internet and the Digital Interface Lab in a simulated Operational Environment.
- 528 **Adaptive Beamforming Technology (ABFT) for Wide Band Phased Array Radars (Partner: United Kingdom):** Continue improvement of detection in severe Electronic CM environments. Define ABFT technology insertion program for THAAD Radar objective system, to include beamforming algorithms and required hardware and software modifications. Publish final point design.
- 933 **Covert Night/Day Operations in Rotorcraft (CONDOR) (Partner: United Kingdom):** Continue to improve helicopter helmet mount display and flight controls. Fabricate Advanced Visionics System (AVS) and Advanced Flight Control System (AFCS) prototypes, system integration and tests.
- 371 **High Technology Switch (Partner: France):** Continue development of advance interoperable Asynchronous Transfer Mode (ATM) switches for ATM communication field tests, military networks and test beds, Digital Interoperability Lab (DIL) and Battlefield Info Transition System (BITS).
- 47 **Extended Air Defense (AD) Command and Control Interoperability (Partner: Germany):** Continue the development of system specification to achieve interoperability between US and GE air defense tactical operations centers. Analyze interoperability elements and prepare final specification.
- 1740 **Fighting Vehicle Propulsion Technology using Ceramic Materials (Partner: Japan):** Continue to develop, test and characterize advance materials including ceramics, high temperature combustion optimization, low heat rejection technology, and advanced friction and wear phenomena.
- 669 **Focal Plane Array Countermeasures (FPACM) (Partner: United Kingdom):** Characterize and assess advanced focal plane array missile seekers and develop electronic countermeasures (ECM) to defeat them through simulation, modeling and lab testing.
- 670 **Cooperative Eyesafe Laser Project (CELRAP) (Partner: Japan):** Develop a joint performance specification for a multifunctional eyesafe laser radar for range finding, target profiling, obstacle avoidance, range and terrain mapping. Start brassboard design and subsystem development.
- 424 **Artillery System Cooperation Activities (ASCA) (Partners: France, Germany, United Kingdom):** Develop common interface requirements for Allied Field Artillery Command and Control Systems and conduct a field demonstration for interoperability between AFATDS and Allies' systems.
- 335 **Laser Standoff Chemical Detector (LSCD) (Partner: France):** Develop detection technology for incorporation in a lightweight, vehicle mountable contamination monitoring system that can detect and quantify in a standoff mode all known types of chemical agent contamination.
- 335 **Advanced Penetrator Development In Tank Munitions (Partner: United Kingdom):** Develop an advanced kinetic energy penetrator to defeat upgraded tanks being equipped with Kinetic Energy/Explosively Reactive Armor (KE/ERA). Evaluate technologies and determine design capability.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603790A NATO Research & Development / PROJECT: D691

FY 1998 Planned Program: (continued)

- 198 **Low Level Air Picture Interface (LLAPI) (Partners: Canada, Germany, France, Netherlands, United Kingdom):** Develop automated interfaces between US and Allied short range air defenses for radar data exchange and demonstrate systems interoperability.
- 236 **TACJAM-A Electronic Support Subsystem Upgrades (Partner: United Kingdom):** Develop and integrate technology enhancements to current jamming subsystems used on vehicles and aircraft that detect modern signal transmissions.
- 132 **Next- Generation Autonomous Vehicle Navigation Control System (AUTOVAV) (Partner: Germany):** Initiate design and development of an advanced autonomous vehicle navigation control system. Complete sub-system tests of obstacle detection, classification, and avoidance technologies.
- 100 **Report To Congress:** Pursuant to 10 USC 2350a, prepare and provide to USD(A&T) the Army section of the 1998 Report to Congress on the International Cooperative Research and Development Program
- 223 Small Business Innovative Research/Small Business Technology Transfer Program

Total 8866

FY 1999 Planned Program:

- 1281 **Command and Control (C2) Systems Interoperability Program (C2SIP) (Partners: Germany, France, United Kingdom):** Integrate 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 4 (messaging) & 5 (database) interoperability.
- 2450 **Fighting Vehicle Propulsion Technology using Ceramic Materials (Partner: Japan):** Continue to develop, test and characterize advance materials including ceramics, high temperature combustion optimization, low heat rejection technology, and advanced friction and wear phenomena.
- 1000 **Focal Plane Array Countermeasures (FPACM) (Partner: United Kingdom):** Characterize and assess advanced focal plane array missile seekers and develop electronic countermeasures (ECM) to defeat them through simulation, modeling and lab testing.
- 1000 **Cooperative Eyesafe Laser Project (CELRAP) (Partner: Japan):** Continue to develop a joint performance specification for a multifunctional, eyesafe laser radar for range finding, target profiling, obstacle avoidance, range and terrain mapping. Fabricate subsystems and brassboard.
- 1000 **Next- Generation Autonomous Vehicle Navigation Control System (AUTOVAV) (Partner: Germany):** Initiate design and development of an advanced autonomous vehicle navigation control system. Complete sub-system tests of obstacle detection, classification, and avoidance technologies.
- 1000 **TACJAM-A Electronic Support Subsystem Upgrades (Partner: United Kingdom):** Develop and integrate technology enhancements to current jamming subsystems used on vehicles and aircraft that detect modern signal transmissions.
- 850 **Advance Penetrator Development in Tank Munitions (Partner: United Kingdom):** Develop an advanced penetrator, and potentially a common cartridge, to defeat modern tanks equipped with Kinetic Energy - Explosively Reactive Armor.
- 830 **Artillery System Cooperation Activities (ASCA) (Partners: France, Germany, United Kingdom):** Develop common interface requirements for Allied Field Artillery Command and Control Systems and conduct a field demonstration for interoperability between AFATDS and Allies' systems.
- 800 **Laser Stand-off Chemical Detector (LSCD) (Partner: France):** Develop 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.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603790A NATO Research & Development
	PROJECT D691

FY 1999 Planned Program: (continued)

- 250 **Adaptive Beamforming Technology (ABFT) for Wide Band Phased Array Radars (Partner: United Kingdom):** Complete ABFT technology insertion program for THAAD Radar objective system, beamforming algorithms, hardware and software modifications. Publish final point design.
- 300 **Low Level Air Picture Interface (LLAPI) (Partners: Canada, Germany, France, Netherlands, United Kingdom):** Continue to develop automated interfaces between U.S. and Allied short range air defenses for radar data exchange and demonstrate systems interoperability.
- 200 **Combat Identification (CI) Interoperability Demonstration (Partners: France, Germany, United Kingdom):** Develop a NATO STANAG for CI based upon the Battlefield Combat Identification System (BCIS) and the completed interoperability trials of prototype systems in Munster, GE.
- 100 **Extended Air Defense (AD) Command and Control Interoperability (Partner: Germany):** Expand system specification development to achieve interoperability between US and GE air defense tactical operations centers (TOCs) to include the TOCs of the Netherlands and the United Kingdom.
- 100 **Report to Congress:** Pursuant to 10 USC 2350a, prepare and provide to USD(A&T) the Army section of the 1999 Report to Congress on the International Cooperative Research and Development Program

Total 11161

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	9755	13168	11169
Appropriated Value	9755	9168	
Adjustments to Appropriated Value	-260	-302	
FY 1999 Pres Bud Request	9495	8866	11161

Change Summary Explanation: Funding: FY 1998 – (-4302) reduction due to a Congressional reduction (-4000) , plus an undistributed Congressional reduction (-302).

C. Other Program Funding Summary: None

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Combat Identification Interoperability												
Complete Fabrication and Integration		X										
Trials and Demonstration Completed			X									
Initial Data Report				X								
Complete Final Report							X					
Complete NATO STANAG for CI											X	
Command & Control Interoperability												
Complete Hardware/Software Installation			X									
Complete Lab Demo/Tests & Simulations								X				

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603790A NATO Research & Development
PROJECT D691	

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Complete Field Demonstration												X
Adaptive Beam Forming Technology												
Complete Algorithms/Architecture	X											
Complete Preliminary Point Design		X										
Complete US & UK Design Assessments				X								
Complete Final Point Design								X				
Complete Final Report											X	
CONDOR												
Complete Integration Tests				X								
Complete Flight Test & Evaluation								X				
High Technology Switch												
Complete Simulation and Commo Link		X										
Complete Test & Evaluation Plan			X									
Complete Architecture Test & Evaluation							X					
Complete Final Report								X				
Extended Air Defense												
Complete Integration Analysis				X								
Complete Trade-off Analysis								X				
Complete Final Report											X	
Fighting Vehicle Propulsion Technology												
Contract Awards	X											
Preliminary Engine Analysis Complete				X								
Materials Characterization/Test Complete								X				
Combustion Test and Analysis Complete												X
Focal Plane Array Countermeasures												
Complete Missile Seeker Characterization			X									
Mathematical Model Development						X						
Complete Software Simulations									X			
Develop Advanced CM Model												X
Cooperative Eyesafe Laser Project												
Complete Performance Specification		X										
Complete Subsystem Development								X				
Complete Brassboard Integration												X

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603790A NATO Research & Development

PROJECT: D691

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Artillery Systems Cooperation Activity												
MOU Concluded						X						
Complete Interface Requirements												
Complete Phase I Technical Test								X				
Complete Phase I Operational Tests										X		
Complete Phase II Tests												X
Low Level Air Picture Interface												
Complete MOU Amendment(CA,NL,UK)				X								
Complete Interface Development								X				
Complete Operational Testing												X
AUTONAV												
MOU Project Arrangement Concluded	X											
Complete Prototype Design						X						
Complete Fabrication & Integration											X	
TACJAM-A												
MOU Concluded												
Complete Prototype Hardware Upgrades				X								
Complete Systems Integration & Testing												X
Laser Standoff Chemical Detector												
MOU Project Arrangement Concluded						X						
Complete Analysis of Spectral Properties											X	
Begin Laser Prototype Development												X
Advance Penetrator in Tank Munitions												
MOU Project Arrangement Concluded						X						
Complete Penetrator Design Studies									X			
Complete Penetrator Development & Test												X

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603790A NATO Research & Development
	PROJECT D691

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Combat Identification Interoperability Demonstration (CIID)	2877	0	200
Command & Control Systems Interoperability Program (C2SIP)	2005	1951	1000
Adaptive Beam Form Technology (ABFT)	1500	528	250
Covert Night/Day Operations in Rotorcraft (CONDOR)	1200	933	0
High Technology Switch Development (HTSD)	405	371	0
Extended Air Defense Command & Control Interoperability	385	47	100
Fighting Vehicle Propulsion Technology (Ceramic Materials)	1050	1740	2350
Focal Plane Array Countermeasures (FPACM)	0	669	1000
Cooperative Eyesafe Laser Project (CELRAP)	0	670	1200
Artillery Systems Cooperation Activities (ASCA)	0	424	830
Low Level Air Picture Interface (LLAPI)	0	198	300
TACJAM-A Electronic Support Subsystem Upgrades	0	236	1000
Autonomous Vehicle Navigation Control System (AUTONAV)	0	132	1000
Laser Stand-Off Chemical Detector (LSCD)	0	335	800
Advance Penetrator Development in Tank Munitions	0	335	850
Report To Congress	73	297	281
Total	9495	8866	11161

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Hughes Training Herdon, VA	CPIF	Jan 94	1600	1600		1100	568	0	0	1668
McDonell Douglas Mesa, AZ	CPIF	Nov 96	800	800		400	500	0	0	900
Quantum Research Huntsville, AL	FFP	May 95	350	350		300	50	0	0	350

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603790A NATO Research & Development

PROJECT: D691

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
CSC Ft Washington, PA	CPFF	Aug 96	4800	4800		2075	3375	0	0	5450
TRW Redondo Bch, CA	CPAF	Mar 96	1313	1313		1267	0	0	0	1267
Madentech Shrewsbury, NJ	CPFF	Feb 95	500	500		250	350	0	0	600
Georgia Tech Atlanta, GA	CPFF	Aug 94	2920	2920		1300	680	384	560	2924
Dynetics Huntsville, AL	CPFF	Aug 94	150	150		150	0	0	0	150
Mitre Boston, MA	FFRDC	Mar 96	100	100		100	0	0	0	100
Wayne State Univ Detroit, MI	CPFF	May 96	500	500		250	350	0	0	600
Rutgers Univ Brunswick, NJ	CPFF	May 96	300	300		150	150	0	0	300
SRI Menlo Park , CA	CPFF	Feb 96	450	450		250	200	0	0	450
TBD	Competitive Best Value	TBD	TBD	TBD		472	613	7285	Cont	8370
Nichols Research Huntsville, AL	CPFF	Dec 96	200	200		0	300	0	0	300
Nuclear Metals Inc. Concord, MA	CPFF	Dec 98	600	600		0	0	404	300	704
Aerojet Ordnance Jonesboro, TN	CPFF	Dec 98	600	600		0	0	404	300	704
Olin Ordnance St. Petersburg, FL	CPFF	Dec 98	100	100		0	0	154	50	204
Alliant Minnetonka, MN	CPFF	Dec 98	70	70		0	0	139	35	174

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603790A NATO Research & Development						PROJECT D691
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Support and Management Organizations										
ATCOM Ft Eustis, VA	MIPR					100	100	204	Cont	404
CECOM Ft Monmouth, NJ	MIPR					150	250	254	Cont	654
TACOM Warren, MI	MIPR					150	250	254	Cont	654
ICPA APG, MD	MIPR					181	300	304	Cont	785
PM ADCCS Huntsville, AL	MIPR					100	0	0	0	100
PM THAAD Huntsville, AL	MIPR					200	0	0	0	200
LOGSA Huntsville, AL	MIPR					125	25	129	Cont	279
MICOM Huntsville, AL	MIPR					0	130	250	Cont	380
PM TMAS Dover, NJ	MIPR					0	50	150	Cont	200
LOGSA Huntsville, AL	MIPR					25	25	134	Cont	184
Test and Evaluation Organizations										
AMSAA APG, MD	MIPR					150	250	204	Cont	604
CECOM Ft Monmouth, NJ	MIPR					150	150	204	Cont	504
Army Research Lab, APG, MD	MIPR					100	200	304	Cont	604

Government Furnished Property: None

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1998
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603790A NATO Research & Development
	PROJECT: D691

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development		8064	7136	8770	Cont	25215
Subtotal Support and Management		1031	1130	1679	Cont	3840
Subtotal Test and Evaluation		400	600	712	Cont	1712
Total Project	0	9495	8866	11161	Cont	30767

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603801A Aviation - Advanced Development

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	10648	13696	7487	5872	5993	9436	9819	Continuing	Continuing
DB32 Advanced Maintenance Concepts and Equipment	2126	2574	2612	3059	3114	3523	3656	Continuing	Continuing
DB33 Cargo Handling and Mission Support Equipment	1857	1872	2403	2813	2879	3057	3276	Continuing	Continuing
DB45 Aircrew Integrated Systems	6665	9250	2472	0	0	2856	2887	Continuing	Continuing

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), formerly Aviation Life Support Equipment (ALSE). The projects in this Program Element supports research efforts in the advanced development phase of the acquisition strategy and are correctly placed in Budget Activity 4.

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603801A Aviation - Advanced Development

PROJECT: DB32

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DB32 Advanced Maintenance Concepts and Equipment	2126	2574	2612	3059	3114	3523	3656	Continuing	Continuing

A. Mission Description and Justification: This project enhances utilization of current and future aircraft by improving the efficiency of maintenance (primarily in the area of diagnostics/prognostics) and servicing operations by validating new maintenance concepts to improve man machine interface, enhancing aircraft maintenance procedures and reducing operating 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, digital source collector, health/usage monitoring system, trending analysis, and support infrastructure.

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.

FY 1997 Accomplishments:

- 940 Began development of portable maintenance tools designed to utilize a CATEA data in the diagnosis and repair of aircraft systems; in addition, tools that support flexible scheduling of phased maintenance and tools that integrate the aircrew as part of the diagnostic and troubleshooting procedure.
- 1186 Finalized an infrastructure definition to support a digitized aviation logistics concept beginning at the aircraft through to the higher headquarters and the sustainment base.

Total 2126

FY 1998 Planned Program:

- 574 Conduct the critical design review and complete prototype build and demonstration of the advanced maintenance software tools to be hosted on a Portable Maintenance Aid. These tools include the application of digitized drawings, flexible maintenance scheduling and integration aircrew information in the diagnostic process.
- 550 Engineer and assembly a portable wireless maintenance data network suitable for use in the "shadow of aircraft". The system will have application at the AVUM/AVIM to support and facilitate communication in the maintenance environment. The system will enhance the trouble shooting and repair of aircraft and improve overall logistics at the flight line.
- 290 Conduct a best-fit determination effort for health usage and monitoring functions on the Army helicopter fleet. The modeling analysis will yield the maximum cost benefit technology suite for the specific aircraft.
- 1099 Start evolutionary prototype effort to demonstrate portions of the digital logistics system in order to support unit maintenance. This demonstration will work out interface requirements for the different elements supporting aviation.
- 61 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs

Total 2574

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603801A Aviation - Advanced Development / PROJECT: DB32

FY 1999 Planned Program:

- 225 Complete the final design and analysis of the optimum cost benefit health usage and monitoring suite as it applies to the individual force modernized helicopters.
- 525 Demonstrate the planeside wireless maintenance data and communications network and evaluate its influence on improving helicopter support in the specific areas of maintenance troubleshooting and its ability to assist in streamlining aircraft logistics.
- 1487 Continue to grow the prototype logistics system by implementing digital technologies throughout the infrastructure. This will demonstrate improved support processes designed to reduce life cycle costs.
- 375 Plan and execute a demonstration to implement advanced maintenance software tools.

Total 2612

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	2181	2656	2599
Appropriated Value	2181	2656	
Adjustments to Appropriated Value	-55	-82	
FY 1999 President's Budget	2126	2574	2612

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE,A Budget Activity 2 PE 0602211 Project A47A Aeronautical and Aircraft Weapons Tech*	20637	22211	29746	30041	31734	32831	33554	Cont	Cont

*Represents total funding in this PE, which only partially supports Project DB32.

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Advanced maintenance software tool CDR							X					
Maintenance data network CDR							X					
Demonstrate maintenance data network												X
Demonstrate initial advanced digital logistics system							X					

*Denotes completed effort

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603801A Aviation - Advanced Development / PROJECT: DB32

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
Primary Hardware Development	370	541	452
Software Development	250	630	754
Systems Engineering	511	436	379
Integrated Logistics Support			
DT/OT			
Program Management	167	165	166
Research Personnel	828	802	861
Miscellaneous			
Total:	2126	2574	2612

B. Budget Acquisition History and Planning Information: Not applicable.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603801A Aviation - Advanced Development / PROJECT: DB33

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DB33 Cargo Handling and Mission Support Equipment	1857	1872	2403	2813	2879	3057	3276	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.

Acquisition Strategy: This program is an aggregate of advanced mission support and cargo handling concepts-related projects. While the acquisition strategy varies from project to project, the general strategy is for each project 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. Programs are executed in coordination with the user and the gaining organization.

FY 1997 Accomplishments:

- 684 Completed the demonstration of advanced internal and external cargo handling systems.
- 69 Conducted an aircraft cleaning and de-icing system NDI evaluation.
- 403 Completed knowledge based NDI/NDT inspection and repair procedures for composite components.
- 261 Continued development of an electronic turbine engine diagnostic system for T-700 engine as part of an overall integrated portable engine test set as part of an overall integrated portable engine test set program.
- 440 Initiated portable engine test set diagnostic logic database development for entire force modernization aviation fleet that will handle both the aircraft interface as well as the engine itself

Total 1857

FY 1998 Planned Program:

- 134 Develop portable multimode electric power source for use in aviation contact maintenance operations
- 938 Continue development of portable engine test diagnostic logic database for force modernization aviation fleet.
- 122 Initiate development of Aviation Ground Power Unit (AGPU) replacement that meets emerging requirements for the force modernization aviation fleet.
- 67 Investigate development of advanced external cargo nets that are capable of being retained by the lift aircraft after cargo drop off.
- 26 Initiate development of next generation general mechanics toolboxes
- 134 Initiate development of prototype aircraft cleaning system that meets environmental wastewater requirements.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603801A Aviation - Advanced Development / PROJECT: DB33

FY 1998 Planned Program: (continued)

•	67	Investigate environmentally NDI approaches for aircraft deicing.
•	201	Initiate development of field-hardened NDI/NDT hardware and neural network software that meets all joint service requirements.
•	136	Initiate development of advanced cargo handling technologies in the areas of remote external cargo monitoring, advanced external cargo winches, internal aircraft communications, and automated weight and balance sensors.
•	47	Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	1872	

FY 1999 Planned Program:

•	734	Initiate development of objective portable engine diagnostic system for force modernization aviation fleet.
•	534	Continue development AGPU replacement through preliminary design.
•	160	Complete development of advanced cargo nets, next generation toolboxes and aircraft deicing system.
•	200	Continue development of NDI/NDT system through preliminary design
•	266	Continue development of advanced cargo handling technologies through preliminary design.
•	243	Initiate development of hidden corrosion detection, prevention and treatment technologies.
•	266	Continue development of aircraft cleaning system through detail design and hardware fabrication.
Total	2403	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	2010	1931	2391
Appropriated Value	2010	1931	
Adjustments to Appropriated Value	-153	-59	
FY 1999 President's Budget	1857	1872	2403

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE,A Budget Activity 2 PE 0602211 Project A47A Aeronautical & Aircraft Weapons Tech.*	20637	22211	29746	30041	31734	32831	33554	Cont	Cont

* Represents total funding in this PE, which only partially supports Project DB33.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE
	February 1998

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
4 - Demonstration and Validation	0603801A Aviation - Advanced Development	DB33

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Complete prototype contact maintenance electrical power unit							X					
Complete engine diagnostic database							X					
AGPU replacement PDR								X				
Field Test advanced cargo nets							X					
Aircraft cleaning system CDR							X					
Aircraft deicing CDR					X							
Adv Cargo Handling Technologies PDR								X				
NDI/NDT system PDR								X				
Portable Engine Diagnostic System CDR										X		
Portable Engine Diagnostic System Prototype Fabrication												X
AGPU Replacement CDR												X
NDI/NDT CDR												X
Advanced Cargo Handling Tech CDR												X

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1998
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603801A Aviation - Advanced Development / PROJECT: DB33

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Primary Hardware Development	600	223	603
Software Development	270	679	422
Systems Engineering	230	233	503
Integrated Logistics Support	0	0	75
Developmental Test/Operational Test (DT/OT)	50	24	25
Program Management	149	155	166
Research Personnel	550	552	592
Miscellaneous	8	6	17
Total	1857	1872	2403

B. Budget Acquisition History and Planning Information: Not applicable

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603801A Aviation - Advanced Development

PROJECT: DB45

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DB45 Aircrew Integrated Systems	6665	9250	2472	0	0	2856	2887	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project DB45 - Aircrew Integrated Systems (ACIS) - formerly Aviation Life Support Equipment (ALSE) Advanced Development: This project provides advanced development for those systems and items of equipment that are unique and necessary to the sustainment and enhanced survivability of Army aircrews and passengers on the future integrated battlefield and during related training activities. 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 Cockpit Air Bag System (CABS) effort has evaluated a variety of supplemental restraint system approaches to improve crew and passenger crash survivability and thereby reduce potential injuries/casualties on UH-60 and SH-60 aircraft; complementing the AH-64 Cockpit Air Bags System Engineering, Manufacturing, and Development (EMD) program, with follow-on adaptation to the OH-58D and CH-47D aircraft. The CABS project transitioned into the EMD life cycle phase during FY 96. 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, nuclear flash protection, 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 component, is the major information management, control, and aircraft interface for the aviator. The AICH incorporates Comanche electronics as an Aircraft Retained Unit (ARU) utilizing new flat panel displays on the latest, most advanced Pilot Retained Unit (PRU), the HGU-56/P helmet. Improved Noise Reduction and Speech Intelligibility technology is being developed in concert with the AICH program. None of these efforts duplicate any aircraft program efforts. Both joint and service independent efforts will be pursued under the scope of this project.

Acquisition Strategy: DB45 - Two Air Warrior Program Definition and Risk Reduction (PDRR) development contracts will be awarded in FY 97 to separate competing teams. At Milestone II, there will be a down selection of one team for a combined PDRR and EMD phase.

FY 1997 Accomplishments:

•	6665	Initiated Air Warrior Program Definition and Risk Reduction contractor effort and continued incorporation of AICH, Improved Noise Reduction and Speech Intelligibility technology, and NBC effort
Total	6665	

FY 1998 Planned Program:

•	9027	Continue Air Warrior Program Definition and Risk Reduction (PDRR), and flight test of AICH miniature flat panel displays
•	223	Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	9250	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603801A Aviation - Advanced Development / PROJECT: DB45

FY 1999 Planned Program:

- 2472 Continue Air Warrior combined PDRR & EMD effort, begin Development Test and Operation Test effort, and begin post-Air Warrior helmet technology trade studies

Total 2472

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	4104	2545	2460
Appropriated Value	8913	9545	
Adjustments to Appropriated Value	-2248	-295	
FY 1999 President's Budget	6665	9250	2472

Change Summary Explanation: Funding: FY 1997 reduction due to reprogramming to higher priority requirements (-2248)

C. Other Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, A Budget Activity 5 PE 0604801A Project DC45 (Aircrew Integrated Systems -EMD)	4331	4951	6599	6508	9638	3745	2235	Cont	Cont
Aircraft Procurement, Army (APA) SSN AZ3110 Aircrew Integrated Systems*	11286	12190	9050	4470	1445	21468	35214	Cont	Cont

*Represents the entire APA program for ACIS

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Air Warrior												
Prepared Draft Request for Proposal (RFP) and trade studies received												
Release Draft Request for Proposal (RFP) for industry response												
Program Definition & Risk Reduction (PDRR) phase incorporated												
Finish Statement of Work for competition												
PDRR RFP released to industry	X*											
Source Selection and award contracts		X										
Post Award Conference			X									
Review Functional Analysis				X								

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603801A Aviation - Advanced Development

PROJECT: DB45

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Review of contractor design					X							
Source Selection of best team's system						X						
Milestone II decision						X						
Preliminary Design Review							X					
Continue Air Warrior combined PDRR and EMD/contractor prototype development								X	X	X	X	X
Initiated advanced development /design of AICH optical display prototypes												
Fabrication of AICH prototypes	X											
Lab test AICH optics and displays		X	X									
AICH Airworthiness testing						X						
Perform AICH flight test								X				
Evaluate AICH flight test & enter EMD									X			
Initiated NBC Initiatives development for air vehicle and aircrew												
Integrated NBC Advanced Initiatives with Air Warrior PDRR												
Cockpit Air Bags System (CABS)												
UH-60 CABS instrumented flight test												
UH-60 CABS Underwater test												
Transition to EMD phase, UH-60 CABS												
UH-60 CABS EMD contract award												

*Denotes completed effort

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603801A Aviation - Advanced Development

PROJECT: DB45

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Subtotal Product Development Organizations	5348	5942	1812
Subtotal Support and Management Organizations	817	2600	580
Subtotal Test and Evaluation Organizations	500	708	80
Total	6665	9250	2472

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
CABS, Simula, Phoenix, AZ	SS-CPFF	May 1994	3183	3183	2629	0	0	0	0	2629
Air Warrior AICH, Gentex, Carbondale, PA	SS-CPFF	Jul 1995			3134	4490	400	100	Cont	8124
Air Warrior, various simulation facilities	C-CPFF	Jun 1995	1208	1208	1123	20	5	5	25	1178
Air Warrior, AD unknown	C-CPFF	Mar 1997			0	538	5400	1707	Cont	7645
Air Warrior, HRED, Aberdeen Proving Grnd, MD	MIPR	Jan 1997	360	360	0	300	137	0	0	437
Miscellaneous	MIPR		866	866	716	0	0	0	0	716
Support and Management Organizations										
CAS, Huntsville, AL	C-T&M	Dec 1993			656	228	640	130	Cont	1654
Camber, Huntsville, AL	C-T&M	Dec 1993			737	100	640	130	Cont	1607

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603801A Aviation - Advanced Development

PROJECT: DB45

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
ATCOM, St. Louis, MO/AMCOM, Huntsville, AL	MIPR				1411	219	1300	300	Cont	3230
AFDD, Moffett Field, CA	MIPR	Nov 1993			1588	0	5	5	Cont	1598
USAARL, Ft. Rucker, AL	MIPR	May 1995			780	100	5	5	Cont	890
AATD, Ft. Eustis, VA	MIPR				640	100	5	5	Cont	750
Natick R&D Center, Natick, MA	MIPR				445	70	5	5	Cont	525
Test and Evaluation Organizations										
TECOM/ATTC, Ft. Rucker, AL	MIPR				278	500	485	80	Cont	1343
SBIR/STTR							223			223
Government Furnished Property: Not Applicable										
Subtotal Product Development Organizations					7602	5348	5942	1812	Cont	Cont
Subtotal Support and Management Organizations					6257	817	2600	580	Cont	Cont
Subtotal Test and Evaluation Organizations					278	500	708	80	Cont	Cont
Total Project					14137	6665	9250	2472	Cont	Cont

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	7100	6574	17478	8886	11191	15752	15745	Continuing	Continuing
DG10 Advanced Tactical Power Sources	129	131	179	200	220	487	487	Continuing	Continuing
DG11 Advanced Electrical Energy Concepts Advanced Development	214	207	1377	1032	755	628	1096	Continuing	Continuing
DG14 Logistics Support Equipment Advanced Development	83	94	99	106	102	105	103	Continuing	Continuing
DK39 General Support Equipment Advanced Development	787	1637	1777	2001	2137	2472	2490	Continuing	Continuing
DK41 Petroleum, Oil and Lubricant (POL) Distribution Equipment Advanced Development	850	832	829	909	907	963	970	Continuing	Continuing
D266 Airdrop Equipment Advanced Development	1311	1317	1359	1351	1527	4961	5147	Continuing	Continuing
D428 Rigidwall Shelter Advanced Development	3726	2356	875	993	1529	2009	2025	Continuing	Continuing
D526 Marine Orientation Log Equipment Advanced Development	0	0	10983	2294	4014	4127	3427	Continuing	Continuing

Mission Description and Budget Item 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, marine craft, 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. The projects in this Program Element focus on efforts to demonstrate general military utility, to include demonstration and validation and are therefore correctly placed in Budget Activity 4.

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DG10

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DG10 Advanced Tactical Power Sources	129	131	179	200	220	487	487	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.

Acquisition Strategy: Transition to production

FY 1997 Accomplishments:

•	37	Conducted field test and evaluation of next generation of primary lithium-based batteries.
•	50	Began development of high power battery chemistry with no toxic/hazardous materials.
•	42	Developed High Energy/High Power throw away battery for Force XXI Soldier.
Total	129	

FY 1998 Planned Program:

•	104	Develop cost effective, lightweight Lithium Ion rechargeable polymer battery for Force XXI Soldier and standard Army configurations..
•	27	Test and evaluate proof of principle prototype polymer batteries.
Total	131	

FY 1999 Planned Program:

•	139	Design and develop conformal battery packaging for Standard Family of Rechargeable Lithium Batteries.
•	40	Conduct field tests and prepare specifications for thin, conformal rechargeable battery family.
Total	179	

B. Project Change Summary	FY1997	FY 1998	FY 1999
FY 1998/FY 1999 President's Budget	129	135	172
Appropriated Value	129	135	
Adjustments to Appropriated Value		-4	
FY 1999 Pres Bud Request	129	131	179

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603804A Logistics and Engineering Equipment - Advanced Development / PROJECT: DG10

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

D. **Schedule Profile**

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Developed Rechargeable Battery & Recharger for SINCGARS			X*									
Developed charging station for vehicular Batteries	X*											
Fielded test and evaluation of next Generation lithium batteries	X*											
Developed High Energy/High Power battery for Force XXI Soldier				X*								
Develop High Energy Lithium Ion Polymer rechargeable battery							X					
Test and evaluate prototype polymer battery								X				
Develop conformal battery configurations											X	
Conduct field tests on thin, conformal Batteries												X

*Milestones Completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development
	PROJECT DG10

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
Hardware Development	99	104	139
Test and Evaluation	30	27	40
Total	129	131	179

B. Budget Acquisition History and Planning Information: Not Applicable

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DG11

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DG11 Advanced Electrical Energy Concepts Advanced Development	214	207	1377	1032	755	628	1096	Continuing	Continuing

A. Mission Description and Budget Item Justification: 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 3-200 kilowatts (kW) with higher efficiency, lighter weight, easier maintainability and higher reliability.

Acquisition Strategy: Complete advanced development and transition to engineering development.

FY 1997 Accomplishments:

•	214	Evaluated digital display controls and diagnostics over the family of generator sets.
Total	214	

FY 1998 Planned Program:

•	203	Initiate evaluation of lightweight designs for 5kW,10kW and 15kW generator sets.
•	4	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	207	

FY 1999 Planned Program:

•	712	Complete evaluation of lightweight designs for 5kW,10kW and 15kW generator sets.
•	665	Complete evaluation of permanent magnet generators and associated electronics.
Total	1377	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/FY 1999 President's Budget	213	214	1371
Appropriated Value	209	214	
Adjustments to Appropriated Value	+5	-7	
FY 1999 President's Budget	214	207	1377

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DG11

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDT&E:PE0604804A/Engine Driven Generators Engineering Development D194	2279	7302	9059	8273	5375	2171	2579	Cont	Cont
Other Procurement, Army BA Generators & Assoc Equip (MA9800)	27308	7526	82749	81505	89954	47613	71883	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Tested commercial state-of-the-art technologies for insertion to FY99 buy			X*									
Initial lightweight engine evaluation						X						
Complete lightweight engine evaluations											X	
Complete permanent magnet generator evaluation												X

*Milestones Completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1998
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603804A Logistics and Engineering Equipment - Advanced Development / PROJECT: DG11

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Hardware Development	90	40	1012
Test and Evaluation	78	118	65
Government Engineering & Support	25	25	200
Government Program Support	21	20	100
Small Business Innovative Research/Small Business Technology Transfer Programs		4	
Total	214	207	1377

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
CECOM	In-House		200	200		214	203	1159	Cont	1576
Support and Management Organizations: None										
Test and Evaluation Organizations										
CECOM	In-House	Various						218	Cont	218
SBIR/STTR							4			4
Government Furnished Property: None										
Subtotal Product Development						214	203	1159		1576
Subtotal Support and Management										
Subtotal Test and Evaluation							4	218		222
Total Project						214	207	1377		1798

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DG14

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DG14 Logistics Support Equipment Advanced Development	83	94	99	106	102	105	103	Continuing	Continuing

A. Mission Description and Justification: This program supports advanced development of new and improved technologies for logistics support equipment such as materiel handling equipment (MHE).

Acquisition Strategy: Develop engineering prototype and award competitive contract for production or select non-developmental item (NDI) equipment based on market investigation and requests for proposals (RFPs) from industry.

FY 1997 Accomplishments:

•	42	Conducted technical testing of Visibility Improvements for Forklift Carriages (VIC) prototypes.
•	41	Initiated materiel change management documentation for VIC.
Total	83	

FY 1998 Planned Program:

•	40	Conduct market survey for Lightweight Container Handlers.
•	52	Complete materiel change management documentation for VIC.
•	2	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	94	

FY 1999 Planned Program:

•	99	Initiate preparation of acquisition package for Lightweight Container Handlers.
Total	99	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	86	96	98
Appropriated Value	84	96	
Adjustments to Appropriated Value	-1	-2	
FY 1999 President's Budget	83	94	99

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DG14

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0604804.DH14, Logistics Support Equipment	84	4680	93	96	92	92	87	Cont	Cont
OPA 3, M41200, Truck Fork Lift, DE, PT, RT			20588	34823	48550	58324	58255	Cont	Cont
OPA 3, ML5365, Items Less Than $2.0M (MHE)	1999	1683	1672	1799	1778	1907	2846	Cont	Cont
OPA 3, M41800, All Terrain Lifting Articulated System	16519	3471	15228	10311	15459	11568	46911	Cont	Cont
OPA 3, X00900, RTCC			13615	11212	8625	129	153	Cont	Cont
OPA 3, M413 4K RTFLT							944	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Contracted for Visibility Improvements for Forklift Carriages (VIC)		X*										
Completed testing of VIC prototypes			X*									
Initiated materiel change management Documentation for VIC				X*								
Completed materiel change management Documentation for VIC					X*							
Initiate acquisition package for Lightweight Container Handlers									X			

*Milestone completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DG14

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Government Engineering and Support	83	92	99
Government Program Support			
Small Business Innovative Research/Small Business Technology Transfer Programs		2	
Total	83	94	99

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
TACOM	In-House									
Support and Management Organizations										
Contractor - TBD										
Test and Evaluation Organizations										
TARDEC	In-House	Various			997	83	92	99	Cont	1271
TECOM					259					259
SBIR/STTR							2			2
Subtotal Product Development										
Subtotal Support and Management										
Subtotal Test and Evaluation					1256	83	94	99		1532
Total Project					1256	83	94	99		1532

Government Furnished Property: None

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603804A Logistics and Engineering Equipment - Advanced Development / PROJECT: DK39

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DK39 General Support Equipment Advanced Development	787	1637	1777	2001	2137	2472	2490	Continuing	Continuing

A. Mission Description and Justification: Develop and demonstrate the potential of prototype equipment to satisfy water purification, maintenance and environmental control requirements.

Acquisition Strategy: Transition to development of engineering prototypes or select Non-Developmental Item based on market survey and proposals from industry.

FY 1997 Accomplishments:

•	154	Selected components and completed initial Environmental Control Unit (ECU) design.
•	450	Released Engineering and Manufacturing Development request for proposal for the Lightweight Water Purifier (LWP).
•	183	Conducted Milestone 0/I/II In Process Review (IPR) for the LWP.
Total	787	

FY 1998 Planned Program:

•	464	Investigate commercial technology applicable to 18K British Thermal Units per Hour (BTUH) ECU and large diesel heaters (250+BTUH).
•	150	Award EMD contract for prototype LWPs.
•	600	Design and fabricate prototype LWPs.
•	273	Initiate Production Qualification Testing (PQT) and Early User Testing (EUT) for the LWP.
•	15	Evaluate the FORSCOM Packaged Water System (PWS).
•	94	Conduct abbreviated market survey of water packaging machines.
•	41	Small Business Innovative Research/Small Business Technology Transfer.
Total	1637	

FY 1999 Planned Program:

•	400	Fabricate 18K BTUH ECU prototypes.
•	194	Investigate commercial technology applicable to Small Diesel Heaters (60K-100K BTUH).
•	500	Complete the LWP PQT/EUT.
•	150	Conduct Milestone (MS) III (Type Classification Generic) IPR for the LWP.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603804A Logistics and Engineering Equipment - Advanced Development / PROJECT: DK39

FY 1999 Planned Program: (continued)

- 150 Prepare LWP Production Contract Package.
- 150 Prepare PWS program documentation.
- 83 Conduct MS I/III (TC Generic) for the PWS.
- 150 Prepare PWS contract solicitation.

Total 1777

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	851	1689	1809
Appropriated Value	830	1689	
Adjustment to Appropriated Value	-43	-52	
FY 1999 Pres Bud Request	787	1637	1777

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0604804.DL39, General Support Equipment Engineering Development	1599	2215	2511	2177	2126	4683	4241	Cont	Cont
OPA 3, ML5335, Items Less Than $2.0M (Water Equipment)	2968	2795	1255	1938	1775	1021	775	Cont	Cont
OPA3, MF9300, Air Conditioners, Various Sizes	1461	1433	4650	4498	4588	1382	7064		

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Selected components and complete initial 9K ECU system design.				X*								
Released EMD request for proposal for the LWP.				X*								
Conducted MS 0/I/II LWP IPR				X*								
Investigated 18K ECU and large heater technology					X*							
Develop 18K ECU prototypes										X		

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603804A Logistics and Engineering Equipment - Advanced Development / PROJECT: DK39

D. Schedule Profile

	FY 1997		FY 1998				FY 1999			
Conducted abbreviated market survey of water packaging machines.		X*								
Award EMD Contract for prototype LWPs.			X							
Design and fabricate prototype LWPs.			X							
Evaluate the FORSCOM Packaged Water System (PWS).				X						
Investigate small diesel heater technology						X				
Initiate PQT and Early User Testing for the LWP.					X					
Prepare PWS program documentation.						X				
Complete the LWP PQT/EUT.							X			
Prepare LWP Production Contract Package.							X			
Conduct MS I/III (TC Generic) for the PWS.							X			
Prepare PWS contract solicitation.								X		

*Milestone completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DK39

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
Hardware Development	400	730	756
Program Management Support	60	60	60
Test and Evaluation	132	321	550
Government Engineering and Support	145	383	261
Integrated Logistics Support	50	143	150
Total	787	1637	1777

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations:										
TARDEC	In-House	Various			504	100	100	100	Cont	804
Contractors	CPFF	Mar 97			118	250	600	500	Cont	1468
ARL	MIPR	Various			15	13	15	15	Cont	58
CECOM/NSWC	MIPR	Various			290	238	526	329	Cont	1383
Support and Management Organizations:										
TARDEC	MIPR	Various			590	166	266	533	Cont	1555
Test and Evaluation Organizations:										
TECOM	MIPR	Various			25	20	130	300	Cont	475
Subtotal Product Development					927	601	1241	944		3713
Subtotal Support and Management					590	166	266	533		1555
Subtotal Test and Evaluation					25	20	130	300		475
Total Project					1542	787	1637	1777		5743

Government Furnished Property: None

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DK41

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DK41 Petroleum, Oil and Lubricant (POL) Distribution Equipment Advanced Development	850	832	829	909	907	963	970	Continuing	Continuing

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

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

FY 1997 Accomplishments:

•	50	Updated Petroleum Quality Assurance Surveillance (PQAS) program management documentation for Milestone II IPR.
•	62	Prepared solicitation package for PQAS Engineering and Manufacturing Development (EMD) phase.
•	738	Completed fabrication and development testing PQAS technology demonstration model (TDM).
Total	850	

FY 1998 Planned Program:

•	35	Coordinate PQAS program management documentation and conduct Milestone II/III IPR.
•	170	Demonstrate feasibility of portable PQAS modules for use in forward areas.
•	95	Prepare Petroleum Quality Surveillance Laboratory (PQSL) program management documentation for Milestone I/II IPR.
•	378	Award contract for ultralight 350 gallons per minute (GPM) pump assembly prototype.
•	135	Prepare contract package for PQSL technology demonstration model.
•	19	Small Business Innovative Research/Small Business Technology Transfer.
Total	832	

FY 1999 Planned Program:

•	579	Complete fabrication and testing of 350GPM ultra lightweight pump.
•	250	Award PQSL contract for design, fabrication, and test.
Total	829	

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DK41

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	872	859	824
Appropriated Value	852	859	
Adjustments to Appropriated Value	-2	-27	
FY 1999 Pres Bud Request	850	832	829

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0604804.DL41, Fuels and Equipment Engineering Development	941	1038	1086	1069	1068	1332	1346	Cont	Cont
OPA3, ML5335, Items Less Than $2 million (POL)	6467	7055	4657	3754	3798	4673	4394	Cont	Cont
OPA3, M90800, Hoseline Outfit Fuel Handling	0	0		2591	3647	2010	15085	Cont	Cont

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603804A Logistics and Engineering Equipment - Advanced Development / PROJECT: DK41

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Prepared performance requirements for PQAS production phase.			X*									
Updated PQAS Program Management Documents (PMD) for MS II IPR.			X*									
Completed fabrication and testing of PQAS technology demonstration model.				X*								
Award contract for ultralight 350 GPM pump assembly model.						X						
Demonstrate feasibility of portable PQAS modules for use in forward areas.							X					
Conduct PQAS MS II/III IPR and coordinate PMD.								X				
Prepare contract package for PQSL TDM.								X				
Prepare PMD for PQSL and conduct MS I/II IPR.									X			
Continue development of ultralight 350 GPM pump.									X			
Award contract for design fabrication and test of PQSL TDM											X	

*Milestone completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DK41

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Hardware Development	610	443	516
Test and Evaluation	120	63	87
Government Engineering and Support	85	276	176
Government Program Support	35	50	50
Total	850	832	829

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations:										
TARDEC	In-House	Various			688	185	246	289	Cont	1408
ETG	CPFF	Sep 95			1404	520	151		Cont	2075
Contractor	CPFF	Feb 98					370	290	Cont	660
Contractor	CPFF	Various						140	Cont	140
Support and Management Organizations:										
TACOM	In-House	Various			72				Cont	72
CECOM	MIPR	Mar 96			80	10			Cont	90
ARL	MIPR	Various			67	15	15	10	Cont	107
Test and Evaluation Organizations:										
TECOM	MIPR	Mar 97				120	50	100	Cont	270
Government Furnished Property: None										
Subtotal Product Development					2092	705	767	719		4283
Subtotal Support and Management					219	25	15	10		269
Subtotal Test and Evaluation						120	50	100		270
Total Project					2311	850	832	829		4822

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D266

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D266 Airdrop Equipment Advanced Development	1311	1317	1359	1351	1527	4961	5147	Continuing	Continuing

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.

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

FY 1997 Accomplishments:

•	1003	Awarded contract for component development and performance validation of Advanced Tactical Parachute System (ATPS).
•	308	Conducted concept testing for Enhanced Container Delivery System (ECDS).
Total	1311	

FY 1998 Planned Program:

•	432	Execute ATPS component development and performance validation contract.
•	852	Initiate Extraction Parachute Jettison Device (EPJD) effort; market survey, component development, initial developmental testing. Enhances safety for US Air Force aircraft and aircrew. Eliminates intentional jettison of US Army equipment loads under emergency/malfunction situations.
	33	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	1317	

FY 1999 Planned Program:

•	769	Initiate and conduct developmental testing of ATPS.
•	590	Conduct developmental testing of EPJD, obtain tri-service certification of load extraction system and begin operational testing.
Total	1359	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	1414	1359	1353
Appropriated Value	1379	1359	
Adjustments to Appropriated Value	-68	-42	
FY 1999 President's Budget	1311	1317	1359

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D266

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0604804.D279 Airdrop Equipment Engineering Development	1326	1317	1361	1395	1393	4961	5738	Cont	Cont
OPA 3, R10904, Advanced Tactical Parachute System						25950	52765		

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Awarded ATPS Contract				X*								
Award EPJD Contract							X					
ATPS Component Development and Performance Validation								X				
EPJD Component Development and Performance Validation									X			
EPJD Developmental Testing												X

* Milestones Completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D266

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Primary Hardware Development	901	912	936
Test and Evaluation	335	340	356
Government Support and Management	75	65	67
Total	1311	1317	1359

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
SSCOM	In-House				24305	458	263	287	Cont	25313
QMSCH/OGA	MIPR				18	443	649	649	Cont	1759
Support and Management Organizations										
SSCOM					718	75	65	67	Cont	925
Test and Evaluation Organizations										
TECOM/OGA					2238	300	290	300	Cont	3128
SSCOM					245	35	50	56	Cont	386
Subtotal Product Development					24323	901	912	936		27072
Subtotal Support and Management					718	75	65	67		925
Subtotal Test and Evaluation					2483	335	340	356		3514
Total Project					27524	1311	1317	1359		31511

Government Furnished Property: None

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D428

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D428 Rigidwall Shelter Advanced Development	3726	2356	875	993	1529	2009	2025	Continuing	Continuing

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.

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

FY 1997 Accomplishments:

•	846	Completed development of Cargo Bed Cover (CBC) variant for M105 cargo trailer, awarded design/fabrication contract for prototype 5 Ton Truck M923 CBC variant, and completed redesign and initiated testing for 2½ M35 truck variant.
•	1395	Awarded contracts to develop lightweight, low-cost signature management techniques to the HMMWV-mounted Standard Integrated Command Post Shelter (SICPS) to avoid visual, thermal, radar and IR detection.
•	1485	Awarded contracts for a vulnerability assessment and for fabrication of a survivable SICPS shelter that provides ballistic protection, protection from directed energy and fuel air weapons and enhanced NBC protection.
Total	3726	

FY 1998 Planned Program:

•	1462	Award contract for the design and fabrication of the Survivable SICPS.
•	835	Complete Milestone I/II for CBC HMMWV variant and award developmental contract with options, complete testing and development for 2½ ton truck CBC variant, and initiate design/fabrication for 5 Ton Truck CBC variant.
	59	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	2356	

FY 1999 Planned Program:

•	875	Complete Milestone I/II for 2½ ton CBC variant and award developmental contract with options, and complete prototype design/fabrication and conduct testing for 5 ton Truck CBC variant.
Total	875	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603804A Logistics and Engineering Equipment - Advanced Development
	PROJECT: D428

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	3868	2431	870
Appropriation Value	3774	2431	
Adjustments to Appropriated Value	-48	-75	
FY 1999 President's Budget	3726	2356	875

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0604804.D429, Rigidwall Shelter Engineering Development	2046	955	0	0	0	0	0	Cont	Cont

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D428

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Completed design and initial Testing for 2½ Ton Truck CBC Variant			X*									
Completed Development of M105 CBC Variant				X*								
Awarded Design/Fabrication Contract for 5 Ton Truck CBC Variant				X*								
Complete MS I/II for HMMWV CBC Variant						X						
Initiate Design/Fabrication of 5 Ton Truck CBC Variant					X							
Award LRIP Contract for HMMWV CBC Variant						X						
Complete Development and Testing of 2½ Ton Truck CBC Variant							X					
Complete MS I/II for 2½ Ton Truck CBC Variant.								X				
Award LRIP Contract for 2½ Ton Truck CBC Variant										X		
Complete Development and Testing of 5 Ton Truck CBC Variant												X

*Denotes completed milestone

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D428

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Primary Hardware Development	3126	421	275
Test and Evaluation	305	925	200
Program Management Support	295	1010	400
Total	3726	2356	875

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
SSCOM	In-House				14424	360	421	275	Cont	15480
Plastics Research Corp.	Various	Various			1413	2166			Cont	3579
Brunswick Ft. Belvoir CASCOM	MIPR				666	600			Cont	1266
Support and Management Organizations										
SSCOM					3739	295	1010	400	Cont	5444
Test and Evaluation Organizations										
TECOM	MIPR				7982	305	925	200	Cont	9412
Subtotal Product Development					16503	3126	421	275		20325
Subtotal Support and Management					3739	295	1010	400		5444
Subtotal Test and Evaluation					7982	305	925	200		9412
Total Project					28224	3726	2356	875		35181

Government Furnished Property: None

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D526

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D526 Marine Orientation Log Equipment Advanced Development	0	0	10983	2294	4014	4127	3427	Continuing	Continuing

A. Mission Description and Justification: The most significant effort in FY 99 provides funds for the Army share of the Joint Lighterage and Causeway Program. 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 Field Command operational capability and flexibility. Funds will 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 will also serve 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.

Acquisition Strategy: RDTE followed by competitive procurement.

FY 1997 Accomplishments: Project not funded in FY 1997

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program:

•	1883	Conceptual Development of the Rapidly Installed Breakwater (RIB).
•	9100	Joint Program with Navy to develop Sea Sate 3 Capable Causeways/Lighterage.
Total	10983	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	0	330
Appropriated Value			
Adjustment to Appropriated Value			
FY 1999 President's Budget	0	0	10983

Change Summary Explanation: Funding – FY 99 increased (+10653) due to high priority requirements.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development
	PROJECT D526

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0604804A, D461, Marine Oriented Logistics, Engineering Development			2085	4467	1514	1260	2812	Cont	Cont
OPA 3, M32400, Floating Crane, 100-250 Ton	13888	13744						Cont	Cont
OPA 3, M44500, Pusher Tug, Small	7599	6597	4269					Cont	Cont
OPA 3, R09600, Causeway, Powered System				8260		4327	5553	Cont	Cont
OPA 3, R09800, RO/RO Discharge Platform			17083	4818	18639	4718	4626	Cont	Cont
OPA 3, R09900, Causeway, Floating				5028				Cont	Cont
OPA 3, M11200, Logistic Support Vessel (LSV)				18528		18875	18505	Cont	Cont
OPA 3, M11201, Logistic Support Vessel (ESP)					6229	7456	13414	Cont	Cont
OPA 3, M32500, Rapidly Installed Breakwater						4806	4786	Cont	Cont
OPA 3, M11300, Containerized Maintenance Facility			5300		958			Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Rapidly Installed Breakwater Award										X		
Joint Lighterage Awards										X	X	

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D526

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Government Engineering Support			1930
Testing			140
Contractor Engineering Support			7883
Program Management Support			1030
Total	0	0	10983

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Miscellaneous	SS-FP				447			7883	Cont	8330
NSWC/Other Govt	MIPR							1930	Cont	1930
Support and Management Organizations										
NSWC	MIPR				318			710	Cont	1028
TACOM	MIPR				69			320	Cont	389
Test and Evaluation Organizations										
NSWC	MIPR							120	Cont	120
TACOM	MIPR							20	Cont	20
Government Furnished Property: None										
Subtotal Product Development					447			9813		10260
Subtotal Support and Management					387			1030		1417
Subtotal Test and Evaluation								140		140
Total Project					834	0	0	10983		11817

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	12479	7280	14353	8265	5975	5810	5944	Continuing	Continuing
D091 Combat Service Support Control System*	10612	5635	12558	6385	4082	3896	4013	16747	177318
D246 Tactical Communications System-Advanced Development	1867	1645	1795	1880	1893	1914	1931	Continuing	Continuing

*FY 97 R-1 exhibit contains an administrative error. Funding shown here is correct.

Mission Description and Budget Item Justification: Project D091: The Combat Service Support Control System, is a computer software system designed to assist the Combat Service Support (CSS) Commander and his staff to rapidly collect, store, analyze, and disseminate CSS information to support the functions of command, control and resource management. CSS control centers must provide a rapid decision support capability and supportive information to commanders more quickly than is possible with the present manual systems. This program develops the CSS battlefield functional area (BFA) node of the Army Tactical Command and Control System (ATCCS) which is a component of the Army Battle Command System (ABCS). Project D246, Tactical Communications System - Advanced Development, provides for insertion of proven communications technology from program element 0602782A, Project AH92 exploratory development into advanced development. Examples of these potential programs are the Multiband, Multimode Radio, high power solid state amplifiers and couplers, and packet appliqués used to increase network efficiency. These efforts provide for the demonstration and validation of advanced technologies and are therefore appropriately funded in Budget Activity 4.

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D091

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D091 Combat Service Support Control System*	10612	5635	12558	6385	4082	3896	4013	16747	177318

A. Mission Description and Justification: Project D091, Combat Service Support Control System. The CSSCS is a computer software system designed to assist the CSS Commander and his staff to rapidly collect, store, analyze, and disseminate CSS information to support the functions of command, control and resource management. CSS control centers must provide a rapid decision support capability and supportive information to commanders more quickly than is possible with the present manual systems. This program develops the CSS BFA node of the ATCCS, which is a component of the ABCS.

Acquisition Strategy: Acquisition strategy is to pursue an evolutionary 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 built on the capabilities of the previous versions and provides 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 provide 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 GTE.

FY 1997 Accomplishments:

•	1000	Concluded IOTE-II
•	5542	Completed Version 3 software development
•	1537	Continued Version 4 Software development
•	1200	Prepared for and conducted Army Warfighting Experiments (AWE), Task Force XXI and Division XXI activities.
•	800	Prepared documentation and conducted ASARC III (Full Scale Production (FSP)
•	533	Began fielding of Version 3
Total	10612	

FY 1998 Planned Program:

•	3874	Complete Version 4 development
•	700	Conduct Version 4 Technical Test.
•	920	Prepare for and conduct Army Warfighting Experiments (AWE), Division XXI and Force XXI activities
•	141	Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
Total	5635	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603805A Combat Service Support Control Systems Evaluation and Analysis PROJECT D091

FY 1999 Planned Program:

•	750	Conduct Version 5 PDR/CDR
•	1000	Conduct Version 5 Technical Test
•	8558	Complete Version 5 development
•	950	Begin FOT&E
•	1300	Prepare for and conduct Army Warfighting Experiments (AWE) and Force XXI activities
Total	12558	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	10771	5914	5997
Appropriated Value	11119	5914	
Adjustments to Appropriated Value	-507	-279	
FY 1999 President's Budget	10612	5635	12558

Change Summary Explanation: Funding: FY 1999 (+6561) RDTE funding increased to provide software support.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Procurement, OPA 2 (W34600)	5778	5590	9332	20802	18867	16260	19979	38158	145290
Spares (BS9706)	810	293	183	173	171	181	181	231	2673

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
V3 IOTE-II	X*											
ASARC III (FSP)		X*										
FUE V3						X						
V3 IOC							X					
V4 Technical Test							X					
Begin Fielding V4									X			
V5 PDR										X		
V5 CDR										X		
V5 Technical Test											X	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603805A Combat Service Support Control Systems Evaluation and Analysis PROJECT D091

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
V5 FOTE												X

*Milestone Complete

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603805A Combat Service Support Control Systems Evaluation and Analysis
	PROJECT D091

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
Software Development	7471	4892	11417
Program Management Support	2861	527	585
COE/CHS/Common Support	0		300
Operational Test and Evaluation	280	75	256
SBIR/STTR		141	
Total	10612	5635	12558

B. Budget Acquisition History and Planning Information

Performing Organizations Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
TRW	C/CPFF	JUL 87	15731	15731	15731	0	0	0	0	15731
TRW	C/CPAF	FEB 91	75397	75397	59147	6370	3943	5980	0	75440
Lockheed Martin	C/CPAF	DEC 94	TBD	TBD	2694	1101	949	1440	0	6184
COE/Common Spt	MIPR				5290	0	0	300	2000	7590
TBD					0	0	0	3997	25257	29254
Support and Management Organizations										
PM CSSCS					14110	376	0	0	0	14486
CECOM	MIPR				1214	210	176	0	0	1600
SDC-LEE	MIPR				401	149	0	0	0	550
SDC-HUACHUCA	MIPR				650	170	151	185	1520	2676
EER/VITRO/	MIPR				3673	1381	0	0	0	5054
FEDSIM										
LMI					0	575	200	400	1609	2784
SBIR/STTR							141			141
Test and Evaluation Organizations										
GOVT	MIPR				2599	105	0	111	618	3433
EPG/CAC	MIPR				583	175	75	145	1080	2058

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D091

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
OPTEC					1578	0	0	0	0	1578
Government Furnished Property										
Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date		Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property										
CHS-TRW/LMC	MIPR				3601	0	0	0	2750	6351
Support and Management Property: None										
Test and Evaluation Property										
CHS-III CORPS	MIPR				2408	0	0	0	0	2408
Subtotal Product Development					86463	7471	4892	11717	30007	140550
Subtotal Support and Management					20048	2861	668	585	3129	27291
Subtotal Test and Evaluation					7168	280	75	256	1698	9477
Total Project					113679	10612	5635	12558	34834	177318

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D246

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D246 Tactical Communications System-Advanced Development	1867	1645	1795	1880	1893	1914	1931	Continuing	Continuing

A. **Mission Description and Budget Item Justification** This project will validate the new Tactical Internet capability required for Force XXI. It provides definition, integration and testing of a mix of mature and prototype products which will be 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 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 will be designed to facilitate technology insertion. The focus of this project will be to reduce the technical risk by assembling, integrating, and testing the Tactical Internet components prior to TF XXI, Division XXI, and Corps XXI. New services and components will be added and tested as required for each iteration leading up to Force XXI.

Acquisition Strategy: Not applicable.

FY 1997 Accomplishments:

•	431	Provided on-site tactical internet technical support at Ft Hood and Ft Irwin for TFXXI
•	582	Expanded the testbed to 35 nodes and installed the latest SINCGARS, EPLRS, Internet Controller, Applique software revisions for tactical internet testing
•	250	Developed and provided empirical test data for validation of the System Performance Model. Provided laboratory testing of EPLRS and NTDR for DIVXXI Demonstrated the transfer of countermine messages over the Tactical Internet; transferred Tactical Internet messages over SPITFIRE UHF satellite radios for range extension
•	104	Incorporate latest DBC/BITS products including HF radios
•	500	Expanded Tactical Internet efforts to begin examining the vulnerabilities (C2 Protect for Information Operations) inherent in commercial protocols and products. Identified protection techniques
Total	1867	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603805A Combat Service Support Control Systems Evaluation and Analysis
	PROJECT D246

FY 1998 Planned Program:

•	335	Resolve technical issues identified during the TF XXI and DIV XXI Exercises
•	570	Insert latest products and expand the testbed to address requirements for Corps size networks
•	203	Develop and provide empirical test data for the Corps XXI Exercise
•	80	Incorporate latest DBC/BITS Products
•	416	Perform lab feasibility studies of candidate video equipment, procure state-of-the-art video equipment for demo in an airborne platform. Incorporate NTDR on an airborne platform to demo networking, high throughput and automatic relaying capabilities using new video equipment
•	41	Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
Total	1645	

FY 1999 Planned Program:

•	468	Resolve technical issues identified during the Corps exercise
•	700	Optimize technical solutions for Force XXI fieldings
•	159	Incorporate final set of DBC/BITS products
•	468	Demonstrate advanced networking capabilities by incorporating the NTDR on an airborne platform
Total	1795	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	1918	1759	1786
Appropriated Value	2021	1759	
Adjustments to Appropriated Value	-154	-114	
FY 1999 President's Budget	1867	1645	1795

C. Other Program Funding Summary: Not applicable

D. Schedule Profile: Not applicable.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
4 - Demonstration and Validation	0603805A Combat Service Support Control Systems Evaluation and Analysis	D246

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
CECOM RDEC Internal Technical Support	1168	914	1083
Contractor Technical Support	570	554	584
Travel & Misc (Routers, Cables, Connectors)	129	136	128
SBIR/STTR		41	
Total	1867	1645	1795

B. **Budget Acquisition History and Planning Information**: Not applicable

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	9730	6555	11414	11073	11041	12546	12083	Continuing	Continuing
D808 DoD Drug and Vaccine-Advanced Development	3650	2134	3714	3727	3711	4127	4146	Continuing	Continuing
D811 Military HIV Vaccine and Drug-Advanced Development	2517	0	3259	2543	2519	2500	2417	Continuing	Continuing
D836 Combat Medical Materiel-Advanced Development	2768	3608	3634	3793	3826	4076	3890	Continuing	Continuing
D837 Soldier System Protection-Advanced Development	795	813	807	1010	985	1843	1630	Continuing	Continuing

Mission Description and Budget Item Justification: This program element (PE) funds the Advanced Development (AD) of medical materiel necessary to field an effective capability for infectious diseases. 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, prophylactic 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 while reducing logistical support requirements. 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 includes AD of vision corrective devices. 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 Advanced Surgical Suites for Trauma Care (ASSTC). This program is primarily managed by the U.S. Army Medical Research and Materiel Command. This PE focuses on efforts to demonstrate general military utility to include demonstration and validation in the area of medical materiel and is properly placed in Budget Activity 4.

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D808

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D808 DoD Drug and Vaccine-Advanced Development	3650	2134	3714	3727	3711	4127	4146	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-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 Janiero, Brazil; and Kenya Medical Research Institute, Nairobi, Kenya.

