UNCLASSIFIED

Supporting Data FY 1998/1999 Budget Estimate
Submitted to Congress - February 1997

DESCRIPTIVE SUMMARIES OF THE

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"

VOLUME II

UNCLASSIFIED

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DESCRIPTIVE SUMMARIES FOR PROGRAM ELEMENTS OF THE RESEARCH, DEVELOPMENT, TEST AND EVALUATION, ARMY FY 1998/1999 FEBRUARY 1997

VOLUME II
Budget Activities 4 and 5

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

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FY 1998/1999 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 1996, 1997, 1998 and 1999 time period.

2. Relationship of the FY 1998/1999 Budget Submission to the FY 1997 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/S16	Science Base/Combat Casualty Care Research	0601102A/S14
0602618A/H81, 0603004A/43A	Liquid Propellant Technology Program	0602618A/H37
0602624A/H28	Fuze Technology	0602624A/H36
0602712A/H24	Camouflage Technology	0602712A/H35
0602785A/791	Personnel System/Performance Technology	0602785A/790
0602787A/825	Combat Casualty Care Technology	0602787A/874
0603001A/XXA	Force XXI Land Warrior	0603001A/J50
0603003A/D368	Improved Cargo Helicopter	0203744A/D430
0603004A/L95	Landmine Warfare Dev	0603004A/43A
0603007A/793	Training Sys and Education	0603007A/792
0603313A/D380	Guided MLRS	0603778A/D784
0604760A/DC77	Computer Generated Forces	0604760A/DC78
0605601A/DE90, DE91,DE92, DE93, D618,D632 & D630	Army Test Ranges and Facilities	0605601A/DF30

A. Program Element Restructures (continued).

OLD PE/PROJECT	NEW PROJECT TITLE	NEW PE/PROJECT
0605601A/D630	Non-Major System Test & Design Evaluation	0605601A/D699
0605641A/D670, D671, D672, D672, D675 & D678	Survivability Evaluation	0605604A/D734
0605706A/D026	Major Systems Test, Design and Evaluation	0605706A/M542
0303142A/D384 & /D386	Automated Communications Management System	0303142A/D559

B. FY 1998 Developmental Transitions.

FROM PE/PROJECT	PROJECT TITLE	TO PE/PROJECT
0602120A/AH15	Dismounted Soldier Combat Identification (CID)	0604817A/D902
0602303A/214	2.75" Anti-Air Tech Demo	0603313A/549
0603313A/387	Multi-Purpose Individual Munition	0604802A/284

C. Establishment of New FY 1998 Program Elements/Projects. There are no major system new starts. Minor new initiatives for FY 1998, in addition to Congressionally directed initiatives for FY 1997, are shown below with asterisks. The remaining programs listed are outyear initiatives or restructures beyond FY 1998 or were previously funded from other Defense appropriations.

TITLE	PE/PROJECT
Voice Instructional Device*	0602601A/AH39
Plasma Energy Pyrolysis System*	0602720A/A876
Western Environmental Technology Office (WETO) Environmental Support*	0602720A/A877
Neurotoxin Exposure Treatment*	0602787A/A838
Cancer Signal/Cancer Cell Proliferation*	0602787A/A839
Computer-Assisted Minimally Invasive Surgery*	0602787A/A841
ENT Minimally Invasive Simulation*	0602787A/A842

C. Establishment of New FY 1998 Program Elements/Projects (continued).

TITLE	PE/PROJECT
Health Technology Roadmaps*	0602787A/A843
Hepatitis A Vaccine*	0602787A/A844
Trichloromelamine*	0603002A/D813
Neurofibromatosis*	0603002A/D814
National Medical Testbed*	0603002A/D815
Computer-Based Decision Support Systems*	0603002A/D816
Computer-Aided Diagnostic Research*	0603002A/D817
Advanced Cancer Detection Center*	0603002A/D818
Nautilus/THEL*	0603308A/D989
Battle Integration Center*	0603308A/D997
LCPK for 2.75 Inch Rockets	0603313A/A567
Advanced Light Anti-Armor Weapon System (ALAWS)*	0603607A/D664
Future Combat System	0603645A/DQ19
LTASS	0603774AD598
Future Scout Vehicle - Advanced Development*	0603645A/D018
Suite of Integrated Infrared Countermeasures Op Test*	0604270A/D2VT
Arm Treatment & Transport Vehicle	0604640A/DG28
Future Scout Vehicle - EMD	0604645A/D022
Mounted Warrior*	0604713A/D680
XM982*	0604802A/D695
Army Systems Engineering & Warfighting Technical Spt*	0604805A/D589
Modernization of Utilities*	0605678A/M744
Survivability Evaluation	0605604A/D734
Ground Combat Vehicle HTI*	0203735A/D718
Bradley A3 P3I (BFV A4)	0203735A/D377
Guardrail Common Sensor	0203744A/D028
UH-60 Door Gun*	0203744A/D504
Force XXI Initiatives*	0203758A/D376
Longbow Hellfire PIP	0203802A/D785
Joint Precision Approach Landing System (JPALS)	0305114A/D711
MLRS Army Technical Architecture*	0603778A/D093
Weapons Systems Modernization Software Maintenance	0708045A/DE26

D. FY 1998 programs for which funding was shown in the FY 1997 President's Budget Submit (February 1996), but which are no longer funded.

PE/PROJECT	TITLE	BRIEF EXPLANATION
0203735A/D2UT	Abrams IOTE	Funds transferred to system line.
0601101A/91E	ILIR-ARI	Program terminated
0601102A/S16	Science Base/Combat Dentistry Research	Program terminated
0602120A/H25	Nuc Effects Surv Tech	Program terminated
0602624A/H23	Non-Lethal Weapons Technology	Program terminated
0602783A/094	Tactical Software Technology	Program terminated
0603627A/E79	Smoke, Obscurant - Advanced Development	Funds transferred to system line
0602787A/825	Combat Maxillofacial Injury	Program terminated
0603001A/594	Metrology & Calibration	Program terminated
0603001A/J28	Test Measurement Technology Development	Program terminated

Descriptive summaries for PE 0603806A - NBC Defense Systems, AD and PE 0604806A - NBC Defense Systems, ED are not provided in this Army submission. Since these programs were transferred to Defense RDT&E in FY 1996, program details are available in the Defense RDT&E submission under PE 0603884BP and PE 0604384BP.