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

FY 1997 Accomplishments:

- 2052 Completed expanded trials to evaluate safety and/or efficacy of antimalarial drugs WR238605 and Halofantrine.
- 172 Completed Phase I safety trials on the Leishmania Skin Test Antigen.
- 204 Began Phase II trials on Leishmaniasis Topical Treatment.
- 1222 Completed Phase I/IIa safety/efficacy trials for RTS,S malaria vaccine.

Total 3650

FY 1998 Planned Program:

- 658 Begin expanded Phase IIb field trials with RTS,S malaria vaccine.
- 113 Complete Phase II trials on Leishmaniasis Topical Treatment.
- 128 Begin Phase II study on Leishmania Skin Test Antigen.
- 306 Begin Phase I/II studies for *Shigella flexneri* vaccine.
- 876 Complete Phase II efficacy studies for antimalarial drug WR238605.
- 53 Small Business Innovative Research/Small Business Technology Transfer Programs.

Total 2134

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development PROJECT D808

FY 1999 Planned Program:

•	530	Initiate Phase I safety trials for a vaccine to protect against hemorrhagic fever with renal failure syndrome.
•	605	Complete Phase IIb field trials with RTS,S malaria vaccine.
•	165	Complete Phase I safety and immunogenicity trials for *Shigella sonnei* vaccine.
•	100	Complete Phase II efficacy study for Leishmania Skin Test Antigen.
•	250	Begin efficacy studies for antimalarial drug Desbutyl Halofantrine.
•	500	Begin Phase II studies for a Dengue Tetravalent vaccine.
•	200	Begin testing of a diagnostic kit for *Plasmodium falciparum* malaria.
•	864	Begin clinical studies for malaria vaccine, reduced immunization schedule.
•	250	Begin testing of insect repellent camouflage face paint.
•	250	Begin testing of artelinic acid for the treatment of malaria.
Total	3714	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	3754	2202	3696
Appropriated Value	3754	2202	
Adjustments to Appropriated Value	-104	-68	
FY 1999 President's Budget	3650	2134	3714

C. Other Program Funding Summary: Not applicable.

D. Schedule Profile: Multiple medical developmental products will advance through various events throughout the FY.

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Campylobacter MLST 2 IPR			X*									
Hantaan MLST Special IPR			X*									
Shigella flexneri 602 MLST 1				X								
Shigella flexneri 602 MLST 2									X			
Shigella sonnei MLST 1									X			
Antimalarial Drug WR238605 MLST 2									X			
Antileishmanial Drug WR6026 MLST 2		X*										
Halofantrine Special IPR					X							

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY **4 - Demonstration and Validation**	PE NUMBER AND TITLE **0603807A Medical Systems - Advanced Development**
	PROJECT **D808**

D. Schedule Profile: Multiple medical developmental products will advance through various events throughout the FY.

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Dengue, Tetravalent Vaccine MS I										X		
Diagnostic Kit, Visceral Leishmaniasis MS I									X			
Diagnostic Kit, *P. falciparum* MS I									X			
Antimalarial Drug Desbutyl Halofantrine – MS I									X			
Insect Repellent, Face Paint - MS I									X			
Artelinic Acid - MS I									X			
LSTA, MS I				X*								
Cholera Vaccine, Special IPR		X*										

* Milestone complete.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D808

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Test & Evaluation	2952	1543	3307
Product Development	225	0	0
Project Management	473	591	407
Total	3650	2134	3714

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Contracts										
Salk Institute	CPFF	APR 1988	50556	50556	43536	225	0	0	Cont	43761
Support and Management Organizations										
USAMMDA					313	271	399	227	Cont	1210
Contracts					170	202	192	180	Cont	744
Test and Evaluation Organizations										
Walter Reed Army Inst of Research					1890	1277	1017	1259	Cont	5443
Army Laboratories					341	73	0	0	Cont	414
Navy Laboratories					455	257	350	887	Cont	1949
Contracts					299	1345	176	1161	Cont	2981
Subtotal Product Development					43536	225	0	0		43761
Subtotal Support and Management					483	473	591	407		1954
Subtotal Test and Evaluation					2985	2952	1543	3307		10787
Total Project					47004	3650	2134	3714		56502

Government Furnished Property: None

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D811

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D811 Military HIV Vaccine and Drug-Advanced Development	2517	0	3259	2543	2519	2500	2417	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.

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

FY 1997 Accomplishments:

•	2517	Transition to Engineering and Manufacturing Development a vaccine for the prevention of HIV-1.
Total	2517	

FY 1998 Planned Program: Program not funded in FY 1998

FY 1999 Planned Program:

•	3259	Evaluate vaccines for prevention of HIV to meet Food and Drug Administration data requirements to prove safety and efficacy.
Total	3259	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	2581	0	517
Appropriated Value	2581		
Adjustments to Appropriated Value	-64		
FY 1999 President's Budget	2517	0	3259

Change Summary Explanation: Funding: FY 1999: Funding increased to allow further product development.

C. Other Program Funding Summary: Not applicable.

D. Schedule Profile: Multiple medical developmental products will advance through various events throughout the FY.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
4 - Demonstration and Validation	0603807A Medical Systems - Advanced Development	D811

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Test & Evaluation	2517	0	3259
Product Development	0	0	0
Project Management	0	0	0
Total	2517	0	3259

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations: None										
Support and Management Organizations: None										
Test and Evaluation Organizations										
Army Laboratories						0	0	0	0	0
Contracts					2532	2517	0	3259	Cont	8308
Government Furnished Property: None										
Subtotal Product Development						0	0	0	0	0
Subtotal Support and Management						0	0	0	0	0
Subtotal Test and Evaluation					2532	2517	0	3259	Cont	8308
Total Project					2532	2517	0	3259	Cont	8308

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D836

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D836 Combat Medical Materiel-Advanced Development	2768	3608	3634	3793	3826	4076	3890	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 and United Defense Limited Partnership, San Jose, CA.

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

FY 1997 Accomplishments:

- 32 Defined Army requirements for life support for trauma and transport.
- 117 Transitioned medical/dental imaging system to procurement.
- 611 Modified U.S. and allied military and commercial medical equipment used for patient examination, diagnosis and treatment in the field; incorporated technological advances into field medical equipment, i.e., the Buchwald retractor, field triage light, and infantry cart.
- 202 Demonstrated and validated off-the-shelf technologies to develop telemedicine hardware and concepts for the treatment of combat casualties.
- 1806 Reconfigured the first prototype of the Armored Medical Evacuation Vehicle (AMEV) from evacuation to treatment. Participated in the Task Force XXI Advanced Warfighting Experiment.

Total 2768

FY 1998 Planned Program:

- 1152 Complete an Analysis of Alternatives (AOA) for AMEV, build a mock-up, and demonstrate at Army Medical Evacuation Conference.
- 14 Standardize and transition field triage light to USAMMA.
- 31 Complete the Operational Requirements Document, AOA, and market investigation for the Life Support for Trauma and Transportation System (LSTAT).
- 125 Complete airworthiness certification testing for LSTAT and submit data to the Food and Drug Administration (FDA).
- 200 Conduct technical testing of thawed blood processing system and submit packet to FDA for 510K approval.
- 105 Make U.S. Army Medical Research Institute for Infectious Diseases modifications to LSTAT.
- 1396 Build Special Operations Resuscitation Surgical Suite (SORSS) prototype for demonstration and testing.
- 74 Coordinate technology demonstrations to the U.S. Army Medical Department Center and School.
- 115 Purchase ceramic oxygen prototype for evaluation on medical platforms.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development
	PROJECT D836

FY 1998 Planned Program: (continued)

•	306	Conduct human safety and efficacy studies of a fibran bandage for treatment of combat casualties.
•	90	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	3608	

FY 1999 Planned Program:

•	1357	Conduct human safety and expand efficacy studies of a fibran bandage for treatment of combat casualties.
•	812	Conduct operational testing on SORSS hospital.
•	150	Evaluation of microwave infusion warming device.
•	685	Complete technical testing of the LSTAT.
•	630	Evaluate Armored Medical Evacuation Vehicle in technology demonstrations or advanced warfighting experiments.
Total	3634	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	2844	3723	3616
Appropriated Value	2844	3723	
Adjustments to Appropriated Value	-76	-115	
FY 1999 President's Budget	2768	3608	3634

C. Other Program Funding Summary: Not applicable.

D. Schedule Profile: Multiple medical developmental products will advance through various events throughout the FY.

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Fibran Bandage MLST 0										X		
Medical-Dental Filmless Imaging System MLST 2 IPR				X								
Intraosseous Infusion Device MLST 1/3 IPR					X							
Armored Medical Treatment Vehicle MS 1/2			X*									
MS 3												X

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY **4 - Demonstration and Validation**	PE NUMBER AND TITLE **0603807A Medical Systems - Advanced Development** PROJECT **D836**

D. Schedule Profile: Multiple medical developmental products will advance through various events throughout the FY.

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Life Support for Trauma and Transport												
MS 1						X						
MS 2									X			
Microwave Infusion Warming Device transition to procurement									X			
AMEV MS 1							X					
Field Triage Light transition to procurement				X								
Thawed Blood Processing System												
MS 1					X							
Field Oxygen Generator transition to procurement												X

* Milestone complete.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D836

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Test and Evaluation	30	60	0
Product Development	2063	3244	3325
Project Management	675	304	309
Total	2768	3608	3634

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Contracts					806	1761	2992	2964	Cont	8523
USAMMDA					292	302	252	361	Cont	1207
Support and Management Organizations										
USAMMDA					616	300	304	289	Cont	1509
Contracts Field Triage					138	375	0	20	Cont	533
Test and Evaluation Organizations										
WRAIR					741	30	60	0	Cont	831
Subtotal Product Development					1098	2063	3244	3325		9730
Subtotal Support and Management					754	675	304	309		2042
Subtotal Test and Evaluation					741	30	60	0		831
Total Project					2593	2768	3608	3634		12603

Government Furnished Property: None

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D837

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D837 Soldier System Protection-Advanced Development	795	813	807	1010	985	1843	1630	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.

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

FY 1997 Accomplishments:

•	9	Continued evaluation of Combat Stress Analysis System.
•	786	Validated far-forward telementoring and Mobile Medical Mentoring vehicle tactical telemedicine appliqués through participation in digital Force XXI Brigade-Corps Advanced Warfighting Exercise.
Total	795	

FY 1998 Planned Program:

•	321	Evaluate Personnel Information Carrier (PIC) for integration with existing and developmental hardware and software systems.
•	236	Evaluate Medical Situational Awareness and Control software for integration into Army Combat Service Support Control System (CSSCS).
•	236	Integrate medical and communications equipment for the Medical Detachment, Telemedicine equipment set.
•	20	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	813	

FY 1999 Planned Program:

•	463	Integrate PIC with Digital medical record and patient identification methodologies.
•	344	Integrate PIC with hand-held computer/communications system.
Total	807	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development PROJECT D837

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	817	840	871
Appropriated Value	817	840	
Adjustments to Appropriated Value	-22	-27	
FY 1999 President's Budget	795	813	807

C. Other Program Funding Summary: Not applicable.

D. Schedule Profile: Multiple medical developmental products will advance through various events throughout the FY.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D837

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Test & Evaluation	0	0	0
Product Development	782	772	766
Project Management	13	41	41
Total	795	813	807

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Contracts					1103	782	772	766	Cont	3423
Support and Management Organizations										
USAMMDA					52	13	41	41	Cont	147
Test and Evaluation Organizations: None										
Government Furnished Property: None										
Subtotal Product Development					1103	782	772	766		3423
Subtotal Support and Management					52	13	41	41		147
Subtotal Test and Evaluation										
Total Project					1155	795	813	807		3570

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603854A Artillery Systems Advanced Development

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	232288	314017	313166	309059	126386	0	0	0	1294916
D505 Crusader - Advanced Development	229561	312019	310881	305967	125129	0	0	0	1283557
DC68 DC68	2727	1998	2285	3092	1257	0	0	0	11359

Mission Description and Budget Item Justification: This program element supports the Program Definition and Risk Reduction (PDRR) efforts for the Crusader - AD Program. The Crusader system is the Army's next generation artillery system consisting of a self propelled howitzer (SPH) and a resupply vehicle (RSV). 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. Beginning in FY1999, efforts previously funded in PE 0603640A, Project DB91, Artillery Propellant Development, will be funded within this program element. This program element focuses on efforts associated with the technology demonstration and validation of Crusader and is correctly placed in Budget Activity 4.

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

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603854A Artillery Systems Advanced Development

PROJECT: D505

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D505 Crusader - Advanced Development	229561	312019	310881	305967	125129	0	0	0	1283557

A. Mission Description and Justification: This project supports the Program Definition and Risk Reduction (PDRR) efforts for the Crusader - AD Program. The Crusader system is the Army's next generation artillery system consisting of a self propelled howitzer (SPH) and a resupply vehicle (RSV). 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. Beginning in FY99, efforts previously funded in PE 0603640A, Project DB91, Artillery Propellant Development, will be funded within this project.

Acquisition Strategy: Not applicable

FY 1997 Accomplishments:

- 204685 Product development: Continued development efforts under the Crusader development Phases I & II contract; continued efforts in support of maturation, integration and risk reduction of critical technologies. Initiated component prototype fabrication and demonstration.
- 22090 Support and management: Continued project management efforts, to include scientific and engineering analysis, product development team support, and engineering management services.
- 2786 Test and evaluation: Purchased propellant, ammunition and fuzes required for the initiation of Engineering Development Testing (EDT)-A testing; began EDT-A testing.

Total 229561

FY 1998 Planned Program:

- 277100 Product development: Continue development efforts under the Crusader development Phase II contract. Continue efforts in support of maturation, integration and risk reduction of critical technologies. Continue component prototype fabrication and demonstration. Conduct system level review. Conduct Phase I PEO/CMDT IPR.
- 19507 Support and management: Continue project management efforts; to include scientific and engineering analysis, product development team support and engineering management services.
- 7588 Test and evaluation: Purchase ammo for EDT and continue EDT-A testing.
- 7824 Small Business Innovative Research/Small Business Technology Transfer Programs

Total 312019

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603854A Artillery Systems Advanced Development
	PROJECT D505

FY 1999 Planned Program:

•	274952	Product development: Continue developmental efforts under the Crusader development Phase II contract. Complete efforts in support of maturation and continue integration and risk reduction of critical technologies. Initiate long lead item buys. Initiate system prototype fabrication (Version I SPH/RSV). Initiate integration and checkout. Complete component fabrication and demonstration. Continue development of MACS for Type Classification.
•	21521	Support and management: Continue project management efforts; to include scientific and engineering analysis, product development team support and engineering management services.
•	14408	Test and evaluation: Continue EDT-A testing. Establish Cannon Interim Safety Fatigue Life. Initiate Safety Certification Activity.
Total	310881	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	235795	322291	293920
Appropriated Value	240916	322291	
Adjustments to Appropriated Value	-11355	-10272	
FY 1999 President's Budget	229561	312019	310881

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Comp	Total Cost
RDTE, BA5, Army, PE 0604854, D503				50000	327021	429225	260928	Cont	Cont
Procurement, WCTV, Army, G83500						42341	97356	Cont	Cont
Procurement, WCTV, Army, G83600						33548	81763	Cont	Cont
RDTE, BA5, Army, PE 0604854, D2KT			100	410	1190	209	3485	Cont	Cont
RDTE, BA4, Army, PE 0603640, DB91	8103	8258						0	115847
Procurement, Ammo,Army, ER 8021				27911	38892	61763	64215	Cont	Cont
RDTE, BA5, Army, PE 0604645, D175	6408		4500	3000	2300			0	48498
Procurement, Ammo, Army, ER 8017			1514	27011	51523	54137	54850	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Awarded Dev Phases I/II Contract System Design Review		X*										

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY **4 - Demonstration and Validation**	PE NUMBER AND TITLE **0603854A Artillery Systems Advanced Development**
	PROJECT **D505**

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Dev Phase I In Process Review (Authorization to enter Phase II)						X						
Integration Checkout									X			
Safety Certification Activity									X			

* Milestone completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY **4 - Demonstration and Validation**	PE NUMBER AND TITLE **0603854A Artillery Systems Advanced Development**
	PROJECT **D505**

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Product Development	204685	277100	274952
Support and Management	22090	19507	21521
Test and Evaluation	2786	7588	14408
SBIR/STTR		7824	
Total	229561	312019	310881

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
United Defense, Minneapolis, MN	SS/CPIF	Sep 94	TBD	TBD		175619	254662	254452	378934	1063667
ARDEC, Picatinny Arsenal, NJ	PO					26158	17468	16869	8942	69437
TACOM, Warren, MI	PO					1405	832	1388	1756	5381
ARL, Aberdeen Proving Ground, MD	PO					1378	1298	1033	883	4592
Various OGAs						0	2790	1160	1135	5085
Various contracts						125	50	50	0	225
Support and Management Organizations										
PM Crusader, Picatinny Arsenal, NJ						5258	6488	6867	8369	26982
ARDEC, Picatinny Arsenal, NJ	PO					8607	7225	8607	10534	34973

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603854A Artillery Systems Advanced Development

PROJECT: D505

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
ACALA, Rock Island, IL	PO					121	153	153	177	604
TACOM, Warren, MI	PO					1411	1609	1631	1525	6176
ARL, Aberdeen Proving Ground, MD	PO					861	789	893	1235	3778
Various OGA's						1136	1144	847	964	4091
Various Contracts						4696	2099	2523	2757	12075
SBIR/STTR							7824			7824
Test and Evaluation Organizations										
TECOM, Yuma Proving Grd, AZ, CSTA, APG, MD	PO					2786	7588	14408	13885	38667
Government Furnished Property: None										
Subtotal Product Development						204685	277100	274952	391650	1148387
Subtotal Support and Management						22090	27331	21521	25561	96503
Subtotal Test and Evaluation						2786	7588	14408	13885	38667
Total Project						229561	312019	310881	431096	1283557

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603856A SCAMP BLKII (SPACE)	PROJECT D389

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D389 SCAMP BLK II *	7701	71	7969	16568	35084	26823	24833	Continuing	Continuing

* $5.5M SCAMP BLK II Engineering Feasibility Effort(EFE) reported under 030342A.D386 in FY1996

A. Mission Description and Budget Item Justification: Project D389 - SCAMP BLK II: The Single Channel Anti-Jam Manportable (SCAMP) BLK II Terminal will be a 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, command and control traffic. It will transmit in the Extremely High Frequency (EHF) band and receive in the Super High Frequency (SHF) band. It will provide Low Data Rate (LDR) secure voice at 2400 bps and secure data at 75-2400 bps, as well as interface with Common Hardware/Software devices such as the Lightweight Computer Units and the Hand-Held Terminal Unit. The SCAMP BLK II will have embedded COMSEC, TRANSEC and GPS. The SCAMP BLK II will operate over MILSTAR, UFOE, as well as future AEHF satellites. The SCAMP BLK II will provide Advanced EHF capability such as increased data rates. It will operate in the transmit, receive or standby mode throughout an entire mission (typically 30 days). SCAMP BLK 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) to develop the SCAMP BLK II in the range of 12-15 pounds was approved in the Acquisition Decision Memorandum. EFE began in FY96 and will continue through FY00. This project provides for the demonstration and validation of advanced technologies and is therefore appropriately funded in Budget Activity 4.

Acquisition Strategy: SCAMP Block II will be a manpackable terminal in the 12-15 lb. range. SCAMP Block II began Engineering Feasibility Efforts (EFE) in FY96 placing emphasis on downsizing the following subsystems: Radio Frequency (RF) Generator, Digital Processor, Transmitter and Antenna. These subsystems will utilize technologies such as Millimeter Microwave Integrated Circuits (MIMIC), custom Very Large Scale Integrated Circuits (VLSIC) and increased efficiency power devices. EFE will conclude with the development and demonstrations of prototype BLK II SCAMP hardware leading to a Phase II spiral development with industry partnering acquisition approach.

FY 1997 Accomplishments:

•	5738	Implemented integration of Engineering Feasibility Efforts (EFE) for functional prototype terminals
•	629	Continued paging prototype system efforts
•	1334	Continued Defense Advanced Research Project Agency (DARPA) advanced communications technologies
Total	7701	

FY 1998 Planned Program:

•	69	Continue SCAMP BLK II prototype development
•	2	Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
Total	71	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603856A SCAMP BLKII (SPACE)
	PROJECT D389

FY 1999 Planned Program:

- 3641 Completes initial prototype development
- 1228 Test, evaluate and demonstrate the prototype
- 3100 Continue engineering feasibility technology improvements

Total 7969

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	8250	73	9669
Appropriated Value	8080	73	
Adjustments to Appropriated Value	-379	-2	
FY 1999 President's Budget	7701	71	7969

Change Summary Explanation: Funding: FY1999 (-1700) Army restructured program resulting in some requirements delayed until FY00/01

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Other Procurement Army 2 - SSN: BC 4110	0	0	0	0	0	28883	60502	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Continue EFE	X*											
Prototype Development and Integration							X					
Prototype Demonstrations/Evaluations										X		

*Denotes a completed effort

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603856A SCAMP BLKII (SPACE)

PROJECT: D389

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Contractor	1963	0	1542
Government Systems Engineering and Project Management	5738	69	6427
SBIR/STTR		2	
Total	7701	71	7969

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Other Contracts					0	1963	0	1542	Cont	3505
Govt Support					0	2553	0	164	Cont	2717
Lincoln Lab								935		935
Support and Management Organizations										
Other Contracts					0	2253	0	1565	Cont	3818
Govt Support					0	641	69	677	Cont	1387
Lincoln Labs					0	230	0	2600	Cont	2830
Lab Activities					0	61	0	486	Cont	547
SBIR/STTR							2			2
Test and Evaluation Organizations: None										
Government Furnished Property: None										
Subtotal Product Development						4516		2641		7157
Subtotal Support and Management						3185	71	5328		8584
Subtotal Test and Evaluation										
Total Project						7701	71	7969		15741

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604201A Aircraft Avionics

PROJECT: DC97

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC97 Aircraft Avionics	17706	31660	7878	1828	2800	46501	31896	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 (commonly referred to as "digitization of the battlefield"). Tasks in this PE support research efforts in the engineering and manufacturing development phases of these systems, therefore, the PE is correctly placed in Budget Activity 5. The Army Airborne Command and Control System (A2C2S) functions as a highly mobile command post. When mounted in the UH-60 helicopter with auxiliary equipment, it provides tactical voice, data, and imagery digitized battlefield communications both in secure and nonsecure modes for corps, division, and brigade commanders. The system provides battle commanders access to critical situational awareness and off-board national asset intelligence information via satellite communications. It also provides digitized battlefield communications links with Army combined arms team members, joint service and combined force elements, and intercommunications facilities for up to six operators, and joint interoperability as well as maritime and air traffic control communications. The A2C2S is in response to real world needs of combat maneuver commanders to perform highly mobile and responsive digital, voice, and imagery command and control (C2) functions in the UH-60 helicopter. The UH-60 A2C2S system will enable the commander and essential staff to remain highly mobile with the capability to interject critical C2 across the designated battle area without sacrificing access to information products or jeopardizing continuity of operations due to command post relocation. Interoperability is enhanced with this system by providing the capability to communicate digitally with Navy or Air Force close air support as well as relaying target information. This system will allow Army aviation forces access to C2 and situational awareness information for conduct of close, deep, rear, and security operations. The A2C2S is used to provide C2 for disaster relief, peacekeeping, drug interdiction, and both low and high intensity conflict missions. The A2C2S will play a major role in eliminating costly fratricide incidents via the capability to closely monitor and control operations. Satellite communications provide access to tactical communication systems and enable communication with the force and command structure from Joint Chiefs of Staff (JCS) down to battalion when required. In FY 1997, A2C2S was approved as a two year Warfighter Rapid Acquisition Program (WRAP) initiative which accelerates the development of the program by twenty-one months. RDTE funds are also required to develop data link migration, embedding Battle Command functionality, Joint Variable Message Formatting (JVMF), message buffering into the Improved Data Modem which will enable AH-64D, OH-58D, and Special Operations aircraft to digitally gather, process and transmit information.

Acquisition Strategy: This project is comprised of multiple systems. The A2C2S is being developed by the Naval Research Laboratory. The initial production will be accomplished by the developer until preplanned product improvements are accomplished through FY 00. The production contract will be competitively awarded starting in FY 01.

FY 1997 Accomplishments:

- 8455 Continued development of enhanced communications terminal, workstation consoles and other A2C2S prime mission equipment
- 1211 Continued development of A2C2S Antenna Interface Module (AIM)
- 1224 Continued development of A2C2S Workstation Software
- 553 Continued test and integration procedures for A2C2S Engineering Development Model

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604201A Aircraft Avionics
	PROJECT DC97

FY 1997 Accomplishments: (continued)

•	1957	Continued system engineering, logistics, and technical documentation for A2C2S
•	906	Continued program management support for the A2C2S
•	450	Accelerated development of enhanced communications terminal, workstation consoles and other A2C2S prime mission equipment
•	980	Accelerated development of A2C2S Antenna Interface Module (AIM)
•	1930	Accelerated development of A2C2S Workstation Software
•	40	Accelerated life cycle software engineering procedures
Total	17706	

FY 1998 Planned Program:

•	3600	Accelerate development of enhanced communications terminal, workstation consoles and other A2C2S prime mission equipment
•	1200	Accelerate development of A2C2S Antenna Interface Module (AIM)
•	1300	Accelerate development of A2C2S Workstation Software
•	3300	Accelerate test and integration procedures for A2C2S Engineering Development Model (EDM)
•	1600	Accelerate system engineering, logistics, and technical documentation for A2C2S
•	13003	Complete development of enhanced communications terminal, workstation consoles and other A2C2S prime mission equipment
•	2600	Complete development of A2C2S Antenna Interface Module (AIM)
•	2038	Continue development of A2C2S Workstation Software
•	525	Continue test and integration procedures for A2C2S Engineering Development Model (EDM)
•	550	Continue system engineering, logistics, and technical documentation for A2C2S
•	1150	Continue program management support for the A2C2S
•	794	Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR)
Total	31660	

FY 1999 Planned Program:

•	1225	Complete development of A2C2S Workstation Software
•	3275	Complete test and integration procedures for A2C2S Engineering Development Model (EDM)
•	1250	Complete system engineering, logistics, and technical documentation for A2C2S
•	750	Complete program management support for the A2C2S development
•	1378	Initiate development of digital data link interfaces to Improved Data Modem and aircraft platforms
Total	7878	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604201A Aircraft Avionics — PROJECT: DC97

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	14694	21669	12729
Appropriated Value	15008	32669	
Adjustments to Appropriated Value	+2698	-1009	
FY 1999 Pres Budget Request	17706	31660	7878

Change Summary Explanation: Funding: The FY 1997 and FY 1998 funding reflects the 3.4M and 11.0M provided by the TRADOC managed Warfighters Rapid Acquisition Program (WRAP) to accelerate the development, production and fielding of the A2C2S. Funding was reprogrammed consistent with Congressional direction. FY 98 also includes a Congressional undistributed reduction of 1.0M. FY 1999 decrease is due to an realignment of funds to higher priority requirements (-4851).

C. Other Program Funding Summary

Aircraft Procurement, Army (APA):	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Airborne Command and Control Console AA0710 BLIN 1026*			24421	18901	17568	36146	116820	93000	306856
Aircraft Avionics SSN AA0700, BLIN 1021	58290	41893	56335	44446	44129	58718	32152		

* A2C2S shares this BLIN with other Avionics Systems in FY 03 – FY 04, ** BLIN 1021 funds multiple Avionics systems

D. Schedule Profile:

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Continue/Complete Design and Development of A2C2S Workstation Consoles	X*				X							
Continue/Complete Technical Documentation - A2C2S Test and Integration Procedures	X*				X				X			
Continue/Complete Development of A2C2S Antenna Interface Module AIM)	X*				X							
Continue/Complete A2C2S Systems Engineering, Logistics Processes	X*				X				X			
Continue/Complete Development of Enhanced Communications terminal, Work Station Consoles and other Prime Mission Equipment	X*				X							
Continue/Complete Development of A2C2S Workstation Software	X*				X				X			
Initiate development of digital data link interfaces to Improved Data Modem And aircraft platforms									X			

* Denotes a completed milestone

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604201A Aircraft Avionics

PROJECT: DC97

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Product Development	16800	29716	7128
Program Management Support:	906	1150	750
Test and Evaluation Support			
SBIR/STTR		794	
Total	17706	31660	7878

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Naval Research Laboratory	MIPR, C/CFF		Cont	Cont	22900	14485	28196	7428	Cont	Cont
Aviation Applied Technology Directorate	MIPR		5772	5772	2284	2088	1200	200	0	5772
Support and Management Organizations										
Aviation Electronic Combat PM	TO, C/CFF		Cont	Cont	482	662	940	100	Cont	Cont
Communications and Electronics Command	MIPR		Cont	Cont	1137	62		50	Cont	Cont
USA Aviation and Troop Command	MIPR		837	837	597	140			0	737
USA Aviation and Missile Command	MIPR		Cont	Cont		40	500	100	Cont	Cont
Army Research Lab	MIPR		59	59		29	30		0	59

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									DATE: February 1998	
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE: 0604201A Aircraft Avionics						PROJECT: DC97
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Support and Management Organizations (continued)										
Air Force			80	80	80				0	80
SBIR/STTR			794	794			794		0	794
Test and Evaluation Organizations:										
Ft. Rucker	MIPR		100	100		100			0	100
Ft. Hood			100	100		100			0	100
Government Furnished Property: Not Applicable										
Subtotal Product Development					25184	16573	29396	7628	Cont	Cont
Subtotal Support and Management					2296	933	2264	250	Cont	Cont
Subtotal Test and Evaluation						200			0	200
Total Project					27480	17706	31660	7878	Cont	Cont

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

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

PROJECT: D538

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D538 Kiowa Warrior Crew Station Mission Equipment Trainer (CSMET)	1100	0	0	0	0	0	0	0	1100

A. Mission Description and Budget Item Justification: The Crew Station Mission Equipment Trainer (CSMET) is a simulation training device that is designed to support training requirements for the OH-58D Kiowa Warrior flight crew. The CSMET effort responds to the lack of training devices, simulators or simulations (TDSS) available to fielded Kiowa Warrior units. Currently, the aircraft itself provides the only primary sustainment training device. Training provided through the use of the actual aircraft is at best limited due to the inability to employ total system capabilities under combat conditions, i.e., weapon systems. When the actual aircraft is not available, the aviator cannot continue to practice crew skills. As a result, aircrew skills decay rapidly. Maintaining a high level of aircrew skill has a direct impact on combat readiness and proficiency. The CSMET will support refresher and sustainment training of those skills required to initialize, operate and employ the weapons systems, aviation survivability equipment, automatic target handover system, communication and navigation equipment, mast mounted sight, data transfer system, Aviator Night Vision Imaging System (ANVIS) display, and airborne video tape recorder. The CSMET will network with other simulation devices for collective training. The project in this Program Element supports research efforts in the engineering and manufacturing development phase of the acquisition strategy and is, therefore, correctly placed in Budget Activity 5.

Acquisition Strategy: The acquisition strategy is based primarily on the integration of government-furnished data and commercially available non-developmental items. Government-owned OH-58D Kiowa Warrior Cockpit Procedures Trainer Ada software will be integrated into the computer and image generator hardware of choice based on maximum compatibility and interoperability with other aviation simulation systems. Acquisition will be accomplished in four phases -- pre-prototype, prototype, production, and support/sustainment -- and will be accomplished utilizing an Integrated Product Team approach among various government agencies.

FY 1997 Accomplishments:

- 818 Awarded Phase II Development Contract - Prototype Build/Systems Integration
- 190 Maintenance Support for Operational Testing Development and for Operational Testing
- 42 Government Support
- 50 Awarded Front End Analysis Contract

Total 1100

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program: Project not funded in FY 99

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604220A Armed, Deployable OH-58D / PROJECT: D538

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	1130	0	0
Appropriated Value	1102		
Adjustments to Appropriated Value	-2		
FY 1999 President's Budget	1100	0	0

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Comp	Total Cost
APA Budget Activity 2									
AZ2200 Kiowa Warrior (CSMET) _1/		3230	7390	4210	2550				17380

1/ Represents only part of the funding in SSN AZ2200.

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Initiate Prototype Build Phase (Feb 97)		X*										
Begin Test Phase (May 97)		X*										

*Denotes completed effort

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1998
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604220A Armed, Deployable OH-58D / PROJECT: D538

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
Prototype Build/System Integration	703		
Developmental Testing	115		
Government Support of Developmental Testing	22		
Operational Testing	190		
Government Support of Operational Testing	20		
Front End Analysis	50		
Total	1100	0	0

B. Budget Acquisition History and Planning Information: Not Applicable

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604223A Comanche

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	325299	272187	367823	438723	586385	739377	783556	Continuing	Continuing
DC72 T800 Engine Engineering Development (LH)	41946	43158	38095	31712	30186	53672	45632	Continuing	Continuing
D2LT Comanche Operational Test	0	0	0	47	97	295	667	Continuing	Continuing
D327 Comanche	283353	229029	329728	406964	556102	685410	737257	Continuing	Continuing

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 is the solution to reconnaissance deficiencies (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 of the same into the Comanche aircraft. Project D2LT includes funding for the operational testing of Comanche to include Comanche simulation accreditation for Limited User Test and Initial Operational Test and Evaluation. Project D327 provides for development of the airframe, mission equipment package, and integration of the whole system to include training and logistic support. The projects in this program element support research efforts that complete Demonstration/Validation (Dem/Val) prototype efforts and transition to the engineering and manufacturing development phase of the acquisition strategy and are therefore correctly placed in Budget Activity 5.

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604223A Comanche

PROJECT: DC72

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC72 T800 Engine Engineering Development (LH)	41946	43158	38095	31712	30186	53672	45632	Continuing	Continuing

A. **Mission Description and Justification: Project DC72 - T800 Engine Engineering Development (LH):** 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 the same into the Comanche aircraft. The growth engine is for the Army's RAH-66 Comanche and other applications.

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

FY 1997 Accomplishments:

•	8535	Continue basic engine air vehicle support
•	15669	Continue growth engine development
•	13663	Continue contractor development testing
•	4079	Begin manufacturing growth engine for flight test
Total	41946	

FY 1998 Planned Program:

•	10301	Continue basic engine air vehicle support
•	12721	Continue growth engine development
•	11777	Continue contractor development testing
•	7298	Continue manufacturing growth engines for flight test
•	1061	Small Business Innovative Research/Small Business Technology Transfer
Total	43158	

FY 1999 Planned Program:

•	7744	Continue basic engine air vehicle support
•	11962	Continue growth engine development
•	13678	Continue contractor development testing
•	4711	Continue manufacturing growth engines for flight test
Total	38095	

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604223A Comanche

PROJECT: DC72

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	41234	44533	41107
Appropriated Value	42116	44533	
Adjustments to Appropriated Value	-170	-1375	
FY 1999 Pres Budget Request	41946	43158	38095

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

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Continue basic engine air vehicle support	X*											
Continue growth engine development	X*											
Continue contractor development testing	X*											
Begin manufacturing growth engine for Flight test		X*										
Continue basic engine air vehicle support					X							
Continue growth engine development					X							
Continue contractor development testing					X							
Continue mfg growth engines for flt test					X							
Continue basic engine air vehicle support									X			
Continue growth engine development									X			
Continue contractor development testing									X			
Continue mfg growth engines for flt test									X			

*Denotes a completed effort

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604223A Comanche

PROJECT: DC72

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
Product Development	41810	41804	37802
Program Management Support	136	1354	293
Government Furnished Personnel/Equipment/Facilities	0	0	0
Test & Evaluation	0	0	0
Total	41946	43158	38095

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations (includes contractor testing)										
LHTEC (0453)	C/CPFF	April 92			191766	41810	41804	37802	Cont	Cont
LHTEC (B017)	C/FFP	Jul 85	276821	276821	276821				0	276821
LHTEC(0518)	CPFF	Jul 93	460	460	460				0	460
AVCO (B019)	C/FFP	Nov 84	128526	128526	128526				0	128526
Support and Management Organizations										
Comanche PMO & Gov't Agencies	MIPR				12447	136	293	293	Cont	Cont
PATS contracts	C/FFP			96	96				0	96
Rail	C/FFP	Sep 87		2806	2806				0	2806
Other Contracts	Agreement				400				0	400
SBIR/STTR							1061			
Test and Evaluation Organizations										
Gov't Agencies	MIPR			9613	9613					9613

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604223A Comanche

PROJECT: DC72

Government Furnished Property

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property: None									
Support and Management Property									
Gov't Agencies	MIPR			13133	0	0	0	0	13133
Test and Evaluation Property: None									

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	597573	41810	41804	37802	Cont	Cont
Subtotal Support and Management	28882	136	1354	293	Cont	Cont
Subtotal Test and Evaluation	9613					
Total Project	636068	41946	43158	38095	Cont	Cont

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604223A Comanche

PROJECT: D327

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D327 Comanche	283353	229029	329728	406964	556102	685410	737257	Continuing	Continuing

A. Mission Description and Justification: Project D327 - Comanche: The Comanche helicopter is a highly sustainable and operationally flexible air cavalry system, 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.

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

FY 1997 Accomplishments:

•	23919	Continue digitization effort
•	209079	Continue Dem/Val prototype engineering development
•	40440	Continue flight test program for prototype #1
•	9915	Continue manufacturing of prototype #2
Total	283353	

FY 1998 Planned Program:

•	19333	Continue digitization effort
•	149030	Continue Dem/Val prototype engineering development
•	8299	Update prototype #1 and complete manufacturing of #2
•	39371	Continue flight test program of prototype #1
•	7371	Begin material procurement for Early Operational Capability (EOC) aircraft
•	5625	Small Business Innovative Research/Small Business Technology Transfer
Total	229029	

FY 1999 Planned Program:

•	32193	Continue digitization effort
•	183033	Continue Dem/Val prototype engineering development
•	58370	Continue flight test program for prototype #1 and conduct first flight of prototype #2
•	8615	Continue to update prototypes #1 and #2

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604223A Comanche	PROJECT D327

FY 1999 Planned Program: (continued)

- 47517 Continue material procurement and begin manufacturing of Early Operational Capability (EOC) aircraft

Total 329728

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	290190	237476	330820
Appropriated Value	283209	237476	
Adjustments to Appropriated Value	+144	-8447	
FY 1999 Pres Budget Request	283353	229029	329728

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Total Cost
APA								
A08300 Comanche							5497	Cont

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE: February 1998
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604223A Comanche	PROJECT: D327

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Continue digitization effort	X*											
Continue Dem/Val prototype engineering development	X*											
Continue flight test program for prototype #1	X*											
Continue manufacturing of prototype #2				X*								
Continue digitization effort					X							
Continue Dem/Val prototype engineering development					X							
Update prototype #1 and complete Manufacturing of #2					X							
Continue flight test program of prototype #1					X							
Begin material procurement Early Operational Capability (EOC) aircraft								X				
Continue Dem/Val prototype engineering development									X			
Continue flight test program for prototypes #1 and conduct first flight of prototype #2									X			
Continue to update prototypes #1 and #2									X			
Continue material procurement and begin Manufacturing of EOC aircraft									X			

*Denotes a completed effort

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604223A Comanche

PROJECT: D327

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Product Development	260037	200224	307211
Program Management Support	20013	26026	18483
Government Furnished Personnel/Equipment/Facilities	2335	1815	2717
Test & Evaluation	968	964	1317
Total	283353	229029	329728

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations (includes contractor testing)										
Boeing Sikorsky JPO A004	C/CPIF	April 91			1948140	257072	197729	301616	Cont	Cont
Product Develop-(Other contracts)						2965	2495	5595	Cont	Cont
Other Completed Contracts					370288	0	0	0	0	370288
Support and Management Organizations										
Rail	C/FFP	Sep 87			37869	7349	5777	5000	Cont	Cont
SysTeam	C/FFP	Oct 91	15181	15181	15181	0	0	0	0	15181
PATS contracts	C/FFP				94	1784	1139	1500	Cont	Cont
Other Contracts	Agreement				15709	0	0	0	0	15709
PMO/Gov't Agencies	MIPR				79574	10880	13485	11983	Cont	Cont
SBIR/STTR							5625			
Test and Evaluation Organizations										
Gov't Agencies	MIPR				8143	968	964	1317	Cont	Cont

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604223A Comanche	PROJECT D327

Government Furnished Property

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property: None									
Support and Management Property									
Other Gov't Agencies	MIPR			11592	2335	0	0	Cont	Cont
Test and Evaluation Property									
Other Gov't Agencies	MIPR					1815	2717	Cont	Cont

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	2318428	260037	200224	307211	Cont	Cont
Subtotal Support and Management	160019	22348	26026	18483	Cont	Cont
Subtotal Test and Evaluation	8143	968	2779	4034	Cont	Cont
Total Project	2486590	283353	229029	329728	Cont	Cont

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	69067	84180	85989	16128	13635	15585	22342	Continuing	Continuing
D665 Aircraft Survivability Equipment Development	43008	45423	59757	6211	4760	8291	14437	Continuing	Continuing
D2VT Advanced Threat Infrared Countermeasures (ATIRCM)/Common Missile Warning System (CMWS) Operational Test	0	5482	1181	1183	90	0	0	0	7936
DL12 Signals Warfare Development	15687	28135	20394	8734	8785	7294	7905	Continuing	Continuing
DL15 Army Reprogramming and Analysis Team (ARAT)	1665	3901	3339	0	0	0	0	0	17670
DL16 TROJAN Development	1228	1239	1318	0	0	0	0	0	4341
DL18 SHORTSTOP Development	7479	0	0	0	0	0	0	0	25710

Mission Description and Budget Item Justification: 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. Signals Warfare Development provides for development of multifunction ground based and airborne intelligence and electronic warfare systems. The High Value Asset Defense System will provide effective protection of personnel and equipment from electronically fused munitions. 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. The projects in this PE are in the engineering and manufacturing development phase of the acquisition cycle and therefore are correctly placed in Budget Activity 5.

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: D665

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D665 Aircraft Survivability Equipment Development	43008	45423	59757	6211	4760	8291	14437	Continuing	Continuing

A. Mission Description and 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 special electronic mission aircraft (SEMA), attack/scout, and assault/cargo 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, damage or destroy Army aircraft. Developments respond to the approved requirements 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 Comanche and Special Operations Aircraft. The projects in this program element support research efforts that complete Demonstration/Validation (Dem/Val) prototype efforts and transition into the Engineering and Manufacturing Development (EMD) phase of the acquisition strategy and are, therefore, correctly placed in Budget Activity 5.

Acquisition Strategy: Project is comprised of multiple programs which have been competitively awarded.

FY 1997 Accomplishments:

- 20618 Continued EMD of Advanced Threat Infrared Countermeasures (ATIRCM)/Common Missile Warning System (CMWS))
- 2530 Continued EMD of Advanced Infrared Countermeasures Munitions (AIRCMM)
- 16228 Continued EMD of Suite of Integrated Radio Frequency Countermeasures (SIRFC)
- 1139 Continued development of Advanced Visual-Electro-Optical Signature Suppression and Analysis (AVESSA)
- 2493 Continued in-house and program management administration

Total 43008

FY 1998 Planned Program:

- 27132 Continue EMD of ATIRCM/CMWS
- 1783 Continue EMD of the AIRCMM
- 11196 Continue EMD of SIRFC
- 752 Continue development of AVESSA
- 3501 Continue in-house and program management administration

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development
	PROJECT D665

FY 1998 Planned Program: (continued)

•	1059	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	45423	

FY 1999 Planned Program:

•	32115	Complete EMD of ATIRCM/CMWS
•	1250	Complete EMD of the AIRCMM
•	21961	Complete EMD of the SIRFC
•	554	Complete development of AVESSA
•	3877	Continue in-house and program management administration
Total	59757	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	43645	46870	37248
Appropriated Value	44579	46870	
Adjustments to Appropriated Value	-1571	-1447	
FY 1999 President's Budget Request	43008	45423	59757

Change Summary Explanation: Funding change in FY98,–1447 is decreases due to undistributed Congressional reductions.
FY99 +22509 increased to continue Engineering and Manufacturing Development (EMD) efforts

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
APA, BA 4 AZ3504 ASE	284	8117	5144	51014	39963	96668	99531	Cont	Cont
APA, BA 2 AA0720 ASE Modifications	25861	18647	2743	12658	21755	17261	14679	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Continue EMD of ATIRCM/CMWS	X*											
Continue EMD of AIRCMM	X*											
Continue EMD contract of SIRFC	X*											
Continue Development of AVESSA	X*											
Continue EMD of ATIRCM/CMWS					X							

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development / PROJECT: D665

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Continue EMD of AIRCMM					X							
Continue EMD of SIRFC					X							
Continue Development of AVESSA					X							
Complete EMD of ATIRCM/CMWS									X			
Complete EMD of AIRCMM									X			
Complete EMD of SIRFC									X			
Complete Development of AVESSA									X			

*Denotes completed effort

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: D665

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
R&D Contracts	34588	27142	38527
Test and Evaluation	1724	10401	12726
Government Engineering Support	1124	1389	1697
Program Management Engineering Support	5572	6491	6807
Total	43008	45423	59757

B. Budget Acquisition History and Planning Information:

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations: Note: Miscellaneous includes funding to various activities (ATCOM, St. Louis, MO/CECOM, Fort Monmouth, NJ) for ASE programs										
Thiokol (AIRCMM)	C/CPIF	Sep 95	6842	6842	3300	1710	1172	660	0	6842
ITT Corp (SIRFC)	C/CPAF	Jul 94	59159	59159	19450	14763	9446	15500	0	59159
Sanders(ATIRCM)	C/CPAF	Sep 95	59520	59520	16691	11579	13299	17951	0	59520
Misc.	Contracts				17021	6536	3074	4787	Cont	Cont
Misc.	MIPR				5860	1124				6984
Support and Management Organizations : Note: Miscellaneous includes funding to various activities (ATCOM, St. Louis, MO/CECOM, Fort Monmouth, NJ) for ASE programs										
Support Contracts	C/FFP	Nov 94			1105	640	5224	4200	Cont	Cont
Misc.	MIPR				10277	4932	6025	2808	Cont	Cont
Test and Evaluation Organizations: Note: Miscellaneous includes funding to various activities for ASE programs.										
Misc.	MIPR				2653	1411	248	594	Cont	Cont
TECOM	MIPR						6025	9806	0	15831
EPG	MIPR				298	313	910	3451	0	4972

Government Furnished Property: None

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development	PROJECT D665

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	62322	35712	26991	38898	Cont	Cont
Subtotal Support and Management	11382	5572	11249	7008	Cont	Cont
Subtotal Test and Evaluation	2951	1724	7183	13851	Cont	Cont
Total Project	76655	43008	45423	59757	Cont	Cont

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: D2VT

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D2VT Advanced Threat Infrared Countermeasures (ATIRCM)/Common Missile Warning System (CMWS) Operational Test	0	5482	1181	1183	90	0	0	0	7936

A. Mission Description and Justification: This project supports the operational test for the Advanced Threat Infrared Countermeasures(ATIRCM)/Common Missile Warning System (CMWS) and is new start in FY1998. 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.

Acquisition Strategy: Operational testing is required to determine the effectiveness of the system during the development phase, meet milestone III requirement and enter the production phase

FY 1997 Accomplishments: Project not funded in FY 1997

FY 1998 Planned Program:

•	5344	Commence ATIRCM/CMWS Operational Test Support
•	138	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	5482	

FY 1999 Planned Program:

•	1181	Continue ATIRCM/CMWS Operational Test Support
Total	1181	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	166	2358
Appropriated Value		5666	
Adjustments to Appropriated Value		-184	
FY 1999 President's Budget Request	0	5482	1181

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development
PROJECT D2VT	

Change Summary Explanation: Funding: FY98 increase due to Congressional increase to Project D2VT instead of Project D665. The increase will be reprogrammed to the correct Project.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Cont	Total Cost
APA, BA 4 AZ3507 ASE (ATIRCM)*				23752	13047	61993	54871	Cont	Cont
APA, BA 2 AA0720 ASE Modifications (ATIRCM)	25861	18647	2743	12658	21755	17261	14679	Cont	Cont

*Represents only part of the funding in this SSN.

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Initiate ATIRCM/CMWS Test Support						X						
Continue ATIRCM/CMWS Test Support										X		

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: D2VT

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Test and Evaluation		5482	1181
Total	0	5482	1181

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations: None										
Support and Management Organizations: None										
Test and Evaluation Organizations:										
OPTEC							5482	1181	1273	7936
Government Furnished Property: None										
Subtotal Product Development										
Subtotal Support and Management										
Subtotal Test and Evaluation							5482	1181	1273	7936
Total Project						0	5482	1181	1273	7936

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: DL12

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL12 Signals Warfare Development	15687	28135	20394	8734	8785	7294	7905	Continuing	Continuing

A. Mission Description and Budget Item Justification: Signals Warfare Development provides for a family of integrated ground-based and heliborne intelligence and electronic warfare common sensor systems. The Ground Base Common Sensor (GBCS) is an intercept and emitter location system. It provides division commanders with the capability to search, intercept, listen to, precisely locate for hard-kill or order-of-battle resolution, or render ineffective through electronic attack, threat command and control and fire control communications nets. It also identifies and precisely locates threat countermortar and counterbattery ground surveillance radar emissions, and identifies enemy conventional and Low Probability of Intercept (LPI) communications and non-communications emitters and jam enemy conventional and LPI communications emitters. GBCS is an evolutionary system which is intended to continually overmatch threat capabilities through a continuous modernization philosophy. Modular components, commercial standards, and open architecture features facilitate change in a cost-effective manner of changing parts via P^3I vice whole system replacement. This open architecture feature satisfies the Army requirement to conduct tactical ground Communications Intelligence, Electronic Intelligence, Electronic Support, and Electronic Attack against threat communications and non-communications signals; enhances the Commander's ability to outmaneuver and destroy the enemy by locating or jamming threat command and control, fire control, and air defense centers. The GBCS will be used in two platform configurations. The GBCS-Light (GBCS-L) will be deployed on a highly mobile multipurpose-wheeled vehicle (HMMWV) in support of Light Divisions. The GBCS-Heavy (GBCS-H) will be deployed on a tracked vehicle in support of Armored and Mechanized Infantry Divisions. The third platform of the Intelligence and Electronic Warfare Common Sensor System is the Advanced QUICKFIX (AQF) which provides for a material change to the existing heliborne QUICKFIX communications intercept, collection, processing, direction finding, and jamming system and will be deployed to Army Divisions and Armored Cavalry Regiments (ACR). Configured in a Blackhawk Helicopter (EH-60A), it provides the moving platform necessary to provide for location accuracy's sufficient for "steel on target" requirements, as well as for extension of radio Line of Sight (LOS) against target emitters. This project provides for engineering and manufacturing development (EMD) and testing of Intelligence and Electronic Warfare Common Sensor (IEWCS) Subsystems and Systems leading to Milestone III and product improvement of systems after initial production. The Subsystems are:

a. The Tactical Communications Jammer (TACJAM-A) will enhance the Division Commander's ability to outmaneuver and kill the enemy by isolating and suppressing enemy fire control and command and control (C^2) nets at critical points in the battle; provide electromagnetic overwatch of the threat C^2 spectrum inclusive of both conventional and modern modulations, e.g., LPI; freeze the enemy in place by jamming C^2; and eliminate enemy counterfire by locating High Value Targets (HVTs) for targeting. TACJAM-A consists of state-of-the-art modular and scaleable Electronic Support Measures (ESM) and Electronic Countermeasures (ECM) subsystems configured for use on a variety of air and ground prime movers (tracked, wheeled and heliborne).

b. The Communication High Accuracy Location System Exploitable (CHALS-X) provides the targeting capability required to support the Division Commander's requirement to locate and kill the enemy by providing location of high value targets. Airborne systems mixed with ground based systems will be capable of precisely locating enemy weapon systems and units (regardless of whether the enemy uses conventional or modern radios) producing target locations sufficiently accurate for first round fire for effect by organic artillery.

c. The Common Modules ELINT Subsystem (CMES) provides search, intercept, direction finding (DF), precision location and analysis of the primary non-communication (radar) battlefield threat emitters. While operating in a fully automatic mode, it will enhance the Division Commander's ability to outmaneuver and kill the

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development PROJECT DL12

enemy by specifically identifying HVTs such as enemy countermortar, and counterbattery ground surveillance radar at critical points in the battle and will provide precise emitter locations with targeting accuracy.

The United States Marine Corps is utilizing the same subsystems as the GBCS and configuring them in a Light Armored Vehicle as a part of the Mobile Electronic Warfare Support System (MEWSS) improvement program.

This project is unclassified and is a cooperative effort with the National Security Agency's Defense Cryptologic Program (DCP), Program Element 030885G, which provides a portion of the funds required for the development of the precision location subsystem and system integration of GBCS-L and GBCS-H.

This program must be considered as a whole with GBCS-L, GBCS-H and AQF. All three programs leverage the others funding.

Acquisition Strategy: In November 1995, the US Army competitively awarded a five-year (basic plus four one-year options) contract to continue development and to acquire the IEWCS systems required to meet initial Army needs. Procured during the first two years of the contract were: Limited Production, Urgent (LP(U)) units of the Ground Based Common Sensor-Light (GBCS-L) system and Low Rate Initial Production (LRIP) units of the Advanced QuickFix (AQF). The contract also provides for continued software and hardware development to correct existing deficiencies and/or to meet Operational Requirement Document (ORD) performance for all IEWCS systems including the Full Scale Engineering Development (FSED) models of the GBCS-Heavy systems. The LP(U) GBCS-L systems will undergo IOT&E in FY98 leading to a full production MS III decision review in 1QFY99. The LRIP AQF systems and the upgraded FSED GBCS-H systems will undergo a joint IOT&E scheduled in FY99 leading to a full production MS III decision reviews in 1QFY00. The current acquisition strategy is: following MS III decision approvals, full scale production for all three systems (GBCS-L, GBCS-H, and AQF) collectively will be awarded competitively.

FY 1997 Accomplishments:

•	87	Conducted special in-process review (SIPR) on AQF ECM)
•	4122	Continued GBCS/AQF improvements to include TACJAM-A Signal Analyzer Upgrade, ECM subsystem integration into AQF and other product improvements resulting from Task Force XXI/Div AWE
•	8506	GBCS-L/AQF software fixes
•	1072	Contractor maintenance support for Task Force XXI/Div AWE
•	1900	ADEXJAM incremental
Total	15687	

FY 1998 Planned Program:

•	0	Continue development and final modification of CCA boards of TACJAM-A ECM to be incorporated in GBCS-H and AQF.
•	0	Develop increased TACJAM-A special signal capabilities and correct existing platform integration problems IAW UKMOU
•	5009	Continue Development and integration of GBCS-H

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development — PROJECT: DL12

FY 1998 Planned Program: (continued)

•	1500	Fix existing central software issues
•	4000	Contractor field tests and follow on fixes
•	3049	Conduct training and provide contractor depot level repair in preparation for and support of IOT&E for GBCS-L
•	10000	Conduct IOT&E on GBCS-L
•	200	Prepare documentation in preparation of Milestone III for GBCS-L
•	1386	Full-band DF Calibration
•	2300	OPTEC Support for IOT&E, GBCS-L
•	691	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	28135	

FY 1999 Planned Program:

•	7728	Continue development and integration of GBCS-H
•	4166	Conduct training and provide contractor depot repair in support of IOT&E for AQF
•	8000	Conduct IOT&E on AQF/GBCS-H
•	200	Conduct Milestone III on GBCS-L
•	300	Prepare documentation in preparation for Milestone III on AQF/GBCS-H
Total	20394	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/99 President's Budget	16065	13874	7228
Appropriated Value	16414	29186	
Adjustments to Appropriated Value	-727	-1051	
FY 1999 President's Budget	15687	28135	20394

Change Summary Explanation:

Funding: FY99 - (+6.000) Funds redirected from APA, (AB3000) to RDTE to complete AQF IOT&E.
FY99 - (+7.000) PBD Adjusted funds from OPA, (BZ7326) to RDTE to prepare GBCS-H for IOT&E.

Schedule: GBCS-L IOT&E is scheduled to be completed in 4QFY98. GBCS-L MS III Decision is scheduled for 1QFY99.
GBCS-H IOT&E will be conducted in 3QFY99 and GBCS-H MS III Decision review will be held in 1QFY00.
AQF IOT&E will be conducted in 3QFY99 and MS III Decision review will be held in 1QFY00.

Technical: ECM capability will not be available during FY99 IOT&E for GBCS-H/AQF (except for Demo Purposes). ECM will be included in future enhancements.

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: DL12

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA (SSN BZ7326)	41436	0	25388	30667	83804	95375	107122	Cont'd	Cont'd
OPA (SSN BZ9750)	14433	1627	4891	14270	12353	12808	21193	Cont'd	Cont'd
APA (SSN AB3000)	13794	43632	3015	54021	65971	74912	82368	Cont'd	Cont'd
RDTE Budget Activity 7 DCP PE 030885G, GBCS	19824	18334	17350	16869	18038	18442	18760	Cont'd	Cont'd
RDTE Budget Activity 7 DCP PE 030885G, CHALS-X	2998	1994	3800	3836	4119	4201	4285	Cont'd	Cont'd

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
T&E Milestones												
Conduct IOTE on GBCS-L								X				
Conduct IOTE on AQF											X	
Conduct IOTE on GBCS-H											X	
Acquisition Milestones												
Milestone III on GBCS-L									X			

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: DL12

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Primary Hardware Development	4698	3600	2154
Software Development	5544	8860	4862
Integrated Logistics Support	1156	2849	3712
Quality Assurance; Reliability; Maintainability & Availability	360	600	2650
Developmental Test & Evaluation	172	4550	3050
Governmental Test & Evaluation	378	5200	2900
Government Engineering Support	617	770	520
Program Management Support	2450	333	137
Program Management Personnel	312	682	409
SBIR/STTR		691	
Total	15687	28135	20394

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Sanders/AEL	C-CPIF	Jun 89	216686	216334	210931	1903	0	0	0	212834
IBM/Loral	SS-CPFF	Jun 90	52997	52997	47923	0	0	0	0	47923
ESI	C-CPAF	Sep 91	189463	186424	104449	1000	0	0	0	105449
FMC/UDLP	SS-CPFF	Sep 90	15913	15913	13813	1844	1400	500	Cont	Cont
LMFS-O (GBCS/AQF)	C-FFP	Nov 95	94577	94577	887	3583	18919	15778	Cont	Cont
Loral-AD/EXJAM	SS-CPIF	Mar 96				1785	0	0	0	1785
Misc.					2888	165	0	0	0	3053
Questech		May95				1650	140	150	Cont	Cont
Support and Management Organizations										
QuesTech	FFP	May 95			630	2450	267	0	0	3347
Sytex	FFP	Dec 96				0	66	137	Cont	Cont
In-House	Direct				7290	312	682	409	Cont	Cont

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: DL12

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
CECOM	MIPR				5930	617	770	520	Cont	Cont
Ft Monmouth NJ										
SBIR/STTR							691			691
Test and Evaluation Organizations										
EPG/Ft. Hood	MIPR				2577	378	2900	2900	Cont	Cont
OPTEC	MIPR						2300		0	2300

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Government Furnished Property: N/A									
Product Development Property									
NOTE: TACJAM-A/CHALS-X/EFVS, Sanders-AEL/IBM-Loral/FMC, Respectively, identified above as Product Development Organizations									
Support and Management Property: Not applicable									
Test and Evaluation Property: Not applicable									
Subtotal Product Development				380891	11930	20459	16428	Cont	Cont
Subtotal Support and Management				13850	3379	2476	1066	Cont	Cont
Subtotal Test and Evaluation				2577	378	5200	2900	Cont	Cont
Total Project				397318	15687	28135	20394	Cont	Cont

*Total Program does not includes funding from other sources.

**Project Office EAC includes Marine Corps and National Security Agency funds which are not included in the Total Program (Army budget).

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: DL15

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL15 Army Reprogramming and Analysis Team (ARAT)	1665	3901	3339	0	0	0	0	0	17670

A. Mission Description and Justification: Army Reprogramming and Analysis Team (ARAT) for Target Sensing Systems (TSS) project will design, develop, implement, test, equip and institutionalize an Army-wide infrastructure capable of rapidly reprogramming electronic combat software embedded in offensive and defensive weapon systems. ATSS are those tactical weapons and sensor systems which rely on embedded, well-defined target or emitter signature data for specific identification. Systems supported by this project include but are not limited to: radar warning receiver and jammer sub-systems of attack, scout, utility and SEMA aircraft; aircraft survivability equipment; automated intelligence collection systems and jammers; advanced threat sensors for air defense, artillery and missile applications, and use as vehicle /troop self-protection systems. The project focuses on advanced information management technologies to: automate the threat recognition process; evaluate the operational impact of threat changes on inventoried sensor; develop, test and evaluate software to counter the change; develop tactical loading devices for deploying or deployed forces; and institutionalize the infrastructure to accomplish these tasks as well as distribute/disseminate the new software. The projects in this PE support development efforts in the engineering and manufacturing development phases of the acquisition strategy and therefore are correctly placed in Budget Activity 5.

Acquisition Strategy: The ARAT to TSS project will design, develop, implement, test, equip and institutionalize all Army-wide infrastructure capable of reprogramming electronic combat software embedded in offensive and defensive weapons systems. The program requirements for software engineering, development, support equipment engineering acquisition, operational training and test and evaluations support will be acquired by the use of time and material contracts. This strategy will further such major program events such as the test and evaluation of off-the-shelf and developmental loading devices, the completion of connectivity of a secure Wide Area Network with all reprogramming centers and the development of flagging models for specific electronic combat survivability systems.

FY 1997 Accomplishments:

•	1120	Tested and evaluated off-the-shelf and developmental loading devices for ADA, Fire Support and Armor TSS
•	165	Initiated study on the feasibility of electronic broadcast reprogramming.
•	380	Improved or modified ARAT flagging capability for ELINT systems.
Total	1665	

FY 1998 Planned Program:

•	3803	Reprogrammed to address high priority requirements for the Army Enterprise Architecture (AEA)
•	98	Small Business Innovative Research/Small Business Technology Transfer Program
Total	3901	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development
	PROJECT DL15

FY 1999 Planned Program:

- 827 Initiate integration of Electro-optic/Infrared (EO/IR) based systems into reprogramming infrastructure.
- 327 Develop and design communications architecture paths to support CONUS and OCONUS field unit communications.
- 1283 Implement support plans for PM, Aviation Electronic Combat (SIRFC to AMPS interface).
- 602 Begin development of specific flagging models for AN/APR-39A(V)2 Radar Warning Receiver.
- 300 Development of Multi-Service Electronic Combat Secure Web Site.

Total 3339

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	3764	4024	3323
Appropriated Value	3845	4024	
Adjustments to Appropriated Value	-2180	-123	
FY 1999 President's Budget	1665	3901	3339

Change Summary Explanation: Funding: FY97 Decrement represents funding transferred to support the Task Force XXI Advanced Warfighting Experiment

C. Other Program Funding Summary: Not applicable.

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Test and evaluate off-the-shelf and developmental loading devices for ADA, IEW, Fire Support and Armor TSS						X		X				
Initiate study on the feasibility of electronic broadcast reprogramming							X	X				
Improve or modify ARAT flagging capability for ELINT systems					X			X				
Integrate Electro-optic based systems into reprogramming infrastructure.							X	X				
Design, develop and test communications architecture paths to support CONUS to OCONUS field unit communications.					X			X				

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: DL15

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Begin to implement support plans for PM, Aviation Electronic Combat (SIRFC to AMPS interface)					X			X				
Begin development of specific flagging models for AN/APR-39A(V)2 Radar Warning Receiver					X			X				
Development of Multi-Service Electronic Combat Secure Web Site.						X		X				
Finalize implementation of support plans for PM, Aviation Electronic Combat (SIRFC to AMPS interface)												
Test and evaluate the communications architecture paths to support CONUS to OCONUS field unit communications												
Finalize Flagging Model for the AN/APR-39A(V)2 Radar Warning Receiver												
Begin Flagging Model for the Suite of Integrated RF Countermeasures (SIRFC)												
Develop Training Materials for Commanders Staff & Unit level personnel (Warfighters Handbook)												

*Denotes a completed effort

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development PROJECT DL15

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
Government Engineering Support	360	0	530
Contract Engineering Support	1080	0	959
Development Support Equipment Acquisition	25	0	600
Operational Training	50	0	150
PM Support	50	0	700
Test and Evaluation	50	0	200
Travel	50	0	200
Reprogrammed to support AEA		3803	
SBIR/STTR		98	
Total	1665	3901	3339

B. Budget Acquisition History and Planning Information: Not applicable

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development PROJECT DL16

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL16 TROJAN Development	1228	1239	1318	0	0	0	0	0	4341

A. Mission Description and Budget Item Justification: This project is a Tactical Intelligence and Related Activities (TIARA) program. A key factor in modern warfare is the ability to collect, process and use information about an adversary while preventing him from obtaining similar information. TROJAN is a combined operational and readiness mission system which uses advanced networking technology to provide seamless rapid radio relay, secure communications to include voice, data, facsimile, and electronic reconnaissance support to U.S. forces throughout the world. TROJAN operations may be easily tailored to fit military intelligence unit training schedules and surged during specific events to involve every aspect of the tactical intelligence collection, processing, analysis and reporting systems. This project engineers, tests and evaluates new digital intelligence collection, processing and dissemination technology using the fielded TROJAN systems, prior to the acquisition of those technologies. The process that will enable the United States to win the battlefield information war is referred to as digitization. This capability will allow us to process and disseminate real-time intelligence data from various sources; it forms the intelligence needed to issue orders inside the threat decision cycle. To that end, it is imperative the TROJAN system keep pace with digitization initiatives in order to respond aggressively to the emerging intelligence communication threats.

Acquisition Strategy: Competitive contract award utilizing firm fixed price and best value selection procedures for engineering and manufacturing development.

FY 1997 Accomplishments:

•	375	Continued operational evaluation on specific TROJAN applications for non-standard modulations techniques using digital processing technologies.
•	328	Completed operational test, evaluation and engineering of video compression/processing technologies on fielded TROJAN systems.
•	525	Acquired previously developed specialized software for classified pre-processing and enhanced signal processing algorithms.
Total	1228	

FY 1998 Planned Program:

•	247	Conduct operational test and evaluation of previously developed specialized software and enhanced signal processing algorithms).
•	330	Implement and test Warfighter Information Network (WIN) interfaces technology for the TROJAN intelligence network.
•	500	Acquire and apply multi-bandwidth compression algorithm technology to maximize TROJAN intelligence collection network throughput-
•	131	Study the feasibility of incorporating Direction Finding (DF) enhancements to TROJAN Remote Receiving Groups (RRGs).
•	31	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	1239	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development
	PROJECT DL16

FY 1999 Planned Program:

- 500 Continue operational assessment of multi-bandwidth compression algorithm technology to maximize TROJAN Classic intelligence collection network throughput
- 318 Apply IEW dissemination applications based on Task Force XXI lessons learned
- 500 Apply Common Remote Systems (CRS) tactical transcription functionality at the RSOCs to support tactical to national partnership

Total 1318

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	1261	1278	1333
Appropriated Value	1288	1278	
Adjustments to Appropriated Value	-60	-39	
FY 1999 President's Budget	1228	1239	1318

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA BA0331	2114	3349	3648	4505	4659	4770	4896	Cont'd	Cont'd
OPA BA0333	2085	479	478	0	0	0	0		

D. Schedule Profile

Acquisition Milestones	FY 1997 1	2	3	4	FY 1998 1	2	3	4	FY 1999 1	2	3	4
Contract Award for Video Compression/Processing												
Contract Award for Non-Standard Mod using Digital Signal Processing Tech.												
Contract Award for Spec Software for Sig Proc Algorithms		X*										
Contract Award for enhanced Sig Proc Algorithms		X*										
Contract Award for WIN Interfaces for TROJAN Classic Intel Network						X						
Contract Award for Multi-bandwidth compression algorithms						X						
Contract Award for dissemination applications										X		

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: DL16

D. Schedule Profile

Acquisition Milestones	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Contract Award for Transcription Functionality at the RSOCs										X		
Engineering Milestones												
Prototype insertion-video compression/processing			X*	X*								
Spec software for signal processing algorithms					X*							
Enhanced signal processing algorithms					X*							
WIN interface for TROJAN Intel Net									X			
Multi-bandwidth compression algorithms									X			
Dissemination applications												X
Transcription functionality at RSOCs												X

*Denotes a completed effort

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: DL16

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Hardware Development	751	709	777
Software Development	477	499	541
SBIR/STTR		31	
Total	1228	1239	1318

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations: None										
Support and Management Organizations:										
Misc.	C/CPFF	Mar 96	517	517	556	1228	1239	1318	0	4341
	MIPR	Jan 97	1228	1228						
	MIPR	Jan 98	1278	1278						
	MIPR	Jan 99	1318	1318						
Test and Evaluation Organizations: None										
Government Furnished Property: None										
Subtotal Product Development					0	0	0	0	0	0
Subtotal Support and Management					556	1228	1239	1318	0	4341
Subtotal Test and Evaluation					0	0	0	0	0	0
Total Project					556	1228	1239	1318	0	4341

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: DL18

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL18 SHORTSTOP Development	7479	0	0	0	0	0	0	0	25710

A. Mission Description and Budget Item Justification The SHORTSTOP Operational Requirements Document, approved Apr 94, called for a system with a lightweight autonomous configuration to provide protection for personnel and other high value assets against proximity fuzed munitions. The EMD program for the SHORTSTOP Electronic Protection System (SEPS) provided a lightweight, fully integrated Radio Frequency Countermeasure system in three configurations: a manpack system, a stand alone system, and a vehicle mounted system.

Acquisition Strategy: FY98 funding will develop additional capabilities which may be incorporated into SEPS.

FY 1997 Accomplishments:

•	5102	Completed fabrication/contractor qualification testing and delivery of nine (9) prototypes
•	485	Completed fabrication/contractor qualification testing of nine (9) prototypes
•	435	Designed/developed 1553 instrumentation data interface to support live fire test
•	95	Developed installation kit for vehicle mount version
•	1362	Conducted technical field test and IOTE
Total	7479	

FY 1998 Planned Program: FY 1998 program/funding currently in PE 0602270A, EW Technology. These funds will be realigned to this PE (0204270A) to more accurately reflect the nature of the work being accomplished.

FY 1999 Planned Program: Project not funded in FY99.

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	9151	0	0
Appropriated Value	9348	0	
Adjustments to Appropriated Value	-1869	0	
FY 1999 President's Budget	7479	0	0

Change Summary Explanation: Funding: FY97 (-1430) - Reprogrammed to other PEO IEW&S programs/.439 - Congressional reductions and SBIR/STTR

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: DL18

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Other Procurement Army									
SSN: VA8000-SHORTSTOP	5000	5824							10824

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Complete fabrication of nine (9) prototypes			X*									
Conduct contractor qualification testing			X*									
Design/Fabricate Fuze Immulator			X*									
Design/develop 1553 instrumentation data interface			X*									
Develop installation kits			X*									
Deliver nine (9) EMD prototypes				X*								
Conduct Technical Field Test				X*								
Conduct IOTE				X*								
Continue 1553 interface development												
Develop Threat Assessment/Simulation												
Develop Low-Profile Rigid Antenna												
Develop Countermeasure techniques												
Conduct Testing												

*Denotes Completed Milestone

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development PROJECT DL18

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
Primary Hardware Development	4191		
Operational Test and Evaluation	2447		
Systems Engineering			
Government			
Contractor			
Government Engineering Support	533		
Program Management Support	308		
SBIR/STTR			
Total	7479	0	0

B. Budget Acquisition History and Planning Information Not Applicable.

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604321A All Source Analysis System (TIARA)

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	37463	26094	28081	30199	39480	34102	17717	Continuing	Continuing
DB19 ASAS Evolutionary Acquisition	34739	23892	23126	26078	35698	29964	12620	Continuing	Continuing
DB41 CI/HUMINT Software Products	0	0	2700	3800	1600	1900	2800	Continuing	Continuing
D2FT ASAS Operational Test	2724	2202	2255	321	2182	2238	2297	Continuing	Continuing

Mission Description and Budget Item Justification: This program element funds the development of the All Source Analysis System (ASAS) Evolutionary Acquisition (EA) system and its operational testing. 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 (ACR), separate brigades, divisions, corps, and echelons above corps (EAC). The projects in this program element support research efforts in the engineering and manufacturing development phases of the acquisition strategy and therefore are correctly placed in Budget Activity 5.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604321A All Source Analysis System (TIARA)
	PROJECT DB19

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DB19 ASAS Evolutionary Acquisition	34739	23892	23126	26078	35698	29964	12620	Continuing	Continuing

A. Mission Description and Justification: Project DB19 - ASAS Evolutionary Acquisition: This project funds the development of the Army's only tactical intelligence fusion project, the ASAS Block II Evolutionary Acquisition, within the Intelligence Fusion Project Office. 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. The ASAS system provides automated support to the combat commander in the areas of intelligence collection management, all-source fusion (signals intelligence, correlation, imagery, and human intelligence) target and situation analysis, single- and multi-source processing, intelligence reporting, electronic warfare/countermeasures, and operational security as well as "digitized Army" automation support to the battlefield commander's command and control.

Acquisition Strategy: The ASAS Block II 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 Tactical Command and Control System (ATCCS) Common Hardware/Software Open architecture 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 and supportability. ASAS Block II strategy maximizes the use of Government Furnished Equipment (GFE), government and commercial Non-Developmental Item (NDI) software, reuse of proven Office of Secretary of Defense (OSD) and ATCCS Command, Control, Communications and Intelligence (C3I) software, multiple prototype deliveries and continuous user test and evaluation opportunities. Building upon experience and feedback gained from the fielded ASAS and other tactical fusion prototypes, ASAS Block II will undergo management review in FY00.

FY 1997 Accomplishments:

- 31167 Continued ASAS Block II Evolutionary Acquisition Engineering and Manufacturing Development (EMD) Capability Packages
  - -Implemented DII COE-Compliant System Services and Common Applications
  - -Initiated Unified Database Scheme
  - -Continued MIDB effort
  - -Initiated Operational Diagnostic Capability
  - -Rehosted and improved All Source intelligence functionality from Blk I to Blk II
  - -Enhanced RWS to meet evolving DIV XXI capabilities

3572 Conducted Development/Operational/Assessment Testing

Total 34739

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604321A All Source Analysis System (TIARA)
	PROJECT DB19

FY 1998 Planned Program:

•	20946	Continue ASAS Block II Evolutionary Acquisition EMD Capability Packages -Implement DII COE-Compliant System Services and Common Applications -Develop and integrate CP-ACE Modules -Develop Operational Diagnostic Capability -Complete MIDB Effort -Continue rehost and improvement of All Source intelligence functionality from Blk I -Enhance RWS to meet evolving EXFOR XXI capabilities -Develop objective target analysis capability
•	2385	Conduct Development/Operational/Assessment Testing
•	561	Small Business Innovative Research/Small Business Technology Transfer Program
Total	23892	

FY 1999 Planned Program:

•	20691	Continue ASAS Block II Evolutionary Acquisition EMD Capability Packages -Integrate and test ASAS Block II final delivery -Complete rehost and improvement of All Source intelligence functionality from Blk I -Complete enhancement of RWS-C to meet evolving EXFOR XXI capabilities -Level 6 DII COE migration -Interface initial CI/HUMINT capability into ACE -Final assessment of "Year 2000" Proof of Operation -Enhance embedded training
•	2435	Conduct ASAS Block II Testing
Total	23126	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY1998/1999 President's Budget	35660	21598	23813
Appropriated Value	36433	24798	
Adjustments to Appropriated Value	-1694	-906	
FY1999 President's Budget	34739	23892	23126

Change Summary Explanation: Funding: FY98 (+2294) Funding increase resulted from Congressional increase of 3200 to support ASAS software upgrade efforts less undistributed Congressional decrements in the appropriations bill(-906) applied against this PE/Proj.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604321A All Source Analysis System (TIARA) — PROJECT DB19

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA (K28801) ASAS Modules	13824	22770	24117	60875	63549	49714	63443.	Cont	Cont
Spares (BS9704)	585	0	0	1810	5355	8028	8608	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Phase 2 (Remote Workstation Functionality) Prototype Delivery	X*	X*	X*									
Block II Unit Sets												X

*Initial software drop delivered

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604321A All Source Analysis System (TIARA)

PROJECT: DB19

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Systems Development	30639	19331	19326
Contractor Engineering	2100	2100	2000
Government In House Support	2000	1900	1800
SBIR/STTR		561	
Total	34739	23892	23126

B. Budget Acquisition History and Planning Information: Following for Block II ASAS only.

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Lockheed Martin	CPAF	Oct 93	113600	113600	62860	22955	14973	15493	Cont	Cont
EWA		Aug 97			0	3314	0	1000	0	4314
Sytex	PWD	Oct 96			2100	2100	2000	900	0	7100
MITRE	MIPR				2700	1000	800	700	0	5200
Support and Management Organizations										
Contractor Spt					2002	2100	2100	2000	Cont	Cont
Gov't In House					3717	2000	1900	1800	Cont	Cont
SBIR/STTR							561			561

Test and Evaluation Organizations: None

Government Furnished Property

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property									
CHS II	MIPR			2687	1270	800	397	0	5154
Support and Management Property: None									
Test and Evaluation Property									
Test sets CHS II				0	0	758	836	Cont	Cont

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - Engineering and Manufacturing Development	0604321A All Source Analysis System (TIARA)	DB19

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	70347	30639	18573	18490	Cont	18490
Subtotal Support and Management	5719	4100	4561	3800	Cont	3800
Subtotal Test and Evaluation			758	836	Cont	836
Total Project	76066	34739	23892	23126	Cont	23126

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604321A All Source Analysis System (TIARA)

PROJECT: DB41

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DB41 CI/HUMINT Software Products	0	0	2700	3800	1600	1900	2800	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project DB41 - CI/HUMINT Management System (CHIMS): The project funds the development of the All Source Analysis System (ASAS) Counter Intelligence/Human Intelligence (CI/HUMINT) subsystem. This subsystem is the CI/HUMINT component of the Intelligence and Electronic Warfare (IEW) sub-element of the Army Battle Command System (ABCS). It is a counter intelligence and human intelligence automation system that meets Army tactical CI/HUMINT information collection, investigation, interrogation, operation, document exploitation, and force protection automation requirements. The architecture is built from three sub-elements. The first tier tactical component to a three tiered automation support architecture for tactical CI/HUMINT operations is the CI/HUMINT Automated Tool Set (CHATS). CHATS operates at the Counter Intelligence Team/Interrogation Prisoner of War (IPW) Team level. The other two major components to the CHIMS architecture are the Counter Intelligence Operations/Interrogation Facility Workstation (OPS/IF WS) for DS/GS MI unit command and control which provides functional interfaces to the All Source Analysis System, and the CI Single-Source Processors (CI SSP) which will operate within the ASAS Analysis and Control Element (ACE).

Acquisition Strategy: FY99 and FY00 funding supports continued improvements and functionality enhancements to the CHATS software baseline and the initiation of development of the OPS/IF workstation software baseline. During FY01 through FY03 the OPS/IF software baseline will fully mature and the CHATS baseline will undergo an evolutionary transition to a new generation of modernized COTS and developed software programs. The CHATS system provides agents the capability to manage assets and analyze information collected through investigations, interrogations, collection, and document exploitation. With CHATS, CI units may electronically store collected information in a local database, associate information with digital photography, and transmit/receive information over existing military and civilian communications. The CHATS provides these functions primarily with COTS software operating in a laptop computer within a hardened transport case. Current planning envisions the capability for information exchange between CHATS and the CI/HUMINT Operations/
Interrogation Facility (OPS/IF) workstation located at MI Battalions and Brigades. In turn, the OPS/IF workstation will provide processed information to ASAS CI/HUMINT Single-Source Processor (CI/H SSP) workstations at the MI Brigade Analysis Control Team (ACT) and the Division Analysis Control Element (ACE).

FY 1997 Accomplishments: Project not funded in FY 1997

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program:

- 1500 Develop, investigate and apply functionality enhancements to the CHATS developmental baseline
  - -Migrate existing CHATS software to DII/COE baseline
  - -Data handling
  - -Mapping and presentation enhancements

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604321A All Source Analysis System (TIARA)
	PROJECT DB41

FY 1999 Planned Program: (continued)

-Communications improvements
-Interoperability enhancements
-Follow-on operational testing

•	1200	Initiate development of the OPS/IF workstation and CI Single Source Processor software baselines
Total	2700	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President' Budget	0	0	0
Appropriated Value			
Adjustments to Appropriated Value			
FY 1999 President's Budget	0	0	2700

Change Summary Explanation: Funding: FY1999 (+2700) funding established to enhance CHATS software baseline functionality

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA (BK5275) CHATS (TIARA)	0	0	3700	3201	386	1537	5188	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
CHATS Hardware/Software Upgrade								X	X	X	X	X
Develop OPS/IF Workstation								X	X	X	X	X

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604321A All Source Analysis System (TIARA)

PROJECT: DB41

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Systems Development	0	0	2555
Matrix Management	0	0	95
Test	0	0	50
Total	0	0	2700

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
TBD	TBD				0	0	0	2555	Cont	2555
Support and Management Organizations										
CECOM	MIPR				0	0	0	95	Cont	95
Test and Evaluation Organizations										
OEC	MIPR				0	0	0	50	Cont	50

Government Furnished Property

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property: None									
Support and Management Property: None									
Test and Evaluation Property: None									

Subtotal Product Development			2555		2555
Subtotal Support and Management			95		95
Subtotal Test and Evaluation			50		50
Total Project	0	0	2700		2700

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604321A All Source Analysis System (TIARA)

PROJECT: D2FT

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D2FT ASAS Operational Test	2724	2202	2255	321	2182	2238	2297	Continuing	Continuing

A. Mission Description and Justification: Project D2FT - ASAS Test and Evaluation: This project finances the direct costs of planning and conducting testing and evaluation of the ASAS by the Operational Test and Evaluation Command (OPTEC). ASAS is an Acquisition Category (ACAT) I system with several dedicated iterations of Test and Evaluation (Technical and Operational) between FY 95 and FY 99. 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, OPTEC provides Army leadership with an evaluation of effectiveness and suitability of the system. Project D2FT is restructured from PE 0605712A.

Acquisition Strategy: Not applicable, see B19 above

FY 1997 Accomplishments:

•	2724	Conducted ASAS Block II Technical and Operational Testing and Evaluation
Total	2724	

FY 1998 Planned Program:

•	2147	ASAS (ACE and RWS-C) Development and Operational Test
•	55	Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
Total	2202	

FY 1999 Planned Program:

•	2255	ASAS Phase 4 Final Delivery Operational Test
Total	2255	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY1998/1999 President's Budget	3648	2447	2415
Appropriated Value	3559	2447	
Adjustments to Appropriated Value	-835	-245	
FY1999 President's Budget	2724	2202	2255

Change Summary Explanation: Funding: FY 1997 (-835) decrease reflects OPTEC change in test plan
FY 1998 (-245) reflects undistributed Congressional reductions applied against this PE/Project

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604321A All Source Analysis System (TIARA)
	PROJECT D2FT

C. **Other Program Funding Summary**: Not Applicable

D. **Schedule Profile**

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
ASAS Testing												
- CP-Single Source			X*	X*								
- Op Eval, Del 2 (RWS-C)							X	X				
- Op Eval, Del 3 (ACE)										X	X	
- Op Eval, Del 4 (Adv Cap)												X

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604321A All Source Analysis System (TIARA)

PROJECT: D2FT

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Operational Test, Evaluation, Assessment	2724	2147	2255
SBIR/STTR		55	
Total	2724	2202	2255

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations: None										
Support and Management Organizations: None										
Test and Evaluation Organizations										
OPTEC					1416	2724	2147	2255	Cont	8542
SBIR/STTR							55			55
Government Furnished Property: None										
Subtotal Product Development										
Subtotal Support and Management										
Subtotal Test and Evaluation					1416	2724	2202	2255		8597
Total Project					1416	2724	2202	2255		8597

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604325A Follow-On To TOW

PROJECT: DE18

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DE18 Follow-On To TOW	5934	13449	48106	78872	85079	83487	43216	Continuing	Continuing

A. **Mission Description and Budget Item Justification:** Provides for Engineering and Manufacturing Development (EMD) for Follow-On To TOW (FOTT), a vehicle mounted, crew served Heavy Anti-tank Missile System which will replace/supplement the TOW missile family. It will be integrated onto and fired from the High Mobility Multi-purpose Wheeled Vehicle (HMMWV) with TOW Improved Target Acquisition System (ITAS), on the Bradley Fighting Vehicle System (BFVS) A3 with Improved Bradley Acquisition Sub-system (IBAS) platforms and the BFVS A2/A2ODS platforms. The FOTT will be capable of operating out to the maximum range required in the FOTT Operational Requirements Document (ORD) and will perform under day/night adverse weather conditions and obscurants. The FOTT will be countermeasures hardened and will increase crew survivability. This program element supports research efforts in the engineering and manufacturing development phase of the acquisition strategy and is therefore correctly placed in budget activity 5.

Acquisition Strategy: The FOTT program will provide a systems approach by leveraging existing missile technologies. This next-generation missile will be compatible with both current and emerging TOW missile platforms. The EMD contract will be competitively awarded. EMD activities will include development of the missile and the ITAS/BFVS A3 (IBAS) applique kits within the 66 month effort, followed by a 20 month effort for the BFVS A2/A2ODS applique kit.

FY 1997 Accomplishments:

•	1634	Continued EMD Preparation: Developed Milestone II Documentation, System Specification and Final Request for Proposal.
•	4300	Supported Contractor Pre-EMD Risk Reduction Tests: Provided Range Support, Range Instrumentation Suite, Range Facility Support, Range Target Sets, Range Test Management, Execution and Data Reduction, TOW Platform Shipment, Integration and Refurbishment.
Total	5934	

FY 1998 Planned Program:

•	1696	Release EMD Request for Proposal; Conduct Source Selection; Complete Milestone II; and Award EMD Contract.
•	1097	Pre-Critical Design Review (CDR) Component Hardware Analysis and Procurement of Component Hardware to Support Pre-CDR Tests.
•	8848	Initiate Component Design and System Engineering Analysis for Preliminary Design Review.
•	598	Prepare for Early User Assessment.
•	873	Procure Open System Integration and Simulation Laboratory (SIL) Hardware and Software.
•	337	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	13449	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604325A Follow-On To TOW
	PROJECT DE18

FY 1999 Planned Program:

- 1384 Conduct Early User Assessment and Post Assessment Analysis to support Preliminary Design Review (PDR).
- 11829 Conduct Component Design and System Engineering Analysis for PDR; Conduct PDR.
- 16809 Initiate Procurement of Hardware for Pre-Production Test.
- 5477 Conduct Pre-CDR Tests and Update FOTT Systems Simulations associated with HMMWV and BFVS Virtual Prototypes, Hardware-in-the-Loop, and SIL.
- 12607 Continue System Engineering Analysis for Critical Design Review.

Total 48106

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	5479	13949	50884
Appropriated Value	5479	13949	
Adjustments to Appropriated Value	+455	-500	
FY 1999 President's Budget	5934	13449	48106

C. Other Program Funding Summary	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Compl	Cost
Missile Procurement, Army									
TOW 2 C59403	9385	1190	0	0	0	0	0		2275916
FOTT H04500							32864	Cont	Cont

D. Schedule Profile	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Release RFP					X*							
Complete Source Selection							X					
Award EMD Contract							X					
Early User Assessment 1										X		
Preliminary Design Review											X	

* Milestone Completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604325A Follow-On To TOW

PROJECT: DE18

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Primary Hardware Development		8342	41166
Program Management Support	1634	3473	4044
Developmental Test and Evaluation	4300	1297	2896
SBIR/STTR		337	
Total	5934	13449	48106

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
PRIME	TBD	TBD	TBD	TBD			8679	41166	Cont	49845
Support and Management Organizations										
PM CCAWS, RSA, AL	PO					689	1638	1869	Cont	4196
AMCOM, RSA, AL	PO					772	1245	1330	Cont	3347
MISC	PO					173	590	845	Cont	1608
Test and Evaluation Organizations										
TECOM, APG, MD	PO					4300	1297	2896	Cont	8493

Product Development Organizations: None

Government Furnished Property: None

Subtotal Product Development		8679	41166	Cont	49845
Subtotal Support and Management	1634	3473	4044	Cont	9151
Subtotal Test and Evaluation	4300	1297	2896	Cont	8493
Total Project	5934	13449	48106	Cont	67489

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604604A Medium Tactical Vehicles

PROJECT: DH07

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DH07 Medium Tactical Vehicles	5719	3614	0	0	1613	0	0	Continuing	Continuing

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, M39 and M809 Series 5 ton trucks which are beyond their average useful life of 20-22 years. FMTV will also provide a follow-on to the current 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. Vehicles operate in all climatic conditions. In FY 1997 and FY 1998, Project DH07 funds the Army's portion of the Medium Tactical Truck Remanufacture Program (MTTR). This research and development effort is a prelude to embarking on a major remanufacture program to increase the mobility, maintainability and reliability of the existing 5 ton fleet. Funding in FY97 and FY98 harmonizes the Army effort with the U.S. Marine Corps Medium Tactical Vehicle Replacement (MTVR) program as directed by Congress. The Army portion of this program is designed to reduce O&S costs and resolve operational deficiencies associated with the existing fleet. This Program Element supports research efforts in the engineering and manufacturing development phases of the acquisition strategy and is therefore correctly placed in Budget Activity 5.

Acquisition Strategy: The acquisition strategy for the Medium Tactical Truck Remanufacture Program (MTTR) is in two phases. In the first phase, two CPFF contracts were awarded. Each contractor produced five Army and five USMC prototypes. The FY98 funding will be used to complete testing of the Army vehicles. Based on the test results, as well as production proposals, one contractor will be selected for award of a five year multiyear production contract.

FY 1997 Accomplishments:

•	4337	Prototype Contracts (MTTR)
•	217	Support Costs (Engineering/Quality/Matrix) (MTTR)
•	1165	Developmental Testing (MTTR)
Total	5719	

FY 1998 Planned Program:

•	2145	Developmental Testing (MTTR)
•	1250	Support Costs (Engineering/Quality/Matrix) (MTTR)
•	129	Technical Support Contract (MTTR)
•	90	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	3614	

FY 1999 Planned Program: Project not funded in FY 1999

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604604A Medium Tactical Vehicles

PROJECT: DH07

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	5874	3729	0
Appropriated Value	6000	3729	
Adjustments to Appropriated Value	-281	-115	
FY1999 President's Budget	5719	3614	0

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA1 5 Ton Extended Svc Pgm (ESP) DV0010			10819	35131	30608	31428	31382	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Award Prototype Contract (MTTR)	X*											
Developmental Testing (MTTR)							X					
Award Production Contract (MTTR)									X			

*Denotes Milestones Completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604604A Medium Tactical Vehicles

PROJECT: DH07

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Product Development	4554	1469	
Developmental Testing	1165	2145	
Total	5719	3614	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
In-House/Eng TACOM, MI			1612	1612	150	212	1250			1612
Govt Eng (all other field activities)			5	5		5				5
SSEB, TACOM, MI (MTTR)			199	199	199					199
Oshkosh Truck Corp. (Prototype MTTR)	C-CPFF	20 Nov 96	2411	2411	488	1923				2411
AM General (Prototype MTTR)	C-CPFF	20 Nov 96	2902	2902	488	2414				2902
SBIR/STTR							90			90
Support and Management Organizations										
Camber (Tech Spt Contract)			227	227	98		129			227
Test and Evaluation Organizations										
TECOM (MTTR)			3310	3310		1165	2145			3310

Government Furnished Property - None

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604604A Medium Tactical Vehicles PROJECT DH07

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	1325	4554	1340			7219
Subtotal Support and Management	98		129			227
Subtotal Test and Evaluation		1165	2145			3310
Total Project	1423	5719	3614			10756

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604609A Smoke, Obscurant and Target Defeating System - Engineering Development

PROJECT: D200

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D200 Smoke/Obscurant Systems	0	0	706	947	2593	4910	8567	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program element 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) to provide large area visual, infrared (IR) and millimeter wavelength (MMW)-radar obscuration; and (2) Vehicle Engine Exhaust Smoke System which provides on-board obscuration of heavy armor systems. The project in this Program Element supports efforts in the engineering and manufacturing development phase of the acquisition strategy and are therefore correctly placed in Budget Activity 5.

Acquisition Strategy: Project D200 – Smoke/Obscurants: The Vehicle Engine Exhaust Smoke System (VEESS) will be developed in-house and will be applied to systems via modification work order.

FY 1997 Accomplishments: Project not funded in FY 1997

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program:

•	706	VEESS – Initiate engineering study/proof of principle and modification work order.
Total	706	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	0	703
Appropriated Value			
Adjustments to Appropriated Value			
FY 1999 President's Budget	0	0	706

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604609A Smoke, Obscurant and Target Defeating System - Engineering Development

PROJECT: D200

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE,A Budget Activity 2, PE 0602622A Project A552 Smoke/Novel Effects Munitions	2193	3577	5116	4090	4132	4188	4261	Cont'd	Cont'd
RDTE,A Budget Activity 4, PE 063627A, Project DE79 Smoke, Obscurant and Equipment Defeating Systems	5573	0	0	0	0	0	0	0	5573
Other Procurement Army, Activity 3, (OPA-3)									
M99103, M56 Smoke Generator	12447	12267	15110	0	0	20021	18074	Cont'd	Cont'd
M99107 M58 Smoke Generator	11523	8946	10622	7726	9597	11440	9511	Cont'd	Cont'd

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
VEESS-Initiate study/mod work order									X			

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604609A Smoke, Obscurant and Target Defeating System - Engineering Development PROJECT D200

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Primary Hardware Development			706
Total	0	0	706

B. Budget Acquisition History and Planning Information: Not applicable.

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604611A Javelin

PROJECT: D499

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D499 JAVELIN	5855	7771	5277	0	0	0	0	0	633848

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 the combined arms team employment. The infantry must have the capability to defeat numerically superior armored forces. The present medium infantry antitank weapon is 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 if necessary. Software improvements to maintain lethality against evolving targets and countermeasures and increase robustness of system performance in all environments will be pursued. Integration of Advanced Main Charge Warhead (AMCW) and Lethality Improvement Tracker Enhancement (LITE) technologies will be pursued. This project supports research efforts in the engineering and manufacturing development phase of the acquisition strategy and therefore is appropriate to Budget Activity 5.

Acquisition Strategy: Not applicable.

FY 1997 Accomplishments:

•	192	Program Management
•	814	Test Support
•	1297	Lethality Improvement Tracker Enhancement
•	3552	Advanced Main Charge Warhead
Total	5855	

FY 1998 Planned Program:

•	1910	Program Management
•	1575	Test Support
•	2716	Lethality Improvement Tracker Enhancement
•	1375	Advanced Main Charge Warhead
•	195	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	7771	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604611A Javelin
	PROJECT D499

FY 1999 Planned Program:

- 264 Program Management
- 4661 Test Support
- 352 Advanced Main Charge Warhead

Total 5277

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	6014	8018	5277
Appropriated Value	6014	8018	
Adjustments to Appropriated Value	-159	-247	
FY 1999 President's Budget	5855	7771	5277

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Missile Procurement, Army CC0007 Javelin (AAWS-M)	194760	139141	324691	458894	404409	468257	81097	96717	2803295

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Full Rate Production Decision (ASARC)			X*									
Award Option 2 of Multi-Year 1					X*							
Award LITE 1 Contract	X*											
Award AMCW Contract			X*									
AMCW Final Design					X*							
AMCW Tandem Test				X*								
Award LITE 1 Contract						X						
LITE 1 Captive Flight Test						X	X					
Award AMCW Contract Option 1 (SAP)					X*							
AMCW Live Fire Test						X						
AMCW Tandem Test							X					
Award AMCW Contract Option 2 (SAP)									X			
AMCW Baseline Test										X		
AMCW Live Fire Flight Test											X	

*Completed Milestone

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604611A Javelin

PROJECT: D499

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Program Management	192	1910	264
Test Support	814	1575	4661
Lethality Improvement Tracker Enhancement	1297	2716	
Advanced Main Charge Warhead	3552	1375	352
Small Business Innovative Research/Small Business Technology Transfer Programs		195	
Total	5855	7771	5277

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
TI/MM JV EMD	C/CPIF	21Jun89			493913					493913
TI/MM JVAMCW	CPIF	28Mar94			4521					4521
TI/MM JV LITE 1	CPAF	28Jun96			378	1297				1675
RTI SYS AMCW	CPIF	9Jun97			N/A	3552	1375	352		5279
RTI SYS LITE 1	CPAF	30Jan98			N/A		2716			2716
Support and Management Organizations										
Support Contractor	8(a)CPFF				6747					6747
Program Mgt					80325	192	2105	264		82886
Test and Evaluation Organizations										
TECOM					20218	814	1575	4661		27268
OPTEC					8843					8843
Government Furnished Property: Not applicable										
Subtotal Product Development					498812	4849	4091	352		508104
Subtotal Support and Management					87072	192	2105	264		89633
Subtotal Test and Evaluation					29061	814	1575	4661		36111
Total Project					614945	5855	7771	5277		633848

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604619A Landmine Warfare

PROJECT: D088

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D088 Wide Area Mine Engineering Development	25355	19189	23189	0	0	0	0	0	250386

A. Mission Description and Budget Item Justification: The Wide Area Munition (WAM), a "smart," remotely-reprogrammable antitank mine, 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 basic WAM provides a two-way command and control and redeployable capability. The project in this Program Element supports the EMD phase of the acquisition strategy for the WAM and is, therefore, appropriately placed in Budget Activity 5.

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. Type classification standard is planned for 3QFY98. 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.

FY 1997 Accomplishments:

- 8341 Completed basic WAM design.
- 5788 Completed basic WAM Technical Test hardware fabrication.
- 6103 Completed Technical Test/Initial Operational Test and Evaluation/Live Fire Test for basic WAM.
- 313 Conducted testing for WAM prototype individual trainer and collective trainer software.
- 4810 Completed WAM PIP Command and Control Sub-system preliminary designs

Total 25355

FY 1998 Planned Program:

- 11789 Conduct WAM PIP preliminary design and functional configuration audit efforts
- 1240 Complete WAM PIP Trainer and System Analysis Models
- 5720 Fabricate hardware and conduct WAM Basic Cold Region Test and Evaluation
- 440 Small Business Innovative Research/Small Business Technology Transfer Programs

Total 19189

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604619A Landmine Warfare
	PROJECT D088

FY 1999 Planned Program:

•	12184	Complete WAM PIP functional design
•	7530	Complete fabrication of Technical Test/Initial Operational Test and Evaluation hardware for WAM PIP.
•	3175	Complete preliminary technical testing for WAM PIP
•	300	Complete testing of trainers and software.
Total	23189	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	26288	19800	23075
Appropriated Value	26909	19800	
Adjustments to Appropriated Value	-1554	-611	
FY 1999 President's Budget	25355	19189	23189

Change Summary Explanation:
Funding: FY 97-$280K reprogrammed to PE 0603619A. Balance of adjustment associated with undistributed congressional reductions (-1264).
Schedule: Type Classification for basic WAM rescheduled from 4QFY97 to 3QFY98 due to requirement to repeat cold weather testing.

C. Other Program Funding Summary

RDTE, A Budget Activity 5	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
PE 0604808A, Project D016, Mine Systems Engineering Development	7242	5500	20000	19000	18436	12198	22321	Cont'd	Cont'd
Procurement Ammunition, Army									
WAM, E78100	9982	14980	9625	24535	23688	58370	57982	Cont'd	Cont'd
WAM Remote Control Unit, G01000	0	0	0	933	938	1688	1712	0	
WAM Collective Trainer, E78104	1926	0	0	1667	1566	0	0	0	5159

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Completed Live Fire Test	X*											
Complete TT/IOTE Testing						X						
Complete Functional Configuration Audit						X						
Complete Basic WAM Milestone III							X					

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604619A Landmine Warfare

PROJECT: D088

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Completed WAM PIP Command &Control Sub-system Preliminary Design				X*								
Complete Contractor System Test											X	
WAM PIP Functional Configuration Completed								X				
Complete PIP preliminary technical test												X

* Milestone Completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604619A Landmine Warfare

PROJECT: D088

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Primary Hardware Development	12840	11200	13492
Test and Evaluation	6277	2850	4100
Government Engineering Support	5833	4299	5097
Government Program Management	405	400	500
SBIR/STTR		440	
Total	25355	19189	23189

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Textron	CPIF	June 1996	28292	28292	2000	3700	9100	13492	0	28292
Textron	CPIF	June 1990	147951	147951	136711	9140	2100	0	0	147951
Support and Management Organizations										
ARDEC					18875	4321	2300	3050	0	28546
PM-MCD					4228	405	400	500	0	5533
Other (Misc.)					12817	1512	1999	2047	0	18375
SBIR/STTR							440			440
Test and Evaluation Organizations										
TECOM					8022	6277	2850	4100	0	21249

Government Furnished Property: None.

Subtotal Product Development	138711	12840	11200	13492	176243
Subtotal Support and Management	35920	6238	5139	5597	52894
Subtotal Test and Evaluation	8022	6277	2850	4100	21249
Total Project	182653	25355	19189	23189	250386

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604622A Family of Heavy Tactical Vehicles

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	4906	4845	0	0	0	7792	7663	Continuing	Continuing
D659 Family of Heavy Tactical Vehicles	4906	4845	0	0	0	0	0	Continuing	Continuing
E49 Heavy Expanded Mobility Tactical Truck (HEMTT)	0	0	0	0	0	7792	7663	Continuing	Continuing

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, unit resupply; and transporting water, ammo, and general cargo. FY98 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. In FY02/03, Project E49 will provide the RDTE funding to support a competitive procurement of a new design Heavy Expanded Mobility Tactical Truck (HEMTT) to begin replacement of the current fleet. This program element supports research efforts in the engineering and manufacturing development phases of the acquisition strategy and is therefore correctly placed in Budget Activity 5.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604622A Family of Heavy Tactical Vehicles / PROJECT: D659

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D659 Family of Heavy Tactical Vehicles	4906	4845	0	0	0	0	0	Continuing	Continuing

A. Mission Description and Budget Item Justification: In FY97 this project supported requirements to develop expanded heavy tactical vehicle capabilities to meet the emerging needs of Army users through the HEMTT Extended Service Program (ESP) and Palletized Load System-Enhanced (PLS-E) initiative. The project will continue to develop and test the HEMTT ESP test bed vehicles to improve the readiness, maintainability, and safety of the HEMTT fleet through ESP. The PLS-E, a designated Warfighter Rapid Acquisition Program (WRAP) will provide critical positive control of transportation assets and all-weather capability, to provide force protection and rapid crisis response, and to track and shift critical assets to support the maneuver commander. This capability will be provided by the Movement Tracking System (MTS), which is a satellite-based tracking/communication system comprised of a personal computer with mobile and base units, global positioning system, two-way digital messaging capability, and the ability to track and control vehicles. In FY98 this project supports requirements for a Trailer R&D program to demonstrate technologies that support the Army's objectives to minimize operational and support cost, while modernizing trailer systems that provide significant benefits to the Army warfighting capability. This project seeks to demonstrate technologies that improve the efficiency and sustainability of the trailer fleet to meet current and future requirements. The project will focus on demonstrating and validating advanced technologies and horizontal technology insertion. The project will demonstrate general military utility and the ability to support current operations as well as Force XXI and the Army After Next (AA) tactical logistics operations

Acquisition Strategy: The strategy for HEMTT ESP is to develop and test prototypes of future requirements to determine producibility and feasibility of incorporating vehicles into future production contracts. Movement Tracking System (MTS) of the PLS-E is a Non-developmental Item (NDI) acquisition, using Commercial Off The Shelf (COTS) technology and components. First year procurement supports two prototype divisional and corps slices using Warfighter Rapid Acquisition Program (WRAP) RDTE funds. In FY98, the Army will continue the program with procurement funding. A competitive award is planned for 3QFY98.

FY 1997 Accomplishments:

HEMTT ESP

- 49 Analysis of HEMTT ESP Areas of Opportunity (Phase I)
- 119 Analysis of Selected HEMTT ESP Alternatives (Phase II)
- 1032 Final HEMTT ESP Hardware Design/Build Test Bed Vehicles (Phase III)
- 706 Tested HEMTT ESP Test Bed Vehicles (Phase IV)

PLS-E

- 50 Developed technical specifications based upon COTS approach
- 150 Conducted Market Survey/ Identified commercial sources meeting best value criteria
- 2225 Equipped Prototype Division and Corps slices with MTS
- 300 Conducted combined Development and Operational Test

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604622A Family of Heavy Tactical Vehicles
	PROJECT D659

FY 1997 Accomplishments: (continued)

•	275	Evaluate impact on Digitized Force
Total	4906	

FY 1998 Planned Program:

		Tactical and Support Vehicles (Trailers)
•	2600	Current and Future Tactical Operational Improvements
•	370	Mobility and Deployment Enhancements
•	758	System Safety Environment & Management
•	995	Life Cycle Cost Reduction
•	122	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR) cut
Total	4845	

FY 1999 Planned Program: Project not funded in FY 1999

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget Request	1958	0	0
Appropriated Value	2000	5000	0
Adjustments to Appropriated Value	+2906	-155	0
FY 99 President's Budget	4906	4845	0

Change Summary Explanation:

Funding: FY 97 – Increase (+2906) is net result of –94 reprogrammed to higher priority requirements and an increase of 3000 reprogrammed from PE 0203758A/project 376 for Palletized Load System – Enhanced, a Warfighter Rapid Acquisition Program (WRAP).

Funding: FY98 – Congressional increase for this project (+5000)

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA1 Family of Heavy Tactical Vehicles (DA0500)	241417	114340	189617	177838	222563	148869	568257	Cont	Cont
OPA1, D16103, Palletized Load System – Enhanced	0	2830	2929	2910	2895	3883	3871	Cont	Cont
OPA1, DV0021, HEMTT Ext Service Program	0	0	0	0	0	19048	63173	Cont	Cont

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604622A Family of Heavy Tactical Vehicles

PROJECT: D659

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA1, Tactical and Support Vehicles (Trailers) (D02300,D04800,D04700)	4878	7125	15298	32195	39169	35856	56408	Cont	Cont

* Note: FY98 OPA1 funds for PLS-E are congressional plus-up as part of WRAP program.

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
HEMTT ESP:												
Test Bed Contract Award				X*								
Phase I (Analysis of Areas of Opportunity) – Complete					X*							
Phase II (Analysis of selected Alternatives) – Complete						X						
Phase III Final Design & Fabrication of 2 Test Bed Vehicles - Complete								X				
Phase IV Test - Complete										X		
PLS-E												
Award MTS Test Quantities				X *								
Conduct combined DT/OT						X						
Initial fielding, Prototype Div/Corps Slices								X				
Tactical and Support Vehicles (Trailers)												
Tactical Trailers Operational Improvement & Support Cost Reduction-Contract Award						X						
Phase I(Analysis of Areas of Opportunity)-Complete							X					
Phase II (Analysis of Selected Alternatives) – Complete								X				
Phase III (Final Design & Fabrication of Test Bed Vehicles (Component Demonstrators) Complete									X			
Phase IV Test – Complete										X		

* Denotes Milestones Completed.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604622A Family of Heavy Tactical Vehicles

PROJECT: D659

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
D659 HEMTT ESP Test Bed Vehicle Program			
Primary Design/Hardware Development	1200		
Developmental Test & Evaluation	506		
Program Management Support	200		
D659 PLS-E			
Hardware	2200		
Primary Design/Hardware Development	270		
Developmental Test and Evaluation	300		
Program Management Support	230		
D659 TACTICAL & SUPPORT VEHICLES (TRAILERS)			
Hardware Development		2615	
Developmental Test and Evaluation		1583	
Program Management Support		647	
Total	4906	4845	

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Oshkosh Truck Corp (HEMTT ESP)	SS/CP	Aug 97	1200	1200	0	1200			Cont	Cont
ARINC(PLS-E)	FFP	3QFY98			0	2100			Cont	Cont
ARINC(PLS-E)	FFP	1QFY98			0	100			Cont	Cont
TBD(Trailers)	TBD	2QFY98	2615	2615		0	2615			

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604622A Family of Heavy Tactical Vehicles

PROJECT: D659

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Support and Management Organizations:										
Science Applications International Corp (SAIC)	CPFF	Various				40			Cont	Cont
PEO STAMIS	1095/MIPR	Various			0	295			Cont	Cont
TACOM	1095/MIPR	Various			0	165			Cont	Cont
TACOM	1095/MIPR	Various					647		Cont	Cont
Test and Evaluation Organizations										
Oshkosh Truck Corp	SS/CP	Aug 97	206	206	0	206			Cont	Cont
TECOM	1095/MIPR	Various			0	800			Cont	Cont
TBD	TBD	Jul 98					396			
TECOM	1095/MIPR						1187			
Government Furnished Property: Not applicable										
Subtotal Product Development					0	3400	2615			
Subtotal Support and Management					0	500	647			
Subtotal Test and Evaluation					0	1006	1583			
Total Project					0	4906	4845			

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

DATE February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604633A Air Traffic Control

PROJECT: D586

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D586 Air Traffic Control	7086	4533	1737	2048	2113	2295	2412	0	Continuing

A. Mission Description and Budget Item Justification: This program element funds continuously evolving efforts for the development of Air Traffic Control (ATC) systems for both tactical and fixed base applications. It funds the integration and qualification of an Air Traffic Navigation, Integration, and Coordination System (ATNAVICS) and Mobile Tower System (MOTS). This system provides urgently needed communications and precision/non-precision approach and flight following capability in support of Army tactical airfields, remote landing zones, drop zones, pickup zones and temporary helicopter operating areas worldwide. MOTS automated tower system is designed to integrate with secure modernized aircraft communications. This is a non-developmental item (NDI) program. Fixed base ATC efforts funded by this line include Navigation Air Systems Modernization, Communication System Modernization and digitization of the ATC structure. The tasks in this Program Element support research efforts in the engineering and manufacturing development phases of the acquisition strategy and are therefore correctly placed in Budget Activity 5.

Acquisition Strategy: The acquisition strategy is to procure an ATNAVICS prototype through a Cost Plus Fixed Fee (CPFF) contract for integration of electronic/radar components to include design, development, and testing of an integrated prototype over a three year period. An additional component of the strategy is to continue concept exploration and design definition of the MOTS.

FY 1997 Accomplishments:

ATNAVICS

•	6734	Continue development of prototype
•	302	Developmental and Operational Testing

MOTS

•	50	Pre-market analysis for state of the art systems solution
Total	7086	

FY 1998 Planned Program:

ATNAVICS

•	3624	Continue development of prototype
•	700	Development and Operational Testing

MOTS

•	50	Market Analysis
•	50	Evaluation and Suitability Study and Cost Savings Data
•	109	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	4533	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604633A Air Traffic Control	PROJECT D586

FY 1999 Planned Program:

MOTS

•	475	Refurbishment for Fielding
•	360	Design Definitization/Integration Analysis
•	902	Procure Prototype System for Developmental Testing
Total	1737	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	7377	1705	1729
Appropriated Value	7201	4705	
Adjustments to Appropriated Value	-115	-172	
FY 1999 President's Budget	7086	4533	1737

Change Summary Explanation:

Funding: (FY 97) -115 Reprogrammed to Higher Priority Requirements.

Funding: (FY 98) +3.0M appropriated by Congress to continue the ATNAVICS EMD phase. -172 Undistributed Congressional Adjustment.

C. Other Program Funding Summary

APA AA0050 - Air Traffic Control	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
	13502	5671	5691	8911	38756	29574	34771	Cont'd	Cont'd

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
ATNAVICS System Performance							X					
ATNAVICS Testing			X					X				
MOTS Pre-Market Analysis (State of Art Syst Solution)		X				X						
ATNAVICS Development/Operational Testing						X		X				
MOTS Market Analysis						X						
MOTS Evaluation and Suitability Study/Cost Savings Data							X					
ATNAVICS Refurbishment for Fielding							X					
MOTS Design Definitization/Integration Analysis									X			
Procure MOTS Prototype System for Development Testing											X	

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE February 1998

BUDGET ACTIVITY
5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE
0604633A Air Traffic Control

PROJECT
D586

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Engineering Support	212	100	50
Primary Hardware Development and Testing	6137	3189	1377
Program Management Support	381	435	310
Development Test and Evaluation	302	700	
Government Furnished Equipment	54		
SBIR/STTR		109	
Total	7086	4533	1737

B. Budget Acquisition History and Planning Information:

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Raytheon	CPFF	Mar 96		13631	13631				0	13631
Raytheon	CPFF	Dec 97		9498		6137	3189			9498
MOTS	TBD	Dec 99						1377	Cont	Cont
Support and Management Organizations										
Army Aviation & Missile Command (AMCOM)					1164	381	435	310	Cont	Cont
CECOM					1592	212	100	50	Cont	Cont
Test and Evaluation Organizations										
Raytheon						302	700		Cont	Cont
TEXCOM/TECOM									Cont	Cont
SBIR/STTR							109			

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604633A Air Traffic Control	PROJECT D586

Government Furnished Property

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program	
Product Development Property				212	54			Cont	Cont	

Support and Management Property: None
Test and Evaluation Property: None

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program	
Subtotal Product Development	13843	6191	3189	1377	Cont	Cont	1377
Subtotal Support and Management	2756	593	535	360	Cont	Cont	360
Subtotal Test and Evaluation		302	809		Cont	Cont	
Total Project	16599	7086	4533	1737	Cont	Cont	1737

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604640A Advanced Command and Control Vehicle

PROJECT: DG27

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DG27 Future Command and Control Vehicle	7545	10532	0	0	0	0	0	0	113410

A. Mission Description and Budget Item Justification: The Command and Control Vehicle (C2V) is a highly mobile, survivable, and responsive tracked platform designed for use by battalion through corps battle staffs in heavy force operations. The C2V provides a reconfigurable (tailorable) command and control capability able to host both current and future command, control, communications, computer, and intelligence (C4I) systems. The C2V supports the Army's Force XXI/Digitization efforts and will be compatible with Army Tactical Command and Control Systems. The C2V began as a Desert Storm initiative in response to shortcomings in the current M577 Command Post Vehicle. The C2V is currently in Low Rate Initial Production (LRIP) and is appropriately placed in Budget Activity 5.

Acquisition Strategy: C2V approved for type classification and Low Rate Initial Production (LRIP) quantity of 46 vehicles in 4Q96. Based on the LRIP decision, the Army will procure 439 C2V vehicles. Follow-on Sole-Source/Firm Fixed Price & Cost Plus Incentive Fee contracts and Fixed Price with Options (FPO) contracts are in place for C2V Low Rate Initial Production (LRIP). C2V LRIP is focused on testing and production planning to meet Initial Operational Test and Evaluation (IOTE) and First Unit Equipped (FUE) in FY99.

FY 1997 Accomplishments:

•	901	Completed Technical Data Package
•	1911	Logistics Effort
•	512	Prototype Manufacturing
•	759	Completed Technical Testing
•	574	Continued Vulnerability/Survivability/Live Fire Testing
•	2309	Advanced Integrated Collective Protective System (AICPS) Development/Procurement
•	579	Project Management
Total	7545	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604640A Advanced Command and Control Vehicle PROJECT DG27

FY 1998 Planned Program:

- 1964 Contractor Test Support; Perform Refurbishment/Rework of Test Vehicles
- 3415 Continue Vulnerability/Survivability/Live Fire Testing
- 2705 Complete Production Verification Testing
- 200 Project Management
- 2000 Test Program Set (TPS) Development
- 248 Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)

Total 10532

FY 1999 Planned Program: Program not funded in FY99.

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	7734	8867	0
Appropriated Value	7899	10867	
Adjustments to Appropriated Value	-354	-335	
FY1999 President's Budget	7545	10532	0

Change Summary Explanation: FY98 increase of 1665 (+2000 Congressional increase for TPS development; -335 undistributed Congressional Adjustments).

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
G84200 Command & Control Vehicle	48766	30262	44241	88279	83028	71188	102798	Cont.	Cont.
GE0173 Spares (Initial) C2V		922	2481	2608	691	1503	1347	Cont.	Cont.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604640A Advanced Command and Control Vehicle PROJECT DG27

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Award LRIP Contracts	X*											
Complete Developmental/Technical Tests		X*										
Support to Task Force XXI		X*										
Complete Production Verification Test								X				
Complete Live Fire Test.									X			
Complete Live Fire Test Report									X			

* Milestone Completed.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - Engineering and Manufacturing Development	0604640A Advanced Command and Control Vehicle	DG27

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Design Engineering	5121	3964	
Prototype Manufacture	512		
Test	1333	6120	
Project Management	579	200	
SBIR/ STTR		248	
Total	7545	10532	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
United Defense LP			63914	66430	61105	5121	1470			67696
Other Contracts			18046	20158	18046	512	2494			21052
Support and Management Organizations										
TACOM					4643	579	200			5422
CECOM					4913					4913
US Army Europe					2481					2481
SBIR/STTR							248			248
Test and Evaluation Organizations										
APG, YPG, White Sands					4145	1333	6120			11598
Government Furnished Property: None										
Subtotal Product Development					79151	5633	3964			88748
Subtotal Support and Management					12037	579	448			13064
Subtotal Test and Evaluation					4145	1333	6120			11598
Total Project					95333	7545	10532			113410

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604641A Tactical Unmanned Ground Vehicle

PROJECT: DE47

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DE47 Tactical Unmanned Gnd Veh (TUGV)	2728	2604	2468	2428	2380	0	0	0	12608

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) provides the 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 displace brigade and battalion commanders from the bottom of the combat intelligence food chain. Six unmanned systems per battalion, operating out front, provide a force multiplication capability where TUGV's 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. This project is OSD funded through Milestone II (3rd Qtr FY 99). This PE supports the critical transition of Defense Advanced Research Project Agency (DARPA) developed technologies to the Project Manager (PM) Unmanned Ground Vehicles/Systems so that they can be assessed (maturity, supportability, operationally) during user appraisals, packaged and readied for incorporation into the TUGV Engineering and Manufacturing Development (EMD) performance specifications. PE supports research efforts in the engineering, manufacturing and design phase of the acquisition cycle and is therefore placed in Budget Activity 5.

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 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. 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. This Program Definition and Risk Reduction phase will produce a system and interface specifications and detailed analysis to demonstrate Milestone (MS) I exit criteria and facilitate Cost and Operational Effectiveness Analysis (COEA) studies. The program utilizes a TUGV Integrating Integrated Product Team (IIPT) approach. A full and open competition will be conducted at MS II to select a system prime contractor.

FY 1997 Accomplishments:

•	2728	Transferred mature technologies from DARPA Demonstration (Demo) II Program, to include incorporating mission planning capabilities into the TUV System Specification, porting automated route planning and stealth observation point planning algorithms for use with the TUV prototype, and porting the mission planning and control station to a portable unit. Supported User Appraisal activities with the US Army Infantry School, Ft. Benning, GA.
Total	2728	

FY 1998 Planned Program:

•	200	Complete transfer of mature technologies from DARPA Demo II Program, quantify the detectable size of both positive and negative obstacles.
•	791	Upgrade SARGE vehicles for participation in MOUT exercise.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604641A Tactical Unmanned Ground Vehicle
	PROJECT DE47

FY 1998 Planned Program: (continued)

- 500 Modeling and simulation and conduct COEA.
- 847 Finalizing performance specification; prepare EMD Milestone documentation.
- 200 Assess Demo III technology for insertion into specification.
- 66 Small Business Innovative Research/Small Business Technology Transfer Programs

Total 2604

FY 1999 Planned Program:

- 2468 In compliance with Evolutionary Acquisition Strategy, identify and transition Technological Enhancement candidates from DARPA Demo III into TUGV EMD Specification.

Total 2468

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	2823	2687	2663
Appropriated Value	2754	2687	
Adjustments to Appropriated Value	-26	-83	
FY 1999 President's Budget	2728	2604	2468

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OSD funding in PE 0603709D.	11000	16500	11900	12700	12500	14300	14900	Cont	Cont

Note: Includes funding for other products.

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Critical Tech Transfer - Contract Award	X*											
Complete Phase I User Appraisal			X*									
Initiate Milestone II Documentation					X*							
Initiate MOUT preparation					X*							
Initiate analysis in support of COEA					X*							
Initiate Draft EMD RFP development						X						
MOUT participation								X				
Assess Demo III technology									X			

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604641A Tactical Unmanned Ground Vehicle

PROJECT: DE47

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Finalize specification										X		
EMD MS II Decision											X	
Award EMD Contract (OSD funded)											X	

*Denotes completed effort

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604641A Tactical Unmanned Ground Vehicle PROJECT DE47

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
DARPA Technology transfer, integration, assessment & HTI	2728	2604	2468
Total	2728	2604	2468

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Lockheed Martin	CPFF	Jan 97		2344	0	2344	0	0	0	2344
SUMMA	CPFF	Mar 94		745	0	0	595	150	Cont	745
SAIC	CPFF	Aug 97		392	0	0	196	196	Cont	392
Uwohali	CPFF	Mar 96		2292	0	0	677	1420	Cont	2097
CAS	CPFF	Aug 97		50	0	0	50	0	50	100
Nichols Research	CPFF	May 97		400	0	0	200	200	Cont	400
Support and Management Organizations										
WSMR							300	0	0	300
Ft. Benning							85	85	Cont	170
JSC							40	40	Cont	80
AMCOM RDEC RSA, AL	MOA	Oct 96				384	395	377	Cont	1156
Test and Evaluation Organizations: Not applicable										
Government Furnished Property N/A										
Subtotal Product Development						2344	1718	1966	50	6078
Subtotal Support and Management						384	820	502		1706
Subtotal Test and Evaluation										
SBIR/STTR							66			
Total Project						2728	2604	2468	50	7784

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604642A Light Tactical Wheeled Vehicle

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	3409	0	0	0	0	0	0	3409	3409
DE40 High Mobility Multi-Purpose Wheeled Vehicle (HMMWV) Prototype	2859	0	0	0	0	0	0	2859	2859
DE41 Armored Security Vehicle (ASV)	550	0	0	0	0	0	0	550	550

Mission Description and Budget Item Justification: This PE supports all Light Tactical Wheeled Vehicles such as the High Mobility Multi-Purpose Wheeled Vehicle (HMMWV), HMMWV Extended Service Program (ESP), Commercial Utility Cargo Vehicle (CUCV) and the Armored Security Vehicle (ASV). In FY97, Project DE40 funds the RDT&E effort of the HMMWV Remanufacture Program and Project DE41 funds completion of the Armored Security Vehicle (ASV) R&D effort. This Program Element supports research efforts in the engineering and manufacturing development phases of the acquisition strategy and is, therefore, correctly placed in Budget Activity 5.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604642A Light Tactical Wheeled Vehicle / PROJECT: DE40

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DE40 High Mobility Multi-Purpose Wheeled Vehicle (HMMWV) Prototype	2859	0	0	0	0	0	0	2859	2859

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 single chassis that can be adapted to any one of four models at Direct Support (DS) or General Support (GS) level. The four models include: Cargo/Utility, Armor, Ambulance and Shelter Carrier. FY 1997 funds the HMMWV Extended Service Program (ESP). The Program Manager, Light Tactical Vehicles initiated the Joint Army/Marine Corps HMMWV ESP program in FY 1995. The objective of the HMMWV ESP program is to extend the useful service life of the vehicle another 14 years and provide operational and safety improvements to the current fleet of vehicles. The remanufactured HMMWVs will have performance characteristics equal to or better than the original product. This will be achieved by a combination of component refurbishment and replacement. Components which have been improved during the evolution of the HMMWV will be incorporated in the remanufactured vehicles where technically and economically feasible.

Acquisition Strategy: The acquisition strategy for the HMMWV ESP is to develop a remanufacture package leading to a five year competitive multi-year production contract.

FY 1997 Accomplishments:

•	2600	Initiated Remanufacture Package – HMMWV ESP
•	259	Support Costs (Engineering/Quality/Matrix)
Total	2859	

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program: Project not funded in FY 1999

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	2937	9909	39919
Appropriated Value	3000	0	
Adjustments to Appropriated Value	-141	0	
FY 1999 President's Budget	2859	0	0

Change Summary Explanation: Funding: FY98 reduction (-9909) due to Congressional adjustment. FY99 Funding redistributed pending program review.

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604642A Light Tactical Wheeled Vehicle

PROJECT: DE40

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA1 Hi Mob Multi-Purp Whld Veh (HMMWV) D15400	161475	127955	12144	0	0	0	0	Cont	Cont
OPA1 HMMWV ESP (DV0230)			24832	59109	129394	138251	246845	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Award Contract (Reman Package)				X*								
Release Production RFP (HMMWV ESP)								X				
Production Contract Award (HMMWV ESP)										X		

*Denotes Milestones Completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604642A Light Tactical Wheeled Vehicle

PROJECT: DE40

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Product Development	2859		
Developmental Testing			
Total	2859	0	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
In-House Eng						259				259
TACOM, MI										
AM General						2600				2600
System Tech Spt										
Support and Management Organizations – None										
Test and Evaluation Organizations – None										
Government Furnished Property – None										
Subtotal Product Development						2859				2859
Subtotal Support and Management										
Subtotal Test and Evaluation										
Total Project						2859				2859

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604642A Light Tactical Wheeled Vehicle

PROJECT: DE41

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DE41 Armored Security Vehicle (ASV)	550	0	0	0	0	0	0	550	550

A. Mission Description and Budget Item Justification: The Armored Security Vehicle (ASV) is a turreted, lightly armored all-wheel drive combat support vehicle which will provide essential protection to selected Military Police units in highly exposed threat environments. The Military Police (MP) currently use the High Mobility Multi-Purpose Wheeled Vehicle. The ASV is required to provide improved ballistic protection, increased payload and NBC protection to the MP teams. The need for such a wheeled vehicle was highlighted by recent humanitarian missions such as Operation Restore Hope in Somalia and conflict in Bosnia. There is no other comparable system in the inventory which offers the ballistic protection, transportability and mobility of the ASV. Congress directed FY 1995 funding for this program under PE 0604328D to insure all services' needs were met. A joint service memorandum is in place.