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

0203735A/DC64	0603003A/DB38/D391	0603710A/DC63
0203806A	0603005A/DC62	0603851A
0203808A	0603009A	0603854A/DC68
0602601A/AC84/DC83	0603013A	0604649A/DG15
0602104A	0603017A	0604328A/DC71
0602122A	0603018A	
0602712A/AC61	0603020A	
0602786A/AC60	0603322A	

Department of the Army
FY 1998/1999 RDT&E Program

Exhibit R-1

Summary

Date: Feb 1997

Thousands of Dollars

	FY 1996	FY 1997	FY 1998	FY 1999
Summary Recap of Budget Activities				
Basic Research	181,722	179,059	198,854	210,349
Applied Research	450,837	551,558	462,935	493,665
Advanced Technology Development	580,033	677,676	418,322	431,696
Demonstration and Validation	454,454	558,250	523,395	445,831
Engineering and Manufacturing Development	1,124,738	1,141,159	1,107,393	1,162,925
RDT&E Management Support	1,234,657	1,072,165	1,136,576	1,108,382
Operational Systems Development	730,971	750,761	663,368	643,876
Total Research Development Test & Eval Army	4,757,412	4,930,628	4,510,843	4,496,724
Summary Recap of FYDP Programs				
Strategic Forces	4,000	26,376	86,193	134,298
General Purpose Forces	560,107	541,129	403,355	354,129
Intelligence and Communications	64,814	72,633	89,316	68,413
Research and Development (FYDP Program 6)	4,094,970	4,242,671	3,874,153	3,874,693
Central Supply and Maintenance	23,699	47,819	44,326	50,086
Administration and Assoc Activities	322	0	0	0
Support of Other Nations	9,500	0	13,500	15,105
Total Research Development Test & Eval Army	4,757,412	4,930,628	4,510,843	4,496,724

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Appropriation: 2040 A Reserach Development Test & Eval Army

Date: Feb 1997

Thousands of Dollars

Line No	Program Element Number	Item	Act	FY 1996	FY 1997	FY 1998	FY 1999
1	0601101A	IN-HOUSE LABORATORY INDEPENDENT RESEARCH	1	13,657	14,393	15,113	15,828
2	0601102A	DEFENSE RESEARCH SCIENCES	1	121,822	119,739	138,165	141,555
3	0601104A	UNIVERSITY AND INDUSTRY RESEARCH CENTERS	1	46,243	44,927	45,576	52,966
	Basic Research			181,722	179,059	198,854	210,349
4	0602104A	TRACTOR ROSE	2	2,484	3,065	0	0
5	0602105A	MATERIALS TECHNOLOGY	2	9,858	14,530	9,811	10,979
6	0602120A	SENSORS AND ELECTRONIC SURVIVABILITY	2	26,675	19,351	19,294	19,682
7	0602122A	TRACTOR HIP	2	5,603	7,981	7,242	8,170
8	0602211A	AVIATION TECHNOLOGY	2	17,853	21,898	27,282	30,281
9	0602270A	EW TECHNOLOGY	2	14,651	15,510	16,528	18,151
10	0602303A	MISSILE TECHNOLOGY	2	17,535	29,144	22,335	24,002
11	0602308A	MODELING & SIMULATION TECHNOLOGY	2	19,466	20,652	21,059	24,287
12	0602601A	COMBAT VEHICLE AND AUTOMOTIVE TECHNOLOGY	2	35,040	34,312	33,112	33,360
13	0602618A	BALLISTICS TECHNOLOGY	2	34,647	39,913	33,317	37,598
14	0602622A	CHEMICAL, SMOKE AND EQUIP DEFEATING TECHNOLOG	2	1,728	2,259	4,739	6,691
15	0602623A	JOINT SERVICE SMALL ARMS PROGRAM	2	4,857	4,497	4,786	5,204
16	0602324A	WEAPONS AND MUNITIONS TECHNOLOGY	2	24,297	22,246	26,980	30,613
17	0602705A	ELECTRONICS AND ELECTRONIC DEVICES	2	21,134	24,351	20,192	22,374
18	0602709A	NIGHT VISION TECHNOLOGY	2	16,442	16,636	17,304	19,213
19	0602712A	COUNTERMINE SYSTEMS DEVELOPMENT	2	0	7,372	10,598	10,715
20	0602716A	HUMAN FACTORS ENGINEERING TECHNOLOGY	2	15,445	15,968	14,256	15,626
21	0602720A	ENVIRONMENTAL QUALITY TECHNOLOGY	2	25,537	55,178	17,519	13,869
22	0602782A	COMMAND, CONTROL, COMMUNICATIONS TECHNOLOGY	2	13,130	14,976	16,838	18,180
23	0602783A	COMPUTER AND SOFTWARE TECHNOLOGY	2	3,843	6,500	679	337
24	0602784A	MILITARY ENGINEERING TECHNOLOGY	2	33,734	38,060	36,422	40,112
25	0602785A	MANPOWER/PERSONNEL/TRAINING TECHNOLOGY	2	7,254	9,329	9,014	9,019
26	0602786A	LOGISTICS TECHNOLOGY	2	26,995	21,319	17,689	18,565
27	0602787A	MEDICAL TECHNOLOGY	2	70,575	104,332	74,684	75,307
28	0602789A	ARMY ARTIFICIAL INTELLIGENCE TECHNOLOGY	2	2,054	2,179	1,255	1,330
	Applied Research			450,837	551,558	462,935	493,665

Department of the Army
FY 1998/1999 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Reserach Development Test & Eval Army

Date: Feb 1997

Line No	Program Element Number	Item	Act	FY 1996	FY 1997	FY 1998	FY 1999
				Thousands of Dollars			
29	0603001A	LOGISTICS ADVANCED TECHNOLOGY	3	38,820	22,724	35,469	32,197
30	0603002A	MEDICAL ADVANCED TECHNOLOGY	3	90,591	201,198	10,677	10,959
31	0603003A	AVIATION ADVANCED TECHNOLOGY	3	48,320	56,165	31,330	29,921
32	0603004A	WEAPONS AND MUNITIONS ADVANCED TECHNOLOGY	3	29,119	29,122	18,255	29,717
33	0603005A	COMBAT VEHICLE AND AUTOMATIVE ADVANCED TECH	3	26,363	28,811	32,685	59,573
34	0603006A	COMMAND, CONTROL, COMM ADVANCED TECHNOLOGY	3	29,323	29,379	19,688	20,911
35	0603007A	MANPOWER, PERSONNEL AND TRAINING ADV TECH	3	4,576	4,406	3,003	3,006
36	0603009A	TRACTOR HIKE	3	23,016	16,791	14,350	9,574
37	0603013A	TRACTOR DIRT	3	1,713	3,265	3,393	2,448
38	0603017A	TRACTOR RED	3	5,369	8,445	5,572	4,953
39	0603020A	TRACTOR ROSE	3	4,731	4,971	9,204	9,111
40	0603105A	MILITARY HIV RESEARCH	3	2,795	17,544	2,713	3,162
41	0603238A	Global Surveillance/Air Defense/Precision Strike Technology Demo	3	37,630	22,009	11,664	4,926
42	0603270A	EW TECHNOLOGY	3	3,818	6,651	8,182	11,754
43	0603313A	MISSILE AND ROCKET ADVANCED TECHNOLOGY	3	109,972	99,819	117,139	89,542
44	0603322A	TRACTOR CAGE	3	8,088	8,651	6,412	5,353
45	0603606A	LANDMINE WARFARE AND BARRIER ADV TECHNOLOGY	3	25,006	27,629	19,332	19,778
46	0603607A	JOINT SERVICE SMALL ARMS PROGRAM	3	4,516	9,049	4,754	5,148
47	0603654A	LINE-OF-SIGHT TECHNOLOGY DEMO	3	13,396	9,791	13,000	20,000
48	0603710A	NIGHT VISION ADVANCED TECHNOLOGY	3	31,142	29,761	19,299	19,250
49	0603734A	MILITARY ENGINEERING ADVANCED TECHNOLOGY	3	14,544	20,213	12,231	17,334
50	0603772A	ADV TACTICAL COMPUTER SCIENCE & SENSOR TECH	3	27,185	21,282	19,970	23,079
		Advanced Technology Development		580,033	677,676	418,322	431,696
51	0603018A	TRACTOR TREAD	4	14,158	2,329	0	0
52	0603308A	ARMY MISSILE DEFENSE SYSTEMS INTEGRATION	4	23,443	66,462	24,138	12,637
53	0603619A	LANDMINE WARFARE AND BARRIER - ADV DEV	4	35,768	27,860	18,882	11,214
54	0603627A	SMOKE, OBSCURANT AND TARGET DEFEATING SYS-AD	4	2,623	6,246	0	0
55	0603639A	ARMAMENT ENHANCEMENT INITIATIVE	4	58,227	63,240	40,313	18,982
56	0603640A	ARTILLERY PROPELLANT DEVELOPMENT	4	20,811	8,322	8,521	0
57	0603645A	ARMORED SYSTEMS MODERNIZATION-ADVANCED DEVE	4	181,647	7,803	2,007	2,008