Acquisition Strategy: The acquisition strategy for ASV awarded one prototype contract (Dec 95).

FY 1997 Accomplishments:

•	119	Developmental Testing
•	25	Engineering Support
•	406	Prototype Contract
Total	550	

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program: Project not funded in FY 1999

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	0	0
Appropriated Value	0		
Adjustments to Appropriated Value	550		
FY 1999 President's Budget	550	0	0

Change Summary Explanation: Funding: FY97 – Reprogrammed from Bridging 654804.DH01 and various projects under Operating Agency 5S to fund shortfall to contractual and test requirements (+550)

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604642A Light Tactical Wheeled Vehicle

PROJECT: DE41

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA1 Armored Security Vehicle (D02800)	10804	10715		6743	9458	13325	10000		Cont
OPA4 Initial Spares (PEO Other) (DS1000)	94	101	89	74					

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
PPQT Testing (ASV)							X					
Production Contract Award (ASV)									X			

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604642A Light Tactical Wheeled Vehicle

PROJECT: DE41

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Product Development	431		
Developmental Testing	119		
Total	550	0	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
TEXTRON (ASV Prototype)	CPFF	Dec 95			3052	406				3458
In-House/Eng TACOM, MI					624	25				649
Support and Management Organizations - None										
Test and Evaluation Organizations										
TECOM (APG)						119				413
Government Furnished Property - None										
Subtotal Product Development					3676	431				4107
Subtotal Support and Management										
Subtotal Test and Evaluation					294	119				413
Total Project					3970	550				4520

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604645A Armored Systems Modernization (ASM) - Engineering Development

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	6408	0	4500	3000	6300	54820	109622	Continuing	Continuing
D022 Future Scout Vehicle (FSV)	0	0	0	0	4000	54820	109622	Continuing	Continuing
D175 Advanced Field Artillery System Multi-Option Fuze	6408	0	4500	3000	2300	0	0	0	48498

Mission Description and Budget Item Justification: This program element supports the Engineering and Manufacturing Development efforts for the Multi-Option Fuze for Artillery (MOFA) and the Future Scout Vehicle (FSV). MOFA will provide proximity, time, delay and point detonation functions for 105mm and 155mm bursting projectiles. The FSV will replace the current ground scout systems in the battalion/brigade and division/regiment levels. The projects in this program element support research efforts in the Engineering and Manufacturing Development phase of the acquisition cycle and are therefore correctly placed in Budget Activity 5.

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604645A Armored Systems Modernization (ASM) - Engineering Development

PROJECT: D175

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D175 Advanced Field Artillery System Multi-Option Fuze	6408	0	4500	3000	2300	0	0	0	48498

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 and is therefore critical to the Crusader 155mm self-propelled howitzer system automated ammunition handling capability, allowing Crusader to meet rate of fire (10-12 rounds/min) requirements. The Portable Inductive Artillery Fuze Setter (FIAFS) is being developed to allow non-Crusader equipped artillery units to inductively set the MOFA.

FY 1997 Accomplishments:

•	3898	Designed enhancements and updates
•	310	Portable Inductive Artillery Fuze Setter (PIAFS) Development
•	850	Continued program management and management engineering services
•	1350	Conducted PPQT testing XM773 and XM782 testing
Total	6408	

FY 1998 Planned Program: Project not funded in FY98

FY 1999 Planned Program:

•	1550	Design enhancements and qualification builds, XM782 (Contract Task VI)
•	1200	Portable Inductive Artillery Fuze Setter (PIAFS) Development
•	550	Program management and management engineering services
•	1200	Engineering test support, PPQT and PIAFS testing
Total	4500	

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604645A Armored Systems Modernization (ASM) - Engineering Development

PROJECT: D175

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	6585	0	0
Appropriated Value	6726		
Adjustments to Appropriated Value	-318		
FY 1999 President's Budget	6408	0	4500

Change Summary Explanation: FY99 increase (+4500) is to enhance Electronic Countermeasure (ECM) performance, insert a Low Cost Advanced Target Sensor (LCATS), develop a Portable Inductive Artillery Fuze Setter (PIAFS) and support MOFA producibility and life cycle cost reduction initiatives.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Comp	Total Cost
Procurement, Ammo, Army, ER 8017			1514	27011	51523	54137	54850	Cont	Cont
RDTE, BA4, Army, PE 0603854, D505	229561	312019	310881	305967	125129			0	1283557
RDTE, BA5, Army, PE 0604854, D503				50000	327021	429225	260928	Cont	Cont
Procurement, WCTV, Army, G83500						42341	97356	Cont	Cont
Procurement, WCTV, Army, G83600						33548	81763	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones												
TC/MS III XM782											X	
Engineering Milestones												
Contract Task V Completed			X*									
Contract Task VI Awarded			X*									
Contract Task VI Completion										X		
T&E Milestones												
PPQT Hardware Delivered XM773			X*									
PPQT XM773				X*								
PPQT Hardware Delivery XM782										X		
PPQT XM782											X	

* Milestone completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - Engineering and Manufacturing Development	0604645A Armored Systems Modernization (ASM) - Engineering Development	D175

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Product Development	4208		2750
Support and Management	850		550
Test and Evaluation	1350		1200
Total	6408	0	4500

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Alliant Tech Sys Hopkins, MN	CPIF	May 92	22639	22639	19505	1704		550	2000	23759
Raytheon/TI Joint Ventures, Tewksburg, MA	SS-CPFF	Mar 94			1788				0	1788
TBD	CPIF	Oct 99						800	0	800
AMCCOM, ARDEC, Dover, NJ; Adelphi, MD					6626	2504		1400	1400	11390
Support and Management Organizations										
AMCCOM, ARDEC, Dover NJ; Adelphi, MD					2915	850		550	900	5215
Test and Evaluation Organizations										
TECOM, Yuma, AZ; APG; ARL; ARDEC; HAFB					1456	1350		1200	1000	5006

Government Furnished Property: None

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604645A Armored Systems Modernization (ASM) - Engineering Development PROJECT D175

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	27919	4208	0	2750	3400	6150
Subtotal Support and Management	2915	850	0	550	900	1450
Subtotal Test and Evaluation	1456	1350	0	1200	1000	2200
Total Project	32290	6408	0	4500	5300	9800

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604649A Engineer Mobility Equipment Development

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	44225	50585	63069	58914	39210	19294	0	0	336086
DG15 DG15	1000	403	1492	0	0	0	0	0	3114
DG25 M1 Breacher	31304	38521	51420	58745	39210	19294	0	0	244752
DG26 Heavy Assault Bridge	11921	11661	10157	169	0	0	0	0	88220

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 will integrate a bridge capable of supporting Military Load Class (MLC) 70 loads and a software controlled launching mechanism. All projects in this PE support efforts in the Engineering and Manufacturing Development (EMD) phase of the life cycle acquisition strategy, and are correctly located in Budget Activity 5.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604649A Engineer Mobility Equipment Development PROJECT DG25

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DG25 M1 Breacher	31304	38521	51420	58745	39210	19294	0	0	244752

A. Mission Description and Justification: The Grizzly (M1 Breacher) will provide 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 will be capable of moving with, and be as survivable as, the force it is supporting. 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 Grizzly, a single, survivable breach platform, 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. Funding in this phase supports vehicle system technical evolution to meet operational requirements prior to production, production planning, and government testing prior to a Milestone III decision. Additionally, funding supports the development of training devices. The Grizzly Training Aids, Devices, Simulators, and Simulations (TADSS) are the tools for life-cycle training of Grizzly operators, maintainers, and leaders. The Grizzly TADSS will support individual, collective and combined arms training at the institutional level and unit level. The computer-based TADSS will optimize training effectiveness at reduced institutional and unit OPTEMPO costs.

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. Through the production buy the vehicle will be sole sourced to United Defense Limited Partnership (UDLP), Ground Systems Division, York, PA. The contracts for training devices development and production will be awarded by STRICOM with maximum use of existing commercial off-the-shelf hardware and software.

FY 1997 Accomplishments:

•	24994	Performed Design Refinement and Prototype Refurbishment
•	4271	Conducted Logistics Analysis, Component Testing and Simulation
•	2039	Provided Government and Contractor Program Management to include Contract Administration, Sub-contracts Administration, Program Analysis, and Earned Value Management Systems (EVMS)
Total	31304	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604649A Engineer Mobility Equipment Development
	PROJECT DG25

FY 1998 Planned Program:

•	28848	Complete EMD Vehicle Design and Rebuild Two Prototype Vehicles
•	5413	Perform Component Testing and Simulation and Accomplish Program Logistics Requirements
•	468	Procure System Support Package
•	2826	Provide Program Management
•	966	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	38521	

FY 1999 Planned Program:

•	6920	Conduct Production Qualification Test I and Limited User Test
•	13490	Perform Component Testing and Simulation and Accomplish Program Logistics Requirements
•	25336	Continue Refinement of Design to Support Vehicle Production Configuration
•	3220	Provide Program Management
•	2454	Begin Design of TADSS
Total	51420	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	34102	43748	51420
Appropriated Value	33269	39748	
Adjustments to Appropriated Value	-1965	-1227	
FY 1999 President's Budget	31304	38521	51420

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, A Budget Activity 4									
PE 0603649A, Project DG24, M1 Breacher AD	498	0	0	0	0	0	0	0	72956
PA, WTCV, GZ3200, Breacher MOD	0	0	0	20569	79860	82460	119698	Cont'd	Cont'd
PA, WTCV, G84000, Breacher Trng Dev	0	0	0	0	381	15031	1452	0	16864
PA, WTCV, GEO175, Breacher Spares	0	0	0	0	0	0	2535	Cont'd	Cont'd

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604649A Engineer Mobility Equipment Development PROJECT DG25

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Conduct Milestone II Review	X*											
Award Engineering and Manufacturing Development (EMD) Contract		X*										
EMD Preliminary Design Review (PDR)					X*							
EMD Critical Design Review (CDR)								X				
Begin Prototype Rebuild								X				
Award Contract for Training Devices									X			
Begin Pre-Production Qualification Test (PQT) I												X

* Milestone Completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604649A Engineer Mobility Equipment Development

PROJECT: DG25

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Development Engineering	24994	28848	27790
Logistics Support	4079	4067	11958
System Test & Evaluation	192	1814	8452
Program Management	2039	2826	3220
SIBR/STTR		966	
Total	31304	38521	51420

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
United Defense York, PA	SS-CPIF	Jan 97	NA	130200	5200	25068	30442	34976	34514	130200
United Defense York, PA	SS-CPFF	Apr 00	NA	53925					53925	53925
General Dynamics Land Sys (GDLS), Warren, MI	SS-CPFF	Dec 96	NA	4313	100	2503	400	1310		4313
Other Contracts	Various	Various	NA	1012	102	200	150	130	430	1012
Support and Management Organizations										
TACOM Warren, MI		Oct 97			553	2280	2609	3001	1797	10240
STRICOM, Orlando, FL	MIPR	Oct 97						2454	3136	5590
Other Gov't Agencies		Oct 97			173	843	1785	1602	508	4911

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - Engineering and Manufacturing Development	0604649A Engineer Mobility Equipment Development	DG25

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Contract Spt to Program					130	410	120	840	310	1810
SIBR/STTR							966			966
Test and Evaluation Organizations										
TECOM APG, MD								6790	20590	27380

Government Furnished Property:

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property									
Chassis GFM	Requisition	Mar 98				1581	187	1909	3677
Test and Evaluation Property									
System Support Package	Requisition	Jul 98				468	130	130	728
Subtotal Product Development				5402	27771	32573	36603	90778	193127
Subtotal Support and Management				856	3533	5480	7897	5751	23517
Subtotal Test and Evaluation						468	6920	20720	28108
Total Project				6258	31304	38521	51420	117249	244752

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604649A Engineer Mobility Equipment Development

PROJECT: DG26

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DG26 Heavy Assault Bridge	11921	11661	10157	169	0	0	0	0	88220

A. **Mission Description and Justification:** The Wolverine will provide Military Load Class (MLC) 70 vehicles the capability to cross 24-meter gaps (26-meter bridge). The Wolverine will have mobility characteristics comparable to the maneuver forces it will support. The launch time for the bridge will be five minutes or less; the retrieval time will be a total of ten minutes or less which includes five minutes to engage plus five minutes to place the vehicle in a travel mode. The base for the Wolverine is an M1A2 SEP Abrams Tank chassis. The Wolverine Training Aids, Devices, Simulators, and Simulations (TADSS) are the tools for life-cycle training of Wolverine operators, maintainers, and leaders. The Wolverine TADSS will support individual, collective, and combined arms training at the institution and unit level. The computer-based TADSS will optimize training effectiveness at reduced institutional and unit OPTEMPO costs.

Acquisition Strategy: Side-by-side Demonstration 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 development testing. Follow-on Fixed Price contracts will be awarded for LRIP and Production requirements. STRICOM will award contracts for the development of training devices.

FY 1997 Accomplishments:

- 7773 Engineering Development Contract for migration to Abrams System Enhancement Program and Test Program Sets (TPS) development
- 622 Completion of EMD II Contract
- 1083 Completed PQT/Began Live Fire (Phase I)
- 21 Various Engineering Services Contracts
- 1902 Contractor Support of Test
- 520 Program Management

Total 11921

FY 1998 Planned Program:

- 512 Contractor Support For Test
- 5787 Developmental Contract
- 602 Program Management
- 4064 Start Live Fire Test and Purchase System Support Package

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604649A Engineer Mobility Equipment Development
	PROJECT DG26

FY 1998 Planned Program: (continued)

•	403	Begin Design of Institutional Training Devices
•	293	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)
Total	11661	

FY 1999 Planned Program:

•	1431	Contractor Support of Test
•	666	Developmental Contract and Refurbishment of Test Vehicles
•	501	Program Management
•	4926	Conclude Live Fire Test, Conduct Production Verification Test, and Support IOT&E
•	2633	Complete Design of Institutional Training Devices
Total	10157	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	12603	12033	10157
Appropriated Value	12295	12033	
Adjustments to Appropriated Value	-374	-372	
FY 1999 President's Budget	11921	11661	10157

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
PA, WTCV, GZ3250, HAB MOD	51401	41311	50401	68604	86469	106537	116476	Cont'd	Cont'd
PA, WTCV, GE0177, HAB Spares	0	911	859	1365	1415	1782	2083	Cont'd	Cont'd
PA, WTCV, G84600 HAB Training Devices	0	0	386	15152	1260	1051	0	0	18534

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604649A Engineer Mobility Equipment Development PROJECT DG26

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
End PQT Testing		X*										
Milestone IIIa (LRIP)		X*										
Begin Live Fire/Vulnerability Test				X*								
Award Contract for Training Devices Dev									X			
LRIP Contract Award						X						
Production Readiness Review											X	
Begin PVT											X	

* Milestone Completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604649A Engineer Mobility Equipment Development

PROJECT: DG26

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Development Engineering	7960	5855	3120
Logistics Support	456	335	179
System Test & Evaluation	2985	4576	6357
System Project Management	520	602	501
SBIR/STTR		293	
Total	11921	11661	10157

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Gen Dyn Land Sys Sterling Hgts, MI	C-CPAF	Jan 94	NA	34701	34079	622				34701
Gen Dyn Land Sys Sterling Hgts, MI	SS-CPFF	Feb 96	NA	18326	4100	7773	5787	666		18326
Gen Dyn Land Sys Sterling Hgts, MI	SS-CPFF	Aug 96	NA	3845	0	1902	512	1431		3845
SMS Corp St. Louis, MO	SS-FFP	May 92	NA	5798	5798					5798
Other Contracts	Various	Various	NA	945	924	21				945
Support and Management Organizations										
PMO Support		Oct 97		7322	5709	510	602	501		7322
ANAD Anniston, AL				396	396					396
PM STRICOM, Orlando, FL	MIPR	Oct 97		3211	6		403	2633	169	3211

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604649A Engineer Mobility Equipment Development

PROJECT: DG26

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Other Gov't Agencies		Dec 97		1411	1401	10				1411
SBIR/STTR				NA			293			293
Test and Evaluation Organizations										
TECOM APG, MD				7313	1493	843	1546	3431		7313
ARL, MD				2054		240	944	870		2054
WSMR White Sands, NM				195	25			170		195

Government Furnished Property:

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property									
Various Gov't Sources	MIPR	Various		381					381
Test and Evaluation Property									
To Be Determined	MIPR	Nov 97				1574	455		2029
Subtotal Product Development				45282	10318	6299	2097		63996
Subtotal Support and Management				7512	520	1298	3134	169	12633
Subtotal Test and Evaluation				1518	1083	4064	4926		11591
Total Project				54312	11921	11661	10157	169	88220

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	33970	35052	21311	19022	18992	27756	17842	Continuing	Continuing
DL69 Horizontal Technology Integration Second Generation FLIR (HTI SGF)	13217	11037	0	0	0	0	0	0	90233
DL70 Night Vision Devices Engineering Development	13631	12387	11333	19022	18992	27756	17842	Continuing	Continuing
DL74 Long Range Advanced Scout Surveillance System (LRAS3)	7122	11628	9978	0	0	0	0	0	28728

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. Developments and improvements to high performance night vision electro-optics, radar, laser, and thermal systems integration of related multi-sensor suites will enable near to long range target identification, acquisition and engagement to include significant fratricide reduction which will improve battlefield command and control in "around the clock" combat operations. Project DL69 is focused on inserting key Horizontal Technology Integration Second Generation Forward Looking Infrared (HTI SGF) (FLIR) 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 HTI laser evaluation and assessment, and integrates individual sensors into a common architecture. Project DL74 focuses on a long range multi-sensor system utilizing Horizontal Technology Integration Second Generation Forward Looking Infrared (HTI SGF) (FLIR) thermal sensors 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 which is mounted or man-portable. The projects in this PE support development efforts in the engineering and manufacturing development phases of the acquisition strategy and therefore are correctly placed in Budget Activity 5.

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

PROJECT: DL69

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL69 Horizontal Technology Integration Second Generation FLIR (HTI SGF)	13217	11037	0	0	0	0	0	0	90233

A. Mission Description and Justification- Horizontal Technology Integration Second Generation Forward Looking Infrared (HTI SGF) (FLIR) 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), and the M1A2 System Enhancement Package (SEP) Abrams]. 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 vehicle 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.

Acquisition Strategy: The common Second Generation FLIR sensor and display "B" Kit are being developed and fabricated using a competitively awarded cost plus award fee contract.

FY 1997 Accomplishments:

- 12031 Completed development and fabrication of SGF "B" kit for M1A2 SEP and M2A3/M3A3.
- 286 Completed sight level qualification testing of EMD prototypes for HTI SGF.
- 900 Aviation "B" Kit Trade Studies.

Total 13217

FY 1998 Planned Program:

- 272 Support M1A2 SEP Vehicle Testing
- 545 Support M2A3/M3A3 Vehicle Testing.
- 8013 Fabricate SGF "B" Kits for LRAS3 test units.
- 1934 Finalize Ground SGF "B" Kit Interface Control Document/final specifications and conduct verification tests.
- 273 Small Business Innovative Research/Small Business Technology Transfer Programs.

Total 11037

FY 1999 Planned Program: Project not funded in FY 1999

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

PROJECT: DL69

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	18036	11477	0
Appropriated Value	17603	11477	
Adjustments to Appropriated Value	-4386	-440	
FY 1999 President's Budget	13217	11037	0

Change Summary Explanation:

Funding: FY97 (-5000) Congressional rescission of Aviation B Kit EMD funds. (+650) Funds programmed from within PE 0604710A (DL70 and DL74) for higher priority efforts.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
6.4 RDTE 0604710A, "A" Kit LRAS3 (DL74)	7122	11628	9978	0	0	0	0	0	28728
6.7 RDTE 0203735A, "A" Kit (D330)	38177	21277	0	0	0	0	0	0	59454
LRAS3 K38300 OPA2	0	0	0	44110	49022	46663	51577	Cont	Cont
WTCV G80717 M2A3/M3A3 Bradley "B" Kit	24180	16072	53014	54490	64104	64174	63100	Cont	Cont
WTCV GA0700 M1A2 SEP Abrams "A" and "B" Kit	0	0	0	2400	29451	51068	65280	Cont	Cont
WTCV GA0750 Abrams Upgrade "A" and "B" Kit	22951	84300	92406	59055	59114	34081	37460	Cont	Cont

The 0203735A program element funds the "A" kit portion of the HTI SGF development, for the M1A2 SEP Abrams Tank. WTCV funds the production tails for the Bradley and Abrams platforms.

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Special In-Process Review for "B" Kit	X*											
Initiate M2A3/M3A3 Limited User Test		X*										
Award Aviation Trade Studies			X*									
Initiate M2A3 and M3A3 Vehicle Tests					X*							
Initiate M1A2 SEP Vehicle Test						X						
Finalize ICD and Specs for Ground HTI "B" Kit						X						

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development PROJECT DL69

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Award LRAS3 HTI "B" Kit					X*							
Accept LRAS3 HTI "B" Kit								X				

*Milestone Completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

PROJECT: DL69

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Primary Hardware Development	11260	10203	0
Contractor Engineering/Trade Studies	900		
Government Engineering Support	746	395	0
Project Management Support	311	166	0
Small Business Innovative Research/Tech Transfer Programs.		273	
Total	13217	11037	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Producibility Contracts	Various	March 94	3876	3876	3876	0			0	3876
Texas Instruments, McKinney, TX	C/CPAF	July 94	62100	62100	50356	9302	2442		0	62100
SADA II, SBRC	C/FP	March 96	2116	2116	2116	0	0		0	2116
T&M Hughes, El Segundo, CA	SS/T&M	July 96	3556	3556	1524	1958	74		0	3556
LRAS3 "B" Kits	CPAF	July 97					7687			7687
Trade Studies (3)	C/CP	June 97		900	0	900	0	0	0	900
Support and Management Organizations										
Pgm Management					1313	311	166		0	1790
ASARC Support	MIPR				250	0	0		0	250
CECOM NVESD	MIPR				6817	746	395		0	7958
SBIR/STTR							273			273

Test and Evaluation Organizations: None. Technical/qualification tests are performed by contractor and all Operational Tests are funded by Host platforms.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development PROJECT DL69

Government Furnished Property: None

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	57872	12160	10203			80235
Subtotal Support and Management	8380	1057	834			10271
Subtotal Test and Evaluation						
Total Project	66252	13217	11037	0		90506

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

PROJECT: DL70

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL70 Night Vision Devices Engineering Development	13631	12387	11333	19022	18992	27756	17842	Continuing	Continuing

A. Mission Description and Justification: **Night Vision Devices Engineering Development:** 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) was approved as a two year Warfighting Rapid Acquisition Program (WRAP) initiative for which funding was provided ($5000K) in FY97 to enter a thirty month Engineering and Manufacturing Development Phase. LLDR is a day/night manportable modular target location and laser designator system. The target location system combines a State-Of-The-Art "See Spot" Forward Looking Infrared (FLIR), eyesafe laser rangefinder, compass and vertical angle measurement, and global positioning system (GPS) and required processing capability to export target location data through a digital interface. The modular laser designator will be able to target enemy assets for laser-guided ground and air-launched munitions. LLDR will provide the artillery light forces with the capability to detect, recognize, identify, determine location and either digitally pass this information on to coordinate indirect fire or designate the target for precision destruction by smart munitions. Improvements to the Thermal Weapon Sight (TWS) and the Driver's Vision Enhancer (DVE) are developed under this project. The architecture for interoperability of sensors [Mini-Eye Safe Laser Infrared Observation Set (MELIOS), LLDR, Target Location Observation System (TLOS), 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 test the flow of data from the sensor, through a variety of computing devices and then out over the communications network. Activities also include the integration, testing and demonstration of multi-sensor systems and the integration of ground-based sensors into long-range surveillance systems. The multispectral target acquisition capabilities will developed, evaluated and inserted incrementally into ongoing production efforts. 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 which could be used in a variety of ground and air platforms. PROFILER targeting aid development will upgrade the AN/TQM-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 lethality further into the battlespace.

Acquisition Strategy: The development programs in this project are currently all based on competitive awards and under cost reimbursment type contract.

FY 1997 Accomplishments:

- 356 Completed development of TLOS-related prototypes incorporating results from COTS evaluation and studies.
- 1020 Conducted HTI Laser trade studies to support developmental/COTS/NDI Integration program.
- 1527 Completed development of DVE P3I prototypes, characterized DVE performance.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development PROJECT DL70

FY 1997 Accomplishments: (continued)

•	1428	Provided TWS support to Land Warrior program and completed P3I efforts.
•	2576	Conducted limited user test on engineering prototype (EP) LLDR. Awarded LLDR EMD contract.
•	5000	Awarded LLDR WRAP option and commenced fabricaton of 18 prototypes in support of an accelerated initial operational capability.
•	1724	Conducted integration and demonstration of sensor interoperability with MELIOS/LVRS.
Total	13631	

FY 1998 Planned Program:

•	3644	Continue development and integrate LLDR EMD models.
•	2696	LLDR WRAP Integration of prototypes onto HMMWV and BFIST platforms
•	2114	Conduct integration, test and evaluation of the sensor architecture to include data dissemination for multiple applications (TLDHS/USMC, BFIST, STRIKER).
•	2986	Development and integration of HTI tactical laser, including laser illumination, into multispectral target acquisition capabilities.
•	650	PROFILER Trade Studies
•	297	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	12387	

FY 1999 Planned Program:

•	3510	Complete development, conduct technical tests and user operational evaluation of LLDR EMD models.
•	2567	Continue integration and technical tests of the sensor architecture (Aerial Common Sensor, TLDHS/USMC, BFIST, STRIKER, Land Warrior applique).
•	2887	Continue development and integration of HTI tactical laser, including laser illumination capabilities, onto Army platforms.
•	2369	Conduct Thermal Upgrade activities (prototype test and evaluation) to enhance combat effectiveness of TWS and DVE.
Total	11333	

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

PROJECT: DL70

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	9283	9981	11277
Appropriated Value	9069	12781	
Adjustments to Appropriated Value	+4562	-394	
FY 1999 President's Budget	13631	12387	11333

Change Summary Explanation:

Funding: FY97 (-420) Reprogrammed within PE 0604710A (DL69) for higher priority efforts (aviation trade studies), (+5000) LLDR WRAP Funding. FY98 (-394K) Undistributed Congressional Reductions , (+2800) for LLDR WRAP Vehicle Integration.

Technical: FY97: LLDR WRAP for 18 systems accelerated initial operational capability.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Night Vision Devices KA3500 OPA2	100570	42241	29636	33408	29532	37638	36842	Continue	Continue
Night Vision TWS K22900 OPA2	45137	41079	36110	39638	40370	36168	38069	Continue	Continue
Night Vision LLDR K31100 OPA2	0	0	0	6391	7410	7414	7594	Continue	Continue

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Complete TWS user test (IOTE)		X*										
Complete TLOS related prototypes		X*										
Initiate HTI Laser Trade Studies			X*									
Complete HTI Laser Trade Studies					*X							
Award Multispectral Target Acquisition						X						
HTI laser prototype development and evaluation completed								X				
LLDR EP User Evaluation			X*									
LLDR Milestone I/II IPR				X*								
LLDR EMD Award				X*								
LLDR Vehicle Integration effort initiated						X						
LLDR Technical Test										X		
Initiate LLDR User Operational Tests											X	

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

PROJECT: DL70

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Complete LLDR User Operational Tests												X
Sensor Architecture Test & Demonstration (MELIOS/LVRS)		X*										
Sensor Architecture Interoperability Implementation on individual platform						X						
Sensor Architecture Interoperability Integration between multiple platforms							X					
Initiate PROFILER Trade Studies						X						
Complete PROFILER Trade Studies							X					
Sensor Architecture Validation/Test											X	X

*Milestone Completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

PROJECT: DL70

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Primary Hardware Development	10276	9715	9009
Contractor Engineering / Trade Studies	900	600	0
Government Engineering Support	808	567	551
Project Management Support	200	425	325
Test and Evaluation	1447	783	1448
SBIR/STTR		297	
Total	13631	12387	11333

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Magnavox, Mahwah, NJ	C/CPIF	Aug 93	8321	8321	7821	500			0	8321
Texas Instruments, McKinney, TX	C/CPIF	Aug 93	11524	11524	11024	500			0	11524
Various (Studies and Prototypes)	C/CPIF	3Q96			2591	356			0	2947
Litton Laser, Apopka, FL	C/CP	Aug 95			2556	0			0	2556
LLDR, Litton Lasers, Apopka FL	C/CP	Jul 97				6900	3700	2750	680	14030
Nichols Research, Huntsville, AL	C/CPIF	2Q96		1000	100	315	550	350	0	1315
HTI Laser Trade Studies (3)	C/CP	3Q97				1020			0	1020

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									DATE: February 1998	
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development				PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development						PROJECT: DL70
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Multispectral target acq. Intevac, Santa Clara, CA	C/CPIF	1Q98					609		0	609
PROFILER Trade Studies	C/CP	2Q98					600	0	0	600
EOIR, VA	C/CP	2Q97			0	750	775	820	0	2345
California Microwave, MD	C/CPIF	Mar 96			2000	835	429		0	3264
Sensor Architecture (TBS)	C/CP	2Q98			0	0	400	541	Continue	941
HTI Laser Prototypes (TBS)	C/CP	2Q98					1802	2179	0	3981
Thermal Upgrades (TBS)	C/CP	2Q99						2369	Continue	2369
LLDR BFIST Veh. Integration (TBS)	C/CP	2Q98					1450			1450
Support and Management Organizations										
Project Mgmt					2555	200	425	325	Continue	3505
CECOM NVESD	MIPR				6038	733	492	476	Continue	7739
Other Support	MIPR				2305	75	75	75	Continue	2530
SBIR/STTR							297			297
Test and Evaluation Organizations										
OPTEC	MIPR				4719	974	355	983	Continue	7031
Oth. Gov't Agency	MIPR				1735	473	428	465	Continue	3101

Government Furnished Property: None

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY **5 - Engineering and Manufacturing Development**	PE NUMBER AND TITLE **0604710A Night Vision Systems - Engineering Development**
	PROJECT **DL70**

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	26092	11176	10315	9009	680	57272
Subtotal Support and Management	10898	1008	1289	876		14071
Subtotal Test and Evaluation	6454	1447	783	1448		10132
Total Project	43444	13631	12387	11333	680	81475

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

PROJECT: DL74

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL74 Long Range Advanced Scout Surveillance System (LRAS3)	7122	11628	9978	0	0	0	0	0	28728

A. Mission Description and Justification Project DL74 - Long Range Advanced Scout Surveillance System (LRAS3): This project will develop the Long Range Advanced Scout Surveillance System (LRAS3), which is a long range multi-sensor system for US Army scouts which will provide the capability to detect, recognize, identify, range and determine 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.

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.

FY 1997 Accomplishments:

•	8	Milestone I/II IPR.
•	34	Conducted Proposal Evaluation for LRAS3.
•	7080	Awarded EMD contract design, develop and fabricate LRAS3 A-Kits.
Total	7122	

FY 1998 Planned Program:

•	8374	Continue EMD contract Development and Fabrication of LRAS3 A-Kits.
•	2199	Initiate Development Test (DT).
•	764	Initiate Test Equipment Development.
•	291	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	11628	

FY 1999 Planned Program:

•	1497	Complete Developmental Tests.
•	978	Conduct Operational Test.
•	4690	Complete Fabrication of LRAS3 EMD A-Kits.
•	2813	Complete Test Equipment Development.
Total	9978	

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

PROJECT: DL74

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	7551	11998	9978
Appropriated Value	7367	11998	
Adjustments to Appropriated Value	-245	-370	
FY 1999 President's Budget	7122	11628	9978

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
0603774A D131 Budget Activity 4	2254	2848	2681	3015	3779	4568	4488	Continue	Continue
6.4 RDTE 0604710A, B Kit (DL69)	13217	11037	0	0	0	0	0	0	90233
LRAS-3 K38300 OPA2	0	0	0	44110	49022	46663	51577	Continue	Continue

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Milestone I/II IPR				X*								
Award EMD Contract				X*								
Initiate fabrication of test units.						X						
Complete Prototype A-Kit Development and Fabrication for DT								X				
Initiate Development Test								X				
Initiate Test Equipment Development								X				
Complete Development Test									X			
Complete Fabrication of A-Kits for IOTE									X			
Initiate Operational Test											X	
Complete Operational Test												X
Complete Test Equipment Development												X

*Milestone Completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

PROJECT: DL74

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Primary Hardware Development	7080	10857	9057
Project Management Support	8	162	141
Test and Evaluation	0	0	500
Government Engineering Support	34	318	280
SBIR/STTR		291	
Total	7122	11628	9978

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Raytheon Systems	C/CPAF	Jul 97				3540	4623	3752	0	11915
Hughes	C/CPAF	Jul 97				3540	6234	5305	0	15079
Support and Management Organizations										
Project Mgmt						8	162	141	0	311
CECOM NVESD	MIPR					34	318	280	0	632
SBIR/STTR							291			291
Test and Evaluation Organizations										
TEXCOM	MIPR					0	0	200	0	200
TECOM	MIPR					0	0	300	0	300
Government Furnished Property: None										
Subtotal Product Development						7080	10857	9057		26994
Subtotal Support and Management						42	771	421		1234
Subtotal Test and Evaluation								500		500
Total Project						7122	11628	9978		28728

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	73404	60053	62218	39201	40651	38326	38640	Continuing	Continuing
DC40 Unit/Organizational Equipment	1701	1740	1720	1861	2736	2105	2563	Continuing	Continuing
DL40 Clothing and Equipment	4525	3571	4351	3631	4548	4962	5009	Continuing	Continuing
D548 Military Subsistence System	766	857	1300	1661	1794	1914	1930	Continuing	Continuing
D667 Land Warrior	50628	37826	39960	16999	15757	13972	14179	Continuing	Continuing
D668 Soldier Enhancement Program	15784	14114	14702	14866	14942	14805	14959	Continuing	Continuing
D680 Mounted Warrior	0	1945	185	183	874	568	0	Continuing	Continuing

Mission Description and Budget Item Justification: 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 service 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. The projects in this Program Element support research efforts in the Engineering and Manufacturing Development phase of the acquisition cycle and are therefore correctly placed in Budget Activity 5.

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: DC40

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC40 Unit/Organizational Equipment	1701	1740	1720	1861	2736	2105	2563	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.

Acquisition Strategy: Accelerated developments that incorporate Low Rate Initial Production (LRIP) contracts for earlier transition to procurement.

FY 1997 Accomplishments:

•	1701	Awarded integrated contract for development and procurement of the Laundry Advanced Systems (LADS) which replaces aging M85 Field Laundries on a 1:4 basis, incorporates a water recycle capability and minimizes waste product disposal in the field.
Total	1701	

FY 1998 Planned Program:

•	1000	Complete prototype development and conduct Developmental Test/Operational Test (DT/OT) of LADS prototypes.
•	447	Complete testing and field evaluation of the Modular General Purpose Tent Shelters (MGPTS) and prepare for MS III decision.
•	250	Conduct market investigation for Containerized Shower systems and subcomponents, fabricate NDI prototypes, and initiate Technical Testing.
	43	Small Business Innovative Research/Small Technology Transfer Programs.
Total	1740	

FY 1999 Planned Program:

•	300	Develop frame and flooring systems as part of MGPTS P3I.
•	861	Award developments contract for prototype air beam technology shelter.
•	125	Type Classify LADS and execute production phase of the contract.
•	109	Conduct market investigation for Small Unit Shower-Light systems and subcomponents, fabricate NDI prototypes, and initiate Technical Testing.
•	325	Complete Technical and Operational Testing on the Containerized Shower and Type Classify the Performance Specifications.
Total	1720	

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: DC40

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	1746	1795	1811
Appropriated Value	1784	1795	
Adjustments to Appropriated Value	-83	-55	
FY 1999 President's Budget	1701	1740	1720

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0603747.DC09, Unit/Org Equipment	2124	1895	1609	1851	2254	1804	2224	Cont	Cont
Other Procurement, Army BA 3	24863	11362	24418	18288	20074	20664	21896	Cont	Cont
M80200, Force Provider									
M86200, LADS			7216	8084	12954	13728	19735	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Awarded LADS R&D/Procurement Contract			X*									
Complete MGPTS PVT/FE						X						
Conduct Technical Test and Operational Test (TT/OT) on LADS prototypes							X					
Type classify LADS									X			
Conduct TT/OT on Containerized Shower									X			
Develop frame and floor MGPTS P3I										X		
Develop AMS P3I Shelter										X		
Type classify Containerized Shower											X	

*Milestone Completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT DC40

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Product Development	1208	1251	1130
Support and Management	71	89	90
Test and Evaluation	422	400	500
Total	1701	1740	1720

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
SSCOM	In-House				1159	468	359	320	Cont	2306
Guild	Various	Various			6332	740	892	810	Cont	8774
DDRV										
Tech Rsch Grp										
Hunter Mfg										
GTS										
ARO	MIPR				29				Cont	Cont
OGA										
Support and Management Organizations										
SSCOM					1293	71	89	90	Cont	Cont
Test and Evaluation Organizations										
TECOM/ATC	MIPR				3151	422	400	500	Cont	Cont
CRIC										
WSMR										

Government Furnished Property: None

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment	PROJECT DC40

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	7520	1208	1251	1130		Cont
Subtotal Support and Management	1293	71	89	90		Cont
Subtotal Test and Evaluation	3151	422	400	500		Cont
Total Project	11964	1701	1740	1720		Cont

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT DL40

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL40 Clothing and Equipment	4525	3571	4351	3631	4548	4962	5009	Continuing	Continuing

A. **Mission Description and Justification:** Develop state-of-the-art tactical and non-tactical clothing and equipment items to enhance the survivability, sustainment and mobility of the individual soldier.

Acquisition Strategy: Soldier Modernization will be accomplished via integrated acquisition programs embodying procurement approaches 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); 2) modular improvements which require more complex RDT&E and is usually completed in more than 36 months from concept to TC.

FY 1997 Accomplishments:

- 400 Completed Acquisition Strategy Report, Integrated Program Summary and forwarded Body Armor Set Individual countermeasure (BASIC) P3I RFP to contracting.
- 1175 Completed Developmental Test/Operational Test (DT/OT) and assessment reports, initiated redesign for the Improved Toxicological Agent Protective (ITAP). Conducted MS III and TC for the Joint Service Lightweight Integrated Suit Technology (JSLIST). Completed testing on Firefighters Integrated Suit-Combat (FISC).
- 2192 Awarded single RDTE contract for the Modular Body Armor and Modular Load System (MBA.MLS), conducted Explosive Ordnance Detachment (EOD) Suit domestic/foreign market survey and procured EOD suit prototypes.
- 173 Obtained Milestone I decision on the Optional Uniform Program concept. Procured test items and initiated field tests. Conducted Concept of Fit Study on Women's Dress Uniform.
- 202 Procured prototypes, conducted feasibility evaluation to modify patterns and size tariff, completed technical data for Integrated Sizing of the Battledress Uniform.
- 383 Program management.

Total 4525

FY 1998 Planned Program:

- 768 Award contract for initial prototype and DT test items for BASIC P3I. Initiate DT/OT testing
- 1784 Fabricate test items and initiate the DT/OT of the MBA and MLS.
- 179 Procure prototypes for a wear test and acceptability evaluation of the Women's Coat, and Physical fitness Uniform

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT DL40

FY 1998 Planned Program: (continued)

•	577	Complete redesign testing and staff MSIII document for ITAP
•	176	PM-Management
•	87	Small Business Innovative Research/Small Business Technology Transfer
Total	3571	

FY 1999 Planned Program:

•	620	Complete DT/OT and assessment reports for the MBA and MLS and obtain MSIII approval.
•	305	Conduct a wear test and acceptability evaluation of the Women's Coats.
•	821	Modify designs, procure test prototypes, and initiate the DT/OT of the Combat Clothing Product Improvement.
•	900	Modify designs, procure test prototypes, complete DT/OT, obtain MS III approval of the Concealable Body Armor.
•	500	Complete test of the Advanced Bomb Suit, obtain MS III approval and transition to procurement.
•	1205	Develop initial designs, conduct early user evaluation, refine designs for Climate Control Equipment (heating and cooling) for the individual soldier.
Total	4351	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	4851	3684	4330
Appropriated Value	4955	3684	
Adjustments to Appropriated Value	-430	-113	
FY 1999 President's Budget	4525	3571	4351

C. Other Program Funding Summary:

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0603747.D669, Clothing & Equipment	2514	3236	3390	4158	3699	5261	5299	Cont	Cont
RDTE, 064384BP.IP5, Individual Protection	5227	6023	9728	12078	17048	21910	13077		12202
DoD CBDP, MA0400, Protective Clothing	58825	35089	39188	40336	31228	38867	40264	Cont	Cont
OMA, 114092000, Central Funding and Fielding	89572	49059	54958	79898	82414	84233	86032	Cont	Cont

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT DL40

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Completed Acquisition Strategy Report; Forwarded RFP for BASIC P3I		X*										
Completed DT/OT, initiated redesign ITAP				X*								
Completed MS III/TC JSLIST			X*									
Completed testing FIS-C; Staffed MSIII/TC trans to production			X*		X*	X						
Contract Awarded MBA/MLS			X*									
Obtained MSI on Opt Uniform Fabric. Initiated user tests. Completed Concept of Fit Study				X*								
Conducted feasibility eval, completed tech data,; forwarded to procurement center of Integrated Sizing Battledress Uniform					X*			X				
Awarded contract for prototypes and DT Test items BASIC P3I. Initiated DT/OT testing.					X*			X				
Procure test items/initiate DT/OT MBA/MLS							X					
Design modifications of maternity Uniforms, Men's and Women's dress items and all weather coats; test prototypes and prepare for MS III					X*		X				X	X
Redesign & test ITAP, staff MSIII IPR documentation					X*			X		X		X
Procure test items /initiate DT/OT BASIC P3I						X	X	X		X		X

*Completed Milestones

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment	PROJECT DL40

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
Primary Hardware Development	4525	3571	4351
Total	4525	3571	4351

B. Budget Acquisition History and Planning Information: Not applicable

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT D548

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D548 Military Subsistence System	766	857	1300	1661	1794	1914	1930	Continuing	Continuing

A. Mission Description and Budget Item Justification: 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. Program is reviewed and validated twice annually by the DoD Food and Nutrition Research and Engineering Board as part of the Joint Service DoD Food Program.

Acquisition Strategy: Developments transition to procurement.

FY 1997 Accomplishments:

•	138	Completed design/development of Modern Burner Unit (MBU) interface components for integration into the Army Field Feeding System (AFFS).
•	320	Completed DT/EUOT&E and USAREUR Customer test, and developed performance specification for the Containerized Kitchen.
•	174	Procured, fabricated and evaluated a low cost safety improvements for the Mobile Kitchen Trailer (MKT).
•	134	Procured and evaluated electrification upgrades to Air Force field kitchens.
Total	766	

FY 1998 Planned Program:

•	420	Design/fabricate vented components and equipment to remove combustion by-products of the MBU. Develop component efficiency upgrades for field kitchens.
•	266	Conduct field evaluations of component improvements to the MKT.
•	50	Type classify the Containerized Kitchen and move to production and deployment phase.
•	100	Conduct field evaluations of commercially available squad stoves to improve subsistence capability in the field and transition to procurement.
	21	Small Business Innovative Research/Small Business Technology Transfer Program
Total	857	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment
	PROJECT D548

FY 1999 Planned Program:

- 471 Conduct technical and user testing on improved field kitchen equipment for use with the MBU.
- 470 Complete technical and user testing of the Rapid Deployment Kitchen and transition TDP to procurement.
- 359 Fabricate prototypes and begin DT/OT of the Thermal Powered Washer for the Advanced Food Sanitation Center.

Total 1300

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	792	884	1294
Appropriated Value	809	884	
Adjustments to Appropriated Value	-43	-27	
FY 1999 President's Budget	766	857	1300

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0603747.D610, Food Adv Dev	1849	2193	2582	3131	3395	3819	3853	Cont	Cont
OPA3, M86400, Kitchen, Containerized, Field			7435	7206	7240	5798	10360	Cont	Cont
OPA 3. ML5325, Items Less Than $2.0M (CSS-EQ) (MDEP RJS2)	871	825	871	2150	3220	2189	5062	Cont	Cont
OPA 3, M66500, Sanitation Center, Field Feeding	664		1364	675	1882	1859	6640	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Conducted DT/OT of Containerized Field Kitchen		X*										
Type Classify Containerized Field Kitchen						X						
Test MKT prototypes							X					
Conduct DT/OT of improved Army Field Feeding Equipment for MBU											X	
Transition Rapid Deployment Kitchen to procurement											X	

* Milestone completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: D548

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Product Development	455	613	836
Support and Management	59	44	64
Test and Evaluation	252	200	400
Total	766	857	1300

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
SSCOM	In-House				5771	255	312	716	Cont	7054
GTS Hunter Mfg	Various	Various			311	200	301	120	Cont	932
ATCOM	MIPR				35				Cont	35
Support and Management Organizations										
SSCOM					405	59	44	64	Cont	572
Test and Evaluation Organizations										
TECOM/ATC					1381	252	200	400	Cont	2233

Government Furnished Property: None

Subtotal Product Development	6117	455	613	836	8021
Subtotal Support and Management	405	59	44	64	572
Subtotal Test and Evaluation	1381	252	200	400	2233
Total Project	7903	766	857	1300	10826

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT D667

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D667 Land Warrior	50628	37826	39960	16999	15757	13972	14179	Continuing	Continuing

A. **Mission Description and Justification:** Land Warrior (LW) is an integrated fighting system for dismounted combat soldiers. The LW program will enhance the soldier's battlefield capabilities through the development and integration of an assortment of Army systems/components and technologies into a cohesive, timely, and combat effective system. These systems/components include: modular weapon system with thermal weapon sight, infrared aiming light, laser rangefinder, digital compass, video camera, and close combat optic; integrated headgear with helmet mounted display and image intensifier; enhancements to protective clothing and individual equipment; and an integrated individual soldier computer/radio. LW will bring the dismounted soldier into the digital battlefield.

Acquisition Strategy: The LW Engineering and Manufacturing Development (EMD) program is designed to field existing/mature technologies to meet soldier requirement deficiencies. The Force XXI Land Warrior program will develop advanced technology components for insertion into the LW consolidated program. An Integrated Product Team (IPT) was formed to determine which technologies from the Science and Technology (S&T) program will be integrated into the LW EMD program. An LRIP option, sole source contract, will be exercised to provide the required number of systems to meet the First Unit Equipped (FUE) date of 4Q00. A full production competitive contract will be awarded upon completion of successful Milestone III (1Q00).

FY 1997 Accomplishments:

•	7480	Fabricated LW prototypes for Development Testing (DT) and procure long lead items for Operational Testing.
•	12756	Conducted LW Early Operational Exercise (EOE), contractor and government testing, and prepare test support package.
•	9476	Fixed deficiencies resulting from Early Operational Exercise (EOE), contractor testing, finalize LW hardware/software design/integration, contract award fee. Ensured contractor and government compliance with Joint Technical Architecture-Army.
•	14120	Developed LW functional plans: Integrated Logistics Support (ILS), configuration management, etc., published LW draft system manuals; conducted risk reduction efforts and Preliminary and Critical Design Reviews.
•	6796	Program management and engineering support from other government agencies to provide oversight of contractor effort.
Total	50628	

FY 1998 Planned Program:

•	7756	Contractor program management, complete Production Qualification Test-Contractor (PQT-C); fix deficiencies, and conduct IV&V of software.
•	5100	Fabricate and deliver prototypes for PQT-Government and Initial Operational Test and Evaluation (IOTE) and to support Early User Test (EUT) which is Force XXI LW demonstration. Procure items and supplies for operational testing.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT D667

FY 1998 Planned Program: (continued)

•	5610	Redesign/refurbish prototypes and additional test support to conduct 15-month test.
•	10281	Conduct technical testing, logistics demo, operational and maintenance training, conduct operational testing and functional configuration audit (FCA).
•	7382	Program management and engineering support from other government agencies to provide oversight of contractor effort. Write specifications for LW limited production contract.
•	750	Modify LW EMD contract to incorporate Joint Technical Architecture-Army Version 5.0 compliance. Modify LW EMD contract to incorporate the Joint Variable Message Format (VMF) IAW with ASARDA direction to achieve Joint Force Digital Common Interoperability.
•	947	Small Business Innovation Research/Small Business Technology Transfer Programs
Total	37826	

FY 1999 Planned Program:

•	15915	Complete operational testing and fix deficiencies from operational testing.
•	250	Ensure system compliance with Joint Technical Architecture-Army and conduct IV&V of software.
•	6840	Program Management and engineering support from other government agencies to provide oversight of contractor effort. Conduct technical and program reviews (PRR and LRIP IPR) and briefings to achieve LRIP decision. Develop/coordinate documentation of release of RFP and conduct SSEB to award LRIP contract.
•	5800	Begin EMD on technology insertion candidates for insertion into LW production baseline.
•	8770	Contractor program management and contract award fee.
•	2385	Small Business Innovation Research/Small Business Technology Transfer Programs
Total	39960	

B. Program Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 Presidents Budget	47893	33031	16965
Appropriated Value	48917	39031	
Adjustment to Appropriated Value	1711	-1205	
FY 1999 President's Budget	50628	37826	39960

Change Summary Explanation:

Funding: FY 98 – Funding increased (+4796) due to congressional plus up.

Funding: FY 99 - Program restructure, funding realigned from other PM Soldier programs (+22800)

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: D667

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0603001.DJ50, Force XXI Land Warrior	18515	10948	9316	6423	6434	7669	7997	Cont	Cont
OPA 3, M80500, Land Warrior	0	0	51380	91460	100470	119198	111664	Cont	Cont
OPA 4, MS3610, Initial Spares-Land Warrior	0	0	0	207	241	257	256	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Early Operational Experiment (EOE)	X*											
LW Preliminary Design Review (PDR)		X*										
LW CDR				X*								
Fabricate/Deliver DT prototypes					X	X						
Contractor/Govt Production Qual testing						X	X	X				
Fabricate/Deliver OT items							X	X				
Operational Training							X	X				
Operational Testing							X	X	X	X	X	X
Logistics Demonstration								X				
LRIP IPR/Award									X			
Early User Test									X	X		
Milestone III/Production Award										X		

* Milestone Completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT D667

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
System Engineering and Program Management	1317	2350	1945
System Test and Evaluation	11919	7268	3665
Product Development	35009	26260	31965
Other RDTE Costs	2383	1948	2385
Total	50628	37826	39960

B. Budget Acquisition History and Planning Information:

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Hughes	CPAF/Comp	Jul 95				43515	26260	29570	Cont	99345
RDECs	MIPR					3096	2929	2395	Cont	8420
NRDEC	MIPR				244					244
CECOM	MIPR									
TACOM (PM-SA)	MIPR									
ARL	MIPR									
Support and Management Organizations										
Congress							716	2385	Cont	Cont
Reduction										
SSCOM	FAD					2383	1232		Cont	Cont
PM Soldier	In-House				252	277	600	750	Cont	Cont
Modern Tech Corp	Task Order					1040	1750	1195	Cont	Cont
Test and Evaluation Organizations										
ARL-SLAD	MIPR					317	4339	3665	Cont	Cont
OPTEC	MIPR									
TECOM	MIPR									
IV&V Contractor	Task Order									

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT D667

Government Furnished Property: None

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	244	46611	29189	31965		Cont
Subtotal Support and Management	252	3700	4298	4330		Cont
Subtotal Test and Evaluation		317	4339	3665		Cont
Total Project	496	50628	37826	39960		Cont

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: D668

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D668 Soldier Enhancement Program	15784	14114	14702	14866	14942	14805	14959	Continuing	Continuing

A. Mission Description and Justification: The objective of the Soldier Enhancement Program (SEP) is to increase 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 take three years to complete.

Acquisition Strategy: SEP procurement consists of Non-Developmental Items (NDI) or modified NDI that can be fielded in three years or less. Items that require more than three years development are pursued under the appropriate system area. SEP items are reviewed and approved for development one year and begin development during the next year. Procurement varies by appropriation.

FY 1997 Accomplishments:

•	1732	Completed development/type classification: Modular Weapon System, M4 Improved Buttstock, Shoulder Holster for 9MM Pistol (Left/Right Handed), Lightweight Chemical Overgarment, Shin/Knee Guards for Riot Control, Combat Medic Vest, Compression Sack, Improved Flotation Device, Small Unit Shower, Individual Soldier Radio and Blacklight.
•	3633	Continued development/procured prototypes and/or test: Non-Lethal 40MM Grenade, Non-Lethal 5.56MM Cartridge, XM 25 Stabilized Binoculars, Machine Gun Optics, Anti-Reflection Device, XM94 Stun Grenade, Mid Sized Riot Control Dispenser and Fighting Position Revetment.
•	7186	Initiated market surveys and/or developed: Heavy Sniper Weapon System, M249 Flexmount, Weapon Flashlight, Iron Sight, Close Quarters Battle Sling, 12 Gauge Non-Lethal Point and Crowd Control, 40mm Canister Rounds, IR Illumination Hand Grenade, M249 Feed Tray Cover, M4 Improved Buttstock, Blast Protective Boots, Knee and Elbow Pads, Ballistic Shin Guards, Equipment Belt Extender, Improved Underlying Insulating Layers for Extended Cold Weather Clothing System (ECWCS), Extreme Cold Weather Boot, Ballistic/Non-Ballistic Face and Body Shield, Fuel Bar, Modular Load Bearing Equipment, Low Profile Flotation Collar, and Emergency Breathing Device, Tuff Ties, MP Combat/Law Enforcement Ensemble, Improved Combat Shelter, Multi Purpose Cart, and Canteen Insert Water Purifier.
•	793	Terminated/Suspended/On-Hold: Canteen Cup Cooler, On the Move Hydration, Alternate Wear Hot Weather Boot, Physical Fitness Uniform, Enhanced Incendiary Grenade, Weapons Flashlight, Accessory Shotgun for Rifles/Carbines, and Boresights for Aimlights and Thermal Systems (BATS).
•	2440	Program Management.
Total	15784	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT D668

FY 1998 Planned Program:

•	3154	Complete development/type classify: Anti-Reflection Device, M249 Feed Tray Cover, M4 Improved Buttstock, Close Quarters Battle Sling, Iron Sight, Machine Gun Optics, Non-Lethal 40MM Grenade, 5.56MM Non-Lethal Cartridge, XM94 Stun Grenade, XM25 Stabilized Binoculars, Blast Protective Boots, Knee and Elbow Pads, Ballistic Shin Guards, Equipment Belt Extender, Improved Underlaying Insulating Layers for ECWCS, Extreme Cold Weather Boot, Ballistic/Non-Ballistic Face and Body Shield, Fuel Bar, Low Profile Flotation Collar, Tuff Ties, MP Combat/Law Enforcement Ensemble, Multi Purpose Cart, Emergency Breathing Device, Fighting Position Revetment and Mid Sized Riot Control Dispenser.
•	3258	Continue development/procure prototypes and/or test: Heavy Sniper Weapon System, 12 Gauge Non-Lethal Point and Crowd Control, 40MM Canister Round and IR Illumination Hand Grenade, Improved Combat Shelter, and Canteen Insert Water Purifier.
•	5469	Initiate market surveys/development: 12 Gauge Breaching Round, M203 Enhanced Fire Control System, Tactical Cartridge for Long Range Sniper Rifle, Lightweight Fragmentation Hand Grenade, Short Barrel M249 Light Machine Gun, Machine Gun Assault Bag, Collapsible Grappling Hook, Aviator Cable Tether, Micro Rappel System, Protective Gloves, Advanced Protective Eyewear System (APES), Ballistic Helmet Weight Reduction, Multi Purpose Cart (Pack Rat), and Low-Profile Lightweight (LPLW) Voice Amplifier.
•	1771	Program Management.
•	125	On Hold: Boresights for Aimlights and Thermal Systems IBATS).
•	337	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	14114	

FY 1999 Planned Program:

•	2041	Complete development/type classify: 12 Gauge Non-Lethal Point and Crowd Control, 40MM Canister Round, Short Barrel M249 Light Machine Gun, Advanced Protective Eyewear (APES), Multi Purpose Cart, Collapsible Grappling Hook, Improved Combat Shelter, Protective Gloves, Micro Rappel System, Low Profile Lightweight (LPLW) Voice Amplifier and Canteen Insert Water Purifier.
•	4899	Continue development/procure prototypes and /or test: Heavy Sniper Weapon System, 12 Gauge Breaching Round, IR Illumination Hand Grenade, Long Range Sniper Cartridge, M203 Enhanced Fire Control System, and Lightweight Fragmentation Hand Grenade.
•	5743	Initiate market surveys/development on new items to commence in FY 1999.
•	1940	Program Management.
•	79	Boresights for Aimlights and Thermal Systems (BATS).
Total	14702	

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: D668

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	21146	14563	14645
Appropriated Value	21598	14563	
Adjustments to Appropriated Value	-5814	-449	
FY 1999 President's Budget	15784	14114	14702

Change Summary Explanation: FY1997 funding (-5814) reprogrammed to support higher priority requirements.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Other Procurement, Army BA 3		1670	4832	4237	4676	3809	3801	Cont	Cont
MA6800, Soldier Enhancement									
WTCV, GC0076, Small Arms (SEP)	5338	4095	5233	5299	3601	310	2144	Cont	Cont
WTCV, GZ1290, Squad Automatic Weapon Mods				8461	10817	7951	7478	Cont	Cont
WTCV, GZ2800, M16 Rifle Mods	4907	4669	6241						15817
WTCV, GB3007, M4 Carbine Mods	4494	4886	5149	5401					19930
WTCV, G01500 Sniper Rifle, XM107, .50Cal				1200	3300	2300			6000
WTCV, GC0925, Mods	627	178	1128	1022	1008	1291	1290	Cont	Cont
PAA, F47500, 7.62mm AP	1996	1949	1926	1937	1929	3829	1898	Cont	Cont
PAA, F47600, 5.56mm AP	1996	1933	1926	1917	1909	1900	1889	Cont	Cont
PAA, F00900, 40mm Canister							5690		5995
PAA, E84900, XM84 Stun Grenade			1265	1792	2410	2441			7908
PAA, E82500, 12 Gauge Non-Lethal Point & Area	113								113
PAA, E91100, 5.56MM Non-Lethal Point & Area			3260	4310	6508	6653			20731
PAA, E89000, 40MM Non-Lethal		1213	1639	1598	1928	2011			8389
Other Procurement, Army BA 2		974	4593	3395	4500	5286	6317	Cont	Cont
BA5300, Soldier Enhancement (C/E)									
K30800, LWVRS	2589	4336	3364	4006	1233	1377	1419	Cont	Cont
OMA, 114092000, Central Funding and Fielding	89572	49059	54058	79898	82414	84233	86032	Cont	Cont

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT D668

D. Schedule Profile:

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
SEP Requirements Reviews		X*				X				X		
SEP Projects Reviews				X*				X				X

*Milestone completed

Note: Numerous individual projects are ongoing under the Soldier Enhancement Program (SEP) and each project has its own milestone schedule.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT D668

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
Soldier Enhancement Program	15784	14114	14702
Total	15784	14114	14702

B. Budget Acquisition History and Planning Information: Not applicable

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: D680

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D680 Mounted Warrior	0	1945	185	183	874	568	0	Continuing	Continuing

A. **Mission Description and Justification**: Mounted Warrior (MW) is an integrated modular system that will enhance the combat 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 can degrade a crewman's effectiveness by increasing rates of fatigue, reducing mobility and restricting his 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 the 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, and Chemical (NBC) contamination, spall, flame and heat, and better performance of crew tasks without reducing tactility and agility.

Acquisition Strategy. The MW program fields currently existing/mature technologies to meet the needs of the Combat Vehicle Crewman (CVC).

FY 1997 Accomplishments: Project not funded in FY 97

FY 1998 Planned Program:

•	393	Conduct trade off determinations and analysis to identify near and far term products and technologies.
•	788	Leverage Land Warrior components for concept experimentation.
•	342	Procure hardware to support early concept experimentation program of MW unique components.
•	373	Program Management and engineering support for program and requirements definition and documentation.
•	49	Small Business Innovation Research/Small Business Technology Transfer programs.
Total	1945	

FY 1999 Planned Program:

•	185	Program Management and engineering support for program and requirements definition and documentation
Total	185	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT D680

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	2007	4494
Appropriated Value		2007	
Adjustments to Appropriated Value		-62	
FY 1999 President's Budget	0	1945	185

Change Summary Explanation: Funding: FY99 funds (-4294) realigned to higher priority requirements.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA3, M80600 Mounted Warrior	0	0	0	0	0	2394	4298	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Capstone Requirements Document Approval					X							
Milestone I Decision						X						
Early Operational Evaluation components							X	X				
Operational Reqmts Document Approval								X				
Milestone II Decision									X			
Development Contract Award										X		
Fabricate MW prototypes for DT/OT										X	X	X

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: D680

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Program Management	0	297	175
System Engineering and Early Prototype Development		1535	
Other RDTE Costs		113	10
Total		1945	185

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Contractor-TBD	CPIF/Comp				0	0	1142	0	Cont	1142
RDEC Support	MIPR				0	0	393	80	Cont	473
Support and Management Organizations										
SSCOM	FAD						113	10	Cont	123
PM Soldier	In-House						113	95	Cont	208
RDEC Support							184		Cont	184
Test and Evaluation Organizations										

Government Furnished Property: None

Subtotal Product Development	1535	80		1615
Subtotal Support and Management	410	105		515
Subtotal Test and Evaluation				
Total Project	1945	185		2130

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604715A Non-System Training Devices - Engineering Development

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	46142	82965	64035	60445	48945	41235	53132	Continuing	Continuing
D241 Non-System Training Devices Combined Arms	33455	67229	48661	44505	33081	24369	36244	Continuing	Continuing
D396 WARSIM Intel Module (WIM)	2650	5490	4660	4356	4050	5265	5516	Continuing	Continuing
D573 STRICOM and Naval Air Warfare Center Training Systems Division (NAWCTSD) Support	10037	10246	10714	11584	11814	11601	11372	Continuing	Continuing

Mission Description and Budget Item 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 while helping to control rapidly escalating costs. 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). Project D573, STRICOM/Naval Air Warfare Center Training Systems Division (NAWCTSD) Support, funds in-house costs of project support by US Army Simulation, Training and Instrumentation Command (STRICOM) and NAWCTSD. This Program Element supports research efforts in the engineering and manufacturing development phase of the acquisition cycle and is therefore correctly placed in Budget Activity 5.

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604715A Non-System Training Devices - Engineering Development

PROJECT: D241

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D241 Non-System Training Devices Combined Arms	33455	67229	48661	44505	33081	24369	36244	Continuing	Continuing

A. Mission Description and Justification: D241 - NSTD Combined Arms: 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 simulation to replace CBS, Brigade/Battalion Battle Simulation (BBS), 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 Fire Support Combined Arms Tactical Trainer (FSCATT) provides for initial and sustainment gunnery training, and can be linked as part of the CATT family. FSCATT is designated as the Army's only Defense Acquisition Pilot Program IAW the Federal Acquisition Streamlining Act (FASTA). The Engagement Skills Trainer (EST) provides individual and squad level home station training with a deployable small arms engagement trainer, resulting in a significant savings in ammunition costs. This project funds the development of training devices, simulators, simulations and instrumentation for the Combat Training Centers (CTC's); Joint Readiness Training Center Military Operations in Urban Terrain (JRTC MOUT) for training in a realistic MOUT environment; Combat Training Center Opposing Forces (OPFOR) Surrogate Tracked Vehicles (STV) modernization to simulate the T-80 Main Battle Tank at the NTC, JRTC and CMTC; National Training Center Objective Instrumentation System (NTC OIS) to provide a completely digital based system for full tactical system connectivity and Distributed Interactive Simulation (DIS) compatibility. The Combat Synthetic Training Assessment Range (CSTAR) is a battle command training system that provides collective training for brigade-sized organizations at the National Training Center. CSTAR was approved as a two year Warfighting Rapid Acquisition Program (WRAP) effort. Devices developed will enable the Army to train units collectively to obtain synergistic results through the employment of weapons and support systems in their respective battlefield roles.

Acquisition Strategy: Competitive development efforts leading to competitive procurement against performance specifications.

FY 1997 Accomplishments:

•	22120	Continued development of WARSIM 2000 to include System Requirements Analysis, Software Requirements Analysis and System Design.
•	4365	Completed development of FSCATT Phase I.
•	3204	Continued limited enhancements to CBS.
•	2650	Continued development of devices, simulators and simulations to support training at Combat Training Centers to include JRTC MOUT Phase II.
•	1116	Initiated development of Combat Synthetic Training Assessment Range.
Total	33455	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development PROJECT D241

FY 1998 Planned Program:

•	38452	Complete Spiral Build 1 and approximately 50% of Spiral Build 2 software development for WARSIM 2000.
•	1046	Initiate development of Engagement Skills Trainer.
•	15123	Continue development of devices, simulators and simulations to support training at Combat Training Centers to include JRTC MOUT Phase II (3025), CTC OPFOR Tracked Vehicles (9880), NTC OIS (1947) and CTC Digitization (271).
•	2310	Continue limited/high priority refinements to CBS Source Code, to support major training exercises (i.e., Prairie Warrior).
•	3387	Continue the Battle Lab Reconfigureable Simulator.
•	5226	Continue development of Combat Synthetic Training Assessment Range.
•	1685	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	67229	

FY 1999 Planned Program:

•	34568	Complete Spiral Build 2 and majority of Spiral Build 3 software development for WARSIM 2000 and deliver software required for JSIMS Initial Operational Capability.
•	4557	Continue development of Engagement Skills Trainer.
•	1400	Continue limited /high priority refinements to CBS Source Code, to support major training exercises (i.e., Prairie Warrior).
•	8136	Continue development of devices, simulators and simulations to support training at the Combat Training Centers, to include JRTC MOUT Phase II, NTC OIS and CTC Digitization
Total	48661	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	35951	60512	57306
Appropriated Value	36752	69412	
Adjustment to Appropriated Value	-3297	-2183	
FY 1999 President's Budget	33455	67229	48661

Change Summary Explanation: Funding: FY 99 Funds realigned 8645 to higher priority requirements.

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604715A Non-System Training Devices - Engineering Development

PROJECT: D241

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA3, Appropriation	73546	52416	56755	91100	132810	103241	127069	Cont'd	Cont'd
NA0100 Training Devices, Non-System									
OPA3, Appropriation	26617	26101	47395	41612	54073	58110	25580	Cont'd	Cont'd
MA6600 CTC Support									
OPA3, Appropriation	21994	19396	28124	25309	11835	0	0	0	107804
NA0174 Fire Support Combined Arms Tactical Trainer									

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
WARSIM Software Spiral Build 1								X				
WARSIM Software Spiral Build 2										X		
WARSIM Software for JSIMS IOC											X	
EST Contract Award						X						
EST MS III											X	
JRTC-IS IOC			X*									
JRTC MOUT Phase II MS I/III			X*									
JRTC MOUT Phase II PDR								X				
JRTC MOUT Phase CDR										X		
CTC OPFOR STV Contract Award						X						
CTC OPFOR STV PDR								X				
CTC OPFOR STV CDR										X		
NTC OIS Contract Award						X						
NTC OIS MS II								X				
NTC OIS MS III												X
FSCATT IOC							X					

*Complete Milestones

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development PROJECT D241

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
System Development	32783	61113	42137
Test and Evaluation	87	5697	6270
Technical Data	585	419	254
Total	33455	67229	48661

B. **Budget Acquisition History and Planning Information**: Not Applicable

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604715A Non-System Training Devices - Engineering Development

PROJECT: D396

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D396 WARSIM Intel Module (WIM)	2650	5490	4660	4356	4050	5265	5516	Continuing	Continuing

A. Mission Description and Justification: D396 - WARSIM Intelligence Module (WIM): 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).

Acquisition Strategy: Competitive development leading to competitive procurement against performance specifications.

FY 1997 Accomplishments:

•	1035	Performed system requirements analysis, software requirements analysis and system design.
•	460	Initiated Software Development of Spiral Build 1.
•	1155	Contract solicited and awarded for development of WIM capability.
Total	2650	

FY 1998 Planned Program:

•	523	Verification and validation of completed software
•	3140	Complete software development of Spiral Build 1
•	1689	Initiate software development of Spiral Build 2.
•	138	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	5490	

FY 1999 Planned Program:

•	680	Verification and validation of completed software
•	3451	Complete development of Spiral Build 2
•	529	Complete version 1.0 for integration into JSIMS
Total	4660	

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604715A Non-System Training Devices - Engineering Development

PROJECT: D396

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	2722	5665	5047
Appropriated Value	2781	5665	
Adjustment to Appropriated Value	-131	-175	
FY 1999 President's Budget	2650	5490	4660

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA3, Appropriation NA0103 Training Devices, Non-System	4429	3013	0	9644	13643	3624	478	Cont'd	Cont'd

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Contract Awarded			X*									
Spiral Software Build 1								X				
Spiral Software Build 2										X		

* Completed Milestones

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1998
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604715A Non-System Training Devices - Engineering Development
	PROJECT: D396

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
Software Development	1000	3825	2933
System Engineering	522	835	1007
Project Management	1128	830	520
Developmental Test and Evaluation	0	0	200
Total	2650	5490	4660

B. Budget Acquisition History and Planning Information: Not Applicable

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604715A Non-System Training Devices - Engineering Development

PROJECT: D573

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D573 STRICOM and Naval Air Warfare Center Training Systems Division (NAWCTSD) Support	10037	10246	10714	11584	11814	11601	11372	Continuing	Continuing

A. **Mission Description and Justification: D573 – STRICOM and NAWCTSD Support:** This project funds STRICOM personnel salaries and support costs and a proportionate Army share of the operating costs of the Naval Air Warfare Center Training Systems Division (NAWCTSD) through an Inter-Service support agreement which is reviewed annually.

FY 1997 Accomplishments:

- 8837 Funded STRICOM personnel and support costs for Non-System Training Device programs.
- 1200 Funded NAWCTSD support costs for Non-System Training Device programs..

Total 10037

FY 1998 Planned Program:

- 8996 Funds STRICOM personnel and support costs for Non-System Training Device programs..
- 1250 Funds NAWCTSD support costs for Non-System Training Device programs..

Total 10246

FY 1999 Planned Program:

- 9464 Funds STRICOM personnel and support costs for Non-System Training Device programs..
- 1250 Funds NAWCTSD support costs for Non-System Training Device programs..

Total 10714

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	10115	10572	10695
Appropriated Value	10332	10572	
Adjustment to Appropriated Value	-295	-326	
FY 1999 President's Budget	10037	10246	10714

C. **Other Program Funding Summary:** Not Applicable

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development PROJECT D573

D. **Schedule Profile:** The nature of this project does not lend itself to acquisition milestones.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development PROJECT D573

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
Fund STRICOM Personnel & support	8837	8996	9464
Fund NAWCTSD Support	1200	1250	1250
Total	10037	10246	10714

B. **Budget Acquisition History and Planning Information**: Not Applicable

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604716A Terrain Information - Engineering Development (TIARA)

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	6969	2825	2999	5059	4065	5943	5133	Continuing	Continuing
D579 Field Army Map Sys Eng Dev	6969	2825	2999	5059	3606	5186	4393	Continuing	Continuing
D598 High Volume Map Production Equip (HVMPE)	0	0	0	0	459	757	740	Continuing	Continuing

Mission Description and Budget Item Justification: Combat Terrain Information Systems (CTIS) provide automated terrain analysis and 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/Quick Response Multicolor Printer (DTSS/QRMP) [i.e., HMMWV (Light) and 5-ton (Heavy)], the DTSS-Multispectral Imagery Processor (DTSS-MSIP), and the High Volume Map Production Equipment (HVMPE). Additionally, HQDA directed the acquisition of the Topographic Imagery Integration Prototype (TIIP). The Project Director for CTIS (PD CTIS) is responsible for developing, procuring, and fielding of topographic support systems for the Army. In addition, a Pre-Planned Product Improvement (P3I) program will be conducted to enable technology insertion (e.g., improved Army Battle Command Systems (ABCS) interoperability, automated feature extraction, improved tactical decision aid functionality), as well as the cyclic upgrade of Commercial Off-the-Shelf equipment. 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/QRMP, DTSS-MSIP, and TIIP fall under the Field Army Mapping System Engineering Development (D579) project. The HVMPE falls under the D598 project. The projects in this program element (Terrain Information - Engineering Development) support research efforts in the Engineering and Manufacturing Development (EMD) phases of the Acquisition Strategy and are therefore correctly placed in Budget Activity 5.

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604716A Terrain Information - Engineering Development (TIARA)

PROJECT: D579

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D579 Field Army Map Sys Eng Dev	6969	2825	2999	5059	3606	5186	4393	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program element funds development of the Digital Topographic Support System/Quick Response Multicolor Printer (DTSS/QRMP). 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 in which the commander must have the ability to rapidly obtain terrain information and topographic products. The Combat Terrain Information Systems (CTIS) Modernization Plan stated the requirement to proceed immediately with the Downsized DTSS and further identified that QRMP functionality would be incorporated into the DTSS for a single integrated terrain analysis and reproduction capability. It has been determined that the downsized (Light) capability is now more appropriate to support contingency operations, operations other than war, and split based operations. The DTSS/QRMP will be deployed at Division, Corps, and EAC in support of these missions. The DTSS/QRMP will automate the updating and processing of terrain information into terrain analysis products, provide rapid reproduction of low volume, up-to-date, large format, full color imagery maps, situation overlays, special graphics (e.g. captured enemy maps) and other topographic and terrain products. Using the most current technology available, the functional capabilities of DTSS and QRMP will be developed into a single interoperable architecture. Part of imagery exploitation includes the development of a Multi-Spectral Imagery Processor (MSIP), which provides an image map making capability. Due to current world events and the possibility of contingency missions in areas where standard map products are not available, image map production has become an urgent need.

Acquisition Strategy: The Acquisition Strategy being pursued for the DTSS/QRMP (Light) EMD phase is 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 Combat Terrain Information Systems (CTIS) System Engineering and Integration (SE&I) contractor is executing EMD phase, performing system integration, and has provided units for formal test and evaluation. Acquisition of the MSIP was completed in FY 1996. Based upon CINC, TRADOC and PEO C3S User Evaluation approvals, the MSIP will be Type Classified - Standard and added to the gaining unit's Table of Organization and Equipment. The acquisition of the MSIP relied upon existing contracts and commercial-off-the-shelf to the fullest extent possible Existing DTSS units are being upgraded to a 5-ton ISO 20 foot shelter configuration. The upgraded 5-ton systems will provide an integrated DTSS/QRMP (Heavy) capability while preserving the Army's investment in the DTSS. Program Management responsibility and milestone decision authority have been assigned to the Program Executive Officer for Command, Control, and Communications Systems (PEO C3S). Project management is provided by the Project Director (PD) for Combat Terrain Information Systems. The contracting strategy for the DTSS/QRMP (Light) program is to execute the EMD phase through the current SE&I contractor, Lockheed Martin Corporation. A Competitive Cost Plus Fixed Fee (CPFF) contract was awarded for the CTIS SE&I contract. A competitively awarded, Firm Fixed Price (FFP) contract is anticipated for the Full Rate Production of the downsized DTSS/QRMP (Light). Upgrades to the existing DTSS units will also be accomplished through a production contract with Lockheed Martin Corporation. The computer workstations for CTIS programs are being procured through the project manager for CHS.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604716A Terrain Information - Engineering Development (TIARA)
	PROJECT D579

FY 1997 Accomplishments:

•	5469	Completed development of downsized DTSS/QRMP
•	500	Conducted test and evaluation of EMD Prototypes
•	1000	Initiated P3I development for DTSS/QRMP
Total	6969	

FY 1998 Planned Program:

•	2754	Continue P3I development for DTSS/QRMP - communications and ABCS interoperability
•	71	Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
Total	2825	

FY 1999 Planned Program:

•	2999	Continue P3I development for DTSS/QRMP - communications and ABCS interoperability
Total	2999	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 Presidents Budget	7144	2942	2686
Appropriated Value	6969	2942	
Adjustments to Appropriated Value		-117	
FY 1999 President's Budget	6969	2825	2999

Change Summary Explanation: Funding - FY 1999 (+313) funding increased to support the Pre-Planned Product Improvement (P3I) Program

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA - KA2550 - DTSS	6386	7246	21230	16303	9005	4610	4659	Cont	Cont

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604716A Terrain Information - Engineering Development (TIARA) PROJECT D579

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Complete Downsized DTSS/QRMP (Light) Developmental Test and Evaluation/Operational Test and Evaluation (DT&E/OT&E)			X*									
Downsized DTSS/QRMP (Light) Milestone III						X						
Initiate Fielding of DTSS (Heavy)						X						
Award DTSS/QRMP (Light) Production Contract									X			
Complete Fielding of DTSS/QRMP (Heavy)												X

*Milestone Complete

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604716A Terrain Information - Engineering Development (TIARA)

PROJECT: D579

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Primary System Development	1800	100	200
Software Development	2749	1362	1492
Government Furnished Equipment	100	50	50
Government Engineering Support (includes Test Support)	942	150	150
Contractor Engineering Support	550	280	280
Licenses and Maintenance	15	12	27
Project Management and Administration	813	800	800
SBIR/STTR		71	
Total	6969	2825	2999

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Loral Defense Akron, OH	C/CPFF/FFP Prod Option	JUL 87	35657	35657	35657	0	0	0	0	35657
Lockheed Martin Ft Wash, PA	C/CPFF	JAN 93	21023	21023	16951	4549	962	0	0	22462
In-House Spt/TEC	MIPR				976	828	812	827	Cont	3443
TBD	TBD	TBD			0	0	500	1692	Cont	2192
Support and Management Organizations										
SYTEX	FFP thru PM				400	150	100	100	Cont	750
McLean, VA	Intel Fusion									
MITRE Corp	FFRDC thru				500	400	180	180	Cont	1260
McLean, VA	CECOM									
OGAs	MIPR				397	542	100	100	Cont	1139
SBIR/STTR							71			71
Test and Evaluation Organizations										
TECOM	MIPR				235	400	50	50	Cont	735

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604716A Terrain Information - Engineering Development (TIARA) PROJECT D579

Government Furnished Property

Item Description	Contract Method/Type or Funding Vehicle	Award of Obligation Date	Delivery Date	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property									
SUN's (ECS)	REQS	VAR	VAR	450	0	0	0	0	450
PULSAR /ECS	REQS	VAR	VAR	0	100	50	50	Cont	200
Support and Management Property: None									
Test and Evaluation Property: None									
Subtotal Product Development				54034	5477	2324	2569		64404
Subtotal Support and Management				1297	1092	451	380		3220
Subtotal Test and Evaluation				235	400	50	50		735
Total Project				55566	6969	2825	2999		68359

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604726A Integrated Meteorological System (IMETS) (TIARA)

PROJECT: DD85

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DD85 Integrated Meteorological System (IMETS)	0	1887	1790	2192	1669	1774	1735	13279	33926

A. Mission Description and Budget Item Justification: This program element, Integrated Meteorological System (IMETS), funds the development of the IMETS evolving upgrades to the fielded IMETS, integrating the Defense Information Infrastructure (DII) and Common Operating Environment (COE). The IMETS is a mobile tactical automated weather data receiving, processing, and dissemination system designed to provide timely weather and environmental effect forecasts, observations, and decision aid support to the Army. The IMETS is an Army-furnished system consisting of a standard shelter and vehicle, and Army Common Hardware and Software of the Army Battle Command System which will be operated by Air Force weather personnel and maintained within planned Army support for systems and components IAW AR115-10/AFR 105-3. It is essential that the battlefield commander be provided the most accurate and timely weather data for his intelligence preparation of the battlefield. IMETS is the first link in providing this data. This project supports research efforts in the engineering and manufacturing development phase of the acquisition cycle and is therefore correctly placed in Budget Activity 5.

Acquisition Strategy: The IMETS Block III development program will build on the Block II initiative including conversion to the DII and the Army C4I Technical Architecture. The IMETS NDI acquisition strategy has proven successful in the fielding of twenty systems since program initiation in FY92. 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 distributed communication environment interoperability. Weather tactical decision aid upgrades and updated forecaster aids will be developed to include products from the Air Force initiative called the High Resolution Weather Satellite Receiver, the Small Tactical Terminal for Defense Meteorological Satellite Program (DMSP) and high resolution domestic and foreign weather satellite data. Weather Application modules from the Army Research Laboratory will be integrated and fielded as a capability upgrade to the current software baseline.

FY 1997 Accomplishments: Project not funded in FY97

FY 1998 Planned Program:

•	1163	Develop, investigate and apply advanced technologies to the IMETS prototype for expanded capabilities and performance in the areas of battlescale forecast modeling, Integrated Weather Effects Decision Aid, Vis5D, Target Area Met, thunderstorm and turbulence model, and weather overlays on ATCCS SITMAP
•	676	Evaluate, configure and integrate high performance expanded tech base prototype capabilities into operational IMETS prototypes
•	48	Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
Total	1887	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604726A Integrated Meteorological System (IMETS) (TIARA) / PROJECT: DD85

FY 1999 Planned Program:

•	909	Continue 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 including continued battlescale forecast modeling; evaluation of the DoD Meteorological Satellite Program Special Sensor Data, environmental record data, for integration into the Weather Effects database; generate Down Wind Message from BFM; adapt AF EOTDA to Army Applications, Applications to support Aviation Mission Planning; develop heat/cold tactical decision aid
•	881	Continue to evaluate, configure and integrate tech base prototype capabilities into operational IMETS prototypes
Total	1790	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	1946	1931
Appropriated Value	0	1946	
Adjustments to Appropriated Value	0	-59	
FY1999 President's Budget	0	1887	1790

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA 2 - SSN: BW0021-IMETS	3125	1338	4890	8581	0	0	0	0	17934

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Develop tech base prototype							X					
Expand Battlescale Forecast Model							X				X	
Develop/integrate Vis5D program								X				
Develop thunderstorm and turbulence model								X				
Develop Target Area Meteorological capability								X				
Generate basic Down Wind Message from BFM									X			
Integrated Weather Effects Decision Aid									X			

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604726A Integrated Meteorological System (IMETS) (TIARA)

PROJECT: DD85

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Integrate Defense MetSat Program Environmental Data Record									X			
Adapt AF EOTDA to Army Applications										X		
Develop Applications to support Aviation Mission Planning										X		
Develop heat/cold tactical decision aid										X		

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604726A Integrated Meteorological System (IMETS) (TIARA)
	PROJECT DD85

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Systems Development	0	1614	1443
Project Management	0	112	148
Matrix Management	0	113	149
Test	0	0	50
SBIR/STTR		48	
Total	0	1887	1790

B. Budget Acquisition History and Planning Information:

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Logicon	Task Order				9600	0	451	584	8891	19526
ARL	MIPR				0	0	1163	859	8691	10713
Misc. Contracts	PWD				0	0	0	0	0	
Support and Management Organizations										
CECOM	MIPR				0	0	225	297	3067	3589
SBIR/STTR							48			48
Test and Evaluation Organizations: None										
EPG	MIPR				0	0	0	50	0	50
Subtotal Product Development					9600		1614	1443	17582	30239
Subtotal Support and Management							273	297	3067	3637
Subtotal Test and Evaluation								50		50
Total Project					9600		1887	1790	20649	33926

Government Furnished Property: None

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604739A JTT/CIBS-M (TIARA)

PROJECT: D702

COST (*In Thousands*)	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D702 Common Integrated Broadcast Service-Modules	4588	4360	4447	4426	4409	0	0	0	22369

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. The Common Integrated Broadcast Service - Modules (CIBS-M) Joint Program (all military departments and SOCOM) 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. This program funds design, development, test and evaluation of initial CIBS hardware and software modules, as well as implementing performance expanding modifications to the family of CIBS-M equipment. This program element supports development efforts in the Engineering and Manufacturing development phase of the Acquisition Strategy; therefore, is correctly placed in Budget Activity 5.

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 Joint Program will competitively develop hardware and software modules and procure the required modules for integration into host receiver systems. Additionally, this program provides for necessary modifications to IBS modules as the broadcast networks continue to evolve and modify their formats and protocols.

FY 1997 Accomplishments:

- 2990 Space Warfare Systems Command (SSC) S/W Study (S/W & Configuration Management Plan
- 980 Initial Module Development Planning, Host Integration/Configuration Management
- 443 Tactical Integrated Broadcast Service (TIBS) Certification Testing
- 175 CTT/MATT Modeling & Simulation Support

Total 4588

FY 1998 Planned Program:

- 1450 CIBS-Module prototype design)
- 1644 CIBS-Module Development)
- 1157 Design/Develop CIBS Interface to Commanders Tactical Terminal (CTT) and Multi Mission Advanced Tactical Terminal (MATT))
- 109 Small Business Innovative Research/Small Business Technology Transfer Programs

Total 4360

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604739A JTT/CIBS-M (TIARA)

PROJECT: D702

FY 1999 Planned Program:

- 1309 Continue CIBS-M Development
- 490 Initiate "Over the Air" Software Load Capability
- 848 Complete Development/Test CIBS-M Interoperability with CTT
- 1800 Design/Develop Reduced Size JTT Configuration (3/4 ATR)

Total 4447

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 Presidents Budget	4765	4499	4447
Appropriated Value	4648	4499	
Adjustments to Appropriated Value	-60	-139	
FY 1999 President's Budget	4588	4360	4447

Change Summary Explanation: Schedule: Module development delayed one year due to sustained contract protest.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
V29600 JTT/CIBS-M (Tiara)	20801	11190	5340	24761	25527	12402	12973	Cont	Cont
BA1081 Integrated Broadcast Terminal Mod (Tiara)	1445	3197	6487	0	0	0	0	0	5671

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Initiate Gov't Module Design Planning			X									
Award JTT Contract				X								
Award CIBS-M Development Mod						X						
Initial CIBS-M Prototype										X		
Complete CIBS-M/CTT Interop Test											X	
Complete CIBS-M/MATT Interop Test												X
Initial CIBS-M Integration into other SATCOM Terminals (eg.SPITFIRE,JCIT)												X

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604739A JTT/CIBS-M (TIARA)

PROJECT: D702

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Architecture Design	268	200	79
Module Design/Development	2990	2780	2281
TRIXS Migration Support (ABIO)	78	200	200
CIBS-M/CTT/MATT Interoperability	175	856	950
Validation Testing	443	0	832
Project Management	634	215	105
SBIR/STTR		109	
Total	4588	4360	4447

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
TBD	C/PFF	Jan 98	TBD	TBD	0	0	3636	3231	7800	14667
SSC						2990	0	0	0	2990
Various						253	200	200	365	1018
SBIR/STTR							109			109
Support and Management Organizations										
Proj Mgr/CECOM	MIPR					634	215	105	220	1174
MITRE						268	200	79	0	547
Test and Evaluation Organizations										
DET2	MIPR					443	0	0	0	443
OEC	MIPR					0		832	450	1282

Government Furnished Property: None

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604739A JTT/CIBS-M (TIARA)
	PROJECT D702

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development		3243	3945	3431	8165	18784
Subtotal Support and Management		902	415	184	220	1721
Subtotal Test and Evaluation		443		832	450	1725
Total Project		4588	4360	4447	8835	22230

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604741A Air Defense Command, Control, Intelligence - Engineering Development

PROJECT: D126

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D126 FAAD Command and Control Engineering Development	19577	21181	6476	7571	8500	17810	19686	Continuing	Continuing

A. Mission Description and Justification: **Project D126 - FAAD Command and Control Eng Dev:** The Forward Air Defense Command and Control (FAAD C2) System is an automated system deployed with FAAD weapons to provide accurate and timely command, control and targeting information for the weapon systems. The system utilizes non-developmental item sensors, computers, displays and interface hardware integrated with data communication equipment. It automates mission related functions and uses the Single Channel Ground and Airborne Radio Systems (SINCGARS) for voice and the Army Data Distribution System (ADDS) for data.

Acquisition Strategy: The acquisition strategy relies heavily on non-developmental items (NDI) and evolutionary software development to rapidly overcome our current air defense command, control and intelligence deficiencies and to keep pace with the advancing 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. Block III is currently being developed.

FY 1997 Accomplishments:

•	1877	Conducted Block III V4.R Integration, Assembly, and Test (IA&T) and System Certification Test (SCT)
•	17600	Continued Block III Software Development
•	100	Prepared for Block III Development Test (DT)
Total	19577	

FY 1998 Planned Program:

•	2499	Digitization integration
•	14447	Continue Block III development
•	3791	SENTINEL GBS
•	444	Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
Total	21181	

FY 1999 Planned Program:

•	100	System Certification Test
•	3251	Complete Block III SW development
•	3125	Digitization integration
Total	6476	

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604741A Air Defense Command, Control, Intelligence - Engineering Development

PROJECT: D126

B. Project Change Summary

	F 1997	FY 1998	FY 1999
FY1998/1999 President's Budget	20031	18350	6698
Appropriated Value	19624	22350	
Adjustments to Appropriated Value	-47	-1169	
FY 1999 President's Budget	19577	21181	6476

Change Summary Explanation:

Funding: FY 1998 (+2831) reflects Congressional increase for SENTINEL GBS (+4000) and undistributed Congressional reductions applied against this PE/Project (-1169).

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, DE10 - SENTINEL GBS	0	0	2786	5544	8593	8186	0	Cont	Cont
OPA 2, WK5053 - SENTINEL GBS	68877	59447	58247	49567	26987	24332	2494	Cont	Cont
OPA 2, WK5057 - SENTINEL MODS	0	0	0	0	9265	9707	30247	Cont	Cont
OPA 2, AD5050 - FAAD C2	41915	12696	14204	11212	11207	10718	9104	Cont	Cont
OPA 2, AD5070 - AD TAC OPNS CTR	0	0	0	0	0	14204	14208	Cont	Cont
Spares (BS9702) - FAAD C2	1150	1555	840	0	0	0	0	Cont	Cont
Spares (BS9732) - SENTINAL GBS	3610	5258	7181	0	0	0	0	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
System Certification Test		X*							X			
First Unit Equipped - Objective System												X

*Denotes completed milestone

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604741A Air Defense Command, Control, Intelligence - Engineering Development

PROJECT: D126

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Major Contracts	15254	14684	4749
Support Contract	1000	500	200
PMO/In-house/Other	2414	1562	1227
GFE/Testing	909	200	300
SENTINEL GBS		3791	
SBIR/STTR		444	
Total	19577	21181	6476

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
TRW	C/CPIF	Sep 86	176461	176461	176461	0	0	0	0	176461
TRW	SS/CPIF	Aug 92	32206	32206	32206	0	0	0	0	32206
TRW	SS/CPIF	Sep 94	53194	53194	21900	13264	12684	4749	Cont	52597
TRW	SS/T&M	Sep 93	4900	4900	2205	1888	2000	0	Cont	6093
Matrix (RDEC)	MIPR				3351	1072	1000	532	Cont	5955
SENTINEL GBS							3791			3791
Support and Management Organizations										
SETA, CAS	SS/CPFF	Feb 91	10879	10879	10879	0	0	0	0	10879
In-House/ Other					7962	2343	1062	895	Cont	12262
SBIR/STTR							444			444
Test and Evaluation Organizations										
ADATD, Ft Bliss					9006	810	0	100	Cont	9916
OPTEC					2000	0	0	0	0	2000

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604741A Air Defense Command, Control, Intelligence - Engineering Development PROJECT D126

Government Furnished Property

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property									
CHS	MIPR			600	200	200	200	0	1200
JTIDS	MIPR	1988		6000	0	0	0	0	6000
Support and Management Property: None									
Test and Evaluation Property: None									
Subtotal Product Development				242723	16424	19675	5481		284303
Subtotal Support and Management				18841	2343	1506	895		23585
Subtotal Test and Evaluation				11006	810		100		11916
Total Project				272570	19577	21181	6476		319804

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604746A Automatic Test Equipment Development

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	8868	8220	7030	7424	6749	7740	7222	Continuing	Continuing
DL59 Diagnostic/Expert System Development	8868	8220	4030	5424	6749	7740	7222	Continuing	Continuing
DL65 Calibration Sets Development	0	0	3000	2000	0	0	0	0	5000

Mission Description and Budget Item Justification: This program element provides for the development of automatic test equipment (ATE) to support the increasingly complex electronics of all Army weapon system commodities including armor, aviation, missile, and communications-electronics. The program focuses on test technologies which are common to multiple weapon platforms and are commercial state of the art to minimize the cost of troubleshooting and maintenance in the field. 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 will be developed to alleviate serious deployability and survivability shortfalls in the current systems. Expert systems and artificial intelligence applications are also being developed under this program element to support the Army strategy of improving the ability of weapon systems to help diagnose themselves through 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 will be on providing paperless maintenance manuals/procedures and battlefield electro-optics displays which will reduce the Army's investment in test program sets and in maintenance publications and procedures. These projects are appropriately assigned to Budget Activity 5 since they provide for engineering and manufacturing development of new ATE and calibration systems to meet the test, measurement, and diagnostic requirements of the Army's weapons and support systems, and for incorporation of modern technologies into the Army's ATE and calibration systems.

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604746A Automatic Test Equipment Development

PROJECT: DL59

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL59 Diagnostic/Expert System Development	8868	8220	4030	5424	6749	7740	7222	Continuing	Continuing

A. Mission Description and Budget Item Justification: This project funds development of expert/diagnostic systems and general purpose test 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 technologies and state-of-the-art general purpose test equipment to support the Army's weapon systems, improvement of general purpose test equipment to meet new testing and technological requirements, market surveys of commercially available general purpose test equipment to determine applicability to Army requirements, evaluations and validations of diagnostic software on targeted hardware, and development/evaluation of test program sets (TPS) for use with standard automatic test equipment. Applications of state-of-the-art technologies in expert systems and artificial intelligence, paperless maintenance and troubleshooting manuals, electro-optics displays for battlefield use, and soldier-friendly equipment will be developed to meet identified requirements.

Acquisition Strategy: When the necessary expertise and capability are available within the Department of Defense, services are ordered from the government source; otherwise, commercial contracts are used. Equipment required for developmental projects is obtained by contract from the commercial supplier. Candidate non-developmental items and commercial equipment are identified and evaluated through market surveys and bid sample testing.

FY 1997 Accomplishments:

•	1175	Tested new contact test set (Soldier Portable On-System Repair Tool) (SPORT) hardware and Apache cables.
•	1607	Tested new state-of-the-art commercial equipment for use in Army test equipment programs.
•	4700	Continued integration and testing of the Electro-Optics Test Facility.
•	486	Continued development of the Failure Analysis and Maintenance Planning System for SPORT.
•	500	Completed development of Kiowa Warrior electro-optic TPSs.
•	400	Commenced development/rehost of Apache electro-optic TPSs.
Total	8868	

FY 1998 Planned Program:

•	1500	Upgrade digital capability of Integrated Family of Test Equipment off-system tester to VXI (open architecture).
•	2244	Modify Navy Consolidated Automated Support System electro-optics (EO) module for use in Army EO tester.
•	1882	Complete integration and testing of the Electro-Optics Test Facility.
•	1700	Complete development/rehost of Apache EO test program sets.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604746A Automatic Test Equipment Development PROJECT DL59

FY 1998 Planned Program: (continued)

•	700	Complete development of the Failure Analysis and Maintenance Planning System for the Soldier Portable On-System Repair Tool (SPORT).
•	194	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	8220	

FY 1999 Planned Program:

•	510	Test and evaluate a Society of Automotive Engineers J1939 data bus as a SPORT test capability.
•	2497	Develop interface software needed by test program set developers to utilize Integrated Family of Test Equipment electro-optics test capabilities.
•	1023	Evaluate Navy diagnostics for the SH-60 for application to Army UH-60 and review Marine Corps testing of real-time maintenance reporting.
Total	4030	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	9575	2582	2533
Appropriated Value	9793	8582	
Adjustments to Appropriated Value	-925	-362	
FY 1999 President's Budget	8868	8220	4030

Change Summary Explanation:

Funding: FY 1998 appropriated value +6000 Congressional increase; adjustment –362 undistributed Congressional reduction.

Funding: FY 1999 +1479 increase supports high priority software development requirement.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA2, K18400, Base Shop Test Facility	15414							0	306074
OPA3, MB4001, Base Shop Test Facility		15162	16587	17024	14912	4290	1903	0	69878
OPA2, K51600, Contact Test Set	4408							0	94364
OPA3, MB4002, Contact Test Set (SPORT)		19055	23559	18849	40805	37848	46800	Cont	Cont
OPA2, KA4100, Electro-Optic Equipment	1829							0	5688
OPA3, MB4003, Electro-Optic Equipment		0	13905	12472	14525	8580	8561	Cont	Cont
OPA3, MB2201, Electronic Repair Shelter	0	5545	3694	3674	2871	1649	0	Cont	Cont

D. Schedule Profile: Not applicable.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1998
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604746A Automatic Test Equipment Development
	PROJECT: DL59

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Systems Engineering	2399	3976	983
Software Development/Engineering	5091	3150	2497
Testing	700	750	300
Miscellaneous	678	344	250
Total	8868	8220	4030

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations:										
Northrop Grumman, Bethpage, NY	SS/CPFF	Various*	13179	13179	1385	5450	6344		0	26358
Other Contracts	Various	Various			53719	1516	676	2830	Cont	Cont
Support and Management Organizations:										
Govt In-House					9425	1902	1200	1200	Cont	Cont

Test and Evaluation Organizations: None

Government Furnished Property: None

*Basic contract awarded Jul 96; follow-on delivery orders through Jul 98.

Subtotal Product Development	55104	6966	7020	2830	Cont	Cont
Subtotal Support and Management	9425	1902	1200	1200	Cont	Cont
Subtotal Test and Evaluation						
Total Project	64529	8868	8220	4030	Cont	Cont

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604746A Automatic Test Equipment Development

PROJECT: DL65

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL65 Calibration Sets Development	0	0	3000	2000	0	0	0	0	5000

A. Mission Description and Budget Item Justification: This project funds development of major program elements 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 have highlighted the need for a more mobile and upgraded calibration set. Primary needs are for an appropriate mobility footprint which 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 down-sized calibration set to be developed under this project will employ reconfigurable, open electronics architecture wherever feasible and will be housed in transport configurations appropriate for airlift via C-141/C-130 aircraft.

Acquisition Strategy: When the necessary expertise and capability are available within the Department of Defense, services will be ordered from the government source; otherwise, commercial contracts will be used. Existing equipment and instrumentation and commercial off-the-shelf components will be used to the maximum extent possible. Development will be limited primarily to overcoming commercial market barriers (e.g., economic and packaging) rather than overcoming technology barriers.

FY 1997 Accomplishments: Project not funded in FY 1997

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program:

•	2125	Initiate development of two prototypes combining the current AN/GSM-286 and AN/GSM-287 Calibration Sets into a downsized configuration.
•	125	Perform Manpower and Personnel Integration study of the prototype calibration set.
•	500	Acquire smaller and lighter high-precision calibration standards for technology insertion into the downsized equipment configuration.
•	250	Initiate development of software to link calibration set computers for interactive electronic technical manual, training, controls, and other applications.
Total	3000	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	0	0
Appropriated Value			
Adjustments to Appropriated Value			
FY 1999 President's Budget	0	0	3000

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE
	February 1998

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - Engineering and Manufacturing Development	0604746A Automatic Test Equipment Development	DL65

Change Summary Explanation: Funding: FY 1999 +3000 plus up supports development of downsized calibration set.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA2, BZ5269, Calibration Sets Equipment	10984							0	135644
OPA3, N10000, Calibration Sets Equipment		6418	9984	11639	18862	15921	16694	Cont	Cont

D. Schedule Profile: Not applicable.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604746A Automatic Test Equipment Development

PROJECT: DL65

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Systems Engineering			2325
Software Development/Engineering			250
Testing			200
Miscellaneous			225
Total	0	0	3000

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations:										
Contracts								2100	1650	3750
Support and Management Organizations:										
Govt In-House								900	350	1250
Test and Evaluation Organizations: None										
Government Furnished Property: None										
Subtotal Product Development								2100	1650	3750
Subtotal Support and Management								900	350	1250
Subtotal Test and Evaluation										
Total Project								3000	2000	5000

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	17618	20249	2766	5890	6877	17186	26249	0	Continuing
DC73 Synthetic Theater of War	9768	5657	0	0	0	0	0	0	15425
DC74 Developmental Simulation Technology	2429	2360	0	0	0	0	0	0	4789
DC77 Interactive Simulation	5421	8355	1380	2929	3411	8508	8508	0	Continuing
DC78 Computer Generated Forces	0	3877	1386	2961	3466	8678	17741	0	Continuing

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 DIS components may reside at local and distributed locations, using various simulation hardware linked through use of a standard communication architecture. This Program Element provides for the engineering development and application of DIS technology to electronically link all subcomponents together to create a scaleable battlefield, both horizontally and vertically. 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. Project DC73, Synthetic Theater of War, supports engineering development and integration of the Synthetic Theater of War-Army (STOW-A). Project DC74, Developmental Simulation Technology, provides engineering development of DIS tools (e.g., Distributed Interactive Simulation Exercise Toolset (DISECT) for exercise management, techniques, standards and applications in support of the Army's Core DIS Facilities (CDF) at Forts Knox, Benning and Rucker, and the Operational Support Facility in Orlando, FL). Project DC77, Interactive Simulation, focuses on engineering development of techniques and technology for reconfigurable simulators operating in the DIS virtual environment and related simulations and simulator efforts. The FY98 program provides a Reconfigurable Research and Development Simulation tool that will allow the battlelabs to accomplish their mission in support of the Advanced Concept & Requirements (ACR), Research, Development and Acquisition (RDA), and Training Exercise and Military Operations (TEMO) domains. The reconfigurable simulator program will provide tools to the Army's Battle Labs and Core DIS facilities to conduct experiments in all three domains. Project DC78 develops and upgrades computer generated forces software systems which support experimentation, concept evaluation, materiel development and training. Work done on this program will have benefit across the Army and DOD by providing standards for interoperability and software reuse in this emerging domain. This Program Element supports research efforts in the engineering and manufacturing development phases of the acquisition cycle and therefore is correctly placed in Budget Activity 5.

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

PROJECT: DC73

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC73 Synthetic Theater of War	9768	5657	0	0	0	0	0	0	15425

A. Mission Description and Justification: Project DC73 - Synthetic Theater of War: 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 DIS user based exercise/experiment for JOINT VENTURE training and analytical needs.

Acquisition Strategy: Development and procurement through delivery orders to competitively selected contractors providing Systems Engineering and Integration and Advanced Development Simulation Technology, based on performance specifications.

FY 1997 Accomplishments:

•	2995	Developed and applied distributed simulation technology to support the Synthetic Theater of War and joint venture/digitization.
•	1338	Completed the Early Entry Operations and Service Support Analysis (EEOSSA) Phase 1 PPQT and continued the development of EEOSSA and Ground Vehicle
•	5020	Developed and integrated emerging simulation technology in support of Force XXI training program.
•	415	Integrated virtual reality technologies and Dismounted Infantry computer generated forces. Conducted engineering and user level experiments to support ACR, RDA and TEMO simulation requirements.
Total	9768	

FY 1998 Planned Program:

•	5515	Continue development of software and hardware integration used to link live, virtual and constructive legacy simulations to support the Synthetic Theater of War.
•	142	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	5657	

FY 1999 Planned Program: Project not funded in FY 1999

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

PROJECT: DC73

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	10033	5837	0
Appropriated Value	10248	5837	
Adjustments to Appropriated Value	-480	-180	
FY 1999 Presidents Budget	9768	5657	0

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA3, KA6000, Reconfigurable Simulators	2296	13501	1967	1420	240	273	334	0	20031
OMA, Reconfigurable Simulators	10323	0	0	0	0	0	0	0	10323

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Award Engr & Integration Contract	X*				X							

*Milestone Complete

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604760A Distributive Interactive Simulations - Engineering Development PROJECT DC73

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Systems Engineering & Integration	2848	3863	0
Hardware Design & Development	1750	490	
Reliability, Availability and Maintainability	738	920	
Training Support Packages	4027	0	
Verification, Validation & Accreditation	405	384	
Total	9768	5657	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Lockheed-Martin, Orlando, Fl	DO/CPAF	Nov 96	6089	6089	0	2849	3240	0	0	6089
Cubic Applications Inc., Lacey, WA	DO/CPIF	Jan 97	1290	1290	0	1290	0	0	0	1290
ARI, Alexandria, VA	DO/CPIF	Feb 97	4710	4710	0	3747	963	0	0	4710
Support and Management Organizations										
Miscellaneous	Various	Various	2547	2547	0	1477	1070	0	0	2547
Test and Evaluation Organizations										
Miscellaneous	Various	Various	789	789	0	405	384	0	0	789
Subtotal Product Development						7886	4203			12089
Subtotal Support and Management						1477	1070			2547
Subtotal Test and Evaluation						405	384			789
Total Project						9768	5657			15425

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

PROJECT: DC74

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC74 Developmental Simulation Technology	2429	2360	0	0	0	0	0	0	4789

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 virtual combined arms battlefield with the warfighter-in-the-loop to evaluate weapon system concepts, tactics, doctrine and test plans.

Acquisition Strategy: Competitive development leading to competitive procurement against performance specifications

FY 1997 Accomplishments:

•	865	Developed Distributed Exercise Management (DEM) as a major tool of DISECT for use in support of STOW97 ACTD and future exercises.
•	1564	Prepared the Core DIS Facilities (CDF) for the implementation of new simulators, improved support for synthetic environment experiments, and increased CDF operational efficiency.
Total	2429	

FY 1998 Planned Program:

•	480	Develop Dismounted Warrior Network, expand the current capabilities to include MOUT and C4I simulation and integrate DI SAF into MODSAF.
•	366	Complete development of tools which provide improved capabilities for exercise generation and after-action analysis.
•	493	Simulator Interoperability development and systems integration of CDF architecture to resolve issues of compatibility, compliance, and interoperability.
•	962	Increase Environmental representation, develop representations of candidate C4I models and CDF/HLA compliance of interfaces for existing CDF equipment.
•	59	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	2360	

FY 1999 Planned Program: Project not funded in FY 1999

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

PROJECT: DC74

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	2577	2436	3008
Appropriated Value	2632	2436	
Adjustments to Appropriated Value	-203	-76	
FY 1999 Presidents Budget	2429	2360	0

Change Summary Explanation: FY 99 Funds realigned (-3008) to higher priority requirements.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, A Budget Activity 5, PE 0604760A, Project DC77, Interactive Simulation	5421	8355	1380	2929	3411	8508	8508	0	Cont'd
OPA3, KA6000, Reconfigurable Simulators	2296	13501	1967	1420	240	273	334	0	15797

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Advanced Distributed Simulation Technology (ADST) II Delivery Order Contract Award	X*					X						

*Milestone Complete

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

PROJECT: DC74

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Systems Engineering & Integration	1609	1410	0
Primary Hardware Development	425	600	0
Reliability, Availability and Maintainability	395	350	0
Total	2429	2360	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Lockheed-Martin, Orlando, Fl	DO/CPAF	Nov 96	3698	3698	0	1644	2054	0	0	3698
Support and Management Organizations										
Miscellaneous	Various	Various	498	498	0	364	134	0	0	498
Test and Evaluation Organizations										
Miscellaneous	Various	Various	120	120	0	120	0	0	0	120
TASC, Orlando, FL	DO-CPFF	Nov 97	473	473	0	301	172	0	0	473
Subtotal Product Development						1644	2054			3698
Subtotal Support and Management						364	134			498
Subtotal Test and Evaluation						421	172			593
Total Project						2429	2360			4789

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

PROJECT: DC77

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC77 Interactive Simulation	5421	8355	1380	2929	3411	8508	8508	0	Continuing

A. Mission Description and Justification: Project DC77 - Interactive Simulation: This project focuses on engineering development of techniques and Distributed Simulation technology (e.g. 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 Battlelab Reconfigurable Simulators. Development activities associated with this project were budgeted in Program Element 0604715A, Non-System Training Devices Engineering Development, Project DC91, Distributive Interactive Simulation, in FY 1995 and FY 1996.

Acquisition Strategy: Competitive development leading to competitive procurement against performance specifications

FY 1997 Accomplishments:

•	777	Provided systems engineering and developed standards, interoperability and accreditation processes, and DIS tool to support the synthetic environment.
•	500	Developed software upgrades/enhancements to support the re-architecture of modular semi-automated forces (MODSAF) computer generated forces system.
•	4144	Developed the Ground Vehicle and Early Entry Operations and Service Support Analysis Battlelab Reconfigurable Simulators. The Phase 1 PPQT for Early Entry Operations and Service Support Analysis was completed Jun 97.
Total	5421	

FY 1998 Planned Program:

•	2239	Provide systems engineering and develop HLA environment and standards to support interoperability within the training domain.
•	5906	Solicit and evaluate NDI candidate Reconfigurable Research and Development Simulation Tools. Develop linkages and upgrade R&D tools to achieve HLA and DIS compliance and resolve interoperability issues.
•	210	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	8355	

FY 1999 Planned Program:

•	880	Provide systems engineering and develop HLA environment and standards to support interoperability within the training domain.
•	500	Development of distributed simulation technology to support the Synthetic Theater of War and Joint Venture/Digitization.
Total	1380	

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

PROJECT: DC77

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	3021	8622	4224
Appropriated Value	3086	8622	
Adjustments to Appropriated Value	2335	-267	
FY 1999 Presidents Budget	5421	8355	1380

Change Summary Explanation:

Funding: FY 97 Reduction (-100) for undistributed congressional reductions, and congressional increase (+2500) for the Battle Lab Reconfigurable Simulators

FY 99 Funds realigned (-2844) to higher priority requirements.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA3, KA6000, Reconfigurable Simulators	2296	13501	1967	1420	240	273	334	0	15797
RDTE, A Budget Activity 5, PE 0604760A, Project DC74, Interactive Simulation	2429	2360	0	0	0	0	0	0	4789

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Advanced Distributed Simulation Technology II Delivery Order Contract Awarded	X*					X			X			
Software Engineering Institute (SEI) Delivery Order Contract Award	X*					X			X			

* Milestones Complete

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

PROJECT: DC77

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Systems Engineering & Integration	1367	1337	400
Develop HLA tools, techniques, standards	852	750	980
Reconfigurable Simulator Hardware/Software Development	3202	0	0
Reconfigurable Research & Development Simulation Tool	0	6268	0
Total	5421	8355	1380

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Hughes Training Inc., Orlando, FL	CPIF	Feb 97	3202	3202	0	3202	0	0	0	3202
Lockheed-Martin, Orlando, FL	DO/CPAF	Oct 96	TBD	TBD	0	886	4418	400	Cont'd	5704
Miscellaneous	TBD	TBD	2567	2567	0	0	2087	480	0	2567
Support and Management Organizations										
Miscellaneous	Various	Various	TBD	TBD	0	1034	1500	500	Cont'd	3034
Test and Evaluation Organizations										
Miscellaneous	Various	Various	649	649	0	299	350	0	0	649
Subtotal Product Development						4088	6505	880		11473
Subtotal Support and Management						1034	1500	500		3034
Subtotal Test and Evaluation						299	350			649
Total Project						5421	8355	1380		15156

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

PROJECT: DC78

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC78 Computer Generated Forces	0	3877	1386	2961	3466	8678	17741	0	Continuing

A. Mission Description and Justification: **Project DC78 - Computer Generated Forces**: 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. This project is not a new start, but rather a realignment of funds from Interactive Simulation (DC77) to more appropriately identify/manage accomplishments of Computer Generated Forces as determined by the Army Modeling Simulation Office (AMSO). OneSAF is a composable next generation SAF which 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.

Acquisition Strategy: Competitive development leading to competitive procurements against performance specifications.

FY 1997 Accomplishments: Project not funded in FY 1997

FY 1998 Planned Program:

•	500	Develop and integrate expansion of ModSAF battlefield operating systems representation/upper echelon behavior capabilities.
•	2894	Establish the Integrated Product Team and develop the technical requirements, acquisition planning and concept for OneSAF.
•	385	Verification and validation of newly integrated software.
•	98	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	3877	

FY 1999 Planned Program:

•	300	Develop and integrate expansion of ModSAF battlefield operating systems representation/upper echelon behavior capabilities.
•	906	Continue requirements generation for OneSAF.
•	180	Verification and validation of newly integrated software.
Total	1386	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604760A Distributive Interactive Simulations - Engineering Development PROJECT DC78

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	4000	2010
Appropriated Value	0	4000	
Adjustments to Appropriated Value	0	-123	
FY 1999 Presidents Budget	0	3877	1386

Change Summary Explanation: Funding: FY 99 Funds realigned (-624) to higher priority requirements.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, A Budget Activity 5, PE 0604760A, Project DC77, Interactive Simulation	5421	8355	1380	2929	3411	8508	8508	Cont'd	Cont'd

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
ADST II Delivery Order Contract Award					X				X			

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

PROJECT: DC78

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Engineering Development and Integration		3392	1106
Verification and Validation		485	280
Total	0	3877	1386

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Miscellaneous	Various	Various	TBD	TBD	0	0	1125	300	Cont'd	1425
Lockheed-Martin Inc., Orlando, FL	DO/CPAF	Dec 98	TBD	TBD	0	0	700	400	Cont'd	1100
Support and Management Organizations										
Miscellaneous	Various	Various	TBD	TBD	0	0	1707	506	Cont'd	2213
Test and Evaluation Organizations										
Miscellaneous	Various	Various	TBD	TBD	0	0	345	180	Cont'd	525
Subtotal Product Development							1825	700		2525
Subtotal Support and Management							1707	506		2213
Subtotal Test and Evaluation							345	180		525
Total Project							3877	1386		5263

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE: February 1998

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*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D909 Tactical Exploitation of National Capabilities - Eng Dev	14839	17807	44674	79740	56213	92231	77255	Continuing	Continuing

A. **Mission Description and Budget Item Justification:** This project supports the engineering development/enhancement of the Electronic Tactical User Terminal (ETUT), Mobile Integrated Tactical Terminal (MITT), Forward Area Support Terminal (FAST), Advanced Electronic Processing Dissemination System (AEPDS) and Tactical Exploitation System (TES). The Army's emerging 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. TENCAP Common Baseline addresses common subsystems, planned improvements, key activities and ongoing/planned initiatives determined to have potential application to multiple TENCAP systems [including MIES and ETRAC that are funded under the Defense Airborne Reconnaissance Program (DARP) (PE 0305154D)]. Specific details are provided in the Tactical Intelligence and Related Activities (TIARA) Congressional Justification Book, Volume II and in the Army TENCAP Master Plan. This PE supports research efforts in the engineering and manufacturing development phases of the acquisition strategy and is therefore correctly placed in Budget Activity 5.

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, dedicated cradle to grave Integrated Logistics Support (ILS) for TENCAP systems is accomplished through a coordinated effort by Government and contractor personnel and facilities.

FY 1997 Accomplishments:

•	4481	Continued software upgrades and enhancements for the refinement of the TENCAP Common Baseline to fully exploit National 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.
•	5106	Continued engineering development of TES.
•	2343	Completed effort to combine ETUT and EPDS capabilities into AEPDS.
•	2909	Continued support to TENCAP program management and administrative activities [e.g. FFRDC (Aerospace), ARL support, ASPO support , Army Topographic Engineering Center (TEC) and Contractor SETA support].
Total	14839	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
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 1998 Planned Program:

•	6965	Continue software upgrades and enhancements for the refinement of the TENCAP Common Baseline to fully exploit National 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, will include integration of Global Broadcast System (GBS) and the Joint Tactical Terminal (JTT) into the TENCAP systems.
•	8640	Continue engineering development of TES.
•	1761	Continue support to TENCAP program management and administrative activities [e.g. FFRDC (Aerospace), ARL support, ASPO support , Army Topographic Engineering Center (TEC) and Contractor SETA support].
•	441	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	17807	

FY 1999 Planned Program:

•	19951	Continue software upgrades and enhancements for the refinement of the TENCAP Common Baseline to fully exploit National 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, will include integration of Global Broadcast System (GBS) and the Joint Tactical Terminal (JTT) into the TENCAP systems.
•	18379	Continue engineering development of TES.
•	6344	Continue support to TENCAP program management and administrative activities (e.g. FFRDC (Aerospace), ARL support, ASPO support , Army Topographic Engineering Center (TEC) and Contractor SETA support).
Total	44674	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	15235	19113	19531
Appropriated Value	14869	19113	
Adjustments to Appropriated Value	-30	-1306	
FY 1999 President's Budget	14839	17807	44674

Change Summary Explanation: FY 1999 increase (+25143) All efforts previously funded under 6063766A/project 909 were consolidated into this PE/project.

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)

PROJECT: D909

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE,A Budget Activity 4									
PE0603766,A Project D907 TENCAP – Adv Dev	24714	19566	0	0	0	0	0	0	0
RDTE,D Budget Activity 7									
PE 0305154D, Project P531 DARP	49395	0	0	0	0	0	0	0	0
PE 0305208D, Project PD8Z DARP	0	30377	29924	23558	24768	24216	23837	Cont	Cont
Other Procurement Army, OPA-2									
BZ7315 TENCAP	1818	1679	1690	4460	13225	14204	16101	Cont	Cont
Procurement, Defense Wide									
PE 0305154D DARP	89945	0	0	0	0	0	0	0	0
PE 0305208D DARP	0	94070	75857	74281	64267	65468	66678	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Complete and Field DAMA Applique into SUCCESS Radios								X				
Complete Development and fielded AEPDS				X*								
Initiate integration of GBS into AEPDS and TES						X						
Initiate migration of JTT into AEPDS and TES										X		
Complete integration of GBS into AEPDS and TES												X
Complete Prototype Development of TES-Forward												
Complete integration of DSN/DMS into TENCAP Systems										X		

* Denotes completed milestones

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - Engineering and Manufacturing Development	0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)	D909

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
AEPDS	2343	0	0
TES	5106	8640	18379
Common Baseline (*1)	4481	6965	19951
FFRDC	1220	1274	1403
Systems Engineering (Contractor)	1689	487	1030
Systems Engineering (Government)	0	0	1500
ASPO In-house(*2)	0	0	2411
SBIR/STTR	0	441	0
Total	14839	17807	44674

(*1) TENCAP Common Baseline addresses common subsystems, planned improvements, key activities and ongoing/planned initiatives determined to have potential application to multiple TENCAP systems [including MIES and ETRAC that are funded under the DARP (PE 0305154D)]
(*2) Approximately 40% of program management cost in FY 1997 through FY 1999 support efforts being developed under PE 0305154D.P531 and PE 0305308D.PD8Z.

B. Budget Acquisition History and Planning Information Not Applicable

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	161583	229389	134858	160363	120582	53841	19339	0	1822612
D641 BAT	79252	78440	17239	16381	0	0	0	0	1020227
D687 BAT P3I	15523	62376	65588	70835	55824	9514	4488	0	334316
D688 ATACMS BLK II	66803	88573	41496	23981	12684	0	0	0	296827
D686 ATACMS BLK IIA	0	0	10282	43863	52074	44327	14851	0	165397
D2NT BAT Operational Test	5	0	253	5303	0	0	0	0	5845

Mission Description and Budget Item Justification: The BAT is the submunition in the Block II missile system that supports the Army's deep fire doctrine that calls 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, the Army Tactical Missile System Block II (ATACMS BLK II) missile, and the ATACMS BLK IIA missile. BAT is a dual-sensor (acoustic and infrared) submunition that autonomously seeks out and destroys moving armored vehicles. It is an unpowered, aerodynamically stable vehicle, approximately 36 inches long, 5.5 inches in diameter and weighs 44 pounds. BAT and BAT P3I submunitions are carried deep into enemy territory by the two Army TACMS variants, 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. The ATACMS BLK IIA missile is an extended range version of the ATACMS BLK II missile and will carry 6 BAT P3I submunitions out to ranges in excess of 200 kilometers. The projects in this Program Element support research efforts in the engineering and manufacturing development phases of the acquisition strategy and are therefore correctly placed in Budget Activity 5.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition PROJECT D641

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D641 BAT	79252	78440	17239	16381	0	0	0	0	1020227

A. Mission Description and Budget Item Justification: **Project D641-BAT:** 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 utilizing acoustic technology, BAT has the advantage of an extremely large footprint, which allows it to compensate for target location errors. Being a certified round, the Block II with BAT submunitions has a low sustainment cost.

Acquisition Strategy: The BAT system is a sole source EMD program.

FY 1997 Accomplishments:

•	66994	Conducted EMD Program
•	5458	Conducted Carrier Integration Activities and other studies
•	6800	Conducted Test Range and Target Operations, Maintenance and Improvements
Total	79252	

FY 1998 Planned Program:

•	39837	Conduct EMD Program and complete CDT/conduct PPVT
•	22757	First increment to procure Initial Operational Test and Evaluation (IOT&E)/Formal Live Fire Test (FLFT) Hardware
•	10533	Support Carrier Flight Testing and Other Integration Activities
•	3147	Conduct Test Range and Target Operation, Maintenance and Improvement
•	200	Trade studies and system improvement and optimization activities
•	1966	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	78440	

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition

PROJECT: D641

FY 1999 Planned Program:

•	15739	Build Hardware to support Operational Test and Live Fire Test
•	585	Conduct Integration Activities
•	715	Conduct Test Range and Target Operation, Maintenance and Improvement
•	200	Trade studies and system improvement and optimization activities
Total	17239	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	67186	46077	2548
Appropriated Value	67186	81077	
Adjustments to Appropriated Value	+12066	-2637	
FY 1999 President's Budget	79252	78440	17239

Change Summary Explanation: Funding: FY 1997 funding adjusted for Congressionally approved reprogrammings and below threshold reprogramming (+12066).
FY 1998 funding increased by Congress (+35000) and undistributed Congressional adjustments (-2637).
FY 1999 - Restructure of the BAT Program (+14691).

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete	Total Cost
Missile Procurement, Army CA 6100 BAT			100425	156426	204944	187748	225188	989597	1864328

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Complete Wind Tunnel/Sled Tests		X*										
Complete Functional Conf Audit (FCA)							X					
Complete CDT and PPVT						X						
Award Test Hardware Contract (THC)						X						
Award LRIP I Contract (MIPA)									X			
Block II/BAT LRIP DAB									X			
THC First Article Testing												X
First Pilot Line Deliveries												X

* Milestone completed.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition

PROJECT: D641

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Prime Contractor/Producibility Activity	65139	64971	14722
Developmental Test & Evaluation	4160	2515	525
Program Management Spt	3318	3239	495
Program Management Personnel	6635	5749	1497
SBIR/STTR		1966	
Total	79252	78440	17239

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Northrop Grumman Corp	SS/CPAF/ CPFF/CPIF/ FPIF	5 Jun 91			631857	65139	64971	14722	12306	788995
SBIR/STTR							1966			1966
In-House Support	PO	Oct 97/8/9			63981	6635	5749	1497	200	78062
Support and Management Organizations										
Sys Eng Tech Assist & Program Mgmt Spt	SS/CPFF	Nov97/8/9			54991	3155	2702	495	000	61343
Misc Oth Gov Act	PO	Oct 97/8/9			44771	163	537	000	000	45471
Test and Evaluation Organizations										
Range Support	PO	Oct 97/8/9			18617	2225	1500	325	3600	26267
Other Test	PO	Oct 97/8/9			14698	1935	1015	200	275	18123

Government Furnished Property: Not applicable.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition	PROJECT D641

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	695838	71774	72686	16219	12506	869023
Subtotal Support and Management	99762	3318	3239	495		106814
Subtotal Test and Evaluation	33315	4160	2515	525	3875	44390
Total Project	828915	79252	78440	17239	16381	1020227

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition	PROJECT D687

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D687 BAT P3I	15523	62376	65588	70835	55824	9514	4488	0	334316

A. **Mission Description and Budget Item Justification: Project D687-BAT P3I: The** BAT P3I submunition maintains the BAT length, diameter, and weight configurations. The BAT P3I is a multi-sensored, terminally guided submunition that searches for, 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 (MRL). BAT P3I submunitions are carried deep into enemy territory by variants of the Army Tactical Missile System (ATACMS), then dispensed over numerous high-payoff target concentrations to selectively attack and destroy individual targets. BAT P3I is intended to increase submunition lethality and expand the target set to be attacked. Being a certified round, the Block II and IIA missile carrying the BAT P3I submunition has a low sustainment cost. This program will incorporate new seeker, warhead, and microprocessor technologies into the current 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.

Acquisition Strategy: The BAT P3I system completed the Program Definition and Risk Reduction (PDRR) program and will begin engineering manufacturing development in FY 1999.

FY 1997 Accomplishments:

- 12399 Conducted P3I PDRR program
- 1500 Receipt and Assembly of Major Components of the Hardware-in-the-Loop (HWIL) Facility
- 915 Developed Warhead Lethality Models
- 609 Conducted Captive Flight Test (CFT)
- 100 Trade studies, CAIV initiatives, and system improvement and optimization activities

Total 15523

FY 1998 Planned Program:

- 50985 Continue System Development and P3I PDRR Program
- 1831 Continue Simulation and Testing Program
- 3126 Conduct CFTs
- 2100 Integrate and Test Seekers in the Hardware-in-the-Loop Facility

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition
	PROJECT D687

FY 1998 Planned Program: (continued)

•	2571	Conduct Warhead Testing
•	200	Trade studies, CAIV initiatives, and system improvement and optimization activities
•	1563	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	62376	

FY 1999 Planned Program:

•	37988	Complete P3I PDRR Program, Begin EMD
•	17500	EMD Test Hardware
•	4300	Conduct CFT's
•	3200	Continue Hardware-in-the-Loop Seeker Assessments
•	2400	Conduct Simulations and Algorithm Development
•	200	Trade studies, CAIV initiatives, and system improvement and optimization activities
Total	65588	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	18819	64556	70774
Appropriated Value	18819	64556	
Adjustments to Appropriated Value	-3296	-2180	
FY 1999 President's Budget	15523	62376	65588

Change Summary Explanation: Funding: FY 1997 funding adjustment due to reprogramming to higher priority programs (-3296).
FY 1998 funding adjustment due to undistributed Congressional reductions (-2180).
FY 1999 - Inflation adjustment (-5186) [NOTE: Database administrative error resulted in excessive adjustment for lower inflation. Will be corrected by below-threshold adjustment during FY 1999.]