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Line No	Program Element Number	Item	Act	FY 1996	FY 1997	FY 1998	FY 1999
				Thousands of Dollars			
58	0603649A	ENGINEER MOB EQUIP ADVANCED DEV	4	13,591	0	0	0
59	0603653A	ADVANCED TANK ARMAMENT SYSTEM	4	9,335	11,395	8,982	8,928
60	0603713A	ARMY DATA DISTRIBUTION SYTEM	4	6,360	23,170	21,214	10,049
61	0603745A	TACTICAL ELECTRONIC SUPPORT SYSTEMS - ADV DEV	4	5,630	3,941	0	0
62	0603747A	SOLDIER SUPPORT AND SURVIVABILITY	4	6,709	6,541	7,557	7,680
63	0603766A	TAC EXPLOIT OF NAT CAP (TENCAP)-DEM/VAL TIARA	4	26,796	25,354	20,920	23,714
64	0603774A	NIGHT VISION SYSTEMS ADVANCED DEVELOPMENT	4	3,167	2,769	2,939	2,893
65	0603790A	NATO RESEARCH AND DEVELOPMENT (H)	4	0	9,755	13,168	11,169
66	0603801A	AVIATION - ADV DEV	4	12,893	13,104	7,132	7,450
67	0603802A	WEAPONS AND MUNITIONS - ADV DEV	4	949	0	0	0
68	0603804A	LOGISTICS AND ENGINEER EQUIPMENT - ADV DEV	4	5,587	7,433	6,783	6,833
69	0603805A	CBT SERVICE SUPPORT CONTROL SYS EVAL & ANALYS	4	13,228	12,689	7,673	7,783
70	0603807A	MEDICAL SYSTEMS - ADV DEV	4	9,878	9,996	6,765	8,700
71	0603851A	TRACTOR CAGE (Dem/Val)	4	3,234	3,001	1,948	1,627
72	0603854A	ARTILLERY SYSTEMS DEMONSTRATION/VALIDATION	4	0	238,590	324,380	294,495
73	0603856A	SCAMP BLOCK II (SPACE)	4	0	8,250	73	9,669
74	0603889A	COUNTERDRUG R&D PROJECTS	4	420	0	0	0
		Demonstration and Validation		454,454	558,250	523,395	445,831
75	0604201A	AIRCRAFT AVIONICS	5	20,073	14,694	21,669	12,729
76	0604220A	ARMED, DEPLOYABLE OH-58D	5	688	1,130	0	0
77	0604223A	COMANCHE	5	284,131	331,424	282,009	371,927
78	0604270A	EW DEVELOPMENT	5	62,250	73,886	66,212	51,490
79	0604321A	ALL SOURCE ANALYSIS SYSTEM	5	49,912	39,308	24,045	26,228
80	0604325A	FOLLOW-ON TO TOW	5	944	5,479	13,949	50,884
81	0604328A	TRACTOR CAGE	5	0	1,524	11	303
82	0604604A	MEDIUM TACTICAL VEHICLES	5	2,923	5,874	3,729	0
83	0604609A	SMOKE, OBSCURANT AND TARGET DEFEATING SYS-ED	5	1,915	0	0	703
84	0604611A	JAVELIN (AWWS-M)	5	2,249	6,014	8,018	5,277
85	0604619A	LANDMINE WARFARE	5	29,453	26,288	19,800	23,075
86	0604622A	FAMILY OF HEAVY TACTICAL VEHICLES	5	2,605	1,958	0	0

Department of the Army
FY 1998/1999 RDT&E Program

Exhibit R-1

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Line No	Program Element Number	Item	Act	FY 1996	FY 1997	FY 1998	FY 1999
				Thousands of Dollars			
87	0604633A	AIR TRAFFIC CONTROL	5	5,073	7,377	1,705	1,729
88	0604640A	ADVANCED COMMAND AND CONTROL VEHICLE	5	17,306	7,734	8,867	0
89	0604641A	TACTICAL UNMANNED GROUND VEHICLE	5	0	2,823	2,687	2,663
90	0604642A	LIGHT TACTICLE WHEELED VEHICLE	5	3,970	2,937	9,909	39,919
91	0604645A	ARMORED SYSTEMS MODERNIZATION (ASM)-ENG DEV	5	32,425	6,585	0	0
92	0604649A	ENGINEER MOBILITY EQUIPMENT DEVELOPMENT	5	19,114	46,705	56,196	63,069
93	0604710A	NIGHT VISION SYSTEMS - ENG DEV	5	37,658	34,870	33,456	21,255
94	0604713A	COMBAT FEEDING, CLOTHING, AND EQUIPMENT	5	16,049	76,428	55,964	43,539
95	0604715A	NON-SYSTEM TRAINING DEVICES - ENG DEV	5	50,140	48,788	76,749	73,048
96	0604716A	TERRAIN INFORMATION - ENG DEV	5	8,509	7,144	2,942	2,686
97	0604726A	INTEGRATED METEOROLOGICAL SUPPORT SYSTEM	5	0	0	1,946	1,931
98	0604739A	JTT/CIBS-M (TIARA)	5	0	4,765	4,499	4,447
99	0604740A	TACTICAL SURVEILLANCE SYSTEM - ENG DEV	5	2,954	0	0	0
100	0604741A	AIR DEFENSE C2I - ENG DEV	5	21,810	20,031	18,350	6,698
101	0604746A	AUTOMATIC TEST EQUIPMENT DEVELOPMENT	5	10,648	9,575	2,582	2,533
102	0604760A	DISTRIBUTIVE INTERACTIVE SIMULATIONS ENG DEV	5	0	15,631	20,895	9,242
103	0604766A	TAC EXPLOIT NAT CAP (TENCAP)-EMD (TIARA)	5	23,266	15,235	19,113	19,531
104	0604768A	BRILLIANT ANTI-ARMOR SUBMUNITION(BAT)	5	190,472	161,816	202,302	129,466
105	0604770A	JOINT SURVEILLANCE/TARGET ATTACK RADAR SYSTEM	5	15,302	9,624	6,940	5,670
106	0604778A	POSITIONING SYS DEVEL (SPACE)	5	436	428	419	409
107	0604780A	COMBINED ARMS TACTICAL TRAINER (CATT)	5	56,282	26,110	2,823	2,866
108	0604801A	AVIATION - ENG DEV	5	4,885	5,403	5,109	6,067
109	0604802A	WEAPONS AND MUNITIONS - ENG DEV	5	14,845	23,661	3,577	24,865
110	0604804A	LOGISTICS & ENGINEER EQUIPMENT - ENG DEV	5	19,132	19,903	28,039	26,932
111	0604805A	COMMAND, CONTROL, COMMUNICATIONS SYSTEMS - ED	5	16,740	9,556	11,052	16,395
112	0604807A	MEDICAL MATERIEL/MED BIO DEFENSE EQUIPMENT ED	5	4,644	4,693	4,483	5,408
113	0604808A	LANDMINE WARFARE/BARRIER - ENG DEV	5	6,802	7,556	22,605	44,133
114	0604814A	SENSE AND DESTROY ARMOR - ENG DEV	5	15,764	9,934	22,372	20,813
115	0604816A	LONGBOW	5	21,969	10,644	0	0
116	0604817A	COMBAT IDENTIFICATION	5	23,669	16,411	19,784	13,379
117	0604818A	ARMY TACTICAL COMM & CONT HARDWARE & SOFTWAR	5	27,231	15,780	20,022	18,697
118	0604820A	RADAR DEVELOPMENT	5	500	0	0	0