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

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition — PROJECT: D687

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Captive Flight Tests (CFT)		X*				X		X				
Warhead Testing	X*						X					
Hardware-in-the-Loop Testing							X					
Milestone II									X			
EMD CFT										X		X
Seeker Critical Design Review												X

*Milestone completed.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition

PROJECT: D687

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Prime Contractor Activity	10243	40000	48020
Developmental Test & Evaluation	1318	6425	7680
Program Management Support	938	4480	1295
Program Management Personnel	3024	9908	8593
SBIR/STTR		1563	
Total	15523	62376	65588

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Northrop Grumman Corp	SS-CPIF	Dec 97			38161	10243	40000	48020	85491	221915
SBIR/STTR							1563			1563
In-House Support	PO	Oct 97/8/9			7297	3024	9908*	8593	21396	50218
Support and Management Organizations										
SETA & Prog Mgmt Spt	SS-CPFF	Nov 97/8/9			1201	308	1950	580	3000	7039
MISC OGA Activities	PO	Oct 97/8/9			1854	630	2530	715	2225	7954
Test and Evaluation Organizations										
Range Support	PO	Oct 97/8/9			35	0	800	400	10500	11735
Other Test Activities	PO	Oct 97/8/9			1620	1318	5625	7280	18049	33892

*Includes HWIL support

Government Furnished Property: Not applicable.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition	PROJECT D687

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	45458	13267	51471	56613	106887	273696
Subtotal Support and Management	3055	938	4480	1295	5225	14993
Subtotal Test and Evaluation	1655	1318	6425	7680	28549	45627
Total Project	50168	15523	62376	65588	140661	334316

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition

PROJECT: D688

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D688 ATACMS BLK II	66803	88573	41496	23981	12684	0	0	0	296827

A. Mission Description and Budget Item Justification: Project D688-Army Tactical Missiles System Block II: 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 BATs or P3I BATs 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, moving armored combat vehicles, heavy multiple rocket launchers and missile transporter/launchers. ATACMS BLK II will carry and dispense BAT and BAT P3I submunitions deep in enemy territory where these submunitions will autonomously track and destroy numerous critical high-payoff targets. GPS technology will increase accuracy in flight, mitigating target location errors. ATACMS BLK II will be launched from the M270A1 launcher. Further, these funds will allow for trade studies/demonstrations pertaining to technology advancements, payload variants, propulsion, guidance and control, and fire control improvements.

Acquisition Strategy: The Army Tactical Missile System Block II is a sole source, performance specification program.

FY 1997 Accomplishments:

- 63109 Conducted EMD Program to include Preliminary Design Review (PDR), Critical Design Review (CDR) and Block II/BAT Integration Activities
- 400 Conducted Sled Tests (OGA)
- 1100 Conducted Engineering Development Test (EDT) Flight
- 570 Prepared for and begin Production Proveout Test (PPT) Flight Program (OGA)
- 1374 Began Command and Control Software Design, Development and Test
- 250 Trade studies and system improvement and optimization activities

Total 66803

FY 1998 Planned Program:

- 14000 Begin Pilot Production Line and Begin IOT&E Activities
- 64277 Continue EMD Including Submunition Integration
- 5010 Complete Production Proveout Test (PPT) Flights /Begin Preproduction Qualification Test (PQT) Flights
- 350 Conduct "Interim" Launcher Integration Tests
- 2465 Continue Command and Control Software Design, Development and Test

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition
	PROJECT D688

FY 1998 Planned Program: (continued)

•	250	Trade studies and system improvement and optimization activities
•	2221	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	88573	

FY 1999 Planned Program:

•	33133	Continue EMD and Subsystem Qualification
•	3189	Complete PQT and conduct Dev Test/Op Test Flight Tests
•	1073	Conduct M270A1 Integration Tests
•	1451	Conduct C4I System Integration Tests
•	1300	Continue Command and Control Software Design, Development and Test
•	1100	Prepare for and conduct DT/OT
•	250	Trade studies and system improvement and optimization activities
Total	41496	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	75806	91669	44777
Appropriated Value	75806	91669	
Adjustments to Appropriated Value	-9003	-3096	
FY 1999 President's Budget	66803	88573	41496

Change Summary Explanation: Funding: FY 1997 funding adjustment due to reprogramming to higher priority programs (-9003).
FY 1998 funding adjusted for undistributed Congressional adjustments (-3096).
FY 1999 – Inflation Adjustment (-3281). [NOTE: Database administrative error resulted in excessive adjustment for lower inflation. Will be corrected by below-threshold adjustment during FY 1999.]

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete	Total Cost
Missile Procurement, Army CA 6105 ATACMS BLK II			49083	66675	98753	99440	120484	555119	989554

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition PROJECT D688

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Sled Test	X*											
CDR			X*									
PDR	X*											
EDT Flight Test					X*							
PPT Flight Test					X*	X						
PQT Flight Test							X	X	X			
DT/OT Flight Test										X		
Block II/BAT LRIP DAB									X			
Award LRIP Contract (MIPA)										X		

*Milestone Completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition

PROJECT: D688

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Prime Contractor Activity	51442	57424	22494
Development Test & Eval	3446	11934	8312
Program Management Spt	4836	7739	4172
Program Management Personnel	7079	9255	6518
SBIR/STTR		2221	
Total	66803	88573	41496

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
LMV	SS/CPIF	Jul 95			54523	51442	57424	22494	8525	194408
SBIR/STTR							2221			2221
In-House Support	PO	Oct 97/8/9			5452	7079	9255	6518	8121	36425
Support and Management Organizations										
SETA & Program Mgmt Spt	SS/CPFF	Oct 97/8/9			2024	1155	1929	1541	2180	8829
Misc OGA Activities	PO	Oct 97/8/9			512	3681	5810	2631	1899	14533
Test and Evaluation Organizations										
Range Support	PO	Oct 97/8/9			450	2465	7000	3987	9852	23754
Other Test Activity	PO	Oct 97/8/9			329	981	4934	4325	6088	16657
Subtotal Product Development					59975	58521	68900	29012	16646	233054
Subtotal Support and Management					2536	4836	7739	4172	4079	23362
Subtotal Test and Evaluation					779	3446	11934	8312	15940	40411
Total Project					63290	66803	88573	41496	36665	296827

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition

PROJECT: D686

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D686 ATACMS BLK IIA	0	0	10282	43863	52074	44327	14851	0	165397

A. Mission Description and Budget Item Justification: **Project** D686-Army TACMS Block IIA: 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 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. Since the Block IIA payload contains 6 submunitions rather than 13, as in the Block II, it doubles the range of Block II. The mission of the ATACMS Block IIA will be to delay, disrupt, or destroy the Block II target sets plus cold stationary tanks and armored combat vehicles as well as moving and stationary surface-to-surface missile (SSM) transporter erector launchers (TELs) at extended ranges. The Block IIA missile will dispense 6 BAT P3I submunitions at ranges beyond the Block II system.

Acquisition Strategy: The Army Tactical Missile System Block IIA is a sole source, performance specification program.

FY 1997 Accomplishments: Project not funded in FY 1997

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program:

•	8425	Initiate and Conduct EMD Program; Conduct Submunition Integration Activities
•	1857	Conduct Test Range and Target Operation, Maintenance and Improvement
Total	10282	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	0	11094
Appropriated Value			
Adjustments to Appropriated Value			
FY 1999 President's Budget	0	0	10282

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete	Total Cost
Missile Procurement, Army CA 6110						6732	53936	473397	534065

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition PROJECT D686

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
DA IPR MS II										X		
EMD Contract											X	

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition

PROJECT: D686

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Prime Contractor Activity			6447
Development Test & Eval			1857
Program Management Spt			900
Program Management Personnel			1078
Total	0	0	10282

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
LMV	SS/CPFF							6447	106840	113287
In-House Support	PO	Oct 99						1078	8067	9145
Support and Management Organizations										
SETA & Program Mgmt Spt	SS/CPFF	Oct 99						900	2416	3316
Test and Evaluation Organizations										
Range Support	PO	Oct 99						654	25255	25909
Other Test Activities	PO	Oct 99						1203	12537	13740

Government Furnished Property: Not applicable.

Subtotal Product Development								7525	114907	122432
Subtotal Support and Management								900	2416	3316
Subtotal Test and Evaluation								1857	37792	39649
Total Project					0	0	0	10282	155115	165397

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition

PROJECT: D2NT

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D2NT BAT Operational Test	5	0	253	5303	0	0	0	0	5845

A. Mission Description and Budget Item Justification: Project D2NT-OPTEC: 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.

Acquisition Strategy: Not applicable.

FY 1997 Planned Program:

•	5	IOTE planning and preparation
Total	5	

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program:

•	253	IOTE planning and preparation
Total	253	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	5	0	273
Appropriated Value	5		
Adjustments to Appropriated Value			
FY 1999 President's Budget	5	0	253

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

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition PROJECT D2NT

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Planning & Preparation of IOTE Activities	X*								X	X		

*Milestone completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1998
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition — PROJECT: D2NT

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Operational Test and Evaluation	5	0	253
Total	5	0	253

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations: None										
Support and Management Organizations: None										
Test and Evaluation Organizations										
Other Test Activities	PO	Oct 97/9			284	5	0	253	5303	5845
Subtotal Product Development										
Subtotal Support and Management										
Subtotal Test and Evaluation					284	5		253	5303	5845
Total Project					284	5	0	253	5303	5845

Government Furnished Property: Not applicable.

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604770A Joint Surveillance/Target Attack Radar System

PROJECT: D202

COST (*In Thousands*)	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D202 Army Joint STARS (TIARA)	9406	6726	5503	4010	12135	17990	12179	Continuing	Continuing

A. **Mission Description and Justification:** This is a Tactical Intelligence and Related Activities (TIARA) program. 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 is distributed to ground station modules via a secure surveillance and control data link. The Army developed the initial ground components of the JSTARS under this PE/Project. The Ground Station Module (GSM) is being developed in a Block approach. Block I (GSM) utilizes the same prime mission equipment and was developed and deployed on different platforms. The Block I Medium GSM (MGSM) is housed in a standard S280 shelter and mounted on a 5 Ton Truck. The rapidly deployable Block I Light GSM (LGSM) is housed in a Standard Integrated Command Post Shelter (SICPS) and mounted on a High Mobility Multi-Purpose Wheeled Vehicle (HMMWV). Included in this project is the development of the Block II GSM now called the Common Ground Station (CGS). The CGS will integrate signal, imagery, and other intelligence processing into a single ground station, resulting in enhanced battle management as well as significant cost savings. These enhancements are being implemented in a phased approach of Pre-Planned Product Improvement (P3I) initiatives and provide significant expansion of the system performance parameters. Specific enhancements include: integration of Secondary Imagery Dissemination, extended range Satellite Communications (SATCOM relay) capability, full on the move and manportable operations as well as integration/interface with other service/allied sensor systems. This program element supports development efforts in the Engineering and Manufacturing development phases of the Acquisition Strategy and is therefore correctly placed in Budget Activity 5.

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. The first two years of the contract are Low Rate Initial Production (LRIP) with the first deliveries participating in a February 1998 Initial Operational Test. This test will support the Milestone III decision scheduled for July 1998. The contract also includes provisions for the design, development and test of various P3Is. Following P3I prove out, the modifications will be folded into the production contract via fixed price contract revisions. Those P3I enhancements initiated prior to the Full Production Decision (Milestone III) include Advanced Imagery Processing, Integration of Improved Data Modem (IDM) providing Army Aviation Command and Control (A2C2) interoperability and radar masking analysis tools. Following Milestone III, all P3Is will be implemented in block upgrades in accordance with the CGS System Improvement Plan (SIP).

FY 1997 Accomplishments:

- 1795 Completed Secondary Imagery Dissemination Integration
- 1850 Initiated Sensor(A2C2/Airborne Reconnaissance Low Integration (P3I)
- 5761 Initial Operation Test and Evaluation (IOT&E) Support

Total 9406

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604770A Joint Surveillance/Target Attack Radar System
	PROJECT D202

FY 1998 Planned Program:

•	904	Continue Sensor Integration (P3I)
•	1103	Trainer/Training Enhancements
•	4565	IOT&E Support
•	154	Small Business Innovative Research/Small Business Technology Transfer Program
Total	6726	

FY 1999 Planned Program:

•	2814	Continue CGS Expanded Capability (P3I)Development
•	2033	Provide Additional Simulators/Embedded Training Capability
•	656	Test CGS Expanded Performance Capabilities(P3I)
Total	5503	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 Presidents Budget	9624	6940	5670
Appropriated Value	9406	6940	
Adjustments to Appropriated Value		-214	
FY 1999 President's Budget	9406	6726	5503

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
BA1080 Joint STARS (TIARA)	84719	91079	87229	88463	107017	31330	7087	Cont	Cont
BS9724 Joint STARS Spares	8632	6313	8733	6335	6389	7093	4522	Cont	Cont
NATO AGS C35	0	10225	6405						
NATO AGS BA 1082	0	611	0						

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Start CGS Technical Test	X*											
First CGS LRIP Delivery		X*										
Initial CGS Operator Training			X*									
Conduct Final CGS Technical Test						X						

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604770A Joint Surveillance/Target Attack Radar System — PROJECT: D202

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Complete CGS Operational Test(IOT&E)						X						
Prepare CGS Operator Test Report							X					
CGS SIP Approval							X					
Milestone III								X				
Start CGS Expanded Capability									X			
Start Simulators/Embedded Training										X		
Initial P3I Technical Test											X	
Initial P3I Operational Assessment												X

*Milestone Completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1998
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604770A Joint Surveillance/Target Attack Radar System — PROJECT: D202

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Hardware Development	1192	498	2135
Software Development	2298	885	2095
Integrated Logistics Support	75	105	195
Developmental/Operational Test and Evaluation	5088	4565	525
Contractor Engineering Support	54	109	101
Government Engineering Support	13	72	79
Program Management Support	149	70	86
Program Management Personnel	537	268	287
SBIR/STTR		154	
Total	9406	6726	5503

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Motorola (96-C-S201)	SS/CPFF	Nov 95	10063	8339	1750	1030	1046	1076	Cont	Cont
Motorola (96-C-S204)	C/FP	Dec 95	38000	37920	8117	4485	1592	3349	Cont	Cont
Support and Management Organizations										
CECOM	MIPR					13	72	79	Cont	Cont
Proj Management						686	338	373	Cont	Cont
Misc.						54	109	101	Cont	Cont
SBIR/STTR							154			
Test and Evaluation Organizations										
Texcom	MIPR					2225	2315	525	Cont	Cont
OEC	MIPR					913	250		Cont	Cont
USAF	MIPR						850			

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604770A Joint Surveillance/Target Attack Radar System

PROJECT: D202

Government Furnished Property: Not applicable

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development		5515	2792	4425	Cont	Cont
Subtotal Support and Management		753	519	553	Cont	Cont
Subtotal Test and Evaluation		3138	3415	525	Cont	Cont
Total Project	547600	9406	6726	5503	Cont	Cont

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604778A Positioning Systems Development (SPACE)

PROJECT: D168

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D168 NAVSTAR Global Positioning System (GPS) Equipment	417	407	379	419	408	0	0	0	2030

A. **Mission Description and Budget Item Justification:** Project D168 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, Advanced GPS Receivers (AGR), Tactical GPS Anti-Jam Technology (TGAT) and Differential GPS. The projects in this program element support research efforts in the engineering and manufacturing development phases of the acquisition strategy and are therefore correctly placed in Budget Activity 5.

Acquisition Strategy: Perform studies and analyses of host vehicles to support development of alternative GPS applications.

FY 1997 Accomplishments:

•	111	Improved accuracy and time to fix studies for follow-on equipment requirements
•	150	Test program for NDI aviation GPS receiver (MAGR follow-on/replacement)
•	156	Improved survivability of GPS capability (renewed anti-jam/anti-spoof and other threats response)
Total	417	

FY 1998 Planned Program:

•	120	Continue improved accuracy and time to fix studies
•	111	Continue survivability studies
•	165	Exploration of emerging capabilities based on follow-on satellite configuration options
•	11	Small Business Innovative Research/Small Business Technology Transfer Program
Total	407	

FY 1999 Planned Program:

•	170	Continued exploration of emerging capabilities
•	109	Support of miniaturization studies
•	100	Studies on interfacing of GPS with other systems
Total	379	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604778A Positioning Systems Development (SPACE) — PROJECT: D168

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	428	419	409
Appropriated Value	417	419	
Adjustments to Appropriated Value		-12	
FY 1999 President's Budget	417	407	379

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY2002	FY2003	To Complete	Total Cost
K47800, Other Procurement, Army, NAVSTAR GPS	26130	5432	6866	6689	32169	32645	49763	237000	429694

D. Schedule Profile: Not applicable

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1998
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604778A Positioning Systems Development (SPACE) — PROJECT: D168

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
Developmental Test and Evaluation	150	122	109
Government Engineering Support	156	165	170
Contractor Engineering Support	111	120	100
Total	417	407	379

B. Budget Acquisition History and Planning Information: Not applicable.

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604780A Combined Arms Tactical Trainer (CATT)

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	29420	12880	7533	11551	7836	21697	28344	Continuing	Continuing
D571 Close Combat Tactical Trainer	29420	12880	7533	11551	7836	5200	5400	0	281550
D582 Engineer CATT	0	0	0	0	0	16497	22944	Continuing	Continuing

Mission Description and Budget Item 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. Synthetic Environment Core provides for the expansion of the CCTT 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 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. Units taking their CATT systems with them on operational deployments, such as peacekeeping missions, are able to sustain essential warfighting skills when not at their home station. 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. The projects in this program element support research efforts in the engineering and manufacturing development phases of the acquisition strategy and are therefore correctly placed in Budget Activity 5.

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604780A Combined Arms Tactical Trainer (CATT)

PROJECT: D571

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D571 Close Combat Tactical Trainer	29420	12880	7533	11551	7836	5200	5400	0	281550

A. Mission Description and Justification: Project D571 - Close Combat Tactical Trainer: Provides for engineering and manufacturing development (EMD) and pre-planned product improvements for the Close Combat Tactical Trainer (CCTT) which will enhance readiness of both active and reserve component forces. The program will develop 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 which, 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.

Acquisition Strategy: Competitive cost plus award fee contract for EMD phase. Competitive procurement against performance specifications as part of basic contract.

FY 1997 Accomplishments:

•	27109	Completed deliveries, completed final functionality, planned and executed Limited User Test prepared for Initial Operational Test and Evaluation (IOT&E), corrected deficiencies from testing, completed documentation and audit trail, and prepared for Pre-Planned Product Improvements.
•	1921	Maintained support services to the program office.
•	390	Provided government program management, engineering, technical and contract support.
Total	29420	

FY 1998 Planned Program:

•	11150	Conclude functionality integration and test, conduct and support IOT&E.
•	343	Maintain support services to the program office. Prepare for MSIII decision 1st QTR FY99
•	1064	Provide government program management, engineering, technical and contract support.
•	323	Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR).
Total	12880	

FY 1999 Planned Program:

•	6592	Execute Training Support Package, relocation of simulators, Engineering Change Proposals (ECPs) and Pre-Planned Product Improvements.
•	527	Maintain support services to the program office.
•	414	Provide government program management, engineering, technical and contract support.
Total	7533	

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604780A Combined Arms Tactical Trainer (CATT)

PROJECT: D571

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	26110	2823	2866
Appropriated Value	26713	13323	
Adjustments to Appropriated Value	+2707	-443	
FY 1999 President's Budget	29420	12880	7533

Change Summary Explanation: FY 97 undistributed congressional reductions (-689), FY 97 project funds were reprogrammed (+3999) for additional software development for deficiencies identified during integration and test. FY 99 project funds increased (+4667) for training support package and relocation of simulators.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA3, Appropriation	64222	53326	113927	53596	62058	682	0	0	422806
NA0170 SIMNET/CCTT RDTE, Appropriation	2883	5891							8774
0605712A SUPPORT OF OPERATIONAL TESTING									
Military Construction, A Appropriation	11900	14200	7300	0	0			0	51400
Operation and Maintenance, A Appropriation	9201	12917	15591	22052	25918	28391	27955	Cont'd	Cont'd

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
PPQT Fixed System/FQT		X*										
IOT&E Fixed System							X					
PPQT/IOT&E Mobile System			X*									
MSIII Decision									X			

* Completed Milestones

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604780A Combined Arms Tactical Trainer (CATT)

PROJECT: D571

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Lockheed/Martin Development	23363	9411	0
Lockheed/Martin Program Management/System Engineering	3746	1739	0
Program Office/Technical Support	202	1042	527
Government Agency Support	188	22	0
Support Contracts	1921	343	414
Engineering Changes/P3I/TSP/simulator relocation	0	0	6592
SBIR/STTR		323	
Total	29420	12880	7533

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Lockheed/Martin	C-CPAF/ T&M/FFP	Oct 97	214945	214945	164032	27109	11150	6592	26988	235871
Support and Management Organizations										
STRICOM/NAWC	MIPR	Oct 97	4770	4770		202	1042	527	2999	4770
Miscellaneous	Various	Various	40909	40909	37698	2109	688	414	0	40909

Test and Evaluation Organizations: None

Government Furnished Property: None

Subtotal Product Development	164032	27109	11150	6592	26988	235871
Subtotal Support and Management	37698	2311	1730	941	2999	45679
Subtotal Test and Evaluation						
Total Project	201730	29420	12880	7533	29987	281550

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604801A Aviation - Engineering Development

PROJECT: DC45

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC45 Aircrew Integrated Systems (ACIS) - ED	4331	4951	6599	6508	9638	3745	2235	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project DC45 Aircrew Integrated Systems (ACIS) - Engineering Manufacturing Development (EMD) This 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. EMD programs will focus on air vehicle integration, airworthiness qualification and user evaluation of multiple technologies to improve aircrew mission performance, aircrew comfort, aircrew and aircrew station interface, safety, and survivability. These programs include: advanced laser protection against emerging new threat systems; product improvements to 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; and follow-on air vehicle integration and test of Air Warrior program effort to enhance and maximize aircrew performance in force modernized aircraft. 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. Both joint and service independent efforts will be pursued under the scope of this project. This Program Element supports research efforts in the EMD phase of the Acquisition Strategy and is correctly placed in Budget Activity 5. Both joint and service independent efforts will be pursued under the scope of this project.

Acquisition Strategy: The Cockpit Air Bag Systems (CABS) B-kit 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 A-kit hardware will be aircraft specific and will be procured competitively. CABS will be installed via field retrofit and production line incorporation (where applicable.) Pre-Planned Product Improvement of the helmet is awarded, as required, to the helmet developer, Gentex Corp. Performance specifications for the joint service advanced laser eye protection program are being developed and will be used for production competition. A competitive Air Warrior Program Definition and Risk Reduction (PDRR) 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. During a combined PDRR and EMD phase, the contractor will develop the Air Warrior systems and integrate those systems with the force modernization aircraft. Prototypes that represent the final Air Warrior configuration will be developed for test and evaluation.

FY 1997 Accomplishments:

•	3083	Continued EMD for UH-60 Cockpit Air Bag System (CABS)
•	898	Continued AIHS P^3I efforts in EMD
•	350	Continued Advanced Laser Eye Protection (Joint Service) EMD
Total	4331	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604801A Aviation - Engineering Development
	PROJECT DC45

FY 1998 Planned Program:

•	1593	Complete UH-60 Cockpit Air Bag System pre-production evaluation and testing
•	3246	Initiate Air Warrior EMD effort
•	112	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	4951	

FY 1999 Planned Program:

•	6599	Continue Air Warrior EMD effort
Total	6599	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	5403	5109	6067
Appropriated Value	5282	5109	
Adjustments to Appropriated Value	-951	-158	
FY 1999 President's Budget Request	4331	4951	6599

Change Summary Explanation:

Funding: FY 1997: Reprogrammed to higher priority requirements (-951)

Funding: FY 1998: Undistributed Congressional reductions (-158)

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, A BA 4 PE 0603801A Proj DB45, ACIS AD	6665	9250	2472	0	0	2856	2887	Cont	Cont
Aircraft Procurement, Army (APA) (ACIS) SSN AZ3110	11286	12190	9050	4470	1445	21468	35214	Cont	Cont

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604801A Aviation - Engineering Development

PROJECT: DC45

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
UH-60 Cockpit Air Bag System (CABS)	1	2	3	4	1	2	3	4	1	2	3	4
Design Review	X*											
Component testing		X*										
Design Validation testing			X*									
Component Redesign				X*								
Evaluate Redesigned component					X*							
Contractor testing						X						
Government Test Redesigned component							X					
AIHS P^3I												
Continue Head Tracker breadboard prototype EMD	X*											
Airworthiness testing			X*									
Flight test and completed EMD				X*								
Airworthiness test of prototype		X*										
Flight Test breadboard on AH-64				X*								
Advanced Laser Eye Protection (LEP)												
Conceptual design review		X*										
Early prototype delivery			X*									
Initiate optical testing				X*								
Evaluate holographic production design					X*							
Air Warrior												
Begin EMD						X						
Assimilate Helmet Mounted Display, LEP, and Electronic Data Module technology							X					
Electronic Data Module breadboard								X				
Preliminary Design Review for Air Warrior									X			
Critical Design Review										X		
Define Air Warrior ensemble initial prototype											X	
Initial Air Warrior ensemble prototype development begins												X

* Denotes milestone completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604801A Aviation - Engineering Development
	PROJECT DC45

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Product Development Organizations	3177	3939	5088
Support and Management Organizations	661	712	843
Test and Evaluation Organizations	493	300	668
Total Project DC45	4331	4951	6599

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
UH-60 CABS, Simula, Phoenix, AZ	SS-CPFF	May 1996		5273	1734	1989	1550			5273
AIHS P^3I, Gentex, Carbondale, PA	SS-CPFF	Dec 1997	873	873		873				873
Advanced LEP, AOTEC - South Bridge, MA	SS-CPFF	Jan 1997	315	315		315				315
Air Warrior, contractor TBD	C-CPFF	Jan 1998					2389	5056	Cont	Cont
Miscellaneous	SS/C-CPFF	Thru FY 1997			9959					9959
Support and Management Organizations										
Various Organizations	MIPR	Various			8583	661	712	843	Cont	Cont
Test and Evaluation Organizations										
Government Agencies	MIPR				3229	493	300	700	Cont	Cont

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604801A Aviation - Engineering Development PROJECT DC45

Government Furnished Property: Not Applicable

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development Organizations	11693	3177	3939	5056	Cont	Cont
Subtotal Support and Management Organizations	8583	661	712	843	Cont	Cont
Subtotal Test and Evaluation Organizations	3229	493	300	700	Cont	Cont
Total Project	23505	4331	4951	6599	Cont	Cont

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	21567	14611	37725	31115	30742	23732	11404	Continuing	Continuing
D134 Objective Individual Combat Weapon Engineering Development (OICW)	0	0	0	1777	1765	3744	4632	Continuing	Continuing
D284 Multipurpose Individual Munition	7450	2831	16624	16150	9716	0	0	0	60943
D531 105mm Howitzer Ammunition Improvement	4861	0	0	0	0	0	0	0	18191
D613 Mortar Systems	5000	9692	11200	0	0	0	0	0	26200
D695 XM982 Projectile	0	635	5901	10729	16169	16753	0	0	50187
D705 Hydra 70 Engineering and Manufacturing Development	0	0	4000	0	0	0	0	0	4000
D712 Non-Lethal Programs	2731	0	0	0	0	0	0	0	2731
DAS1 Small Arms Improvement	1525	1453	0	2459	3092	3235	6772	Continuing	Continuing

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 howitzer ammunition effort supports development of ammunition for the M119A1 Howitzer. The mortar systems effort supports qualification of an Improved Mortar Ballistic Computer (IMBC) and type classification of training and illumination cartridges for the 120mm mortar. 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. The Hydra 70 EMD program will accomplish airworthiness testing of the Hydra 70 rocket motor under various flight conditions. The non-lethal program provides for force response options for non-lethal immobilization of personnel and materiel through development of non-lethal capabilities for multiple weapon systems/platforms. 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.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY **5 - Engineering and Manufacturing Development**	PE NUMBER AND TITLE **0604802A Weapons and Munitions - Engineering Development**

Projects within this program element support research efforts in the engineering and manufacturing development phase of the acquisition strategy and are, therefore, correctly placed in Budget Activity 5.

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D284

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D284 Multipurpose Individual Munition	7450	2831	16624	16150	9716	0	0	0	60943

A. Mission Description and 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 the 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 target 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.

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 April 1998. Funding for initial production facilitization (IPF) and long lead items (LLI) procurement begins in FY 01 to facilitate maintaining an FY 02 First Unit Equipped (FUE). Low rate initial production (LRIP) will begin in FY 02. Full rate production begins in FY 04.

FY 1997 Accomplishments:

•	1841	Continued Phase 1 EMD effort
•	750	Completed warhead module design improvements
•	700	Completed simulation VV&A
•	1750	Conducted Phase 1 EMD flight tests and analysis
•	701	Initiated procurement of missile hardware for pre-production test (PPT) flight tests
•	850	Initiated integrated logistics support (ILS), quality and environmental programs to support EMD
•	858	Finalized system level specification for preliminary design review (PDR)
Total	7450	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT D284

FY 1998 Planned Program:

•	1054	Conduct system level analysis
•	700	Initiate procurement of range support hardware for PPT flights
•	606	Support PDR
•	400	Prepare and conduct early user demonstration (EUD)
•	71	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	2831	

FY 1999 Planned Program:

•	2806	Continue Phase 2 EMD effort
•	1722	Complete procurement of missile hardware for PPT flight tests
•	2000	Conduct PPT flight tests
•	320	Complete procurement of range support hardware for PPT flight tests
•	2000	Conduct grenade safe and arm (S&A) trade studies, analysis and tests
•	1370	Design and fabricate missiles for electromagnetic environmental effects (E3) analyses and tests
•	905	Continue ILS, quality and environmental programs to support EMD
•	870	Prepare for critical design review (CDR)
•	4311	Initiate procurement of missile hardware for pre-production qualification testing (PPQT)
•	320	Conduct lethality analysis
Total	16624	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	13813	2922	18964
Appropriated Value	14108	2922	
Adjustments to Appropriated Value	-6658	-91	
FY 1999 President's Budget	7450	2831	16624

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT D284

Change Summary Explanation:

Funding: FY 97- Due to restructuring of MPIM EMD into a two-phase effort, funds became available for reprogramming to higher priority requirements (-6658)

FY 99-Congressional adjustments (-1300); realigned (-1000) to higher priority requirements.

Schedule: The Army has restructured the MPIM/SRAW program to an incremental EMD, an 18 month risk mitigation (Phase 1) prior to award of the 47-month EMD phase (Phase 2) option.

C. Other Program Funding Summary	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Comp	Total Cost
PE 0603313A, Project D387	609	0	0	0	0	0	0	0	5516
Missile Procurement, Army, SSN C09100 (Multi-Purpose Individual Munition)	0	0	0	0	5797	30664	26584		

D. Schedule Profile	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Complete telemetry missile flight tests						X						
Corporate/government Phase 1 reviews		X*	X*	X*		X						
Exercise EMD Phase 2 option							X					
Complete EUD tests								X				
Conduct PDR								X				
Complete PPT												X

*Denotes completed effort

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D284

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Primary hardware development	5916	2626	14300
Program management support	1232	134	1260
Developmental Test and Evaluation	302	0	1064
SBIR/STTR		71	
Total	7450	2831	16624

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Lockheed -Martin Aeronutronics (EMD phase 1)	SS/CPIF	Oct 96	7000	7000	4858	2142	0	0	0	7000
Lockheed-Martin (EMD phase 2)	SS/Cost sharing	Various*	43100	43100	0	3774	2626	14300	20400	41100
Support and Management Organizations										
PM MPIM, RSA	PO				1143	505	134	720	1850	4352
AMCOM, RSA	PO				1483	481	0	540	1416	3920
Misc.	PO				358	246	0			604
SBIR/STTR							71			71
Test and Evaluation Organizations										
TECOM: APG	PO				330	302	0	1064	2200	3896

Note: April 98 contract to be awarded using FY 1997 funds.
* Initial award in Oct 96; options through FY 01

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT D284

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	4858	5916	2626	14300	20400	48100
Subtotal Support and Management	2984	1232	205	1260	3266	8947
Subtotal Test and Evaluation	330	302		1064	2200	3896
Total Project	8172	7450	2831	16624	25866	60943

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D531

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D531 105mm Howitzer Ammunition Improvement	4861	0	0	0	0	0	0	0	18191

A. Mission Description and Justification: This project provides for the fielding of an extended range 105mm artillery projectile for the M119A1 Howitzer and development of self-destruct fuzing technology for munitions.

Acquisition Strategy: Initial low rate production of cartridge, artillery, 105mm Dual Purpose Improved Conventional Munition (DPICM), XM915, begins in FY 1998 and will be sole sourced to the developer under fixed price contracts.

FY 1997 Accomplishments:

•	1332	Load, assembly and pack (LAP) of cartridge for development test and evaluation accomplished
•	1459	Conducted DT&E tests
•	2070	Test and evaluation management, engineering evaluation of performance
Total	4861	

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program: Project not funded in FY 1999

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/99 President's Budget	5067	0	0
Appropriated Value	5176		
Adjustments to Appropriated Value	-315	0	
FY 1999 President's Budget	4861	0	0

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Procurement , Ammunition, Army; Cartridge, Artillery, 105mm DPICM, SSN E53500	13475	9775	0	0	0	0	0	0	23250

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT D531

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Completed EMD testing		X*										
Eng eval of perf; follow up on all testing						X						
Type Classification						X						

*Denotes a completed milestone

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT D531

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Program engineering and management support	3402	0	0
Contract engineering support	0	0	0
Test and evaluation support	1459	0	0
Total	4861	0	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
TACOM:ARDEC	ALLOT	Oct 92	5527	5527	4829	2070	0	0	0	6899
Chamberlain: SAAP, Scranton	OPEN/CPIF	Sep 93	1100	1100	1244	0	0	0	0	1244
Amrom Corp.	OPEN/CPIF	Sep 93	590	590	858	0	0	0	0	858
KDI	OPEN/CPIF	Sep 93	3914	3914	4022	0	0	0	0	4022
Olin	OPEN/FP	Sep 93	117	117	117	0	0	0	0	117
Norris Industries	OPEN/CPIF	Sep 93	371	371	371	0	0	0	0	371
Dayron Corp.	OPEN/CPIF	Sep 94	238	238	238	0	0	0	0	238
LSAAP	FP/ALLOT	Jul 94	1792	1792	988	1332	0	0	0	2320
Support and Management Organizations: None										
Test and Evaluation Organizations										
TECOM-YPG, AZ			3193	3193	663	1291	0	0	0	1954
WSMR; CRTA; ARL			168	168	0	168	0	0	0	168

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT D531

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	12667	3402				16069
Subtotal Support and Management						
Subtotal Test and Evaluation	663	1459				2122
Total Project	13330	4861				18191

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT D613

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D613 Mortar Systems	5000	9692	11200	0	0	0	0	0	26200

A. Mission Description and Justification: This program provides funds to develop existing and emerging technology to 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), which exponentially reduces response time while improving accuracy. This significantly improves the survivability of the mortar crew and reduces the possibility of fratricide and collateral damage. MFCS will be compatible with the Advanced Field Artillery Tactical Data System (AFATDS) and fully integrate mortars into the fire support network It will also be compatible with the Future Battle Command, Brigade and Below (FBCB2) situation awareness software.

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 a primary contractor (Allied-Signal Corp. of Teterboro, NJ) teamed with a number of subcontractors. Initial production, scheduled for FY 2000, is planned as an option to the development contract.

FY 1997 Accomplishments:

•	200	Developed performance specifications
•	950	Prepared request for proposal, conducted Best Value source selection
•	3850	Awarded initial contract increment
Total	5000	

FY 1998 Planned Program

•	7560	Contractor software development and hardware integration
•	240	Conduct user assessment
•	1649	Support and Management
•	243	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	9692	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT D613

FY 1999 Planned Program

•	6861	Continue software/hardware integration, test and provide units for contractor logistical support (CLS)
•	1839	Support and management
•	1000	Conduct production qualification test
•	1000	Conduct operational test
•	500	Type classify
Total	11200	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/99 President's Budget	0	0	0
Appropriated Value	0	10000	
Adjustments to Appropriated Value	5000	-308	
FY 1999 President's Budget	5000	9692	11200

Change Summary Explanation:

Funding – FY 1997/1998: The Mortar Fire Control System (MFCS) was approved as a Warfighting Rapid Acquisition Program (WRAP). FY 1997 funds were reprogrammed to this project for this effort. FY 1998 funds were provided in the DoD FY 1998 Appropriations Bill. FY 1999 funds were provided to continue EMD of the high priority Mortar Fire Control System program.

Schedule: The WRAP reprogramming moves the development and subsequent fielding of this system up by two years.

C. Other Program Funding Summary

Procurement, Ammunition, Army:	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
SSN E25504, M929	34936	0	0	25439	25947	26607	23653	0	
SSN E25507, XM931	50907	31704	39703	39938	39398	40195	39526	0	
SSN E25503, XM930	25953	2933	0	0	0	0	0	0	
SSN E25501, M934	0	38036	29087	22163	0	0	0	0	
Other Procurement, Army: K99200 (IMBC)	6775	0	0	2910	0	0	0	0	
Other Procurement, Army: K99300 (MFCS)	0	0	0	10637	12763	36554	36561	120400	220821
RDTE: 23761/D394 Force XXI WRAP	0	37700	99528	99421	99345	99244	99362	0	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT D613

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Milestone II				X								
Contract award				X								
Development				X								X
User assessment								X				
Production Qualification Test									X			
Operational Test											X	
Milestone III (TC standard)												X

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D613

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Product development	4050	7560	6861
Management /engineering support	750	1649	1839
Test and evaluation	200	240	2500
SBIR/STTR		243	0
Total	5000	9692	11200

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Allied Signal Corp, Teterboro, NJ	Competitive Cost Plus Award fee	4Q97	16980	16980	0	3779	6350	6381	0	16510
TACOM-ARDEC			1360	1360	0	400	480	480	0	1360
PM Applique			405	405	0	5	400	0	0	405
PM AFATDS			330	330	0	0	330	0	0	330
Support and Management Organizations										
TACOM-ARDEC			2479	2479	0	340	840	1299	0	2479
TACOM-ACALA			407	407	0	62	155	190	0	407
PM Mortars			887	887	0	173	364	350	0	887
Support Contract			178	178	0	78	100	0	0	178
OGA			299	299	0	109	190	0	0	299
SBIR/STTR							243		0	243
Test and Evaluation Organizations										
TECOM			1138	1138	0	8	130	1000	0	1138
TEXCOM			1056	1056	0	6	50	1000	0	1056
OPTEC			600	600	0	40	60	500	0	600

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT D613

Government Furnished Property: Not applicable

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development		4184	7560	6861		18605
Subtotal Support and Management		762	1892	1839		4493
Subtotal Test and Evaluation		54	240	2500		2794
Total Project		5000	9692	11200		25892

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D695

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D695 XM982 Projectile	0	635	5901	10729	16169	16753	0	0	50187

A. **Mission Description and Justification:** The XM982 is an extended range Dual Purpose Improved Conventional Munition (DPICM) projectile which is an extended range 155mm artillery projectile. 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, M109A5, 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. Allowing greater stand-off from threats and faster defeat of potential threats increases survivability.

Acquisition Strategy: Engineering and manufacturing development (EMD) will consist of a system contract to design, test and manufacture hardware and then produce development test hardware for government test and evaluation. Development testing, consisting of safety tests and firing table tests, will be accomplished by TECOM at TECOM Proving Grounds during EMD. The EMD contractor will perform production. The EMD contract will include unpriced options.

FY 1997 Accomplishments: Project not funded in FY 1997 under this project. However, congressional support for the XM982 Extended Range Artillery Projectile program was provided in PE 0603004A/D43A.

FY 1998 Planned Program:

•	509	Government support for engineering: Integrated Product Team (IPT), contract solicitation, engineering support for development testing.
•	110	Program management: technical evaluation; program execution
•	16	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	635	

FY 1999 Planned Program:

•	1390	Government support for engineering: Integrated Product Team (IPT), contract solicitation, engineering support for development testing.
•	4081	Contracts for propellants, fuzing and metal parts
•	110	Program management
•	320	Test and evaluation
Total	5901	

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D695

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/99 President's Budget	0	655	5901
Appropriated Value	0	655	
Adjustments to Appropriated Value	0	-20	
FY 1999 President's Budget	0	635	5901

Change Summary Explanation: Funding: FY 1998: The XM982 projectile transitions from the technology base into EMD in FY 1998.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDT&E: 0603004A, Project D43A	5000								
Procurement Ammunition, Army: E80100							24979	124100	149079

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Milestone II	X*											
Award initial EMD contract						X						
Milestone III: 4Q FY 2002												

*Denotes completed milestone

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D695

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Contractor Engineering Support	0	0	4081
Government Engineering Support	0	438	889
Program Management Support	0	181	181
Developmental Test and Evaluation	0	0	750
SBIR/STTR		16	
Total	0	635	5901

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
TBD	C/CPIF	2Q98	TBD	TBD	0	0	0	4081	24273	28354
Support and Management Organizations										
ARDEC-Picatinny							438	889	6928	8255
PM SADARM					0	0	181	181	840	1202
SBIR/STTR							16			16
Test and Evaluation Organizations										
TECOM					0	0	0	750	11610	12360

Government Furnished Property: None

Subtotal Product Development		4081	24273	28354
Subtotal Support and Management	635	1070	7768	9473
Subtotal Test and Evaluation		750	11610	12360
Total Project	635	5901	43651	50187

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D705

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D705 Hydra 70 Engineering and Manufacturing Development	0	0	4000	0	0	0	0	0	4000

A. Mission Description and Justification: This project will accomplish air qualification testing of the Hydra 70 rocket motor from the Apache Attack Helicopter under various flight conditions. The objective of the tests will be to determine the safety and compatibility of the rocket motor with the firing platform under various tactical conditions. A subject of major interest will be the effect of rocket exhaust gasses on helicopter engines and compatibility with current fire control system.

Acquisition Strategy: The Hydra 70 project manager will manage funding and scheduling of the tasks to prove airworthiness of the composite propellant rocket motors. Technical support will be provided by AVRDEC/MRDEC. Firings will be conducted by TECOM at Yuma Proving Ground, Arizona.

FY 1997 Accomplishments: Project not funded in FY 1997

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program:

•	2000	Purchase 500 rocket motors and test the warheads
•	600	Rental of AH64 Helicopter from Fort Rucker
•	600	Range costs at Yuma Proving Ground
•	800	Government engineering support (AVRDEC/MRDEC/IOC/NSWC/ARDEC)
Total	4000	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/99 President's Budget	0	0	0
Appropriated Value	0		
Adjustments to Appropriated Value	0	0	
FY 1999 President's Budget	0	0	4000

Change Summary Explanation:

Funding: FY 1999-Funds reprogrammed into this project to complete the congressional special interest effort which was included in PE 0603313A in FY 1997.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT D705

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDT&E: PE 63313A/703-Hydra 70 Rocket PIP	3500	0	0	0	0	0	0	0	3500

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Rocket acquisition										X		
Engineering support										X		
Platform rental											X	
Testing												X

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D705

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Government Engineering Support	0	0	800
Program Management Support	0	0	2500
Developmental Test and Evaluation	0	0	100
Government Equipment rental	0	0	600
Total	0	0	4000

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
MRDEC	MIPR	3Q99	2800	2800	0	0	0	2800	0	2800
Support and Management Organizations										
AVRDEC, IOC/PM	MIPR	3Q99	600	600	0	0	0	600		600
Test and Evaluation Organizations										
TECOM	MIPR	3Q99	600	600	0	0	0	600	0	600

Government Furnished Property: Not applicable

Subtotal Product Development	2800	2800
Subtotal Support and Management	600	600
Subtotal Test and Evaluation	600	600
Total Project	4000	4000

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT D712

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D712 Non-Lethal Programs	2731	0	0	0	0	0	0	0	2731

A. Mission Description and Justification: This program will demonstrate the application of non-lethal technologies, devices and munitions that are explicitly designed and employed to incapacitate personnel and/or materiel while minimizing fatalities and undesired damage to property and the environment. Non-lethal devices have the potential to provide the foundation for regional and peacekeeping operations to be successful, and may allow military forces to respond to such conflicts through the use of an established Graduated Response Matrix. The application of non-lethal capabilities that minimizes collateral damage while providing for safe employment and mission accomplishment will enhance operational effectiveness.

Acquisition Strategy: Upon completion of user demonstration and feedback, selected non-lethal devices/munitions will be integrated into the appropriate acquisition phase depending on their design maturity and ability to fulfill the user's needs.

FY 1997 Accomplishments:

•	1785	Acoustics: Initiated integration of initial health hazard assessment into acoustic source design configuration and propagation measurement, for demonstration tests and potential weapon /platform applications
•	590	Kinetics: Performed initial validation test of health hazard (target) assessment model (HHTAM) for blunt impact munitions. Developed functional purchase description for urgent release items. Conducted safety test and evaluation of kinetic systems in support of dismounted battlespace battle lab's warfighting experiments
•	259	Entanglements: Conducted safety and performance testing of gun-fired 40mm ballistically deployed entanglement munition with integrated fuze
•	97	Vehicle stopper: Completed commercial off-the-shelf (COTS) electric discharge vehicle stopper performance evaluation
Total	2731	

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program: Project not funded in FY 1999

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT D712

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/99 President's Budget	3215	0	0
Appropriated Value	3284		
Adjustments to Appropriated Value	-553		
FY 1999 President's Budget	2731	0	0

Change summary explanation: Funding - FY 1997- Reduction due to funds reprogrammed to higher priority requirements (-553)

C. Other Program Funding Summary: Not applicable.

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Demonstrate a 40mm weapon-launched ballistic entanglement munition			X*									
Demonstrate a 40mm weapon launched ballistic "sticky net" munition					X							
Demonstrate a COTS electric discharge electric vehicle stopper				X								
Fabricate & test next generation of acoustic sources				X				X				

*Denotes completed milestone

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D712

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Product development	2731	0	0
Management and engineering support	0	0	0
Test and evaluation	0	0	0
Total	2731	0	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
ARDEC: NJ	CPFF	2Q/3Q97	2311	2311	0	2311	0	0	0	2311
ARL: MD	NA	2Q97	420	420	0	420	0	0	0	420

Support and Management Organizations: None

Test and Evaluation Organizations: None

Government Furnished Property: Not applicable

Subtotal Product Development						2731			0	2731
Subtotal Support and Management									0	0
Subtotal Test and Evaluation									0	0
Total Project						2731			0	2731

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: DAS1

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DAS1 Small Arms Improvement	1525	1453	0	2459	3092	3235	6772	Continuing	Continuing

A. **Mission Description and Justification:** 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. 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 and ammunition. Current efforts focus on improvements to the MK19-3 Grenade Machine Gun (GMG) and M2 Heavy Barrel Machine Gun. Improvements to the M2 Heavy Barrel, Caliber .50 Machine Gun include a trigger safety and a Quick-Change Barrel (QCB) kit to increase safety while simplifying and accelerating M2 barrel changes. Improvements to the MK19-3 GMG include an investigation of two mount designs. Both mounts eliminate excessive looseness and allow bold and accurate fire. One design permits remote control firing. Both mounts will accept either the MK19 or the caliber .50 M2 Heavy Barrel. The Small Arms Fire Control System (SAFCS) provides a full solution fire control for the MK19. The Low Cost Training Ammunition (LCTA) provides visibility out to 1500 M while reducing the cost of current ammunition training.

Acquisition Strategy: The universal mounting bracket will enter production as an engineering change to the current MK19-3 Grenade Machine Gun technical data package. Currently fielded systems will be modified through an MK19-3 modification effort. SAFCS strategy will lead to a type classification (Generic) and procurement of test hardware. Several non-developmental item (NDI) solutions exist for the caliber .50 QCB. QBC strategy is NDI, evaluation of competitive bid samples and contract award for DT/OT hardware. Both new mounts will be direct replacements for the MK19. Since 100% replacement is not practical, a Basis of Issue (BOI) will be developed. The LCTA strategy includes a market survey and procurement and testing a limited sample of potential products for verification of the product's performance specification.

FY 1997 Accomplishments:

•	116	Solicited competitive hardware
•	588	Conducted technical evaluation
•	287	Awarded hardware contract
•	181	Fabricated test hardware
•	222	Performed technical and limited user test
•	43	Prepared test reports and assessments
	88	Type classification of generic SAFCS
Total	1525	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT DAS1

FY 1998 Planned Program:

•	400	In-house design and fabrication of a Mount for the MK-19-3 Grenade Machine Gun
•	200	Procure a modified non-developmental item (NDI) Mount for the MK-19-3 GMG
•	287	Conduct initial tests
•	20	Determine capabilities
•	50	Finalize specifications
•	10	Market survey
•	120	Small purchases
•	75	Manufacturing delivery
•	100	Testing
•	75	Evaluation/Test report
•	80	Performance specifications validation
•	36	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	1453	

FY 1999 Planned Program: Project not funded in FY 1999

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/99 President's Budget	1566	0	0
Appropriated Value	1566	1500	
Adjustments to Appropriated Value	-41	-47	0
FY 1999 President's Budget	1525	1453	0

Summary Change Explanation: Funding—FY 1998 program is a congressional increase (+1500) and decrease (-47) for undistributed congressional reductions.

C. **Other Program Funding Summary**: Not applicable.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT DAS1

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Draft performance specs (brackets)		X*										
Perform validation tests (brackets)				X*								
Finalize performance specs (brackets)				X*								
Solicit competitive hardware (QCB)					X*							
Conduct technical evaluation (QCB)							X					
Award hardware contract (QCB)								X				
Fabricate test hardware (SAFCS)						X						
Perform technical & limited user test							X					
Test reports & assessments (SAFCS)								X				
Type classify generic (SAFCS)								X				
Fabricate hardware (Mount)						X						
Test prototype (Mount)							X					
Finalize Specifications (Mount)								X				
Market survey & small purchases (Ammo)						X						
Manufacturing delivery (Ammo)							X					
Testing (Ammo)									X			
Evaluation/Test report (Ammo)										X		
Performance specs validation (Ammo)											X	

* Milestone completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: DAS1

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Other government support	1351	1360	0
Program management support	174	57	0
SBIR/STTR		36	
Total	1525	1453	0

A. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
ARDEC	MIPR	Multiple	654	654	0	654	865	0	Cont	1519
Support and Management Organizations										
PM, Small Arms	Allotment	Multiple	174	174	0	174	57	0	Cont	231
ACALA	MIPR	Multiple	50	50	0	50	10	0	Cont	60
SBIR/STTR							36			36
Test and Evaluation Organizations										
Aberdeen Test Center	MIPR	Multiple	400	400	0	400	215	0	Cont	615
TEXCOM	MIPR	Multiple	175	175	0	175	0	0	Cont	175
Contractor	FFP	1Q98	72	72	0	72	270	0	Cont	342

Government Furnished Property: None

Subtotal Product Development			654	865			1519
Subtotal Support and Management			224	103			327
Subtotal Test and Evaluation			647	485			1132
Total Project			1525	1453			2978

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	19061	27174	26002	23942	18534	21653	33164	Continuing	Continuing
DH01 Combat Engineer Equipment Engineering Development	8834	8302	7575	2860	1533	2137	12351	Continuing	Continuing
DH02 Bridge Site Mobility	0	0	350	2000	2800	1500	250	0	6200
DH14 Logistics Support Equipment Engineering Development	84	4680	93	96	92	92	87	Continuing	Continuing
DL39 General Support Equipment Engineering Development	1599	2215	2511	2177	2126	4683	4241	Continuing	Continuing
DL41 Fuels and Equipment Engineering Development	941	1038	1086	1069	1068	1332	1346	Continuing	Continuing
DL42 Camouflage System Engineering Development	889	869	781	370	358	306	313	Continuing	Continuing
DL43 Combat Service Support Equipment Engineering Development	0	0	190	63	630	297	1159	Continuing	Continuing
DL44 Distribution System, 105kW	0	0	0	0	0	714	0	0	805
D194 Engine Driven Generators Engineering Development	2279	7302	9059	8273	5375	2171	2579	Continuing	Continuing
D279 Airdrop Equipment Engineering Development	1326	1317	1361	1395	1393	4961	5738	Continuing	Continuing
D429 Rigidwall Shelter Engineering Development	3109	1451	911	1172	1645	2200	2219	Continuing	Continuing
D461 Marine Oriented Logistics Equipment Engineering Development	0	0	2085	4467	1514	1260	2881	Continuing	Continuing

Mission Description and Budget Item Justification: This Program Element (PE) supports engineering and manufacturing development (EMD) of new and advanced combat support and combat service support equipment and therefore belongs in Budget Activity 5.

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DH01

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DH01 Combat Engineer Equipment Engineering Development	8834	8302	7575	2860	1533	2137	12351	Continuing	Continuing

A. Mission Description and Budget Item: This project supports the development and transition to procurement 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 Line of Communication Bridge (LOCB). All bridging work is in support of the increased military load class (MLC) requirements for the Abrams tank. This project also provides for market investigations of engineer construction equipment.

Acquisition Strategy: CBT - Competitive RDTE followed by procurement. HDSB - Competitive RDTE followed by competitive procurement. IRB – Limited RDTE followed by competitive procurement.

FY 1997 Accomplishments:

•	7706	Fabricated HDSB EMD Bridge Prototype
•	258	Tested IRB Ramp Prototype
•	195	Modified CBT Interfaces with HDSB & IRB
•	250	Completed IRB Embankment Height & Vehicle Interface Study
•	338	Simulated CBT Vehicle Performance with HDSB & IRB Loads
•	87	Conducted Market Investigations for Construction Equipment
Total	8834	

FY 1998 Planned Program:

•	6006	Fabricate HDSB EMD Launcher Prototype
•	541	Prepare for contractor testing
•	655	Contractor testing of HDSB Prototype
•	294	Test IRB Positive Flotation
•	237	IRB Market Investigation
•	361	Conduct market investigations for Construction Equipment
•	208	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	8302	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development
	PROJECT: DH01

FY 1999 Planned Program:

•	2096	Prepare and Fabricate HDSB EMD System Support Package
•	923	Complete contractor testing of HDSB EMD Prototype
•	3216	Initiate Pre-production Qualification Test (PPQT) of HDSB
•	430	Prepare IRB Production Solicitation
•	400	Complete IRB Positive Flotation Test
•	510	Conduct market investigation for Construction Equipment
Total	7575	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	9433	8566	7615
Appropriated Value	9203	8566	
Adjustment to Appropriated Value	-369	-264	
FY 1999 President's Budget	8834	8302	7575

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA3, G82400, Heavy Dry Support Bridge				14041	20544	21129	21261	Cont	Cont
OPA3, M26800, Bridge, Float-Ribbon, Transporter	4446	4102	8824	7968	9092	16424	21588	Cont	Cont
OPA3, M26600, Bridge, Float-Ribbon, Interior Bays				3049	3604	8008	6896	Cont	Cont
OPA3, M26700, Bridge, Float-Ribbon, Ramp Bays				1306	2050	2288	2941	Cont	Cont

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development
	PROJECT: DH01

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Fabricated HDSB Prototype Bridge	X*				X*							
Conducted IRB Prototype Test		X*			X*							
Fabricated HDSB Prototype Launcher					X*		X					
Conducted IRB Market Investigation					X*		X					
IRB Positive Floatation Test							X				X	
HDSB Contractor Acceptance Test								X			X	
IRB LRIP Milestone												X
Conduct HDSB PPQT											X	
Conducted Construction Equipment Market Investigation				X*				X				X

* Denotes Milestone completed or Activity started.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DH01

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
DH01 CONSTRUCTION EQUIPMENT			
Construction Equip Market Investigations	87	361	510
DH01 BRIDGING (HDSB, CBT & IRB)			
Primary Hardware Development	6000	4382	2006
Developmental Test and Evaluation	791	1490	3616
Program Management Support	449	442	349
Miscellaneous	1507	1627	1094
Total	8834	8302	7575

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Williams Fairey Engineering LTD	C-CPFF	Aug 96	9972	9972	3500	3000	1961	885	Cont	Cont
Karlskronavarvet	C-CPFF	Aug 96	10445	10445	3500	3000	2184	1121	Cont	Cont
TARDEC	1095	Various			2519	87	619	510	Cont	Cont
Support and Management Organizations										
SAIC	C-CPFF	Various				75	166	75	Cont	Cont
TACOM Logistics	1095	Various				507	496	369	Cont	Cont
TACOM Engineering	1095	Various				807	699	588	Cont	Cont
TACOM Quality	1095	Various				188	184	137	Cont	Cont
TACOM Systems Acquisition	1095	Various				374	367	274	Cont	Cont
Test and Evaluation Organizations										
TECOM	1095	Various			1508	258	485	3616	Cont	Cont
TARDEC	1095	Various				538	483		Cont	Cont

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DH01

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Miscellaneous										
TACOM	1095	Various			2472				Cont	Cont
ANAD	1095	Various					250		Cont	Cont
WES	1095	Various					200		Cont	Cont
SBIR/STTR							208			
Subtotal Product Development					9519	6087	4764	2516	Cont	Cont
Subtotal Support and Management						1951	1912	1443	Cont	Cont
Subtotal Test and Evaluation					1508	796	968	3616	Cont	Cont
Miscellaneous					2472		658		Cont	Cont
Total Project					13499	8834	8302	7575	Cont	Cont

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DH02

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DH02 Bridge Site Mobility	0	0	350	2000	2800	1500	250	0	6200

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).

Acquisition Strategy: : Anchorage System – Competitive RDTE followed by procurement. AERS - competitive RDTE followed by procurement. BEB Upgrade – competitive RDTE followed by procurement.

FY 1997 Planned Program: Project not funded in FY 1997

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program:

- 100 Conduct Market Investigation for Anchorage Equipment
- 150 Conduct Market Investigation for Propulsion Equipment
- 100 Conduct Market Investigation for AERS

Total 350

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY98/99 President's Budget	0	0	0
Appropriated Value	0	0	
Adjustments to Appropriated Value	0	0	
FY 1999 President's Budget	0	0	350

Change Summary Explanation: FY 1999 (+350) – Restructured new start in anticipation of an accelerated development schedule.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development
	PROJECT: DH02

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA3, GA1200, Bridge Site Mobility	0	0	0	0	0	0	383	Cont	Cont
OPA3, GA1300, Bridge Site Anchorage	0	0	0	0	0	0	1914	Cont	Cont
OPA3, M27200, Float Bridge Propulsion	0	0	0	0	0	2002	4566	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Milestone II AERS											X	
Milestone II Anchorage											X	
Milestone II BEB Upgrade											X	

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development PROJECT DH02

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
DH02 Bridge Site Mobility			
Primary Hardware Development			
Developmental Test and Evaluation			
Program Management Support			94
Miscellaneous			256
Total	0	0	350

B. Budget Acquisition History and Planning Information – Not Applicable

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DH14

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DH14 Logistics Support Equipment Engineering Development	84	4680	93	96	92	92	87	Continuing	Continuing

A. Mission Description and Justification: Develops and transitions to procurement a series of Material Handling Equipment (MHE) items.

Acquisition Strategy: Rough Terrain Container Handler (RTCH) - Competitive procurement of integrated NDI. Container Cargo Retriever (CCR) - Pre-Planned Product Improvement (P3I) to All Terrain Lifter Articulated System (ATLAS). MHE - Competitive procurements for miscellaneous MHE.

FY 1997 Accomplishments:

•	25	Conducted market investigations for the Container Cargo Retriever
•	25	Conducted market investigations for warehouse MHE
•	34	Conducted market investigations for other general MHE
Total	84	

FY 1998 Planned Program:

•	79	Conduct Market investigations for Light Weight Container Handling Equipment
•	260	Provide engineering support for development of performance specifications for Rough Terrain Container Handler (RTCH).
•	3000	Procure preproduction test hardware for RTCH.
•	1000	Provide test engineering support for RTCH.
•	223	Prepare purchase description; contract package of FY99 production contract for Rough Terrain Container Crane (RTCC).
•	118	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	4680	

FY 1999 Planned Program:

•	30	Development of performance specifications for MHE.
•	30	Conduct market investigations for warehouse MHE.
•	33	Conduct market investigations for other general MHE.
Total	93	

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DH14

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	88	4829	100
Appropriated Value	84	4829	
Adjustments to Appropriated Value		-149	
FY 1999 President's Budget	84	4680	93

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0603804.DG14, Logistics Support Equipment, Advanced Development	83	94	99	106	102	105	103	Cont	Cont
OPA3, M41800, All Terrain Lifting Army System	16519	3471	15228	10311	15459	11568	46911	Cont	Cont
OPA3, ML5365, Items Less Than $2.0M (MHE)	1999	1683	1672	1799	1778	1907	2846	Cont	Cont
OPA3, M41200, Forklift, DE, PT, RT, 50,000 lbs.			20588	34823	48550	58324	58255	Cont	Cont
OPA3, X00900, Rough Terrain Container Crane			13615	11212	8625	129	153	Cont	Cont

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development
	PROJECT: DH14

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Conducted Market Investigations for MHE				X*				X				X
Award Prototype Contract for RTCH							X					
Conduct RTCH PQT								X		X		
Prepare/Conduct Milestone III IPR for RTCC						X						
Prepare RFP for Prod. Contract for RTCC							X					
Conduct Evaluation Board for contract for RTCC								X				
Conduct Market Investigation for Heavy Lift Container Handler								X				
Develop performance specifications for MHE											X	
Conduct market investigations for warehouse MHE										X		
Conduct market investigations for other general MHE												X

*Milestone completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DH14

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Government Engineering and Other Support	84	439	93
Primary Hardware Development		3000	
Developmental Test and Evaluation		1000	
Program Management Support		123	
SBIR/SBTT		118	
Total	84	4680	93

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
TRAK					1541					1541
International										
RTCH Contractors	CPFF	Jun 98					2874			3000
Support and Management Organizations:										
TARDEC	MIPR	Various			1370	84	300	93	Cont	Cont
PM CE/MHE	PO	Various			517		450		Cont	Cont
Test and Evaluation Organizations:										
TECOM	MIPR	Various			1020		938		Cont	Cont
SBIR/STTR							118			

Government Furnished Property : None

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development PROJECT DH14

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	1541		2874		Cont	Cont
Subtotal Support and Management	1887	84	750	93	Cont	Cont
Subtotal Test and Evaluation	1020		1056		Cont	Cont
Total Project	4448	84	4680	93	Cont	Cont

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DL39

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL39 General Support Equipment Engineering Development	1599	2215	2511	2177	2126	4683	4241	Continuing	Continuing

A. **Mission Description and Justification:** Develop and transition to procurement water purification equipment, maintenance equipment and environmental control units (ECU) that do not use ozone depleting refrigerants.

Acquisition Strategy: Development and transition to competitive procurement for all items under this project.

FY 1997 Accomplishments:

- 62 Tested 18K British Thermal Units per Hour (BTUH) ECU components in prototype layout.
- 100 Prepared data package for improved ECU procurement.
- 470 Performed technical feasibility testing of candidate pretreatment and reverse osmosis element configuration.
- 200 Conducted multiple market investigations of component technologies.
- 767 Prepared purchase description and contract solicitation for Engineering and Manufacturing Development (EMD) Contract.

Total 1599

FY 1998 Planned Program:

- 426 Fabricate large diesel prototype heater (250K + BTUH).
- 1400 Design and fabricate EMD prototype 1500 GPH Reverse Osmosis Water Purification Unit (ROWPU).
- 335 Prepare production qualification test (PQT) and initial operational test and evaluation (IOTE) test plan for the 1500 GPH ROWPU.
- 54 Small Business Innovative Research/Small Business Technology Transfer Programs.

Total 2215

FY 1999 Planned Program:

- 100 Develop purchase description for 18K BTUH ECU.
- 150 Develop purchase description for large diesel heaters (250K + BTUH).
- 312 Complete testing of large heater prototypes.
- 450 Complete fabrication of 1500 GPH ROWPU prototypes.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development
	PROJECT DL39

FY 1999 Planned Program: (continued)

- 1200 Conduct PQT and IOT&E on the 1500 GPH ROWPU.
- 299 Update Program Management Documentation for MS III IPR.

Total 2511

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	1641	2286	2589
Appropriated Value	1602	2286	
Adjustments to Appropriated Value	-3	-71	
FY 1999 President's Budget	1599	2215	2511

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0603804.DK39, General Support Equipment Advanced Development	787	1637	1777	2001	2137	2472	2490	Cont	Cont
OPA 3, ML5335, Items Less Than $2.0M (Water Equipment)	2968	2795	1255	1938	1775	1021	775	Cont	Cont
OPA 3, R05100, Water Purifier Unit Reverse Osmosis 3000 GPH					21232	27177	19439	Cont	Cont
OPA 3, R05200, Water Purifier Unit Reverse Osmosis 1500 GPH				11306	11242	21428	11233	Cont	Cont
OPA3, MF9300, Air Conditioners, Various Sizes	1461	1433	4650	4498	4588	1382	7064	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Fabricate Large Heater EMD prototype								X				
Develop 18K ECU purchase description											X	
Develop large diesel heater purchase description/complete tests											X	
Completed Purchase Description of 1500 GPH ROWPU EMD prototype.			X*									

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DL39

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Completed 1500 GPH ROWPU EMD contract solicitation package.				X*								
Released EMD RFP for 1500 GPU ROWPU.					X*							
Award EMD contract for 1500 GPU ROWPU.						X						
Conduct CDR.							X					
Complete 1500 GPU ROWPU prototype fabrication.									X			
Complete contractor testing.										X		
Initiate PQT/EUT.										X		

* Milestone completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DL39

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Hardware Development	562	1127	1044
Operational Test and Evaluation		20	50
Development Test and Evaluation		121	459
Government Engineering and Support	912	822	833
Government Program Support	125	125	125
Total	1599	2215	2511

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
TARDEC/ CECOM	MIPR	Various			503	1074	1144	1280	Cont	Cont
Contractor	CPFF	2Q98			727	400	544	175	Cont	Cont
Support and Management Organizations:										
TARDEC/ Various	MIPR	Various			1572	125	437	606	Cont	Cont
Test and Evaluation Organizations:										
TECOM	MIPR	Various					70	400	Cont	Cont
OPTEC	MIPR	Various					20	50	Cont	Cont
Government Furnished Property : None										
Subtotal Product Development					1230	1474	1688	1455	Cont	Cont
Subtotal Support and Management					1572	125	437	606	Cont	Cont
Subtotal Test and Evaluation							90	450	Cont	Cont
Total Project					2802	1599	2215	2511	Cont	Cont

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DL41

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL41 Fuels and Equipment Engineering Development	941	1038	1086	1069	1068	1332	1346	Continuing	Continuing

A. **Mission Description and Justification:** Develop and transition to procurement petroleum storage and distribution systems.

Acquisition Strategy: Development of and transition to competitive procurement for all items under this project.

FY 1997 Accomplishments:

•	35	Awarded Improved Tactical Fuel Distribution and Storage (ITFDS).
•	621	Designed and fabricated ITFDS initial prototypes.
•	150	Initiated ITFDS component testing.
•	85	Procured long lead items for Petroleum Quality Assessment System (PQAS) prototypes.
•	50	Completed long term exposure testing of tank fabrics.
Total	941	

FY 1998 Planned Program:

•	150	Prepare contract package for PQAS Engineering and Manufacturing Development (EMD) contract.
•	70	Administer source selection process for PQAS.
•	205	Develop PQAS specification.
•	362	Continue fabrication, assembly and testing ITFSD components.
•	225	Prepare EMD, Baseline Cost Estimate, and Market Investigation for Remote Refueling & Rearming Deployable Distribution System (R3D2S).
•	26	Small Business Innovative Research/Small Business Technology Transfer.
Total	1038	

FY 1999 Planned Program:

•	942	Award and administer PQSL EMD contract for design, fabrication and test system prototype.
•	144	Conduct MS I/III decision for R3D2S and complete performance specification.
Total	1086	

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DL41

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	1011	1071	1081
Appropriated Value	987	1071	
Adjustments to Appropriated Value	-46	-33	
FY 1999 President's Budget	941	1038	1086

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0603804.DK41, POL Distribution Equipment Advanced Development	850	832	829	909	907	963	970	Cont	Cont
OPA 3, ML5330, Items Less Than $2.0M (POL)	6467	7055	4657	3754	3798	4673	4394	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Awarded ITFDS contract for small lightweight pumps.	X*											
Designed and fabricated ITFDS component prototypes and initiated testing.		X*										
Procured long lead time items for PQAS EMD prototypes.		X*										
Develop PQAS specification.						X						
Prepare contract package for PQAS.							X					
Administer source selection process.								X				
Award PQAS contract.									X			

*Milestone completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DL41

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Hardware Development	421	301	751
Test and Evaluation	46	230	80
Government Engineering and Support	400	417	165
Government Program Support	50	90	90
SBIR/STTR	24		
Total	941	1038	1086

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations:										
TARDEC	In-House	Various			540	612	417	316	Cont	Cont
Contractor	Various	Various			1671	281	226	620	Cont	Cont
Support and Management Organizations:										
TEXCOM	MIPR	Feb 94			30				Cont	Cont
ARL/Navy/Misc	Various	Various			185	48	125	20	Cont	Cont
Test and Evaluation Organizations:										
TECOM	MIPR	Various			137		50	30	Cont	Cont
Contractor	CPFF	Various					220	100	Cont	Cont
Subtotal Product Development					2211	893	643	936	Cont	Cont
Subtotal Support and Management					215	48	125	20	Cont	Cont
Subtotal Test and Evaluation					137		270	130	Cont	Cont
Total Project					2563	941	1038	1086	Cont	Cont

Government Furnished Property - None

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DL42

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL42 Camouflage System Engineering Development	889	869	781	370	358	306	313	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.

Acquisition Strategy: Develop camouflage systems for the Services and transition items to competitive procurement.

FY 1997 Accomplishments:

•	489	Developed Ultra-Lightweight Camouflage Net System (ULCANS) for the desert
•	200	Evaluated Production Proveout Testing (PPT) results
•	200	Conducted desert visual evaluation test; prepared desert TEMP.
Total	889	

FY 1998 Planned Program:

•	847	Reprogrammed to address high priority requirements for the Army Enterprise Architecture
•	22	Small Business Innovation Research/Small Business Technology Transfer Program
Total	869	

FY 1999 Planned Program:

•	200	Prepare draft desert ECP for ULCANS
•	200	Finalize Production Qualification Test/Operational Test (PQT/OT) plan
•	381	Initiate desert PQT/OT testing
Total	781	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	942	896	843
Appropriated Value	919	896	
Adjustments to Appropriated Value	-30	-27	
FY 1999 President's Budget	889	869	781

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development / PROJECT: DL42

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0602712.AH35, Camouflage Technology		799	2058	2161	2486	2538	2598	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Completed PPT and testing of Desert ULCANS P3I MDR				X*								
Complete Desert ULCANS P3I MDR PQT/OT Testing												X

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1998
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development
	PROJECT: DL42

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
Government Engineering Support	379	0	380
Contractor Engineering Support	310	0	209
Developmental Test and Evaluation	150	0	140
Travel	30	0	28
Miscellaneous	20	847	24
SBIR/STTR		22	
Total	889	869	781

B. **Budget Acquisition History and Planning Information:** Not applicable.

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DL43

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL43 Combat Service Support Equipment Engineering Development	0	0	190	63	630	297	1159	Continuing	Continuing

A. Mission Description and Justification: Develops engineer support equipment such as firetrucks, electrical distribution systems, and floodlights which are used for garrison and field operations.

Acquisition Strategy: EMD and transition to production.

FY 1997Accomplishments: Project not funded in FY 1997

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program:

- 50 Development of performance specifications for multiple Engineer Support Equipment (ESE).
- 85 Conduct market investigation for multiple ESE items.
- 55 Conduct market investigation testing for multiple ESE items.

Total 190

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	0	1114
Appropriated Value			
Adjustments to Appropriated Value			
FY 1999 President's Budget	0	0	190

Change Summary Explanation: Funding: FY 1999 - Project was decreased (-924) in FY99 due to realignment to higher Army priority requirements.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development / PROJECT: DL43

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA 3, M15800, Truck, Firefighting, Multipurpose			1708	4223	4329	4523	4657	Cont	Cont
OPA 3, M72100, Floodlight Set, Electric, Trailer Mounted			1994	2267	2263	4233	4384	Cont	Cont
OPA 3, ML5325, Items Less than $2.0M (CSS Equipment)	3681	1973	4749	6635	7820	11290	13331	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Conduct market investigation											X	
Conduct pre-production testing											X	
Develop performance specifications												X

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DL43

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Developmental Test and Evaluation			55
Performance Specification Development			50
Market Investigations			85
Total	0	0	190

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations: None										
Support and Management Organizations: None										
Test and Evaluation Organizations: None										
Miscellaneous										
TARDEC	PO	Various						135	Cont	Cont
TECOM	MIPR	Various						55	Cont	Cont
Government Furnished Property: None										
Subtotal Product Development										
Subtotal Support and Management										
Subtotal Test and Evaluation										
Subtotal Miscellaneous								190	Cont	Cont
Total Project						0	0	190	Cont	Cont

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D194

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D194 Engine Driven Generators Engineering Development	2279	7302	9059	8273	5375	2171	2579	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.

Acquisition Strategy: Develop and transition to competitive procurement all items in this project.

FY 1997 Accomplishments:

•	130	Completed testing of 5kW 28 Volts Direct Current (VDC), Production Qualification Test (PQT) models.
•	179	Completed preparation of formal program review of 5kW 28VDC Auxiliary Power Units (APU).
•	1568	Continued development contracts for 3kW Tactical Quiet Generators (TQG).
•	402	Evaluated designs for 3kW TQG generator sets from competitive contract.
Total	2279	

FY 1998 Planned Program:

•	2400	Continue hardware development for 3kW TQG.
•	1668	Test and Evaluation for the 3kW TQG .
•	759	Develop logistics data for the 3kW TQG .
•	1926	Initiate hardware development for Prime Power System (PPS).
•	375	Initiate 100 & 200kW Utility Set Program.
•	174	Small Business Innovative Research/Small Business Technology
Total	7302	

FY 1999 Planned Program:

•	444	Complete development, testing and transition 3kW generator set to procurement.
•	5015	Complete hardware and initiate test/evaluation of PPS.
•	3600	Initiate hardware development for 100 & 200kW sets.
Total	9059	

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D194

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	2183	7534	9015
Appropriated Value	2138	7534	
Adjustments to Appropriated Value	+141	-232	
FY 1999 President's Budget	2279	7302	9059

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDT&E:PE0603804A/DG11	214	207	1377	1032	755	628	1096	Cont	Cont
OPA,BA3:Generators & Assoc Equip (MA9800)	27308	7526	82749	81505	89954	47613	71883	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Begin fabrication of 5kW 28VDC APU PQT models												
Begin testing of 5kW 28VDC APU PQT models												
Complete fabrication of 5kW 28VDC PQT models												
Completed testing of 5kW 28VDC APU PQT models		X*										
Completed preparation of formal program Review of 5kW 28VDC APU			X*									
Begin development of 3kW (TQG)												
Award competitive contracts for design And prototype development of 3kW sets (Phase I)												
Evaluated competitive designs for Lightweight 3kW generator sets (Phase I)				X*								
Continued hardware development and complete Phase I, down select to one contractor, and initiate Phase II hardware delivery, testing and logistics data					X*							

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D194

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Complete data and testing and transition 3kW to procurement (Milestone III)										X		
Award multiple contracts for competitive designs of Prime Power Systems (PPS)						X						
Evaluate PPS designs and down select to single contractor									X			
Award Phase II of PPS EMD for fabrication/test/eval/data										X		
Initiate EMD testing of PPS												X
Initiate EMD program on 100 & 200kW utility sets						X						
Award multiple contracts for competitive designs/hardware/testing of 100 & 200kW sets										X		

*Denotes completed milestone

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D194

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Primary Hardware Development	1473	3795	5400
Test and Evaluation	130	1668	1944
Government Engineering & Support	481	1100	1200
Program Management	110	565	515
Miscellaneous	85	174	
Total	2279	7302	9059

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Contractors Various	CPFF	9406				1448	4700	6600	Cont	13608
Support and Management Organizations: None										
Test and Evaluation Organizations										
Miscellaneous:										
CECOM	In-House	Various	NA	NA		556	1734	1715	Cont	Cont
TECOM	MIPR	Various				275	868	744	Cont	Cont
Government Furnished Property: None										
Subtotal Product Development					1122	1448	4700	6600	Cont	Cont
Subtotal Miscellaneous					821	831	2602	2459	Cont	Cont
Total Project					1943	2279	7302	9059	Cont	Cont

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D279

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D279 Airdrop Equipment Engineering Development	1326	1317	1361	1395	1393	4961	5738	Continuing	Continuing

A. Mission Description and Justification: Develop and transition to procurement cargo and personnel parachutes, airdrop containers and other aerial delivery equipment to improve safety and efficiency of airborne operations.

Acquisition Strategy: Rapid development thru the acquisition life cycle using all available opportunities to accelerate development into production and fielding.

FY 1997 Accomplishments:

•	1050	Awarded contract for Component Development and Performance Validation of Advanced Reserve Parachute System (ARPS). ARPS is a sub-system component of Advanced Tactical Parachute System (ATPS).
•	276	Conducted Concept Evaluation of potential system components for 500 foot Low Velocity Airdrop System (LVADS) (Medium). Provided improved delivery accuracy, and survivability of US Army loads, and increased survivability for USAF aircraft and aircrew delivering.
Total	1326	

FY 1998 Planned Program:

•	1084	Continue component development and performance validation contract of ARPS.
•	200	Perform contractor testing of ARPS.
	33	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	1317	

FY 1999 Planned Program:

•	307	Initiate developmental testing of ARPS.
•	1054	Conduct developmental testing of ARPS.
Total	1361	

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D279

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	1414	1359	1354
Appropriated Value	1379	1359	
Adjustments to Appropriated Value	-53	-42	
FY 1999 President's Budget	1326	1317	1361

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0603804.D266, Airdrop Equipment Advanced Development	1311	1317	1359	1351	1527	4961	6147	Cont	Cont
OPA 3, R10901, Low Velocity Airdrop Delivery System (LVADS)				3171	3057				2685
OPA 3, R10904 Advanced Tactical Parachute System (ATPS)						25950	52767		14874

D. Schedule Profile

	FY 1997				FY 1998				FY 1999		
	1	2	3	4	1	2	3	4	1	2	3
Conducted ECDS Concept Feasibility Study			X*								
Conducted 500' LVAD component study			X*								
Awarded ARPS Contract				X*							
ARPS Component Development and Performance Validation								X			
Begin ARPS Developmental Testing									X		

*Denotes completed activity

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D279

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Primary Hardware Development	871	159	761
Program Management Support	155	200	150
Test and Evaluation	300	958	450
Total	1326	1317	1361

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
SSCOM	In-House				17883	871	159	761	Cont	Cont
Metric Systems	TBD	TBD							Cont	Cont
MICOM	MIPR								Cont	Cont
DA Staff										
Def Eval Spt Acty										
Army Nat'l Guard										
Support and Management Organizations										
SSCOM					2576	155	200	150	Cont	Cont
Test and Evaluation Organizations										
SSCOM	In-House				6318	300	958	450	Cont	Cont
Ft. Bragg	MIPR									
TECOM/YPG										
Government Furnished Property: None										
Subtotal Product Development					17883	871	159	761	Cont	Cont
Subtotal Support and Management					2575	155	200	150	Cont	Cont
Subtotal Test and Evaluation					6318	300	958	450	Cont	Cont
Total Project					26776	1326	1317	1361	Cont	Cont

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D429

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D429 Rigidwall Shelter Engineering Development	3109	1451	911	1172	1645	2200	2219	Continuing	Continuing

A. **Mission Description and Justification:** Develops a series of Rigid Wall Shelters (RWS) with added capabilities and enhanced survivability.

Acquisition Strategy: Developments transition to procurement funded through PM interchange requirements except the Large Standard Integrated Command Post System (SICPS) shelter will be procured through OPA2.

FY 1997 Accomplishments:

•	594	Completed panel testing for Upgraded Lightweight Multipurpose Shelter (LMS) prototype.
•	492	Completed design and prototype fabrication of integral environmental control unit for International Standards Organization (ISO) Component Pre-Planned Product Improvement (P3I).
•	2023	Completed development and began testing of a combined power/environmental control/CB protection system and lightweight camouflage for the Objective Version SICPS Shelter.
Total	3109	

FY 1998 Planned Program:

•	957	Fabricate Upgraded LMS prototypes and initiate testing.
•	458	Complete testing of the Objective SICPS Shelter.
•	36	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	1451	

FY 1999 Planned Program:

•	462	Complete testing of Upgraded LMS.
•	449	Complete MS I/II for Cargo Bed Cover (CBC) 1 1/2 Ton M105 Trailer Variant and award LRIP Contract with production options.
Total	911	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development PROJECT D429

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	3193	1498	1024
Appropriated Value	3115	1498	
Adjustments to Appropriated Value	-6	-47	
FY 1999 President's Budget	3109	1451	911

Change Summary Explanation: Funding: FY 1999 was decreased (-182) due to realignment to higher priority requirements.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0603804.D428, Rigidwall Shelter Engineering Development	3726	2356	875	993	1529	2009	2025	Cont	Cont

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D429

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Completed LMS Upgrade Panel Testing			X*									
Completed Design/Fabrication of Integral ECU Prototypes ISO P3I				X*								
Fabricate Upgraded LMS Prototypes and initiate Technical Testing						X						
Complete testing of the Objective SICPS Shelter								X				
Complete Upgraded LMS Testing									X			
Complete Milestone I/II for 1 1/2 Ton Trailer CBC Variant									X			
Award LRIP Contract for 1 1/2 Ton Trailer CBC Variant										X		
Award Development/Production contract for the 3/4 Ton CBPS Variant										X		

* Denotes completed activity

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D429

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Primary Hardware Development	1417	714	406
Program Management Support	812	369	252
Test and Evaluation	880	368	253
Total	3109	1451	911

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
SSCOM	In- House				13620	1417	714	406	Cont	Cont
DEEPCO (Also Radian, GTS.)	Various	Various								
Ft. Belvoir (Also TEXCOM, ATCOM, USA Med, ARL, Army Nat'l Guard.)	MIPR									
Support and Management Organizations										
SSCOM					6041	812	369	252	Cont	Cont
Test and Evaluation Organizations										
TECOM					9125	880	368	253	Cont	Cont

Government Furnished Property: None

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development PROJECT D429

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	13620	1417	714	406	Cont	Cont
Subtotal Support and Management	6041	812	369	252	Cont	Cont
Subtotal Test and Evaluation	9125	880	368	253	Cont	Cont
Total Project	28786	3109	1451	911	Cont	Cont

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D461

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D461 Marine Oriented Logistics Equipment Engineering Development	0	0	2085	4467	1514	1260	2881	Continuing	Continuing

A. Mission Description and Justification: This project provides for the engineering development of Army watercraft systems. FY99 efforts will center on the completion of Containerized Maintenance Facility (CMF) Development (this item replaces current Floating Machine Shops). Components for the CMF have been identified as a result of prior initiatives. However, Container/Shelter Configuration and Packaging Configurations still require additional development. Strategy is to complete remaining developmental activity, then immediately commence acquisition, assembly and packaging in the same fiscal year (FY 99). This will allow early fielding and consequent retirement of the costly Floating machine Shop. Program also includes engineering development of the Port Communications and Control Center (PCCC). This 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.

Acquisition Strategy: CMF: In house completion of Engineering Development and initiation of Follow-on Acquisition by the Construction Battalion Center (CBC). Port Communication and Control Center (PCCC) – competitive procurement to performance specification.

FY 1997 Accomplishments: Project not funded in FY 1997

FY 1998 Planned Program: Project not funded in FY 1998.

FY 1999 Planned Program:

•	2000	Full scale development of the Containerized Maintenance Facility (CMF).
•	85	Initiate development of the PCCC.
Total	2085	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	0	2195
Appropriated Value			
Adjustments to Appropriated Value			
FY 1999 President's Budget	0	0	2085

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D461

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0603804A, D526, Marine Oriented Logistics, Advanced Development			10983	2294	4014	4127	3427	Cont	Cont
OPA 3, M32400, Floating Crane, 100-250 Ton	13888	13744						Cont	Cont
OPA 3, M44500, Pusher Tug, Small	7599	6597	4269					Cont	Cont
OPA 3, R09600, Causeway, Powered System				8260		4327	1000	Cont	Cont
OPA 3, R09600, RO/RO Discharge Platform			17083	4818	18639	4718	4833	Cont	Cont
OPA 3, R09900, Causeway, Floating				5028				Cont	Cont
OPA 3, M11200, Logistic Support Vessel (LSV)				18528		18875	19333	Cont	Cont
OPA 3, M11201, Logistic Support Vessel (ESP)					6229	7456	14015	Cont	Cont
OPA 3, M32500, Rapidly Installed Breakwater							5000	Cont	Cont
OPA 3, M11300, Containerized Maintenance Facility			5300		958			Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Pusher Tug material release						X						
Floating Crane Milestone I/III	X*											
Floating Crane contract award			X*									
Containerized Maintenance Facility Award									X			
Port Communications & Control Center (PCCC) Contract Award											X	

*Denotes completed effort

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development
	PROJECT D461

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Government Engineering Support (includes test & evaluation			1950
Contract Engineering			85
Program Management Support			50
Total	0	0	2085

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Construction Battalion Center	MIPR							1950	Cont	Cont
International Consultants, Inc.	SS-FP				2266			85	Cont	Cont
Support and Management Organizations										
ATCOM/TACOM	MIPR	Various			88			50	Cont	Cont

Test and Evaluation Organizations: None

Government Furnished Property: None

Subtotal Product Development					2266			2035	Cont	Cont
Subtotal Support and Management					88			50	Cont	Cont
Subtotal Test and Evaluation										
Total Project					2354			2085	Cont	Cont

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	13315	10710	16404	17616	17119	17020	16916	Continuing	Continuing
D097 C3I Interoperability Network Activity	1902	4049	4295	3214	3247	3152	3289	Continuing	Continuing
D098 Tactical Radio Accessories	526	492	469	0	0	0	0	0	4665
D282 SINCGARS-V Engineering Development	6715	0	0	0	0	0	0	0	19729
D485 C4I Interoperability Standardization and Certification	4172	3106	5103	5478	4863	4640	4513	Continuing	Continuing
D589 Army Systems Engineering & Warfighter Technical Support	0	3063	6537	7824	7909	8128	8014	Continuing	Continuing
D591 Weapons System Technical Architecture	0	0	0	1100	1100	1100	1100	Continuing	Continuing

Mission Description and Budget Item Justification: Supports the Army Enterprise Strategy to achieve interoperability within the Army and with the Joint/Combined forces. This program includes Engineering and Manufacturing Development (EMD), integration and interoperability support for Army command, control, communications, computer, intelligence, electronic warfare and sensor (C4IEWS) systems, and the supporting interoperability facilities/tools. Also included is engineering development of life-cycle capability to develop, test, and maintain interoperability, and support an interoperability development and evaluation process consisting of an Army interoperability board and technical management to ensure that the integration of new technologies for emerging systems support joint interoperable Force XXI architecture for Army battlefield digitization. Also included is the Army portion of engineering development efforts in support of the Combat Survivor Evader Locator System (CSEL). This includes the Single Channel Ground and Airborne Radio System (SINCGARS) product improvements identified in the SINCGARS System Improvement Plan; the Frequency Hopping Multiplexer (FH MUX) which allows multiple radios to operate on one antenna for reduced visual signature and rapid transportability and set-up; and 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. The projects in this Program Element support research efforts in the engineering and manufacturing development phase of the acquisition process and therefore are correctly placed in Budget Activity 5.

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

PROJECT: D097

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D097 C3I Interoperability Network Activity	1902	4049	4295	3214	3247	3152	3289	Continuing	Continuing

A. Mission Description and Budget Item 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, developers 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.

Acquisition Strategy: The efforts funded in this project are non-system specific, therefore no acquisition strategy is provided.

FY 1997 Accomplishments:

- 675 Developed/operated AIN 45-node nationwide system for over 8000 test-days supporting Task Force XXI, ACTDs, Joint tests and fielded systems
- 390 Systems engineering of AIN design, analysis, integration, installation and test support (8 new user network nodes, and enhanced network diversity)
- 560 Provided core AIN network connections to link geographically dispersed network hubs/sites
- 277 Provided AIN technology improvements/system upgrades for emerging requirements (remote SINCGARS interface, wireless link, transportability)

Total 1902

FY 1998 Planned Program:

- 630 Develop and operate the AIN core capabilities to facilitate test, experimentation and evaluation of Army C4IEW systems interoperability/software development/sustainment (for Division XXI AWE, ACTDs, Joint tests and tactical systems - estimate 10,000 test-days)
- 389 Systems engineering of AIN design, analysis, integration, installation and test support for C4IEWS system requirements
- 554 Provide core AIN network connections to link geographically dispersed network hubs/sites
- 293 Provide technology improvements and system upgrades to meet emerging test support requirements for C4IEWS systems and Force XXI
- 580 Provide external DIL connectivity to remote battlefield digitization sites
- 341 Upgrade, operate and support DIL Evaluation & Certification Testbed and other facilities supporting the battlefield digitization
- 293 Acquire/update DIL hardware and software interfacing systems, test tools, and supporting systems for 1st Digitized Division and TA/SA evaluations
- 348 Acquire DIL automated scenario drivers and test analysis tools for 1st Digitized Division evaluations and TA/SA evaluations

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development PROJECT D097

FY 1998 Planned Program: (continued)

•	282	Develop VMF test tool, Builds 2 & 3, to support correct C4IEWS system implementations of the Joint/Army Technical Architecture's VMF standard
•	237	Develop Mil-Std-188-220 protocol test tool Conformance Tester capability for to support correct C4IEWS system implementations of the Joint/Army Technical Architecture's 188-220 protocol
•	102	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	4049	

FY 1999 Planned Program:

•	750	Develop and operate the AIN core capabilities to facilitate test, experimentation and evaluation of Army C4IEW systems interoperability/software development/sustainment (for Force XXI modernization, ACTDs, Joint tests and tactical systems)
•	400	Systems engineering of AIN design, analysis, integration, installation and test support for C4IEWS system requirements
•	600	Provide core AIN network connections to link geographically dispersed network hubs/sites
•	300	Provide AIN technology improvements and system upgrades to meet emerging test support requirements for C4IEWS systems and Force XXI
•	650	Provide external DIL connectivity to remote battlefield digitization sites
•	350	Upgrade, operate and support DIL Evaluation & Certification Testbed and other facilities supporting the battlefield digitization
•	300	Acquire/update DIL hardware and software interfacing systems, test tools, and supporting systems for 1st Digitized Division and TA/SA evaluations
•	421	Acquire DIL automated scenario drivers and test analysis tools for 1st Digitized Division evaluations and TA/SA evaluations
•	282	Develop VMF test tool, Build 4, to support correct C4IEWS system implementations of the Joint/Army Technical Architecture's VMF standard
•	242	Develop Mil-Std-188-220 protocol test tool Network Analyzer combat radio network diagnosis; evolve capabilities with evolution of the standards
Total	4295	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY1998/1999 President's Budget	1660	4178	4274
Appropriated Value	1715	4178	
Adjustments to Appropriated Value	187	-129	
FY 1999 President's Budget Request	1902	4049	4295

Change Summary Explanation: Funding: FY1997 (+187) Funds reprogrammed to support Task Force XXI Advanced Warfighting Experiment digitization efforts.

C. Other Program Funding Summary: None

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development
	PROJECT D097

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
AIN User Test Support	X	X	X	X	X	X	X	X	X	X	X	X
VMF Tester, Build 2						X						
Protocol Tester (PTT) Monitor/Decode v2						X						
VMF Tester, Build 3								X				
Protocol Tester (PTT) Conformance v1								X				
Protocol Tester (PTT) Net Analyzer v1										X		
Protocol Tester (PTT) Conformance v2											X	
VMF Tester, Build 4												X
Protocol Tester (PTT) Net Analyzer v2												X

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

PROJECT: D097

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
C4IEWS System Test Support	675	1021	1100
Systems Engineering	390	390	400
Core Networking	560	1086	1271
Technology insertion/upgrade equipment	277	583	605
Automated scenario driver/tools		348	400
VMF test tool development		282	282
Mil-Std-188-220 test tool development		237	237
SBIR/STTR		102	
Total	1902	4049	4295

B. Budget Acquisition History and Planning Information: Not applicable

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

PROJECT: D098

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D098 Tactical Radio Accessories	526	492	469	0	0	0	0	0	4665

A. Mission Description and Budget Item Justification: Project D098 - Tactical Radio Accessories: This project will provide for 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.

Acquisition Strategy: The joint Air Force led acquisition strategy is a research and development approach for the handheld unit, followed by a production contract award in FY98.

FY 1997 Accomplishments:

•	526	Supported Air Force Development efforts on CSEL program
Total	526	

FY 1998 Planned Program:

•	479	Support Air Force Development efforts on CSEL program
•	13	Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
Total	492	

FY 1999 Planned Program:

•	469	Support Air Force Development efforts on CSEL program
Total	469	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY1998/1999 President's Budget	542	508	506
Appropriated Value	529	508	
Adjustments to Appropriated Value	-3	-16	
FY1999 President's Budget	526	492	469

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

PROJECT: D098

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
ARMY, OPA2 B03200, Combat Survivor Evader Locator (CSEL)	0	5510	13712	18589	7125	7108	7106	0	59150

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
CSEL Program Milestone III Decision							X					
Operational Assessment						X						
IOT&E										X		
Option 2 Contract Award							X					
Option 3 Contract Award											X	

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development PROJECT D098

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Support Air Force Development efforts on CSEL program	526	479	469
SBIR/STTR		13	
Total	526	492	469

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations: None										
Support and Management Organizations										
Spt to Air Force on CSEL			4718	4718	3178	526	479	469	0	4652
SBIR/STTR							13			13
Test and Evaluation Organizations: None										
Government Furnished Property: None										
Subtotal Product Development					0	0	0	0	0	0
Subtotal Support and Management					3178	526	492	469	0	4665
Subtotal Test and Evaluation					0	0	0	0	0	0
Total Project					3178	526	492	469	0	4665

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

PROJECT: D282

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D282 SINCGARS-V Engineering Development	6715	0	0	0	0	0	0	0	19729

A. Mission Description and Budget Item Justification: **Project D282 - SINCGARS-V Engineering Development:** This program provided for analysis and implementation of overall product improvements to the SINCGARS Combat Net Radio. Product improvements included are Global Positioning System (GPS) interfaces, Airborne Battlefield Combat Identification System (BCIS), Forward Error Correction (FEC) (data transmission enhancement techniques), improved data capability, weight reduction (to include an Advanced System Improved Receiver Transmitter, Battery Box and Vehicular Appliqué), MANPRINT (ease of operations), vehicular system re-engineering, improved electronic counter-counter measure (ECCM) performance and switched system dial-up interfacing. Program provides simplified operations, improved performance of existing capabilities, new operational capabilities and reduced life cycle costs.

Acquisition Strategy: The Advanced System Improved Receiver-Transmitter and associated items development design products were used by competitive producers as a part of the FY 97 production competition of the SINCGARS radio.

FY 1997 Accomplishments:

•	3100	Completed development effort for ITT Advanced SIP Radio
•	3100	Completed development effort for GD Advanced SIP Radio
•	515	Program Management Support - Office Automation
Total	6715	

FY 1998 Planned Program: Project not funded in FY98

FY 1999 Planned Program: Project not funded in FY99

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY1997/1998 President's Budget	6883	0	0
Appropriated Value	6715		
Adjustments to Appropriated Value			
FY1999 President's Budget	6715	0	0

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

PROJECT: D282

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Army, OPA2 SSN:B00500	285707	275960	13212	13476	0	0	0	0	588355
Army, OPA2 SSN:J30500	12117	9239	0	0	0	0	0	0	21356
Army, OPA2, SSN:Z16800	13496	0	0	0	0	0	0	0	13496

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Award Alternate Configuration Production			X*									
Production Option							X					
Development Contracts												
ECP Cut In to Airborne Production												
Exercise Alternate Configuration Dev Contr Opt	X*											

* Milestone completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

PROJECT: D282

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Contractor Engineering	6200	0	0
Program Management Support	515	0	0
Total	6715	0	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
ITT Ft. Wayne, IN	SS/CPFF	OCT 94	3829	3829	3829	0	0	0	0	3829
GD Tallassee, FL	SS/CPFF	DEC 94	6175	6175	3075	3100	0	0	0	6175
ITT Ft. Wayne ,IN	SS/CPFF	JAN 95	7330	7330	4230	3100	0	0	0	7330
Support and Management Organizations:										
Misc.	TBD	APR 97	1630	1630	1115	515	0	0	0	1630
Test and Evaluation Organizations										
EPG, MD	MIPR	JAN 96	765	765	765	0	0	0	0	765
Subtotal Product Development					11134	6200	0	0	0	17334
Subtotal Support and Management					1115	515	0	0	0	1630
Subtotal Test and Evaluation					765	0	0	0	0	765
Total Project					13014	6715	0	0	0	19729

Government Furnished Property: None

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

PROJECT: D485

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D485 C4I Interoperability Standardization and Certification	4172	3106	5103	5478	4863	4640	4513	Continuing	Continuing

A. Mission Description and Budget Item Justification: C4I Interoperability Standardization and 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.

Acquisition Strategy: The efforts funded within this project are non-system specific, therefore no Acquisition Strategy is provided.

FY 1997 Accomplishments:

•	207	Evaluated and certified IT/C4ISR systems interoperability to assure compliance with the Technical and System Architectures
•	190	Provided Digital Integrated Laboratory (DIL) Systems Engineering and Integration support
•	731	Developed, evolved and maintained required Variable Message Format (VMF) messages, obtained joint approvals, and published VMF Standards for Task Force XXI
•	265	Developed, maintained, jointly approved and published Mil-Std-188-220A as part of Joint/Army Technical Architectures for Task Force XXI
•	684	Provided testing support and analysis for VMF and Mil-Std-188-220 system implementations for Task Force XXI
•	1180	Army configuration management of Tactical Digital Info Link (TADIL) & U.S. Message Text Format (USMTF) and Joint Certification Testing
•	200	Provided Army certification recommendations to the Joint for (JITC/OJCS)
•	332	Developed and managed Joint Tactical Data Link Management Plan (JTDLMP)
•	383	Developed Joint Information Exchange Requirements (JIERs)
Total	4172	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development PROJECT D485

FY 1998 Planned Program:

•	1217	Evaluate and certify IT/C4ISR systems interoperability to assure compliance with the Technical and System Architectures
•	243	Provide DIL System Engineering and Integration support
•	243	Identify and resolve systems' discrepancies and inconsistencies identified during evaluations
•	243	Evaluate and validate Technical and Systems Architectures
•	714	Develop, evolve and maintain required VMF messages, obtain joint approvals, and publish VMF Standards for Division XXI
•	369	Provide testing support and analysis for VMF and Mil-Std-188-220 standards and C4IEWS implementations
•	77	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	3106	

FY 1999 Planned Program:

•	1375	Evaluate and certify IT/C4ISR systems interoperability to assure compliance with the Technical and System Architectures
•	250	Provide DIL System Engineering and Integration support
•	350	Identify and resolve systems' discrepancies and inconsistencies identified during evaluations
•	250	Evaluate and validate Technical and Systems Architectures
•	539	Develop, evolve and maintain required VMF messages, obtain joint approvals, and publish VMF Standards to support Army XXI and architectures
•	100	Upgrade and field common data base to support interoperable implementation by VMF users and developers
•	217	Develop and evolve Mil-Std-188-220 Protocol Standard (CNR), version-C, an element of the Joint/Army Technical Architectures
•	533	Provide testing support and analysis for VMF and Mil-Std-188-220 standards and implementations
•	100	Provide Army's Certification recommendations to joint forums (JITC/OJCS)
•	949	Provide evaluations, configuration management and control for TADIL & USMTF interface changes
•	120	Chair and manage four Army Configuration Control Boards
•	120	Represent Army in Joint and Allied Forums
•	100	Manage Joint Tactical Data Link Management Plan (JTDLMP)
•	100	Develop Joint IERs for VMF and TADILs
Total	5103	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development PROJECT D485

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY1998/1999 President's Budget	471	3205	5078
Appropriated Value	481	3205	
Adjustments to Appropriated Value	+3691	-99	
FY 1999 President's Budget Request	4172	3106	5103

Change Summary Explanation: Funding: FY1997 (+3691) Funding reprogrammed to support Force XXI and Joint /Allied Digitization Exercises

C. Other Program Funding Summary: None

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Army CCBs (TADIL/USMTF)	X	X	X	X	X	X	X	X	X	X	X	X
Army/Joint VMF TIDP (issues)	X			X		X		X		X		X
Joint Mil-Std-188-220A (TFXXI)	X											
Joint Mil-Std-188-220B						X						
Joint Mil-Std-188-220C												X+
Joint TDLMP	X										X	
Joint IERs	X		X						X		X	
Joint Certification Testing	X	X	X	X					X	X	X	X

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

PROJECT: D485

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
Army Interoperability certification	207	1217	1375
System engineering/integration	190	486	600
Architecture evaluation/validation		243	250
VMF Standards	731	714	639
Mil-Std-188-220 Protocols	265	0	217
VMF/Mil-Std-188-220 Testing	684	369	533
Interface change proposals	780	0	700
C4I systems joint certifications	600	0	500
Information exchange requirements	383	0	189
Tactical Data Link Management Plan coordination	332	0	100
SBIR/STTR		77	
Total	4172	3106	5103

B. Budget Acquisition History and Planning Information: Not applicable

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development PROJECT D589

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D589 Army Systems Engineering & Warfighter Technical Support	0	3063	6537	7824	7909	8128	8014	Continuing	Continuing

NOTE: This is not a new start effort. FY97 program tasks have been resourced through an joint HQDA/HQAMC effort via a series of below-threshold reprogramming actions across multiple program elements and project lines

A. Mission Description and Budget Item Justification: Army Systems Engineering & Warfighter Technical Support: 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 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 field technical expertise, on-site risk analysis and execution planning to integrate emerging technologies and support the next generation of digitization across all 21st.Century Battlefield Operating Systems. Inserts new technology (other services and commercial) into ATD/ACTDs promoting timely adaptation of emerging commercial products across the suite of existing systems to gain Information Dominance. Prepares essential documentation to achieve the technical evolution to a joint interoperable architecture and to achieve rapid acquisition for fielding systems to Force XXI. Proposes technically feasible joint experiments to submit to Joint C4ISR Battle Center (JBC) for operational testing. Performs technical coordination/integration activities to accelerate program enhancements through solutions to current user problems in the field by incorporating on-the-spot soldier input/feedback. Supports development of the operational architecture and implementation of new warfighter information technologies throughout the force structure..

Acquisition Strategy: The efforts funded in the project are non-system specific, therefore no acquisition strategy is provided.

FY 1997 Accomplishments: Project not funded in FY97

FY 1998 Planned Program:

- 1000 Conduct major design evaluations of Army systems for Joint Technical Architecture-Army (JTA-A) Interoperability Compliance
- 500 Ensure JTA-A Interoperability Implementation through IPT/Contract actions and assess the JTA-A compatibility of Army Science and Technology Programs
- 700 Assess JTA-A Interoperability for Army Systems
- 313 Technically influence the development and implementation of the JTA-A

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development PROJECT D589

FY 1998 Planned Program: (continued)

•	374	Conduct joint interoperability experiments with the Joint C4ISR Battle Center and other services
•	100	Interim Design Division (IDD) Planning Support
•	76	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	3063	

FY 1999 Planned Program:

•	1350	Conduct Major design evaluations for Joint Technical Architecture-Army (JTA-A) Interoperability
•	1362	Ensure JTA-A Interop Implementation and Assess JTA-A compatibility for Army and S&T Programs
•	800	Assess JTA-A interop for Army Systems
•	617	Technically influence the development/implementation of Joint Technical Architecture (JTA)
•	432	Maintain existing JTA-A Information Technical Standards
•	450	Investigate information technical standards for inclusion in JTA-A/JTA
•	169	Technically influence commercial and international standards forums
•	550	Conduct Joint Interoperability experiments with JBC and other services
•	490	Plan and integrate for implementation of new technology initiatives
•	317	Reengineer systems under evaluation per user feedback (i.e. In-Theater Injection to broadcast services) TF/DIV XXI
Total	6537	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY1998/1999 President's Budget	0	3161	6537
Appropriated Value	0	3161	
Adjustments to Appropriated Value	0	-98	
FY 1999 President's Budget	0	3063	6537

C. Other Program Funding Summary: None

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
TBD												

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - Engineering and Manufacturing Development	0604805A Command, Control, Communications Systems - Engineering Development	D589

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
Government Engineering	0	1552	2521
Contractual Engineering	0	1058	3387
Technical Studies/Technology Evaluations	0	200	300
Training	0	24	39
Travel	0	153	290
SBIR/STTR		76	
Total	0	3063	6537

B. Budget Acquisition History and Planning Information: Not applicable

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604807A Medical Materiel - Engineering Development

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	4570	4345	5338	7264	8011	9411	9905	Continuing	Continuing
D812 Military Human Immunodeficiency Virus (HIV) Vaccine and Drug-Engineering Development	185	0	284	2243	3041	3384	3275	Continuing	Continuing
D832 Combat Medical Materiel-Engineering Development	1616	2274	2432	2389	2366	3373	3562	Continuing	Continuing
D834 Soldier System Protection-Engineering Development	838	902	872	846	825	1028	1692	Continuing	Continuing
D849 Infectious Disease Drug and Vaccine-Engineering Development	1931	1169	1750	1786	1779	1626	1376	Continuing	Continuing

Mission Description and Budget Item 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/weight and high mobility, 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 includes engineering development of vision corrective devices for protective masks. This program is primarily managed by the U.S. Army Medical Research and Materiel Command. The projects in this program element support research efforts in the engineering and manufacturing development phase of the acquisition cycle and are therefore correctly placed in Budget Activity 5.

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604807A Medical Materiel - Engineering Development

PROJECT: D812

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D812 Military Human Immunodeficiency Virus (HIV) Vaccine and Drug-Engineering Development	185	0	284	2243	3041	3384	3275	Continuing	Continuing

A. Mission Description and Justification: This project funds Congressionally mandated, militarily relevant 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.

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

FY 1997 Accomplishments:

•	92	Developed and prepared cohorts for a Phase III test of a vaccine to prevent infection with HIV.
•	93	Began additional Phase I trials, began Phase II trials, and selected products to evaluate vaccine products.
Total	185	

FY 1998 Planned Program: Program not funded in FY 1998

FY 1999 Planned Program:

•	98	Develop cohorts for expanded Phase II trial.
•	186	Begin Phase II trial for HIV vaccines.
Total	284	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	189	0	306
Appropriated Value	189		
Adjustments to Appropriated Value	-4		
FY 1999 President's Budget	185	0	284

C. Other Program Funding Summary: Not applicable.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604807A Medical Materiel - Engineering Development PROJECT D812

D. **Schedule Profile**: Multiple medical developmental products will advance through the various events throughout the FY.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604807A Medical Materiel - Engineering Development

PROJECT: D812

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Test & Evaluation	185	0	284
Product Development	0	0	0
Project Management	0	0	0
Total	185	0	284

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations: None										
Support and Management Organizations										
USAMMDA						0	0	0	0	
Contracts						0	0	0	0	
Test and Evaluation Organizations										
Army Laboratories						0	0	0	0	
Contracts						0	0	0	0	
H.M. Jackson Foundation	C/Coop Agreement	Apr 93	125000	125000	38231	185	0	284	Cont	38700

Government Furnished Property: None.

Subtotal Product Development										
Subtotal Support and Management										
Subtotal Test and Evaluation					38231	185		284		38700
Total Project					38231	185		284		38700

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604807A Medical Materiel - Engineering Development

PROJECT: D832

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D832 Combat Medical Materiel-Engineering Development	1616	2274	2432	2389	2366	3373	3562	Continuing	Continuing

A. **Mission Description and Justification:** This project supports engineering and manufacturing development to field new and improved medical materiel essential for combat casualty care to reduce logistical support requirements and minimize loss from duty rates. The major contractor is the United Defense Limited Partnership, San Jose, CA.

Acquisition Strategy: Test and evaluate commercially developed materiel for hardening or other modification in government managed trials.

FY 1997 Accomplishments:

•	773	Conducted technical and user evaluations of Engineering Design Model of armored medical treatment vehicle prototype.
•	843	Supported the engineering development and user evaluations of telemedicine hardware and concepts for the treatment of combat casualties.
Total	1616	

FY 1998 Planned Program:

•	23	Monitor industry development and technical testing of the portable field oxygen concentrator.
•	200	Conduct Patient Movement Item Testing at military testing laboratories.
•	984	Build Armored Medical Evacuation Vehicle (AMEV) mock-up. Finish final design of the Armored Medical treatment vehicle. Conduct production qualification testing.
•	233	Conduct nondevelopmental item (NDI) User Testing of Medical Equipment.
•	684	Conduct Limited User Assessment Testing of Life Support for Trauma and Transport.
•	83	Transition Hypertonic Saline Dextran to procurement.
•	10	Build Joint Special Operations Command Resuscitation Station.
•	57	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	2274	

FY 1999 Planned Program:

•	222	Complete development; conduct air worthiness certification testing of the portable field oxygen concentrator.
•	2210	Conduct initial operational test and evaluation (IOT&E) for the Armored Medical Treatment Vehicle; complete Milestone III.
•	476	Begin IOT&E of LSTAT.
Total	2432	

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604807A Medical Materiel - Engineering Development

PROJECT: D832

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	1659	2346	2420
Appropriated Value	1659	2346	
Adjustments to Appropriated Value	-43	-72	
FY 1999 President's Budget	1616	2274	2432

C. Other Program Funding Summary: Not applicable.

D. Schedule Profile: Multiple medical developmental products will advance through the various events throughout the FY.

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Field Portable Oxygen Generation and Distribution System transition to procurement								X				
Hypertonic Saline Dextran MLST 3							X					
Life Support Trauma and Transport System												
MLST 1								X				
MLST 2											X	
Armored Medical Treatment Vehicle												
MLST 1/2			X									
MLST 3												X
Joint Special Operations Resuscitation Prototype					X							
Thawed Blood Processing System												
MLST 1							X					

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604807A Medical Materiel - Engineering Development

PROJECT: D832

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Test and Evaluation	1291	819	212
Product Development	61	1013	1952
Program Management	264	442	268
Total	1616	2274	2432

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Contracts					690	61	1013	1952	Cont	3716
Support and Management Organizations										
USAMMDA					94	176	192	193	Cont	655
Contracts					109	88	250	75	Cont	522
Test and Evaluation Organizations										
Army Laboratories					615	1291	819	212	Cont	2937
Subtotal Product Development					690	61	1013	1952		3716
Subtotal Support and Management					203	264	442	268		1177
Subtotal Test and Evaluation					615	1291	819	212		2937
Total Project					1508	1616	2274	2432		7830

Government Furnished Property: None

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604807A Medical Materiel - Engineering Development

PROJECT: D834

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D834 Soldier System Protection-Engineering Development	838	902	872	846	825	1028	1692	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.

Acquisition Strategy: Test and evaluate commercially developed materiel for hardening or other modification in government managed trials.

FY 1997 Accomplishments:

•	838	Supported the engineering development and user evaluation of telemedicine hardware and concepts for soldier protection.
Total	838	

FY 1998 Planned Program:

•	236	Begin user testing of Personnel Information Carrier (PIC).
•	236	Integrate Medical Situational Awareness and Control software into Combat Service Support Control System.
•	408	Integrate hand-held computer/communications system with medical and communications equipment for the Medical Detachment, Telemedicine equipment set.
•	22	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	902	

FY 1999 Planned Program:

•	872	Begin testing of Personnel Information Carrier necessary to obtain Food and Drug Administration (FDA) approval.
Total	872	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	865	931	941
Appropriated Value	865	931	
Adjustments to Appropriated Value	-27	-29	
FY 1999 President's Budget	838	902	872

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604807A Medical Materiel - Engineering Development PROJECT D834

C. **Other Program Funding Summary** Not applicable.

D. **Schedule Profile** Multiple medical developmental products will advance through the various events throughout the FY.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604807A Medical Materiel - Engineering Development

PROJECT: D834

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Test & Evaluation	44	870	662
Product Development	790	0	0
Project Management	4	32	210
Total	838	902	872

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Contracts					834	790	0	0	Cont	1624
Support and Management Organizations										
USAMMDA					20	4	32	47	Cont	103
Contracts						0	0	163		163
Test and Evaluation Organizations:										
Army Labs						44	870	662	Cont	1576
Subtotal Product Development					834	790				1624
Subtotal Support and Management					20	4	32	210		266
Subtotal Test and Evaluation						44	870	662		1576
Total Project					854	838	902	872		3466

Government Furnished Property: None

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604807A Medical Materiel - Engineering Development

PROJECT: D849

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D849 Infectious Disease Drug and Vaccine-Engineering Development	1931	1169	1750	1786	1779	1626	1376	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.

Acquisition Strategy: Test and evaluate in-house and commercially developed vaccine candidates in government-managed trials to meet FDA requirements.

FY 1997 Accomplishments:

- 859 Completed safety and efficacy testing of antimalarial drug Azithromycin.
- 526 Conducted Phase II efficacy study for *Campylobacter* vaccine.
- 546 Continued efficacy trial on Enterotoxigenic *Escherichia coli* (ETEC) vaccine.

Total 1931

FY 1998 Planned Program:

- 962 Continue trials required to accumulate data to support FDA regulatory filings for *Campylobacter* and ETEC vaccines.
- 177 Begin pivotal Phase III field trials to evaluate efficacy of antimalarial drugs WR238605.
- 30 Small Business Innovative Research/Small Business Technology Transfer Programs.

Total 1169

FY 1999 Planned Program:

- 572 Complete expanded field trials proving the efficacy of *Campylobacter* and ETEC vaccines.
- 664 Conduct expanded field trials to prove efficacy of *Shigella flexneri* and *Leishmania* skin test antigens.
- 514 Continue full-scale expanded Phase III field trials to evaluate efficacy of antimalarial drugs WR238605.

Total 1750

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604807A Medical Materiel - Engineering Development PROJECT D849

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	1980	1206	1741
Appropriated Value	1980	1206	
Adjustments to Appropriated Value	-49	-37	
FY 1999 President's Budget	1931	1169	1750

C. Other Program Funding Summary: Not applicable.

D. Schedule Profile Multiple medical developmental products will advance through the various events throughout the FY.

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
ETEC MLST 3											X	
Chikungunya Live Vaccine Special IPR					X							
Cholera Whole Cell +B Subunit Vaccine					X							
MS III												

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604807A Medical Materiel - Engineering Development

PROJECT: D849

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Test & Evaluation	1632	707	442
Product Development	0	0	0
Project Management	299	462	1308
Total	1931	1169	1750

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Contracts					55	0	0	0	Cont	55
Support and Management Organizations										
USAMMDA					280	255	366	1000	Cont	1901
Contracts					57	44	96	308	Cont	505
Test and Evaluation Organizations										
Army Laboratories					442	128	0	0	Cont	570
WRAIR					1069	240	0	147	Cont	1456
Contracts					0	354	30	147	Cont	531
Navy Laboratories					190	910	677	148	Cont	1925
Subtotal Product Development					55					55
Subtotal Support and Management					337	299	462	442		1540
Subtotal Test and Evaluation					1701	1632	707	1308		5348
Total Project					2093	1931	1169	1750		6943

Government Furnished Property: None

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604808A Landmine Warfare/Barrier - Engineering Development

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	9342	13818	46905	48389	61163	38834	46883	Continuing	Continuing
D016 Mine Systems Engineering Development	7242	5500	20000	19000	18436	12198	22321	Continuing	Continuing
D415 Mine Neutralization/Detection	2100	8318	26905	29389	42727	26636	24562	Continuing	Continuing

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 system for the Wide Area Munition (WAM), the Intelligent Combat Outpost (Raptor), the Area Denial Artillery Munition (ADAM)/Remote Anti-Armor Mine (RAAM) Upgrade , and Non-Self-Destructing Ant-Personnel Landmine Alternatives (NSD-A) . Project D415, Mine Neutralization/Detection Engineering Development, is the engineering and manufacturing development for the Airborne Standoff Minefield Detection System (ASTAMIDS), Explosive Standoff Minefield Breacher (ESMB), and Handheld Stand-off Minefield Detection System (HSTAMIDS). 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. This program element supports Engineering and Manufacturing Development (EMD) and is, therefore, appropriately placed in Budget Activity 5.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604808A Landmine Warfare/Barrier - Engineering Development PROJECT D016

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D016 Mine Systems Engineering Development	7242	5500	20000	19000	18436	12198	22321	Continuing	Continuing

A. Mission Description and Justification: Provides for engineering and manufacturing development of new smart munitions and intelligent/autonomous coordination of there use for increased effectiveness. Also addresses Presidential directive to eliminate reliance on the use of Anti-Personnel Landmines.

Acquisition Strategy: A command and control capability is being developed as a product improvement to Wide Area Munition (WAM) and will be incorporated into the WAM product improvement program. 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 will be requested to submit proposals for their alternative concept. CPIF contracts for two of the best concepts will be awarded for the Early User Experiment (EUE) phase. At the conclusion of the EUE one contractor will be selected to continue into the EMD and Production phases. For ADAM/RAAM 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

FY 1997 Accomplishments:

•	1950	Completed Receiver/Transmitter critical circuit design
•	784	Completed ASIC design through simulation
•	910	Built brassboard Receiver/Transmitter
•	1598	Completed Control Station Interface specification
•	2000	Pending ADAM/RAAM reprogramming
Total	7242	

FY 1998 Planned Program:

•	4800	Conduct ADAM/RAAM hybrid design development
•	500	Conduct ADAM/RAAM process prove-out testing
•	200	Initiate ADAM/RAAM Technical Test planning
Total	5500	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604808A Landmine Warfare/Barrier - Engineering Development PROJECT D016

FY 1999 Planned Program:

•	4000	Complete NSD-A Early User Experiments
•	8500	Complete NSD-A final design and integration of components
•	3500	Complete ADAM/RAAM Technical Testing
•	3300	Fabricate ADAM/RAAM Technical Test Hardware
•	700	Prepare Milestone Documentation and Type Classify ADAM/RAAM
Total	20000	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/99 President's Budget	5384	0	3600
Appropriated Value	5499		
Adjustment to appropriated value	1743		
FY 1999 President's Budget	7242	5500	20000

Change Summary Explanation:

Funding: FY97 Increase of 1743 is a below threshold reprogramming for ADAM/RAAM efforts.
FY98 and FY99 increases of 5500 and 16400 respectively are for NSD-A and ADAM/RAAM efforts.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, A Budget Activity 4 PE 0603619A, Project D005, Landmine Adv Dev		9650	3946	3877					17473

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Completed WAM C2 Circuit Design				X*								
Completed WAM ASIC Design				X*								
Completed Radio Brass board Design		X*										
ADAM/RAAM MS II						X						
ADAM RAAM MS III												X

*Denotes completed milestone

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604808A Landmine Warfare/Barrier - Engineering Development

PROJECT: D016

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Hardware Development	5417	4000	16100
Test & Evaluation	375	400	1300
Government Engineering & Support	1075	800	2300
Government Program Support	375	300	300
Total	7242	5500	20000

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Prog
Product Development Organizations										
TBD	TBD	TBD	TBD	TBD	0	0	4000	16100	Cont	20100
Textron Systems	CPIF	June 1990	22317	22317	18750	3567			Cont	22317
Misc.	Various	Various				1850				1850
Support and Management Organizations										
ARDEC		Various				671	800	2300	Cont	3771
PM-MCD		Various				375	300	300		975
Misc.		Various				404			Cont	404
Test and Evaluation Organizations										
TECOM		Various				375	400	1300	Cont	2075
Government Furnished Property: None										
Subtotal Product Development					18750	5417	4000	16100		44267
Subtotal Support and Management						1450	1100	2600		5150
Subtotal Test and Evaluation						375	400	1300		2075
Total Project					18750	7242	5500	20000		51492

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604808A Landmine Warfare/Barrier - Engineering Development PROJECT D415

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D415 Mine Neutralization/Detection	2100	8318	26905	29389	42727	26636	24562	Continuing	Continuing

A. Mission Description and Justification: This project provides engineering and manufacturing development for the Airborne Standoff Minefield Detection System (ASTAMIDS), Explosive Standoff Minefield Breacher (ESMB), Handheld Stand-off Mine Detection System (HSTAMIDS), and Ground Standoff Mine Detection System (GSTAMIDS). 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.

Acquisition Strategy: ASTAMIDS, HSTAMIDS, and GSTAMIDS - competing contractors (2 for each project) competitively selected for PDRR phase competition which will lead to a down select for the EMD phase. Successful EMD contractor will be awarded initial production contract (sole source) with multiple option year buys. ESMB competitively selected PDRR phase contractor will be awarded a sole source EMD contract upon completion of PDRR phase and MDA approval. Sole source Production contract with multiple options is anticipated for successful EMD contractor.

FY 1997 Accomplishments:

•	507	Prepared EMD solicitation package and MSII Documentation for ATAMIDS.
•	1198	Procured IVMMD prototype
•	395	Conducted IVMMD Test and Evaluation
Total	2100	

FY 1998 Planned Program:

•	4000	Award EMD contract and initiate preliminary EMD design for ESMB
•	2400	Initiate Procurement of ESMB Long lead Test hardware
•	1709	Initiate Development of ESMB Manufacturing Processes
•	209	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	8318	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604808A Landmine Warfare/Barrier - Engineering Development PROJECT D415

FY 1999 Planned Program:

•	5000	Continue ESMB EMD design effort
•	7372	Fabricate ESMB hardware and initiate contractor/Government testing.
•	2512	Continue Development of ESMB Manufacturing Processes
•	7315	Conduct HSTAMIDS source selection and develop EMD design.
•	806	Procure HSTAMIDS long lead test hardware.
•	3900	Complete GSTAMIDS Hardware Fabrication and Conduct Contractor Testing
Total	26905	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 978/99 President's Budget	2172	22605	40533
Appropriated Value	2232	8732	
Adjustments to Appropriated Value	-132	-414	
FY 99 President's Budget	2100	8318	26905

Change Summary Explanation:

Funding: FY98 decrease of 13873 due to realignment of ASTAMIDS funding to 0603606A/projec D608 by Congress.
FY99 decrease of $13M due to realignment of ASTAMIDS funding to 0603606A/project D608 by Congress.

Schedule: Congress delayed start of ASTAMIDS EMD phase from FY98 to FY01

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, A Budget Activity 4									
PE 0603619A, Project D606, Countermine/Barrier Advanced Development	27164	14649	2832	0	6546	7628	8504	Cont	Cont
OPA 3, A Appropriation									
M80100, IVMMD		12281	3775	0					16056
E80300, ESMB					290	432	440		
AMMO, A Appropriation									
E81400, ESMB					2990	6642	6589	Cont	Cont

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604808A Landmine Warfare/Barrier - Engineering Development PROJECT D415

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Conducted Milestone III Review IVMMD			X*									
Conduct MS II for ESMB							X					
Conduct MS II for HSTAMIDS								X				
Award HSTAMIDS EMD Contract									X			
GSTAMIDS MS II											X	

*Denotes completed milestone

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604808A Landmine Warfare/Barrier - Engineering Development

PROJECT: D415

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Primary Hardware Development	1198	6006	22118
Test and Evaluation		330	640
Government Engineering and Support	507	1637	3258
Government Program Management	395	136	889
SBIR/STTR		209	
Total	2100	8318	26905

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Prog
Product Development Organizations										
Tracor Aerospace	CPIF	TBD	TBD	TBD	0	0	6206	12419	Cont	18625
LNY Inc.	FFP	June 97	1198	1198		1198			Cont	1198
TBD	TBD	TBD	TBD	TBD	0	0	0	9699		9699
Support and Management Organizations										
NVESD/CECOM		Various				507	779	2800	Cont	4086
ARDEC		Various					538			538
Misc.		Various				395	465	1347	Cont	2207
Test and Evaluation Organizations										
TECOM		Various					330	640	Cont	970
Government Furnished Property: None										
Subtotal Product Development						1198	6206	22118		29522
Subtotal Support and Management						902	1782	4147		6831
Subtotal Test and Evaluation							330	640		970
Total Project						2100	8318	26905		37323

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604814A Sense and Destroy Armor Munition - Engineering Development

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	9677	10847	20813	12873	1960	0	0	0	992979
D2ST SADARM Operational Test	292	5032	0	0	0	0	0	0	5324
D644 Generic SADARM Engineering Development	9385	5815	20813	12873	1960	0	0	0	987655

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 baseline SADARM), improved infrared sensor to see targets at higher altitudes, and a combined effects (multi-frag) warhead permitting it to kill more targets. As a result, the PI SADARM will be more effective against its primary target (self-propelled howitzers) and secondary targets (light and heavy missile launchers, surface-to-air missile sites, air defense units, surface-to-surface missiles and towed howitzers). 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 (approximately 53,000 square meters or 12 football fields), the submunition detects and destroys the target with the new combined effects warhead.

The projects within this Program Element support research efforts in the engineering and manufacturing development phase of the acquisition strategy and are, therefore, correctly placed in Budget Activity 5.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604814A Sense and Destroy Armor Munition - Engineering Development PROJECT D2ST

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D2ST SADARM Operational Test	292	5032	0	0	0	0	0	0	5324

A. Mission Description and Justification: This project finances the direct costs of planning and conducting operational test and evaluation of the Sense and Destroy Armor (SADARM) munitions by the Operational Test and Evaluation Command (OPTEC). SADARM is an Acquisition Category (ACAT) IC system with an Initial Operational Test and Evaluation (IOTE) in FY 1998. Operational testing is conducted under conditions that approximate, as closely as possible, those encountered in actual combat with typical user troops trained to employ the system. OPTEC provides Army leadership with an independent test and evaluation of effectiveness and suitability of the system. Project D2ST was restructured from SSN E66300, Projectile, Artillery, 155mm SADARM, M898, Procurement Ammunition, Army.