Appropriation: 2040 A Reserach Development Test & Eval Army

Date: Feb 1997

Thousands of Dollars

Line No	Program Element Number	Item	Act	FY 1996	FY 1997	FY 1998	FY 1999
119	0604823A	FIREFINDER	5	0	2,496	2,564	12,022
120	0604854A	ARTILLERY SYSTEMS - ENGINEERING DEVELOPMENT	5	0	2,937	0	897
		Engineering and Manufacturing Development		1,124,738	1,141,159	1,107,393	1,162,925
121	0604256A	THREAT SIMULATOR DEVELOPMENT	6	13,705	11,383	14,004	11,877
122	0604258A	TARGET SYSTEMS DEVELOPMENT	6	13,557	9,916	11,688	13,063
123	0604759A	MAJOR TEST & EVALUATION INVESTMENT	6	62,154	40,833	40,449	33,407
124	0605103A	RAND ARROYO CENTER	6	17,895	21,108	17,576	18,040
125	0605301A	ARMY KWAJALEIN ATOLL	6	140,930	143,789	138,769	142,125
126	0605502A	SMALL BUS INV RSCH/SMALL BUS TECH PILOT PROG	6	85,919	0	0	0
127	0605601A	ARMY TEST RANGES AND FACILITIES	6	142,694	130,222	122,117	128,919
128	0605602A	ARMY TECHNOLOGY & SUSTAINING INSTRUMENTATION	6	25,422	21,944	33,184	32,976
129	0605604A	SURVIVABILITY/LETHALITY ANALYSIS	6	32,250	30,675	32,330	30,678
130	0605605A	DOD HIGH ENERGY LASER SYS TEST FAC (HELSTF)	6	33,231	29,974	14,952	14,976
131	0605606A	AIRCRAFT CERTIFICATION	6	2,821	2,840	2,919	2,924
132	0605702A	METEOROLOGICAL SUPPORT TO RDT&E ACTIVITIES	6	6,458	6,348	6,434	6,658
133	0605706A	MATERIEL SYSTEMS ANALYSIS	6	17,241	14,126	29,707	28,675
134	0605709A	EXPLOITATION OF FOREIGN ITEMS	6	8,413	7,193	7,762	4,349
135	0605712A	SUPPORT OF OPERATIONAL TESTING	6	41,078	49,614	81,672	68,949
136	0605801A	PROGRAMWIDE ACTIVITIES	6	64,859	59,708	86,208	85,604
137	0605802A	INTERNATIONAL COOPERATIVE RESEARCH AND DEV	6	1,555	1,534	1,581	1,581
138	0605803A	TECHNICAL INFORMATION ACTIVITIES	6	13,549	16,552	15,451	15,872
139	0605805A	MUNITIONS STANDARDZION EFFECTIVENESS & SAFETY	6	16,692	3,211	6,317	5,895
140	0605853A	ENVIRONMENTAL CONSERVATION	6	2,493	1,723	1,778	2,977
141	0605854A	POLLUTION PREVENTION	6	11,004	13,602	5,353	4,681
142	0605856A	ENVIRONMENTAL COMPLIANCE-RDT&E	6	65,985	54,251	51,378	47,604
143	0605876A	MINOR CONSTUCTION (RPM) - RDTE	6	6,035	4,229	4,393	4,537
144	0605878A	MAINTENANCE AND REPAIR (RPM) - RDTE	6	86,907	68,580	85,119	74,681
145	0605879A	REAL PROPERTY SERVICES (RPS)	6	0	90,457	88,945	88,936
146	0605896A	BASE OPERATIONS-RDT&E	6	306,481	219,946	231,653	233,633

Department of the Army
FY 1998/1999 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Reserach Development Test & Eval Army

Date: Feb 1997

Line No	Program Element Number	Item	Act	FY 1996	FY 1997	FY 1998	FY 1999
				Thousands of Dollars			
147	0605898A	MANAGEMENT HEADQUARTERS (RSCH & DEVELOPMENT)	6	15,007	18,407	4,837	4,765
148	0909999A	CLOSED ACCOUNT ADJUSTMENT	6	322	0	0	0
		RDT&E Management Support		1,234,657	1,072,165	1,136,576	1,108,382
149	0603778A	MLRS PRODUCT IMPROVEMENT PROGRAM	7	68,851	62,804	26,678	21,845
150	0102419A	AEROSTAT JOINT PROGRAM	7	4,000	26,376	86,193	134,298
151	0203726A	ADV FIELD ARTILLERY TACTICAL DATA SYSTEM	7	36,973	38,512	39,039	34,939
152	0203735A	COMBAT VEHICLE IMPROVEMENT PROGRAMS	7	206,625	206,816	136,520	69,443
153	0203740A	MANEUVER CONTROL SYSTEM	7	48,302	27,888	25,641	23,932
154	0203744A	AIRCRAFT MODIFICATIONS/PRODUCT IMPROV PROGRAM	7	4,288	22,386	2,609	28,791
155	0203752A	AIRCRAFT ENGINE COMPONENT IMPROVEMENT PROGRA	7	3,703	3,834	2,940	2,933
156	0203758A	DIGITIZATION	7	110,583	137,078	156,960	149,015
157	0203801A	MISSILE/AIR DEFENSE PRODUCT IMPRV PROGRAM	7	59,199	64,557	17,412	11,431
158	0203802A	OTHER MISSILE PRODUCT IMPROVEMENT PROGRAMS	7	64,920	9,874	1,255	17,011
159	0203806A	TRACTOR RUT	7	3,346	3,112	2,111	0
160	0203808A	TRACTOR CARD	7	9,521	6,766	6,690	6,693
161	0208010A	JOINT TACTICAL COMMUNICATIONS PROG (TRI-TAC)	7	12,647	18,229	8,983	9,941
162	0208053A	JOINT TACTICAL GRD STATION (TIARA)	7	0	2,077	3,195	0
163	0301359A	SPECIAL ARMY PROGRAM	7	8,538	10,185	5,547	4,551
164	0303140A	COMMUNICATIONS SECURITY (COMSEC) EQUIPMENT	7	3,455	3,161	9,647	3,826
165	0303142A	SATCOM GROUND ENVIRO (SPACE)	7	52,821	39,421	57,827	44,288
166	0303150A	ARMY GLOBAL C2 SYS	7	0	19,389	15,045	14,793
167	0305114A	TRAFFIC CNTL/APPROACH/LANDING SYS (JPALS)	7	0	0	750	0
168	0305128A	SECURITY AND INTELLIGENCE ACTIVITIES	7	0	477	500	955
169	0708045A	End Item Industrial Preparedness Activities	7	23,699	47,819	44,326	50,086
170	1001018A	NATO JSTARS - TIARA	7	9,500	0	13,500	15,105
		Operational Systems Development		730,971	750,761	663,368	643,876
Total		Research Development Test & Eval Army		4,757,412	4,930,628	4,510,843	4,496,724

ARMY

FY97 COLUMN OF FY98/99 PRES BUD

The spreadsheet below reflects the FY97 column of the FY98/99 President's Budget by project. It is provided as clarification to the attached descriptive summaries. In the Project Change Summary (paragraph B of Exhibit R-2), we have reflected the FY97 Appropriated Value as the amount Congress appropriated less undistributed reductions in Sections 8136, 8138, and 8037 (column G of spreadsheet). This methodology is consistent with past practices and is consistent throughout this submission. However, we just recently realized that we should have shown the amount appropriated prior to any reductions (column A), and the total of those reductions (column F) as Adjustments to Appropriated Value. Unfortunately, time did not allow us to change over 400 descriptive summaries before the deadline for this submission. We intend to use this methodology for all future submissions.

			A	B	C	D	E	F (B+C+D+E)	G (A-F)
						Sec 8037			
BA	PE	Proj	FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
1	61101	91A	9893	-198	-9			-207	9686
1	61101	91C	3910	-78	-4			-82	3828
1	61101	91D	768	-15	-1			-16	752
1	61101	91E	130	-3	0			-3	127
			14701	-294	-14	0	0	-308	14393
1	61102	305	1156	-23	-1			-24	1132
1	61102	31B	2281	-46	-2			-48	2233
1	61102	52C	2243	-45	-2			-47	2196
1	61102	53A	3605	-72	-3			-75	3530
1	61102	74A	2303	-46	-2			-48	2255
1	61102	74F	2462	-49	-2			-51	2411
1	61102	F20	2333	-47	-2			-49	2284
1	61102	F22	447	-9	0			-9	438
1	61102	H42	1775	-35	-2			-37	1738
1	61102	H43	5584	-112	-6			-118	5466
1	61102	H44	3354	-67	-3			-70	3284
1	61102	H45	1848	-37	-2			-39	1809
1	61102	H47	2811	-56	-4			-60	2751
1	61102	H48	6872	-137	-6			-143	6729
1	61102	H52	849	-17	-1			-18	831
1	61102	H57	47844	-957	-45	-22	-8	-1032	46812
1	61102	H66	1314	-26	-1			-27	1287
1	61102	H67	4901	-98	-5			-103	4798
1	61102	H68	350	-7	0			-7	343
1	61102	S04	598	-12	-1			-13	585
1	61102	S13	8430	-169	-8			-177	8253
1	61102	S14	3830	-77	-4			-81	3749
1	61102	S15	5661	-113	-5			-118	5543
1	61102	S16	468	-9	0			-9	459

ARMY
FY97 COLUMN OF FY98/99 PRES BUD

			A	B	C	D	E	F (B+C+D+E)	G (A-F)
						Sec 8037			
BA	PE	Proj	FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
1	61102	S17	800	-16	-1			-17	783
1	61102	T22	1767	-35	-2			-37	1730
1	61102	T23	1532	-31	-1			-32	1500
1	61102	T24	1128	-23	-1			-24	1104
1	61102	T25	3136	-63	-3			-66	3070
1	61102	S18	650	-13	-1			-14	636
			122332	-2447	-116	-22	-8	-2593	119739
1	61104	H50	6853	-137	-6			-143	6710
1	61104	H53	690	-14	-1			-15	675
1	61104	H54	7252	-145	-7			-152	7100
1	61104	H56	4469	-89	-4			-93	4376
1	61104	H59	5797	-116	-5			-121	5676
1	61104	H62	10043	-201	-9			-210	9833
1	61104	H64	2899	-58	-3			-61	2838
1	61104	H65	2899	-58	-3			-61	2838
1	61104	H73	4986	-100	-5			-105	4881
			45888	-918	-43	0	0	-961	44927
	TOTAL BA 1		**182921**	**-3659**	**-173**	**-22**	**-8**	**-3862**	**179059**
2	62104	B79	3131	-63	-3			-66	3065
			3131	-63	-3	0	0	-66	3065
2	62105	H84	14841	-297	-14			-311	14530
			14841	-297	-14	0	0	-311	14530
2	62120	140	2651	-53	-2			-55	2596
2	62120	H15	3686	-74	-3		-5	-82	3604
2	62120	H16	13455	-269	-13	-22		-304	13151
2	62120	H25	0	0	0			0	0
			19792	-396	-18	-22	-5	-441	19351
2	62122	622	8152	-163	-8			-171	7981
			8152	-163	-8	0	0	-171	7981

ARMY
FY97 COLUMN OF FY98/99 PRES BUD

			A	B	C	D	E	F (B+C+D+E)	G (A-F)
						Sec 8037			
BA	PE	Proj	FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
2	62211	47A	19640	-393	-18		-16	-427	19213
2	62211	47B	2743	-55	-3			-58	2685
			22383	-448	-21	0	-16	-485	21898
2	62270	442	8783	-176	-8			-184	8599
2	62270	906	7062	-141	-7	-3		-151	6911
			15845	-317	-15	-3	0	-335	15510
2	62303	214	25795	-516	-24		-27	-567	25228
2	62303	205	4000	-80	-4			-84	3916
			29795	-596	-28	0	-27	-651	29144
2	62308	C90	9516	-190	-9	-19		-218	9298
2	62308	C99	11618	-232	-11	-21		-264	11354
			21134	-422	-20	-40	0	-482	20652
2	62601	C05	5982	-120	-6		-2	-128	5854
2	62601	H39	2100	-42	-2			-44	2056
2	62601	H77	10544	-211	-10		-5	-226	10318
2	62601	H82	3090	-62	-3			-65	3025
2	62601	H91	13384	-268	-13	-5	-39	-325	13059
			35100	-703	-34	-5	-46	-788	34312
2	62618	H75	8007	-160	-8			-168	7839
2	62618	H37	7500	-150	-7			-157	7343
2	62618	H80	20762	-415	-19			-434	20328
2	62618	H81	4497	-90	-4			-94	4403
			40766	-815	-38	0	0	-853	39913
2	62622	552	2343	-47	-2	-34	-1	-84	2259
			2343	-47	-2	-34	-1	-84	2259
2	62623	H21	4593	-92	-4			-96	4497
			4593	-92	-4	0	0	-96	4497