FY 1997 Accomplishments:

•	292	Conducted planning and preparation for test during the 4Q FY 1998 IOTE .
Total	292	

FY 1998 Planned Program:

•	4906	IOTE 4Q FY 1998
•	126	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	5032	

FY 1999 Planned Program: Project not funded in FY 1999

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	300	5494	0
Appropriated Value	309	5494	
Adjustments to Appropriated Value	-17	-462	
FY 1999 President's Budget	292	5032	0

Change Summary Explanation: Funding: FY 1998 – Undistributed congressional reductions (-462).

C. Other Program Funding Summary: None

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604814A Sense and Destroy Armor Munition - Engineering Development PROJECT D2ST

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Initiate preparation for 4Q FY 1998 IOTE	X*											
IOTE								X				

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604814A Sense and Destroy Armor Munition - Engineering Development PROJECT D2ST

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Operational Test and Evaluation	292	4906	0
SBIR/STTR		126	
Total	292	5032	

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations: None										
Support and Management Organizations: None										
Test and Evaluation Organizations										
OPTEC, Alex, VA					0	292	4906	0	0	5198
SBIR/STTR							126			126
Government Furnished Property: None										
Subtotal Product Development										
Subtotal Support and Management										
Subtotal Test and Evaluation						292	5032			5324
Total Project						292	5032			5324

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604814A Sense and Destroy Armor Munition - Engineering Development

PROJECT: D644

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D644 Generic SADARM Engineering Development	9385	5815	20813	12873	1960	0	0	0	987655

A. **Mission Description and Justification:** Sense and Destroy Armor (SADARM)

Acquisition Strategy - R&D: 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. A contract was awarded in the 2QTR FY 1997 for a product improvement to the basic SADARM. This effort will focus on expanding the lethal search area of the submunition and improving its ability to kill targets.

FY 1997 Accomplishments:

•	640	Hardware in-the-loop support provided
•	1750	Initial/design planning for combined effects warhead completed
•	4000	Trade studies and test for electronics sensor/software performed
•	850	Test hardware
•	2145	Government support and development of initial test criteria/schedules/plans provided
Total	9385	

FY 1998 Planned Program:

•	100	Hardware in-the-loop support
•	1500	Design of the combined effects warhead
•	2320	Electronic sensor software development
•	680	Test hardware
•	1069	Government support to development
•	146	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	5815	

FY 1999 Planned Program:

•	750	Hardware in-the-loop support
•	3400	Design of the combined effects warhead

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604814A Sense and Destroy Armor Munition - Engineering Development PROJECT D644

FY 1999 Planned Program: (continued)

- 8800 Electronic sensor software development
- 4000 Test hardware
- 3863 Government support to development

Total 20813

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	9634	16878	20813
Appropriated Value	9840	6000	
Adjustments to Appropriated Value	-455	-185	
FY 1999 President's Budget	9385	5815	20813

Change Summary Explanation: Funding: FY 1998 – Undistributed congressional reductions (-185).

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Procurement, Ammunition, Army, SSN E66300 Proj, Arty, 155mm SADARM, M898	93589	66385	56542	58323	72561	79605	84391	1319117	1905241
LRIP Quantities	600	507							

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Award second LRP contract		X*										
Conduct Initial Production Test (IPT)			X*									
Award Product Improvement Contract		X*										
ASARC III									X			
PI SADARM Captive Flight Test												X

IOTE: 4Q FY 1998
MSIII: 1Q FY 1999
Award Full Scale Prod: 2Q FY 1999
FUE: 1Q FY 1999
* Denotes completed milestone

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604814A Sense and Destroy Armor Munition - Engineering Development

PROJECT: D644

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Contractor Engineering Support	7240	4500	16950
Government Engineering Support	1745	819	2702
Program Management Support	250	250	250
Developmental Test and Evaluation	150	100	911
SBIR/STTR		146	
Total	9385	5815	20813

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Prod Improv:- Aerojet- Azusa, CA	SS/CPAF	FEB 97	TBD	48800	0	6600	4500	16200	11048	38348
Aerojet-Azusa, CA	C/CPIF	SEP 86	436202	442460	436202				0	436202
ARDEC-Picatinny					60468	640	100	750	800	62758
Alliant Tech Sys Hopkins, MN	C/CPIF	SEP 86	TBD	188714	188038	0	0	0	0	188038
Loral Vought Sys Dallas, TX	SS/CPIF	SEP 88	TBD	90535	90535	0	0	0	0	90535
Miscellaneous	Multiple	Multiple			7645	0	0	0	0	7645
Support and Management Organizations										
PM SADARM						250	250	250	350	1100
Picatinny Arsenal					13875	1745	719	2202	2268	20809
PMO-MLRS, Huntsville, AL					16266				0	16266
Miscellaneous					8868				0	8868

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604814A Sense and Destroy Armor Munition - Engineering Development

PROJECT: D644

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
SBIR/STTR							146			146
Test and Evaluation Organizations										
YPG, Yuma, AZ					21117	40	0	911	367	22435
WSMR					26487				0	26487
New Mexico										
Miscellaneous					67308	110	100	500	0	68018
Government Furnished Property: None										
Subtotal Product Development					782888	7240	4600	16950	11848	823526
Subtotal Support and Management					39009	1995	1115	2452	2618	47189
Subtotal Test and Evaluation					114912	150	100	1411	367	116940
Total Project					936809	9385	5815	20813	14833	987655

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604816A Longbow

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	10762	0	0	0	0	0	0	0	575173
DC31 Longbow - Apache	4775	0	0	0	0	0	0	0	555999
DC87 Longbow - Apache TESS	5987	0	0	0	0	0	0	0	19174

Mission Description and Budget Item Justification: Longbow will provide the AH-64 with a fire-and-forget Hellfire capability, greatly increasing weapon system effectiveness and aircraft survivability. The weapon system will be employable by day or night, in adverse weather, and in countermeasures environments. Project DC31 includes the efforts necessary to synchronize the integration of the Fire Control Radar (FCR) and the Radio Frequency (RF) missile onto the Apache aircraft. It includes two versions of the Longbow Apache AH-64D series aircraft: (1) the AH-64D with the FCR mission kit plus the upgraded 701C engine, and (2) the AH-64D without the FCR mission kit and engine upgrade. Funds were added to Project DC31 in FY97 for Second Generation Forward Looking Infrared (FLIR). Project DC87 provides funding for the Longbow Apache Tactical Engagement Simulation System (TESS). The TESS will perform RF missile simulations in addition to the functions of the Multiple Integrated Laser Engagement System/Air-to-Ground Engagement System for force-on-force collective training after fielding. Project DC87 also includes follow-on development of the Longbow Crew Trainer. The projects in this Program Element support research efforts started in the engineering and manufacturing development phase of the acquisition strategy and are, therefore, correctly placed in Budget Activity 5.

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604816A Longbow

PROJECT: DC31

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC31 Longbow - Apache	4775	0	0	0	0	0	0	0	555999

A. Mission Description and Justification The Longbow program encompasses modifications to the AH-64 Apache as well as upgrades to the aircraft systems for the AH-64D series to efficiently and effectively integrate the FCR and RF missile. The system provides an adverse weather fire-and-forget missile capability that increases the AH-64 lethality and survivability. The Longbow Apache also retains the capability to fire the Semi-Active Laser Hellfire. The greatly improved design increases the operational capability of the crew and provides increased lethality and survivability, while complying with Congressional direction to standardize the fleet to a common configuration. The Second Generation FLIR will significantly enhance the night vision capabilities of the Apache. This improvement will maximize the probability of hit/kill, while minimizing the potential for fratricide.

Acquisition Strategy: The acquisition strategy involved a sole source contract during the Engineering and Manufacturing Development phase leading to a production contract in FY 96. The Second Generation FLIR demonstration effort was sole sourced to Lockheed Martin in FY97.

FY 1997 Accomplishments:

•	4775	Second Generation FLIR (Forward Looking Infrared) Development; Flight Demonstration
Total	4775	

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program: Project not funded in FY 1999

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	4895	0	0
Appropriated Value	4775		
Adjustments to Appropriated Value			
FY 1999 Pres Bud Request	4775	0	0

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Aircraft Procurement, Army (AA6607)*	304969	404212	519636	623894	604283	622054	684490	Cont	Cont

*Includes procurement funding for TESS (shown in Project DC87) and for spares and advanced procurement.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE
	February 1998

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - Engineering and Manufacturing Development	0604816A Longbow	DC31

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Second Generation FLIR on contract				X								
Integration/Flight Testing FLIR										X		

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1998
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604816A Longbow — PROJECT: DC31

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Contractor Engineering and Development	4775		
Total	4775	0	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
McDonnell Douglas Helicopter Systems (Airframe Modifications)	CPIF	Aug 89		461329	461329				0	461329
Lockheed Martin ORT Handgrip Modifications	Basic Ordering Agreement	Sep 96		3889	3889				0	3889
Longbow Limited Liability Corp BPIS				1236	1236				0	1236
Lockheed Martin Second Generation FLIR	Basic Ordering Agreement			4775	0	4775			0	4775
Support and Management Organizations										
Govt. Prog. Mgmt.	Varies	Quarterly			73753				0	73753
PATS Contractors	Varies	Quarterly			6903				0	6903
Test and Evaluation Organizations										
Test Activities	Varies	Quarterly			4114				0	4114

Government Furnished Property Not applicable

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604816A Longbow

PROJECT: DC31

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	466454	4775				471229
Subtotal Support and Management	80656					80656
Subtotal Test and Evaluation	4114					4114
Total Project	551224	4775	0	0		555999

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604816A Longbow

PROJECT: DC87

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC87 Longbow - Apache TESS	5987	0	0	0	0	0	0	0	19174

A. Mission Description and Justification: The Tactical Engagement Simulation System (TESS) will perform RF missile simulations in addition to the functions of the Multiple Integrated Laser Engagement System/Air-to-Ground Engagement System for force-on-force collective training after fielding. Project DC87 also includes follow-on development of the Longbow Crew Trainer. The TESS consists of an "A" kit and a "B" kit.

Acquisition Strategy: The Apache Attack Helicopter Project Manager's Office will contract with McDonnell Douglas Helicopter Systems to do the provisioning for the "A" kit that consists of on-board software for data interface operator control software, wiring, and power source taps for the "B" kit.

FY 1997 Accomplishments:

- 4830 Complete integration of the TESS "A" and "B" kits
- 1157 Complete integration and upgrade of the Combat Training Centers interface.

Total 5987

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program: Project not funded in FY 1999

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	5749	0	0
Appropriated Value	5872		
Adjustments to Appropriated Value	115		
FY 1999 Pres Bud Request	5987	0	0

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Longbow Apache TESS (AA6607)*	0	3435	3599	8000	8000	8000	8000	0	39034

*This procurement funding represents only the portion of this line to be used for the TESS effort. The total procurement line (AA6607) includes additional funding for all other Longbow Apache efforts.

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604816A Longbow

PROJECT: DC87

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Continue TESS "A" & "B" kits integration		X										
Complete TESS "A" & "B" kits integration									X			

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604816A Longbow

PROJECT: DC87

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Contractor Engineering and Development	5339		
In House support	648		
Total	5987		

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
McDonnell Douglas Helicopter System					9060	2145		0	0	11205
Lockheed Martin Electro Optics Systems					1543					1543
Intercostal Electronics					1096	1857				2953
Hughes					28	1157				1185
Support and Management Organizations:										
STRICOM					356				0	356
CECOM					154	105			0	259
Longbow Limited Liability Corp.					950	180			0	1130
In House Support					0	222			0	222
Test and Evaluation Organizations:										
Test Activities	Varies	Quarterly			0	321			0	321

Government Furnished Property Not applicable

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604816A Longbow

PROJECT: DC87

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	11727	5159			0	16886
Subtotal Support and Management	1460	507			0	1967
Subtotal Test and Evaluation		321			0	321
Total Project	13187	5987	0	0	0	19174

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604817A Combat Identification - Engineering & Manufacturing Development

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	16889	19026	13471	7032	2010	0	0	0	137209
D482 Ground Combat Identification EMD	13228	14170	7905	7032	2010	0	0	0	123126
D901 All Service Combat ID Evaluation Team	2761	2910	0	0	0	0	0	0	5671
D902 Dismounted Soldier CID	900	1946	5566	0	0	0	0	0	8412

Mission Description and Budget Item Justification: The world situation and modern warfare are evolving in a manner that dictates making reliable identification of friends, foes, and neutrals an absolute necessity, but increasingly difficult to achieve. The ability of weapons systems to engage targets at ranges longer than the capability to positively identify them significantly increases the potential for fratricide. This program is directed toward the design and development of distinct technology devices to help minimize this battlefield deficiency. The projects within this program are in the Engineering and Manufacturing Development (EMD) phase and the program element is correctly assigned in Budget Activity 5. Project D482 addresses the ground-to-ground vehicle mounted mission area; Project D901 addresses improvement of tactics, techniques and procedures across all mission areas; and Project D902 addresses the ground-to-ground dismounted mission area.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604817A Combat Identification - Engineering & Manufacturing Development PROJECT D482

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D482 Ground Combat Identification EMD	13228	14170	7905	7032	2010	0	0	0	123126

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 (out to 1 km, in clear weather), LPI/LPD situational awareness messages at the platoon level. Any situational awareness data received by BCIS will be sent through the platform Applique for integration with other position sources to form the full situational awareness database.

Acquisition Strategy: A competitive, cost plus award fee contract, for 46 EMD units and option quantities, was awarded Aug 93. An additional 65 units were procured for participation in TF XXI AWE and the Combat ID International Demonstration. This contract has been modified to include follow-on producibility engineering and test efforts for a Low Cost Design for the BCIS, Production Qualification Test (PQT), and Initial Operational Testing (IOT) that will lead to a Milestone III decision in 4Q 99.

FY 1997 Accomplishments:

•	3185	Provided technical, integration, training and maintenance support for TF XXI experiment.
•	2372	Completed Producibility Engineering (PE) study and design effort.
•	5171	Initiated fabrication, assembly and test of four Low Cost Producibility models.
•	2500	Develop/update system software for Low Cost Producibility models.
Total	13228	

FY 1998 Planned Program:

•	2659	Initiate development, design, and fabrication of installation kits (A kit) for the Abrams (M1A1)/Bradley (M2 ODS) for IOT.
•	2005	Complete fabrication, assembly and test of four PE models.
•	530	Conduct US/French Interoperability Testing.
•	8640	Initiate fabrication, assembly and test of Initial Operational Test (IOT) hardware (B kit).)
•	336	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	14170	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604817A Combat Identification - Engineering & Manufacturing Development PROJECT D482

FY 1999 Planned Program:

•	500	Initiate kit design, development and fabrication effort for remaining vehicles types (approx 30).
•	2978	Complete fabrication, assembly and test of IOT hardware (B kit).
•	1350	Conduct government PQT.
•	3077	Complete development, design, and fabrication of installation kits (A kit) for the Abrams/Bradley (M1A1/M2 ODS) vehicles.)
•	0	Continue dev, design and fab of installation kits for the Abrams/Bradley (M1A2, M2A2 SEP, M2A3) digitized vehicles.
Total	7905	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	13575	14773	7867
Appropriated Value	13255	14733	
Adjustments to Appropriated Value	-27	-603	
FY 1999 President's Budget	13228	14170	7905

C. Other Program Funding Summary: Work in this program element is related to and fully coordinated with efforts in PE 0602120 (Battlefield Ground Combat Identification Technology) and PE 0603772 (Ground Combat Identification Demonstration).

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, A Budget Activity 2, PE 0602120A Proj AH15 Ground Combat Identification Tech	3520	3364	3570	3475	3641	3744	3861	0	25175
RDTE, A, Budget Activity 3, PE 0603772A Proj D281 Ground Combat ID Demo	7304	2962	0	0	0	0	0	0	10266
RDTE, A Budget Activity 5, PE 0604817A Proj D902, Dismounted Soldier CID	900	1946	5566	0	0	0	0	0	8412
OPA2, SSN BA0515 Combat Identification	0	0	0	9681	11338	14019	13887	93857	142782
OPA2, SSN BA0510 Combat Identification Prog	0	0	4890	14550	27156	28422	13599		88617

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Provide tech, integ, trng/maint for TF XXI	X*											
Complete PE design effort		X*										
Initiate fab, assy, test four PE models	X*											

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604817A Combat Identification - Engineering & Manufacturing Development PROJECT D482

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Develop/update system software for PE models			X*									
Init dev, des & fab of Bradley kits (M2)					X*							
Init dev, des & fab of Abrams kits (M1)						X						
Complete fab/assy of four PE models						X						
Conduct US/French Interoperability Test						X						
Initiate fab/assy/test of IOT hardware					X							
Initiate kit des/dev effort for remaining veh									X			
Compl Abrams/Bradley kit dev (M1A1/M2 ODS)										X		
Complete fab/assy/test of IOT hardware										X		
Conduct PQT											X	
Conduct IOT&E											X	
MS III decision												X

* Denotes Milestones completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604817A Combat Identification - Engineering & Manufacturing Development

PROJECT: D482

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Primary Hardware Development	10956	10203	3340
Platform Integration	313	2446	2438
System Engineering/Program Management Support			
Government	693	478	389
Contractor	439	310	139
Program Management Personnel	827	397	249
Development Test and Evaluation			1350
SBIR/STTR		336	
Total	13228	14170	7905

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
TRW	C/CPAF	12 Aug 93	67813	67813	43314	10956	10203	3340		67813
GDLS	MIPR	29 Apr 94	11891	11891	8215	130	1646	1938		11929
United Defense	MIPR	18 Jan 94	2666	2666	1683	183	800			2666
Misc	MIPR		1993	1993	1493			500		1993
Support and Management Organizations										
Proj Management	Multiple				9933	1266	707	388		12294
CECOM	MIPR				6556	693	478	389		8116
Test and Evaluation Organizations										
TECOM	MIPR				1850			1350		3200
TEXCOM	MIPR	15 Oct 95			673					673
ASCIET	MIPR	2Q 96			3973					3973

Government Furnished Property: Not Applicable

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604817A Combat Identification - Engineering & Manufacturing Development PROJECT D482

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	54705	11269	12649	5778		84401
Subtotal Support and Management	16489	1959	1185	777		20410
Subtotal Test and Evaluation	6496			1350		7846
SBIR/STTR			336			336
Total Project	77690	13228	14170	7905		112993

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604817A Combat Identification - Engineering & Manufacturing Development

PROJECT: D901

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D901 All Service Combat ID Evaluation Team	2761	2910	0	0	0	0	0	0	5671

A. Mission Description and Justification: All Service Combat Identification Evaluation Team (ASCIET) Support. ASCIET is an expanded effort aimed at fostering improved tactics, techniques, and procedures (TTP) across all combat identification mission areas. The Army, Navy, Air Force and Marine Corps are designated as the participating Services with the Air Force designated as the lead Service. ASCIET is chartered to employ the equipment and personnel of all Services to evaluate, investigate and assess various concepts of combat identification on the battlefield. ASCIET will also offer Federally Funded Research and Development Centers (FFRDCs), Service Battle Laboratories, and industry the opportunity to review and evaluate emerging technologies in multi-Service environment on a noninterference basis as a risk reduction and verification. ASCIET began in FY 95 as an effort to evaluate and revise joint TTP using current and new combat ID systems and technologies in a field environment. ASCIET was previously funded through Project D482. Restructuring was required because ASCIET is an independent effort from the BCIS EMD work.

Acquisition Strategy: Not applicable

FY 1997 Accomplishments:

•	1519	Demonstrated A-G target identification capability for rotary wing (AH-1W) Cobra helicopter.
•	818	Demonstrated direct target ID capability for fixed wing (AV-8B).
•	424	Demonstrated automated "nine line" message generation utilizing Automatic Target Hand-off System (ATHS) II data link to locate and identify targets for fixed wing aircraft.
Total	2761	

FY 1998 Planned Program:

•	750	Assess joint C3I interoperability.
•	750	Assess surface-air and air-air CI capabilities in joint environment.
•	1337	Evaluate surface-air, air-ground, ground-ground CI systems.
	73	Small Business Innovative Research/Small Business Technology Transfer Program
Total	2910	

FY 1999 Planned Program: Project not funded in FY 1999

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604817A Combat Identification - Engineering & Manufacturing Development PROJECT D901

B. Project Change Summary:

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	2836	3003	3006
Appropriated Value	2767	3003	
Adjustments to Appropriated Value	-6	-93	
FY 1999 President's Budget	2761	2910	0

Change Summary Explanation: FY 1999 (-3006) reduction due to restructure to 0604820A/project E10 to support Pre-Planned Product Improvement

C. Other Program Funding Summary: None

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Demonstrate A-G capabil for AH-1W			X*									
Demonstrate ID capability for AV-8B				X*								
Demonstrate "nine msg" for ATHS				X*								
Assess joint C3I interoperability					X*	X	X					
Assess surface-air, air-air CI capabilities					X*	X	X					
Evaluating surface-air, air-round, ground-ground CI systems							X					

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604817A Combat Identification - Engineering & Manufacturing Development

PROJECT: D901

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
ASCIET	2761	2838	0
SBIR/STTR		72	
Total	2761	2910	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations: None										
Support and Management Organizations: None										
Test and Evaluation Organizations:										
ASCIET	MIPR					2761	2838	0	0	5599
Government Furnished Property: Not Applicable										
Subtotal Product Development										
Subtotal Support and Management										
Subtotal Test and Evaluation						2761	2838	0	0	5599
SBIR/STTR							72			72
Total Project						2761	2910	0	0	5671

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604817A Combat Identification - Engineering & Manufacturing Development PROJECT D902

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D902 Dismounted Soldier CID	900	1946	5566	0	0	0	0	0	8412

A. Mission Description and Justification: The Combat Identification System for the Dismounted Soldier (CIDDS) is a lightweight, laser-based, question and answer type system, used to positively identify friendly soldiers. The system includes a compact, eyesafe, diode laser interrogator; a laser detector assembly; an electronic processor unit; and an omni-directional RF responder. The laser transmitter also includes a near infrared 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. The system will provide range of at least 1.1 kilometers under clear weather conditions and will exceed the soldier's target acquisition capability under degraded atmospheric conditions. It will have sufficient angular resolution to resolve individual targets, but does not require precise pointing accuracy for robust response. The system will also be directly interoperable with the integrated soldier-to-soldier 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.

Acquisition Strategy: A competitive, cost plus incentive fee contract for delivery and testing of approximately 150 units for IOT.

FY 1997 Accomplishments:

•	500	Initiated hardware design effort
•	200	Initiated software design effort
•	200	Initiated weapons integration kit design
Total	900	

FY 1998 Planned Program:

•	250	Continue weapons integration kit design
•	1647	Continue hardware and software design
•	0	Initiate MILES/MILES 2000 interoperability/integration effort
•	0	Initiate Near IR aiming laser pointer interoperability/integration effort
•	49	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	1946	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604817A Combat Identification - Engineering & Manufacturing Development PROJECT D902

FY 1999 Planned Program:

•	1050	Complete hardware and software design
•	278	Complete weapons integration kit design
•	4238	Conduct hardware build
Total	5566	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	2008	2506
Appropriated Value	0	2008	
Adjustments to Appropriated Value	+900	-62	
FY 1999 President's Budget	900	1946	5566

Change Summary Explanation: Funding: FY97 funding reflects program acceleration to begin E&MD. FY99 funding increase to conduct hardware build (+3060).

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, A Budget Activity 2, PE 0602120A Proj AH15 Ground Combat Identification Tech	3520	3364	3570	3475	3641	3744	3861	0	25175
RDTE, A Budget Activity 3, PE 0603772A Proj D281 Ground Combat ID Demo	7304	2962	0	0	0	0	0	0	10266
RDTE, A Budget Activity 5, PE 0604817A Proj D482 Ground CID	13228	14170	7905	7032	2010	0	0	0	123126
OPA 2, SSN BA0510 Combat Identification Prog	0	0	4890	14550	27156	28422	13599	0	91918
OPA2,BA0515 Combat I D Aiming / Light	0	0	0	9681	11338	14019	13887	93857	142782

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Complete MSII Decision			X*									
Initiate hardware/software design effort				X*								
Initiate weapons integration design kit				X*								
Continue hardware/software design effort					X*	X	X	X				
Continue weapons integration design kit					X*	X	X	X				
Initiate MILES/MILES 2000 effort						X						

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604817A Combat Identification - Engineering & Manufacturing Development PROJECT D902

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Initiate Near IR aiming pointer effort						X						
Complete hardware/software design effort									X			
Complete weapons integration design kit									X			
Conduct hardware build										X	X	X

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604817A Combat Identification - Engineering & Manufacturing Development

PROJECT: D902

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Primary Hardware Development	900	1482	5061
System Engineering/Program Management Support			
Government		123	207
Contractor		121	122
Program Management Personnel		171	176
SBIR/STTR		49	
Total	900	1946	5566

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organization										
Motorola	CPIF	4Q97	7443	7443		900	1482	5061		7443
Support and Management Organizations										
Proj Management	Multiple						171	298		469
CECOM	MIPR						244	207		451
SBIR/STTR							49			
Test and Evaluation Organizations:										

Government Furnished Property: Not Applicable

Subtotal Product Development	900	1482	5061		
Subtotal Support and Management		464	505		920
Subtotal Test and Evaluation					
Total Project	900	1946	5566		920

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604818A Army Tactical Command and Control Hardware & Software

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	35495	19184	32929	36641	35065	39417	37924	Continuing	Continuing
DC34 Army Tactical C2 Systems(ATCCS) Engineering	11236	7706	15968	18682	17222	17687	18009	Continuing	Continuing
DC39 Tactical Operations Centers(TOCs)	0	0	6000	6500	6300	8300	6300	Continuing	Continuing
D323 Common Hardware Software (CHS)	24259	11478	10961	11459	11543	13430	13615	Continuing	Continuing

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. The projects in this program element support the ATCCS programs which, for the most part, are in the engineering and manufacturing development phase of the acquisition process and, therefore, are correctly placed in Budget Activity 5.

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604818A Army Tactical Command and Control Hardware & Software

PROJECT: DC34

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC34 Army Tactical C2 Systems(ATCCS) Engineering	11236	7706	15968	18682	17222	17687	18009	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. 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 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.

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.

FY 1997 Accomplishments:

•	500	Performed functional analysis and update command post analysis to support ABCS and AWE
•	900	Implemented the ABCS data architecture and standardization program in all Battlefield Functional Areas(BFA) to facilitate Army Technical Architecture(ATA) compliance
•	1245	Continued ABCS/AWE system level training and logistics development
•	3415	Continued ABCS/AWE interoperability engineering and system level engineering support
•	1381	Conducted/supported system configuration development/operational demonstrations in conjunction with MCS LUT and other BFA Ots
•	500	Developed the ABCS security architecture to support Division 2000
•	3295	Army Technical Architecture definition and compliance
Total	11236	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604818A Army Tactical Command and Control Hardware & Software PROJECT DC34

FY 1998 Planned Program:

•	300	Perform functional analysis and update command post analysis to support ABCS
•	1250	Continue ABCS/AWE system level training and logistics development
•	3213	Continue ABCS/AWE interoperability engineering and system level engineering support/perform dependency analyses and verification and validation of all BFA fielded software, including common and unique applications
•	1450	Conduct and support system configuration development/operational demonstrations in conjunction with BFA tests
•	800	Implement the ABCS data architecture and standardization program for all BFAs to facilitate ATA compliance
•	500	Develop and implement the ABCS security architecture
•	193	Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
Total	7706	

FY 1999 Planned Program:

•	300	Perform functional analysis and update command post analysis to support ABCS
•	1200	Continue ABCS/AWE system level training and logistics development
•	3540	Continue ABCS/AWE interoperability engineering and system level engineering support/perform dependency analyses and verification and validation of all BFA fielded software, including common and unique applications
•	1450	Conduct and support system configuration development/operational demonstrations in conjunction with BFA tests
•	800	Continue to implement the ABCS data architecture and standardization program for all BFAs to facilitate ATA compliance
•	500	Continue to develop and implement the ABCS security architecture
•	8178	Central Technical Support Facility(CTSF) efforts to meet the Army's digital fielding requirements
Total	15968	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY1998/1999 President's Budget	8159	7951	7790
Appropriated Value	7960	7951	
Adjustments to Appropriated Value	+3276	-245	
FY1999 President's Budget	11236	7706	15968

Change Summary Explanation:

Funding: FY97 (+3276) for an increase for Army Technical Architecture definition and compliance.
FY99 (+8178) funding increase supports CTSF efforts to meet the Army's digitization efforts.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604818A Army Tactical Command and Control Hardware & Software PROJECT DC34

C. **Other Program Funding Summary:** Not applicable

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
ATCCS VI Operational Test and Evaluation	X*											
Participate in Task Force XXI AWE		X*										
ATCCS System s Confidence Demo - 7				X*								
Participate in Division XXI AWE					X*							
ABCS Interoperability Test						X						
FBCB2 LUT								X				
Corps/JTF										X		

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604818A Army Tactical Command and Control Hardware & Software

PROJECT: DC34

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
System Engineering and Integration	11236	7513	15968
SBIR/STTR		193	
Total	11236	7706	15968

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
TRW	PWD					1000		725		1725
CSC	PWD					4807	5325	7464	Cont	17596
MITRE	MIPR					1554	350	1150	Cont	3054
MANTECH	PWD							3705	Cont	3705
Misc Contracts	PWD					1300	1200	2068	Cont	4568
Govt Support	Various					2575	638	856	Cont	4069
Support and Management Organizations										
SBIR/STTR							193			193
Test and Evaluation Organizations										
NONE										
Government Furnished Property: NONE										
Subtotal Product Development						11236	7513	15968		34717
Subtotal Support and Management							193			193
Subtotal Test and Evaluation										
Total Project						11236	7706	15968		34910

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604818A Army Tactical Command and Control Hardware & Software

PROJECT: DC39

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC39 Tactical Operations Centers(TOCs)	0	0	6000	6500	6300	8300	6300	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project DC39. The Army Tactical Operations Center(TOC) program provides commanders and staff at 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 information dominance using interoperable, robust Army Battle Command System(ABCS) systems operating in a Defense Information Infrastructure(DII)/Common Operating Environment(COE) compliant architecture.

FY 1997 Accomplishments: Project not funded in FY 1997

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program:

•	2000	Sustain Division XXI prototype TOCs
•	4000	Upgrade Division XXI TOCs, system engineering, program planning, technology assessment, integrated logistics support, lab support, and other program costs
Total	6000	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY1998/1999 President's Budget	0	0	0
Appropriated Value			
Adjustments to Appropriated Value			
FY1999 President's Budget	0	0	6000

Change Summary Explanation: Funding: FY99 (+6000) funding provided to support the formal TOC program.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Other Procurement Army 2 – SSN: BZ9865			26703	28674	27564	36329	27375	Cont	Cont

D. Schedule Profile: None

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604818A Army Tactical Command and Control Hardware & Software

PROJECT: DC39

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Major Contracts			4000
PMO/in-house/other			2000
Total	0	0	6000

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
TRW	SS/CPFF	TBD						2000	Cont	Cont
TBD		TBD						2000	Cont	Cont
Support and Management Organizations										
In-house/Other								2000	Cont	Cont
Test and Evaluation Organizations										

Government Furnished Property: None

Subtotal Product Development	4000	Cont	Cont
Subtotal Support and Management	2000	Cont	Cont
Subtotal Test and Evaluation			
Total Project	6000	Cont	Cont

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604818A Army Tactical Command and Control Hardware & Software PROJECT D323

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D323 Common Hardware Software (CHS)	24259	11478	10961	11459	11543	13430	13615	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 Command and Control Systems. 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.

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.

FY 1997 Accomplishments:

•	1797	Continued management of the acquisition and delivery of CHS equipment (LCU/CHS-1/CHS-2) in support of customer requirements
•	3704	Continued execution of common hardware, software technology and command post programs
•	483	Continued supporting customers testing efforts with CHS equipment
•	605	Continued exploring state of the art technology insertion in support of ABCS
•	870	Developed, integrated and upgraded Defense Information Infrastructure (DII) Common Operating Environment (COE) products
•	7200	TOC design, development, and technology assessment
•	9600	CTSF efforts in support of the Army digitization plan
Total	24259	

FY 1998 Planned Program:

•	1350	Continue management of the acquisition and delivery of CHS equipment (LCU/CHS-2) in support of customer requirements
•	3150	Continue execution of common hardware, software technology and software reuse programs
•	575	Continue supporting customers testing efforts with CHS equipment
•	610	Continue the exploration of state of the art technology insertion in support of ABCS programs
•	5548	Continue developing and upgrading DII COE products/integrate into ABCS systems
•	245	Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
Total	11478	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE
	February 1998

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - Engineering and Manufacturing Development	0604818A Army Tactical Command and Control Hardware & Software	D323

FY 1999 Planned Program:

•	1350	Continue management of the acquisition and delivery of CHS-2 equipment in support of customer requirements
•	3150	Continue execution of common hardware, software technology and software reuse programs
•	550	Continue supporting customers testing efforts with CHS equipment
•	545	Continue exploring state of the art technology insertion in support of ABCS programs
•	5366	Continue developing and upgrading DII COE products/integrate into ABCS systems
Total	10961	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	7621	12071	10907
Appropriated Value	7476	12071	
Adjustments to Appropriated Value	+16783	-593	
FY 1999 President's Budget	24259	11478	10961

Change Summary Explanation:

Funding: FY97(+16783) Increase for Congressionally approved emergency reprogramming to support critical digitization requirements

C. Other Program Funding Summary: Not Applicable

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Last CHS-1 orders processed					X*							
Last LCU orders processed											X	
CHS-2 Technology Insertion (continuous)					X*	X	X	X	X	X	X	X

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604818A Army Tactical Command and Control Hardware & Software

PROJECT: D323

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
System Engineering and Integration	13400		
Program Management Support	5844	4666	4635
Contract Engineering Support	3815	6567	6326
Test and Evaluation	1200		
SBIR/STTR		245	
Total	24259	11478	10961

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	FY1997	FY1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations									
Matrix-CECOM	MIPR				1425	2032	2017	Cont	Cont
Misc-Contracts	PWD				5942	6567	6326	Cont	Cont
TRW	PWD				3500				3500
CSC	PWD				1116				1116
MANTECH	PWD				3937				3937
GE	PWD				2500				2500
Support and Management Organizations									
In-House (CHS)					2439	2634	2618	Cont	Cont
In-House(ADCCS)					2200				2200
SBIR/STTR						245			245
Test and Evaluation Property									
EPG					1200				1200
Government Furnished Property: None									
Subtotal Product Development					18420	8599	8343	Cont	Cont
Subtotal Support and Management					4639	2879	2618	Cont	Cont
Subtotal Test and Evaluation					1200				1200
Total Project					24259	11478	10961	Cont	Cont

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604820A Radar Development

PROJECT: DE10

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DE10 Sentinel (FAAD GBS)	0	0	2786	5544	8593	8186	0	0	25109

A. Mission Description and Budget Item Justification: The Sentinel, AN/MPQ-64, consists of a 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, and unmanned aerial vehicles, rotary wing and fixed wing aircraft). A Pre-Planned Product Improvement (P3I) Program, which will improve Sentinel's capability against evolving threats, begins in FY99. The P3I 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. The P3I will compensate for the evolving threat and ensure that the division air picture and target cues are maintained at maximum effective acquisition ranges. This project is related to an engineering and manufacturing development program and is therefore correctly placed in BA 5.

Acquisition Strategy: The pre-planned product improvement is currently planned as a sole source contract award to the production manufacturer.

FY 1997 Accomplishments: Project not funded in FY 97

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program:

•	1598	Conduct Transmitter Prototype Design and Development
•	401	Test Bed System Upgrade
•	495	Integration and Test
•	292	Design and Fabrication of Developmental Tooling.
Total	2786	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	0	0
Appropriated Value			
Adjustments to Appropriated Value			
FY 1999 President's Budget	0	0	2786

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604820A Radar Development

PROJECT: DE10

Change Summary Explanation: Schedule – As a result of Congressional increases in procurement funding, the Sentinel production program has been accelerated. The RDT&E funds in FY99 (+2786) for the Pre-Planned Product Improvement (P3I) program ensures efficient schedule alignment of the P3I program with the production capability. These funds prevent both a loss of production capability and an increase in cost.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Other Procurement, Army 2 (SSN WK 5053)	68877	59447	58247	49567	26987	24332	2494	31361	321312
Other Procurement, Army 2 (SSN WK 5057)					9265	9707	30247		49219
Spares (SSN BS 9732)	3610	5258	7181						16049

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Conduct Transmitter Prototype Design and Development									X	X		
Test Bed System Upgrade									X	X		
Integration and Test											X	
Design and Fab of Developmental Tooling											X	X

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604820A Radar Development

PROJECT: DE10

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Pre-Planned Product Improvement			2786
Total	0	0	2786

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Hughes Aircraft	C/FFP	Feb 92	56836	56836	56836			2166	17128	76130
AMCOM	MIPR				18704					18704
Other/Misc.	MIPR				5270					5270
Support and Management Organizations										
AMCOM	MIPR				20125			225	1919	22269
Other/Misc	MIPR				1707					1707
Test and Evaluation Organizations										
OPTEC	MIPR				24180					24180
Other/Misc	MIPR				7703			110		7813
TECOM	MIPR				1213			285	5781	7279
Subtotal Product Development					80810			2166	17128	100104
Subtotal Support and Management					21832			225	1919	23976
Subtotal Test and Evaluation					33096			395	5781	39272
Total Project					135738			2786	24828	163352

Government Furnished Property None

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604823A Firefinder

PROJECT: DL85

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DL85 Firefinder Pre-Planned Product Improvement	2430	2484	19822	33448	39000	5788	0	0	102972

A. Mission Description and Budget Item Justification: The Firefinder Block II Pre-Planned Product Improvement (P3I) program 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 more survivable, longer range and less manpower intensive radar. An Operational Requirements Document (ORD) for Firefinder AN/TPQ-37 Block II was approved 25 Sep 96. Firefinder Block II will double the current range performance and improve the target throughput to 50 targets per minute in a highly mobile, transportable and survivable system. The Firefinder Block II will be capable of missile detection at maximum ranges of 150-300 km and will be capable of interfacing with 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. This program will leverage off the AN/TPQ-36(V)8 Electronics Upgrade program by using the same man-machine interface. The Firefinder Block II will be integrated into the targeting structure by interfacing with the Advanced Field Artillery Tactical Data System (AFATDS).

Acquisition Strategy: A competitive EMD contract will be awarded for the Firefinder Block II program. Award is scheduled for April 1998.

FY 1997 Accomplishments:

- 891 Awarded multiple study contracts for evaluation of program risks and cost/performance trade-offs
- 343 Prepared program and cost documentation to support a Milestone II decision
- 437 Prepared Analysis of Alternatives (AOA) and Threat Analysis
- 509 Prepared and released draft solicitation for industry comment
- 250 Initiated development of simulator to model radar capabilities

Total 2430

FY 1998 Planned Program:

- 222 Complete development of simulator to support evaluation of radar performance
- 185 Finalize and issue solicitation for EMD contract award
- 620 Conduct Source Selection Evaluation Board (SSEB)
- 1394 Award EMD contract and initiate hardware/software design of new radar
- 63 Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR)

Total 2484

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604823A Firefinder PROJECT DL85

FY 1999 Planned Program:

•	3942	Complete development of hardware design
•	5218	Continue development of software design and integrate with the AN/TPQ-36(V)8 Electronics Shelter
•	10662	Order parts and begin fabrication of three (3) prototypes
Total	19822	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	2496	2564	12022
Appropriated Value	2435	2564	
Adjustments to Appropriated Value	-5	-80	
FY 1999 President's Budget	2430	2484	19822

Change Summary Explanation:

Funding: FY98 decrease (-80) due to undistributed Congressional adjustments.
FY99 increase was provided to meet the required Initial Operating Capability (IOC) (+7800)

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Other Procurement, Army 2									
SSN: BA5100 Firefinder P3I						93307	188860	458000	740167

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE
	February 1998

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - Engineering and Manufacturing Development	0604823A Firefinder	DL85

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Award multiple study contracts		X*										
Prepare Analysis of Alternatives (AOA)			X*									
Initiate development of simulator				X*								
Prepare and release draft solicitation				X*								
Obtain Milestone II Approval					X*							
Finalize and issue solicitation for EMD					X*							
Complete development of simulator						X						
Conduct SSEB							X					
Award EMD Contract							X					
Complete hardware design											X	
Begin prototype fabrication											X	

*Denotes Completed Milestone

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604823A Firefinder

PROJECT: DL85

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Specification/Technical Parameters Development	1578	222	
Primary Hardware Development		1035	17693
System Engineering			
Government	521	117	703
Contractor	191	262	629
Source Selection Evaluation Board		620	
Program Management Personnel	140	165	540
Test and Evaluation			257
SBIR/STTR		63	
Total	2430	2484	19822

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
EMD-TBD	C/CPIF	Apr 98					1035	17693	61756	80484
Trainer-TBD	C/CPIF	Nov 00							7657	7657
Misc Contracts	Various					1353	222			1575
CECOM	MIPR					225				225
CECOM-SSEB	MIPR						328			328
Contractor-SSEB	Various						292			292
Support and Management Organizations										
Misc Contracts	Various					191	262	629	2002	3084
CECOM	MIPR					661	282	1243	2413	4599
SBIR/STTR							63			63
Test and Evaluation Organizations										
CECOM	MIPR							257	4408	4665

Government Furnished Property: Not Applicable

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604823A Firefinder

PROJECT: DL85

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development		1578	1877	17693	69413	90561
Subtotal Support and Management		852	607	1872	4415	7746
Subtotal Test and Evaluation				257	4408	4665
Total Project		2430	2484	19822	78236	102972

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604824A Commercial Operating & Support Savings Initiative (COSSI)

PROJECT: D112

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D112 Commercial Operating & Support Savings Initiative*	0	0	33600	31800	31850	31800	31900	Continuing	Continuing

*FY 1999 funding level is due to an administrative database error. In FY 1999, the program will be decreased $5.1M below threshold to reflect proper funding level of $28.5M ($3.9M will be reprogrammed to PE 0604280A, Joint Tactical Radio Systems, and $1.2M to PE 0603780A, SERDP, to correct database error).

A. Mission Description and Budget Item Justification: The mission of Commercial Operations and Support Savings Initiative (COSSI) is to develop and test a method for reducing 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 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 readied 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. Prior to FY1999, COSSI was funded in DOD PE 0603805E.

This program element is assigned to budget activity 5 since it involves the engineering and manufacturing development necessary to integrate commercial items with already fielded systems.

FY 1997 Accomplishments: Program funded in DOD PE 0603805E.

FY 1998 Planned Program: Program funded in DOD PE 0603805E.

FY 1999 Planned Program: FY 1999 funding will be for new Stage I COSSI projects. Some examples of possible Stage I efforts are improved inspection/testing techniques, information processing and distribution, automated software change distribution, automated condition assessment and reporting, inventory tracking/asset visibility, interactive electronic technical manuals, embedded training/distance learning, component refurbishing techniques, equipment power reduction, calibration and measurement techniques, modeling and simulation, and voice activation. Any idea to reduce the Operations and Support costs of fielded military systems by inserting a commercial item while maintaining or improving its operation is a possible COSSI Stage I project.

- 33600 - Develop, manufacture and deliver cost savings initiatives in the area of product re-engineering
  - Develop, manufacture and deliver cost savings initiatives in the area of information technology.
  - Develop, manufacture and deliver cost savings initiatives in the area of training.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604824A Commercial Operating & Support Savings Initiative (COSSI)
	PROJECT D112

FY 1999 Planned Program: (continued)

- Develop, manufacture and deliver cost savings initiatives in the area of automation.
- Develop, manufacture and deliver cost savings initiatives in the area of rapid prototyping for spares.

Total 33600

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	0	0
Appropriated Value			
Adjustments to Appropriated Value			
FY 1999 President's Budget	0	0	33600

Change Summary Explanation: Funding: FY1999 – Program transferred from DOD to Army.

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604854A Artillery Systems - Engineering Development

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	0	0	100	55410	338811	434734	272113	Continuing	Continuing
D509 ATCAS (LW 155 Towed Howitzer)	0	0	0	5000	10600	5300	7700	0	28600
D503 Crusader - ED	0	0	0	50000	327021	429225	260928	Continuing	Continuing
D2KT Crusader Operational Test	0	0	100	410	1190	209	3485	Continuing	Continuing

Mission Description and Budget Item Justification: This program element supports the engineering and manufacturing development efforts for the Crusader-ED program and Crusader Operational Test. The Light Weight (LW) 155mm 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. The projects in this program support research efforts in the engineering and manufacturing development phases of the acquisition strategy and are therefore correctly placed in Budget Activity 5.

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

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604854A Artillery Systems - Engineering Development

PROJECT: D2KT

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D2KT Crusader Operational Test	0	0	100	410	1190	209	3485	Continuing	Continuing

A. Mission Description and Justification: Project D2KT Crusader Operational Test: Crusader operational testing 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.

Acquisition Strategy: Not applicable

FY 1997 Accomplishments:. Project not funded in FY97

FY 1998 Planned Program: Project not funded in FY98

FY 1999 Planned Program:

•	100	Conduct Crusader crew station tests with soldiers in operational scenarios.
Total	100	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	0	499
Appropriated Value			
Adjustments to Appropriated Value			
FY 1999 President's Budget	0	0	100

Change Summary Explanation: Decrease (-399) in FY99 is due to the revised Acquisition Program Baseline.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Comp	Total Cost
RDTE, BA4, Army, PE 0603854, D505	229561	312019	310881	305967	125129				1283557
RDTE, BA5, Army, PE 0604854, D503				50000	327021	429225	260928	Cont	Cont
Procurement, WCTV, Army, G83500						42341	97356	Cont	Cont
Procurement, WCTV, Army, G83600						33548	81763	Cont	Cont

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604854A Artillery Systems - Engineering Development
	PROJECT: D2KT

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Initiate combined Early Developmental Testing/Early User Testing											X	

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE: February 1998

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604854A Artillery Systems - Engineering Development

PROJECT: D2KT

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Product Development			
Support and Management			
Test and Evaluation			100
Total	0	0	100

B. Budget Acquisition History and Planning Information:

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations: None										
Support and Management Organizations: None										
Test and Evaluation Organizations										
TECOM, YPG, AZ, CSTA, APG, MD, Ft. Sill, OK, OPTEC, VA								100	Cont	Cont
Government Furnished Property: None										
Subtotal Product Development										
Subtotal Support and Management										
Subtotal Test and Evaluation								100	Cont	Cont
Total Project								100	Cont	Cont

APPENDIX A

RDT&E CONGRESSIONAL DESCRIPTIVE SUMMARIES MAILING LIST

PRINT	ADDRESS
1	USD (Policy), Pentagon, Room 4B926, Washington, DC 20301-2100
1	DOD Compt, MS, DMI, Pentagon, Room 1B728, Washington, DC 20301-1100
1	OSD, ATTN: DOT&E, Pentagon, Room 3E318, Washington, DC 20301
11	ASD(C3I), Pentagon, Room 3E209, Washington, DC 20301
1	ASD(ISA), Pentagon, Room 4B938, Washington, DC 20301
1	ASD(LA), Pentagon, Room 3D918, Washington, DC 20301
1	USD(P&R), Room 3C980, Washington, DC 20301-4000
1	ASD(PA&E)/GPP/LFD, Pentagon, Room 2B256, Washington, DC 20301
1	ASD (PA&E), Pentagon, Room 2E313, Washington, DC 20301
2	ASD(PA), Pentagon, Room 2D278, Washington, DC 20301
2	JCS(J-8), Pentagon, Room 1E963, Washington, DC 20301
1	HQDA, (SAUS-OR), Pentagon, Room 2E600, Washington, DC 20310
*	HQDA (SAILE), Pentagon, Room 2E614, Washington, DC 20310
*	HQDA (SARD-DEP), Pentagon, Room 2E673, Washington, DC 20310
*	HQDA (SAFM-CAZ-A), 5611 Columbia Pike, Falls Church, VA 22041-5050
*	HQDA (SFIS-API), Hoffman 1, Room 1012, Alexandria, VA 22331-0302
*	HQDA (DACS-DPD), Pentagon, Room 3C738, Washington, DC 20310
*	HQDA (DACS-DPA), Pentagon, Room 1C460, Washington, DC 20310
*	HQDA (SAIS-PPG), Pentagon, Room 1D679, Washington, DC 20310
*	HQDA (DACS-DPA), Pentagon, Room 3C747, Washington, DC 20310
*	HQDA (DACS-DMC), Pentagon, Room 3D631, Washington, DC 20310
1	HQDA (DACS-TE), Pentagon, Room 3C571, Washington, DC 20310
*	HQDA (DAIM-ZR), Pentagon, Room 2B683, Washington, DC 20310

***Distributed electronically**

APPENDIX A

RDT&E CONGRESSIONAL DESCRIPTIVE SUMMARIES MAILING LIST

PRINT	ADDRESS
*	HQDA (DAMI-ZXM), Pentagon, Room 2D474, Washington, DC 20310
1	HQDA (DAMI-PBB), Pentagon, Room 2E477, Washington, DC 20310
*	HQDA (DAPE-ZXO), Pentagon, Room 2D735, Washington, DC 20310
*	HQDA (DALO-RMP), Pentagon, Room 1E565, Washington, DC 20310
*	HQDA (DALO-ZA), Pentagon, Room 3E560, Washington, DC 20310
*	HQDA (DAMO-ZR), Pentagon, Room 3D526, Washington, DC 20310
*	HQDA (DAMO-FDR), Pentagon, Room 2D570, Washington, DC 20310
*	HQDA (DAAR-CO), Pentagon, Room 1D432, Washington, DC 20310
*	HQDA (NGB-ZA), Pentagon, Room 2E394, Washington, DC 20310
*	HQDA (DASG-ZA), 5111 Leesburg Pike , Room 638, Falls Church, VA 22041-3258
*	HQDA (DASG-RMZ), 5111 Leesburg Pike, Room 554, Falls Church, VA 22041-3258
*	HQDA (DASG-RDZ), Pentagon, Room 3E368, Washington, DC 20310-2300
*	HQDA (DAIM-ED), Pentagon, Room 1E682, Washington, DC 20310
*	HQDA (DAIM) Pentagon, Room 1E665, Washington, DC 20310
*	HQDA (SAPA), Pentagon, Room 2E641, Washington, DC 20310
*	HQDA (CSSD-RM-W), P.O. Box 15280, Arlington, VA 22215-0150
*	HQDA (SAAG-PRP), Room 1309, 3101 Park Center Drive, Alexandria, VA 22302-1596
*	HQDA (DAMH-ZB), Pulaski Bldg, Room 4229, 20 Massachusetts Avenue, Washington, DC 20314
*	US Army Cost And Economic Analysis Center, ATTN: SFFM-CA-PI, 5611 Columbia Pike, Falls Church, VA 22041-5050
1	BMDO/RM, Pentagon, Room 1E1037, Washington, DC 20310
*	HQDA, (JDRS-PBD), Pentagon, Room 1E610, Washington, DC 20310
*	HQ, PACOM, R&D Requirements (J531), BOX 15, USPACOM Staff, Camp H.M. Smith, HI, 96861
*	Commander, US Army Intelligence and Security Command, ATTN: IARM-PB, Fort Belvoir, VA 22060-5370

***Distributed electronically**

APPENDIX A

RDT&E CONGRESSIONAL DESCRIPTIVE SUMMARIES MAILING LIST

PRINT	ADDRESS
*	Commander, US Army Nuclear and Chemical Agency, ATTN: MONA-OPS, Bldg 2073, Backlick Road, Springfield, VA 22150
*	Commander, US Army Medical R&D Command, ATTN: SGRD-RMC, Fort Detrick, Frederick, MD 21701-5012
*	Commander, US Army Medical R&D Command, ATTN: SGRD-PR, Fort Detrick, Frederick, MD 21701-5012
*	Commander, US Army Training and Doctrine Command, ATTN: ATCD-E, Fort Monroe, VA 23651-5000
*	CMDT, Army Field Artillery School, ATTN: ATSF-CSI-P, ATSF-CBL, Ft. Sill, OK 73503-5600
*	CDR, Army Aviation Ctr & Ft. Rucker, ATTN: ATZS-CDI, Ft. Rucker, AL 36362-5000
*	CDR, Army Intelligence Ctr and FT. Huachucha, ATTN: ATZS-CDI-I, ATZS-CDT, Ft. Huachucha, AZ 85613-7000
*	CMDT, U.S. Army Signal Ctr, ATTN: ATZH-CDM, ATZH-BLT, Ft. Gordan, GA 30905-5000
*	Force Design Directorate, ATTN: ATCD-F, 415 Sherman Ave., Ft. Leavenworth, KS 66027-5000
*	CDR, USACHCS, ATTN: ATSC-CD, Ft. Monmouth, NJ 07703-5612
*	CDR, U.S. Army Medical Center & School, ATTN: HSMC-FCM, Ft. Sam Houston, TX 78234
*	CMDT, U.S. Army Air Defense Artillery School, ATTN; ATSA-CDM, Ft. Bliss , TX 79916
*	CMDT, U.S. Army Infantry School, ATTN: ATSH-IWC, ATSH-MLS, Ft. Benning, GA 31905-5400
*	CMDT, U.S. Army Armor School, ATTN: ATZK-CD-ML, ATZK-MW, Ft. Knox, KY 40121-5200
*	CMDT, U.S. Army Engineer School, ATTN: ATSE-CD-M, Ft. Leonard Wood, MO 65473-5000
*	CMDT, U.S. Army Chemical School, ATTN: ATZN-CM-CS, Ft. McClellan, AL 36205-5020
*	CMDT, U.S. Army Military Police School, ATTN: ATZN-MP-CM, Ft. McClellan, AL 36205-5020
*	Commander, US Army Research Institute for the Behavioral and Social Sciences, ATTN: PERI-MB, 5001 Eisenhower Avenue, Alexandria, VA 22333-5600
*	Commander, US Army Operational Test and Evaluation Command, ATTN: CSTE-RMZ, Park Center IV, 4501 Ford Avenue, Alexandria, VA 22302-1458
*	Commander, US Army Materiel Command, ATTN: AMCRD-AB, 5001 Eisenhower Avenue, Alexandria, VA 22333-0001
*	Commander, US Army Materiel Command, ATTN: AMCAE-P, 5001 Eisenhower Avenue, Alexandria, VA 22333
*	Commander, US Army Materiel Command, ATTN: AMCAQ-B-TILO, 5001 Eisenhower Avenue, Alexandria, VA 22333

***Distributed electronically**

APPENDIX A

RDT&E CONGRESSIONAL DESCRIPTIVE SUMMARIES MAILING LIST

PRINT	ADDRESS
*	Commander, US Army Communications-Electronics Command, ATTN: AMSEL-CG, Ft. Monmouth, NJ 07703-5000
*	Commander, US Army Communication-Electronics Command, ATTN: AMSEL-ACSB-BT, Ft. Monmouth, NJ 07703-5008
*	Commander, US Army Missile Command, ATTN: AMSMI-AS (Library), Bldg 5250, RMC-147, Redstone Arsenal, AL 35898-5000
*	Commander, US Army Test and Evaluation Command, ATTN: AMSTE-RM, Aberdeen Proving Ground, MD 21005-5055
*	Commander, US Army CECOM, Technical Industrial Liaison Office, ATTN: AMSEL-AC-SP-BL (Sandra Vermont), Ft. Monmouth, NJ 07703-5008
*	Commander, US Army Tank-Automotive Command, ATTN: AMSTA-CG, Warren, MI 48397-5000
*	Commander, US Army Laboratory Command, ATTN: AMSLC-CG, Adelphi, MD 20783-1145
*	Commander, US Army Armament Research, Development and Engineering Center, ATTN: SMCAR-CO, Dover, NJ 07806-5000
*	Commander, Environmental Center, ATTN: SFIM-AEC-RM, Edgewood Area, Aberdeen Proving Ground, MD 21010-5055
*	Commander, US Army Materiel Systems Analysis Activity, ATTN: AMXSY-PB, Aberdeen Proving Ground, MD 21005-5071
*	Commander, US Army Chemical, Biological and Defense Command, ATTN: AMSCB-RR, Aberdeen Proving Ground, MD 21010-5423
*	Commander, US Army Chemical, Biological and Defense Command, ATTN: SCBRD-ASA, Aberdeen Proving Ground, MD 21010-5423
*	Commander, US Army Chemical, Biological and Defense Command, ATTN: AMSCB-EO, Aberdeen Proving Ground, MD 21010-5423
*	Commander, US Army Aviation and Troop Command, ATTN: AMSAT-D-C, 4300 Goodfellow Blvd, St. Louis, MO 63120-1798
*	Program Manager, Instrumentation, Targets and Threat Simulators, ATTN: AMCPM-ITTS, 12350 Research Parkway, Orlando, FL 32826
*	Program Manager, Tank Main Armament Systems, ATTN: AMCPM-TMD PMD, Picatinny Arsenal NJ 07806-5000
*	Program Executive Officer, Missile Defense, ATTN: SFAE-MD-DP-P, Building 5250, Redstone Arsenal, Alabama 35898-5750
*	Program Executive Officer, Field Artillery Systems, ATTN: SFAE-FAS, Building 171, Picatinny Arsenal, Picatinny, NJ 07806-5000
*	Program Executive Officer, Armored Systems Modernization, ATTN: SFAE-HFM-P, Warren, MI 48397-5000
*	Program Executive Officer, Aviation, ATTN: SFAE-AV, 4300 Goodfellow Boulevard, St. Louis, MO 63120-1798
*	Program Executive Officer, Tactical Wheeled Vehicles, ATTN: SFAE-TWV, Warren, MI 48397-5000
*	Program Executive Officer, Command and Control Systems, ATTN: SFAE-CC-PMO, Ft. Monmouth, NJ 07703-5000

***Distributed electronically**

APPENDIX A

RDT&E CONGRESSIONAL DESCRIPTIVE SUMMARIES MAILING LIST

PRINT	ADDRESS
*	Program Executive Officer, Communication Systems, ATTN: SFAE-COM, Ft. Monmouth, NJ 07703-5000
*	Program Executive Officer, Tactical Missiles, ATTN: SFAE-MSL, Redstone Arsenal, AL 35898-8000
*	Program Executive Officer, Intelligence and Electronic Warfare, ATTN: SFAE-IEW-BM, Ft. Monmouth, NJ 07703
*	Commander, US Army Space and Strategic Defense Command, ATTN: CSSD-RM-BP, P.O. Box 1500, Huntsville, AL 35807-3801
*	Commander, US Army Corps of Engineers, ATTN: CERD-L, Washington, DC 20314
*	Commander, US Army Force Integration Support Agency, ATTN: MOFI-TRED-O, Building 2588, Fort Belvoir, VA 22060-5587
*	Commander, 902d MI Group, ATTN: IAGPA-OPOP, Ft. Meade, MD 20755-5910
*	Commander, HQ US Army Missile & Space Intelligence Center, ATTN: AIAMS-YCC, Redstone Arsenal, AL 35898-5000
*	Commander, US Army Countermeasures/Counter Counter Measures Center, ATTN: AMX-CM-RF, 2800 Powder Mill Rd, Adelpi, MD 207[illegible]
*	Commander, US Army Belvoir Research, Development & Engineering Center, ATTN: STRBE-Z, Ft. Belvoir, VA 22060-5606
*	Commander, US Army Research Office, ATTN: SLCRO-AO (Security Officer), P.O. Box 12211, Research Triangle Park, NC 27709
3	Executive Office of the President, Office of Management and Budget, National Security Division, NEOB, Room 10001, Washington, DC 20503
1	Inspector General, ATTN: A&IM/FMD, 400 Army-Navy Drive Arlington, VA 22202-2884
14	US General Accounting Office, ATTN: NSIAD, Room 4103, 441 G Street, NW, Washington, DC 20548
*	HQ USAF/FMBMC, Pentagon, Room 5C129, Washington, DC 20330-5012
*	HQ US Marine Corps, Deputy Chief of Staff for RD&S, Code (MC-RDP-30), Washington, DC 20380
*	Commandant, US Army War College, ATTN: Library, Carlisle Barracks, PA 17013-5050
1	Defense Advanced Research Projects Agency, ATTN: Comptroller, 3701 North Fairfax Drive, Arlington, VA 22203-1714
*	Institute for Defense Analyses, 1801 North Beauregard Street, Alexandria, VA 22311
*	Headquarters, National Aeronautical and Space Administration, Code ID, ATTN: Deputy DOD Affairs, Washington, DC 20546
1	Library of Congress, Rm. LM-208 (202), ATTN: Bruce Krafte, James Madison Library Bldg., 1st Street & Independence Avenue, SE, Washington, DC 20540

***Distributed electronically**

APPENDIX A

RDT&E CONGRESSIONAL DESCRIPTIVE SUMMARIES MAILING LIST

PRINT	ADDRESS
1	ACDA/NWC/DPA, Room 5741, 320 21st Street, NW, Washington, DC 20451
2	Pentagon Library, ATTN: Army Studies, Room 1A518, Washington, DC 20310
*	Director, Defense Finance and Accounting Service-Indianapolis Center, ATTN: DFAS-I-PA, Indianapolis, IN 46249
1	Defense Technical Information Center (DTIC), ATTN: Ms. Mawby, Ft. Belvoir Headquarters Complex (FBHC), Suite 0944 8725 John J. Kingman Road, , Ft. Belvoir, VA 22060-6220
1	Defense Technical Information Center (DTIC), ATTN: OCC, Ft. Belvoir Headquarters Complex (FBHC), Suite 0928, 8725 John J. Kingman Road, Ft. Belvoir, VA 22060-6220
11	National Technical Information Service (NTIS), ATTN: Military Publications, 5285 Port Royal Road, Springfield, VA 22161
	HAND DELIVERY
1	DOD(C)(P&S), Room 3A862
3	DOD(C)(INV), Room 4B916
1	DOD(C)(MILCON), Room 3D841
2	DOD(C)(CFO), Room 1B728
27	USD(A) Mailroom, Room 3D139
13	SAFM-BUL, Room 3A652
3	SAFM-BUC-F, Room 3B663
*	SAFM-BUC-I, Room 3A674
*	SAFM-RB, Room 3A720
34	SALL, Room 2C638
16	SAFM-BUI-A, Room 3D400
1	SAFM-BUI-W, Room 3D400

***Distributed electronically**

APPENDIX A

RDT&E CONGRESSIONAL DESCRIPTIVE SUMMARIES MAILING LIST

PRINT	ADDRESS
	HAND DELIVERY (continued)
1	SAFM-BUI-O, Room 3D400
1	SARD-TS, Room 3D400
166	Total Print

Any changes to this distribution list should be provided to HQDA (SAFM-BUI-A), Washington, DC 20310, DSN, 223-2687..

***Distributed electronically**