ARMY
FY97 COLUMN OF FY98/99 PRES BUD

			A	B	C	D	E	F (B+C+D+E)	G (A-F)
						Sec 8037			
BA	PE	Proj	FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
2	62624	H18	9484	-190	-9	-9	-3	-211	9273
2	62624	H19	5039	-101	-5			-106	4933
2	62624	H28	8214	-164	-8		-2	-174	8040
			22737	-455	-22	-9	-5	-491	22246
2	62705	H11	6073	-121	-6			-127	5946
2	62705	H94	18799	-376	-18			-394	18405
			24872	-497	-24	0	0	-521	24351
2	62709	H95	16994	-340	-16	-2		-358	16636
			16994	-340	-16	-2	0	-358	16636
2	62712	C61	1359	-27	-1			-28	1331
2	62712	H24	6170	-123	-6			-129	6041
			7529	-150	-7	0	0	-157	7372
2	62716	H70	14072	-281	-13	-13		-307	13765
2	62716	H34	2250	-45	-2			-47	2203
			16322	-326	-15	-13	0	-354	15968
2	62720	048	6072	-121	-6			-127	5945
2	62720	876	7500	-150	-7			-157	7343
2	62720	877	5000	-100	-5			-105	4895
2	62720	822	2000	-40	-2			-42	1958
2	62720	823	5400	-108	-5			-113	5287
2	62720	826	4000	-80	-4			-84	3916
2	62720	829	13170	-263	-12			-275	12895
2	62720	835	3169	-63	-3			-66	3103
2	62720	896	7412	-148	-7			-155	7257
2	62720	F25	2634	-53	-2			-55	2579
			56357	-1126	-53	0	0	-1179	55178
2	62782	779	7265	-145	-7			-152	7113
2	62782	H92	8042	-161	-8	-10		-179	7863
			15307	-306	-15	-10	0	-331	14976

ARMY

FY97 COLUMN OF FY98/99 PRES BUD

			A	B	C	D	E	F (B+C+D+E)	G (A-F)
						Sec 8037			
BA	PE	Proj	FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
2	62783	094	4321	-86	-4			-90	4231
2	62783	Y10	2317	-46	-2			-48	2269
			6638	-132	-6	0	0	-138	6500
2	62784	855	8556	-171	-8			-179	8377
2	62784	H71	6691	-134	-6			-140	6551
2	62784	T40	11403	-228	-11	-24		-263	11140
2	62784	T41	4285	-86	-4			-90	4195
2	62784	T42	5541	-111	-5			-116	5425
2	62784	T45	2422	-48	-2			-50	2372
			38898	-778	-36	-24	0	-838	38060
2	62785	790	3107	-62	-3			-65	3042
2	62785	791	6421	-128	-6			-134	6287
			9528	-190	-9	0	0	-199	9329
2	62786	283	1665	-33	-2			-35	1630
2	62786	C60	3277	-66	-3			-69	3208
2	62786	J10	3000	-60	-3			-63	2937
2	62786	H98	9464	-189	-9	-13	-8	-219	9245
2	62786	H99	4402	-88	-4	-8	-3	-103	4299
			21808	-436	-21	-21	-11	-489	21319
2	62787	825	514	-10	0			-10	504
2	62787	870	29843	-597	-28			-1044	28799
2	62787	873	2931	-59	-3			-62	2869
2	62787	874	11415	-228	-11			-239	11176
2	62787	878	7294	-146	-7			-153	7141
2	62787	879	8693	-174	-8			-182	8511
2	62787	839	2300	-46	-2			-48	2252
2	62787	842	1000	-20	-1			-21	979
2	62787	844	20000	-400	-19	TRANSFERRED TO DEFENSE HEALTH PROGRAM			
2	62787	843	3500	-70	-3			-73	3427
2	62787	841	2500	-50	-2			-52	2448
2	62787	838	25000	-500	-23			-523	24477
2	62787	863	2000	-40	-2			-42	1958
2	62787	845	10000	-200	-9			-209	9791
			126990	-2540	-118	0	0	-2658	104332

ARMY
FY97 COLUMN OF FY98/99 PRES BUD

			A	B	C	D	E	F (B+C+D+E)	G (A-F)
						Sec 8037			
BA	PE	Proj	FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
2	62789	880	2226	-45	-2			-47	2179
			2226	-45	-2	0	0	-47	2179
	TOTAL BA 2		**584081**	**-11680**	**-549**	**-183**	**-111**	**-12523**	**551558**
3	63001	242	1249	-25	-1			-26	1223
3	63001	543	3097	-62	-3			-65	3032
3	63001	594	445	-9	0			-9	436
3	63001	C07	1891	-38	-2			-40	1851
3	63001	J28	251	-5	0			-5	246
3	63001	J50	16277	-326	-15			-341	15936
			23210	-465	-21	0	0	-486	22724
3	63002	806	100000	-2000	-94			-2094	97906
3	63002	810	9228	-185	-9			-194	9034
3	63002	804	45000	-900	-42			-942	44058
3	63002	819	2400	-48	-2			-50	2350
3	63002	893	12000	-240	-11			-251	11749
3	63002	813	500	-10	0			-10	490
3	63002	818	3500	-70	-3			-73	3427
3	63002	817	3000	-60	-3			-63	2937
3	63002	816	6000	-120	-6			-126	5874
3	63002	815	6000	-120	-6			-126	5874
3	63002	887	7500	-150	-7			-157	7343
3	63002	814	8000	-160	-8			-168	7832
3	63002	840	2373	-47	-2			-49	2324
			205501	-4110	-193	0	0	-4303	201198
3	63003	313	3527	-71	-3			-74	3453
3	63003	391	5040	-101	-5			-106	4934
3	63003	436	24647	-493	-23		-109	-625	24022
3	63003	447	7780	-156	-7			-163	7617
3	63003	A38	15000	-300	-14			-314	14686
3	63003	B38	1000	-20	-1			-21	979
3	63003	B97	484	-10	0			-10	474
			57478	-1151	-53	0	-109	-1313	56165
					xx				

ARMY

FY97 COLUMN OF FY98/99 PRES BUD

			A	B	C	D	E	F	G
								(B+C+D+E)	(A-F)
						Sec 8037			
BA	PE	Proj	FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
3	63004	232	5772	-115	-5			-120	5652
3	63004	43A	21809	-436	-20			-456	21353
3	63004	L95	2178	-44	-2	-15		-61	2117
			29759	-595	-27	-15	0	-637	29122
3	63005	221	4758	-95	-4			-99	4659
3	63005	440	13507	-270	-13		-123	-406	13101
3	63005	441	4203	-84	-4			-88	4115
3	63005	497	1818	-36	-2			-38	1780
3	63005	502	2000	-40	-2			-42	1958
3	63005	C62	3266	-65	-3			-68	3198
			29552	-590	-28	0	-123	-741	28811
3	63006	247	7427	-149	-7			-156	7271
3	63006	257	11981	-240	-11	-110		-361	11620
3	63006	592	3712	-74	-3			-77	3635
3	63006	596	5000	-100	-5			-105	4895
3	63006	597	2000	-40	-2			-42	1958
			30120	-603	-28	-110	0	-741	29379
3	63007	792	1418	-28	-1			-29	1389
3	63007	793	3082	-62	-3			-65	3017
			4500	-90	-4	0	0	-94	4406
3	63009	B18	17176	-344	-16	-25		-385	16791
			17176	-344	-16	-25	0	-385	16791
3	63013	C25	3335	-67	-3			-70	3265
			3335	-67	-3	0	0	-70	3265
3	63017	B69	8625	-172	-8			-180	8445
			8625	-172	-8	0	0	-180	8445
3	63020	B77	5078	-102	-5			-107	4971
			5078	-102	-5	0	0	-107	4971
3	63105	H29	17919	-358	-17			-375	17544
			17919	-358	-17	0	0	-375	17544

ARMY
FY97 COLUMN OF FY98/99 PRES BUD

			A	B	C	D	E	F (B+C+D+E)	G (A-F)
						Sec 8037		Tot Adj to	
BA	PE	Proj	FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Consulting Services	Approp Value	FY 97 Column on RDDS
3	63238	177	14446	-289	-14	-22	-124	-449	13997
3	63238	546	8212	-164	-8		-28	-200	8012
			22658	-453	-22	-22	-152	-649	22009
3	63270	K15	2913	-58	-3			-61	2852
3	63270	K16	3881	-78	-4			-82	3799
			6794	-136	-7	0	0	-143	6651
3	63313	206	1	0	0			0	1
3	63313	703	9000	-180	-8			-188	8812
3	63313	263	9745	-195	-9			-204	9541
3	63313	380	13515	-270	-13			-283	13232
3	63313	387	639	-13	-1			-14	625
3	63313	486	7849	-157	-7	-29		-193	7656
3	63313	493	24245	-485	-23			-508	23737
3	63313	496	37042	-741	-35	-18	-34	-828	36214
3	63313	550	1	0	0			0	1
			102037	-2041	-96	-47	-34	-2218	99819
3	63322	B92	8851	-177	-8		-15	-200	8651
			8851	-177	-8	0	-15	-200	8651
3	63606	608	23296	-466	-22	-67	-7	-562	22734
3	63606	624	5000	-100	-5			-105	4895
			28296	-566	-27	-67	-7	-667	27629
3	63607	627	8243	-165	-8			-173	8070
3	63607	664	1000	-20	-1			-21	979
			9243	-185	-9	0	0	-194	9049
3	63654	460	10000	-200	-9			-209	9791
			10000	-200	-9	0	0	-209	9791
3	63710	C63	2224	-44	-2			-46	2178
3	63710	K70	11425	-228	-11			-239	11186
3	63710	K86	5566	-111	-5			-116	5450
3	63710	K87	11182	-224	-11			-235	10947
			30397	-607	-29	0	0	-636	29761

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FY97 COLUMN OF FY98/99 PRES BUD

BA	PE	Proj	A FY 97 Approp Value	B Sec 8136	C Sec 8138	D Sec 8037 FFRDC	E Sec 8037 Consulting Services	F (B+C+D+E) Tot Adj to Approp Value	G (A-F) FY 97 Column on RDDS
3	63734	T08	1456	-29	-1			-30	1426
3	63734	T10	9585	-192	-9			-201	9384
3	63734	T12	9623	-192	-9	-19		-220	9403
			20664	-413	-19	-19	0	-451	20213
3	63772	101	13988	-280	-13	-265		-558	13430
3	63772	243	975	-19	-1			-20	955
3	63772	281	7136	-143	-7	-51	-38	-239	6897
			22099	-442	-21	-316	-38	-817	21282
	TOTAL BA 3		**693292**	**-13867**	**-650**	**-621**	**-478**	**-15616**	**677676**
4	63018	B89	2409	-48	-2	-30		-80	2329
			2409	-48	-2	-30	0	-80	2329
4	63308	990	2884	-58	-3			-61	2823
4	63308	989	45000	-900	-42			-942	44058
4	63308	997	20000	-400	-19			-419	19581
			67884	-1358	-64	0	0	-1422	66462
4	63619	606	28464	-569	-27		-8	-604	27860
			28464	-569	-27	0	-8	-604	27860
4	63627	E79	6380	-128	-6			-134	6246
			6380	-128	-6	0	0	-134	6246
4	63639	643	46561	-931	-44		-5	-980	45581
4	63639	656	18160	-363	-17	-7		-387	17773
			64721	-1294	-61	-7	-5	-1367	63354
4	63640	B91	8500	-170	-8			-178	8322
			8500	-170	-8	0	0	-178	8322
4	63645	Q19	8000	-160	-8	-29		-197	7803
			8000	-160	-8	-29	0	-197	7803
4	63653	B99	11639	-233	-11			-244	11395
			11639	-233	-11	0	0	-244	11395

ARMY
FY97 COLUMN OF FY98/99 PRES BUD

			A	B	C	D	E	F (B+C+D+E)	G (A-F)
						Sec 8037		Tot Adj to	FY 97
BA	PE	Proj	FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Consulting Services	Approp Value	Column on RDDS
4	63713	2QT	3653	-73	-3		-39	-115	3538
4	63713	370	20169	-403	-19		-2	-424	19745
			23822	-476	-22	0	-41	-539	23283
4	63745	535	4025	-80	-4			-84	3941
			4025	-80	-4	0	0	-84	3941
4	63747	610	1946	-39	-2			-41	1905
4	63747	669	3418	-68	-3			-71	3347
4	63747	C09	1316	-26	-1			-27	1289
			6680	-133	-6	0	0	-139	6541
4	63766	907	26060	-521	-24	-17	-144	-706	25354
			26060	-521	-24	-17	-144	-706	25354
4	63774	131	2829	-57	-3			-60	2769
			2829	-57	-3	0	0	-60	2769
4	63790	691	9963	-199	-9			-208	9755
			9963	-199	-9	0	0	-208	9755
4	63801	B32	2228	-45	-2			-47	2181
4	63801	B33	2053	-41	-2			-43	2010
4	63801	B45	9104	-182	-9			-191	8913
			13385	-268	-13	0	0	-281	13104
4	63804	266	1444	-29	-1			-30	1414
4	63804	428	3951	-79	-4			-83	3868
4	63804	G10	132	-3	0			-3	129
4	63804	G11	217	-4	0			-4	213
4	63804	G14	88	-2	0			-2	86
4	63804	K39	869	-17	-1			-18	851
4	63804	K41	891	-18	-1			-19	872
			7592	-152	-7	0	0	-159	7433
4	63805	091	11119	-222	-10	-3		-235	10884
4	63805	246	2021	-40	-2	-61		-103	1918
			13140	-262	-12	-64	0	-338	12802

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FY97 COLUMN OF FY98/99 PRES BUD

			A	B	C	D	E	F (B+C+D+E)	G (A-F)
						Sec 8037			
BA	PE	Proj	FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
4	63807	808	3835	-77	-4			-81	3754
4	63807	811	2636	-53	-2			-55	2581
4	63807	836	2905	-58	-3			-61	2844
4	63807	837	835	-17	-1			-18	817
			10211	-205	-10	0	0	-215	9996
4	63851	C75	3124	-62	-3	-48	-10	-123	3001
			3124	-62	-3	-48	-10	-123	3001
4	63854	505	240916	-4818	-226		-77	-5121	235795
4	63854	C68	2855	-57	-3			-60	2795
			243771	-4875	-229	0	-77	-5181	238590
4	63856	389	8080	-162	-8			-170	7910
			8080	-162	-8	0	0	-170	7910
	TOTAL BA 4		**570679**	**-11412**	**-537**	**-195**	**-285**	**-12429**	**558250**
5	64201	C97	15008	-300	-14			-314	14694
			15008	-300	-14	0	0	-314	14694
5	64220	538	1154	-23	-1			-24	1130
			1154	-23	-1	0	0	-24	1130
5	64223	327	296528	-5930	-278		-130	-6338	290190
5	64223	C72	42116	-842	-40			-882	41234
			338644	-6772	-318	0	-130	-7220	331424
5	64270	665	44579	-892	-42			-934	43645
5	64270	L12	16414	-328	-15	-6		-349	16065
5	64270	L15	3845	-77	-4			-81	3764
5	64270	L16	1288	-26	-1			-27	1261
5	64270	L18	9348	-187	-9		-1	-197	9151
			75474	-1510	-71	-6	-1	-1588	73886
5	64321	2FT	3767	-75	-4		-40	-119	3648
5	64321	B19	36433	-729	-34	-10		-773	35660
			40200	-804	-38	-10	-40	-892	39308

ARMY
FY97 COLUMN OF FY98/99 PRES BUD

			A	B	C	D	E	F (B+C+D+E)	G (A-F)
						Sec 8037			
BA	PE	Proj	FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
5	64325	E18	5596	-112	-5			-117	5479
			5596	-112	-5	0	0	-117	5479
5	64328	C71	1561	-31	-1		-5	-37	1524
			1561	-31	-1	0	-5	-37	1524
5	64604	H07	6000	-120	-6			-126	5874
			6000	-120	-6	0	0	-126	5874
5	64611	499	6143	-123	-6			-129	6014
			6143	-123	-6	0	0	-129	6014
5	64619	088	26909	-538	-25	-41	-17	-621	26288
			26909	-538	-25	-41	-17	-621	26288
5	64622	659	2000	-40	-2			-42	1958
			2000	-40	-2	0	0	-42	1958
5	64633	586	7549	-151	-7		-14	-172	7377
			7549	-151	-7	0	-14	-172	7377
5	64640	G27	7899	-158	-7			-165	7734
			7899	-158	-7	0	0	-165	7734
5	64641	E47	2884	-58	-3			-61	2823
			2884	-58	-3	0	0	-61	2823
5	64642	E40	3000	-60	-3			-63	2937
			3000	-60	-3	0	0	-63	2937
5	64645	175	6726	-135	-6			-141	6585
			6726	-135	-6	0	0	-141	6585
5	64649	G25	34837	-697	-33		-5	-735	34102
5	64649	G26	12873	-257	-12		-1	-270	12603
			47710	-954	-45	0	-6	-1005	46705

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FY97 COLUMN OF FY98/99 PRES BUD

			A	B	C	D	E	F (B+C+D+E)	G (A-F)
						Sec 8037		Tot Adj to	
BA	PE	Proj	FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Consulting Services	Approp Value	FY 97 Column on RDDS
5	64710	L69	18443	-369	-17	-8	-13	-407	18036
5	64710	L70	9482	-190	-9			-199	9283
5	64710	L74	7712	-154	-7			-161	7551
			35637	-713	-33	-8	-13	-767	34870
5	64713	548	809	-16	-1			-17	792
5	64713	667	48917	-978	-46			-1024	47893
5	64713	668	21598	-432	-20			-452	21146
5	64713	C40	1784	-36	-2			-38	1746
5	64713	L40	4955	-99	-5			-104	4851
			78063	-1561	-74	0	0	-1635	76428
5	64715	241	36752	-735	-35	-31		-801	35951
5	64715	396	2781	-56	-3			-59	2722
5	64715	573	10332	-207	-10			-217	10115
			49865	-998	-48	-31	0	-1077	48788
5	64716	579	7369	-147	-7	-50	-21	-225	7144
			7369	-147	-7	-50	-21	-225	7144
5	64739	702	4867	-97	-5			-102	4765
			4867	-97	-5	0	0	-102	4765
5	64741	126	20516	-410	-19	-9	-47	-485	20031
			20516	-410	-19	-9	-47	-485	20031
5	64746	L59	9793	-196	-9	-10	-3	-218	9575
			9793	-196	-9	-10	-3	-218	9575
5	64760	C73	10248	-205	-10			-215	10033
5	64760	C74	2632	-53	-2			-55	2577
5	64760	C77	3086	-62	-3			-65	3021
			15966	-320	-15	0	0	-335	15631
5	64766	909	15758	-315	-15	-136	-57	-523	15235
			15758	-315	-15	-136	-57	-523	15235

ARMY
FY97 COLUMN OF FY98/99 PRES BUD

			A	B	C	D	E	F	G
								(B+C+D+E)	(A-F)
						Sec 8037			
BA	PE	Proj	FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
5	64768	2NT	5	0	0			0	5
5	64768	641	68622	-1372	-64			-1436	67186
5	64768	687	19221	-384	-18			-402	18819
5	64768	688	77559	-1551	-73		-129	-1753	75806
			165407	-3307	-155	0	-129	-3591	161816
5	64770	202	9857	-197	-9	-12	-15	-233	9624
			9857	-197	-9	-12	-15	-233	9624
5	64778	168	437	-9	0			-9	428
			437	-9	0	0	0	-9	428
5	64780	571	26713	-534	-25	-44		-603	26110
			26713	-534	-25	-44	0	-603	26110
5	64801	C45	5518	-110	-5			-115	5403
			5518	-110	-5	0	0	-115	5403
5	64802	284	14108	-282	-13			-295	13813
5	64802	AS1	1600	-32	-2			-34	1566
5	64802	531	5176	-104	-5			-109	5067
5	64802	712	3284	-66	-3			-69	3215
			24168	-484	-23	0	0	-507	23661
5	64804	194	2230	-45	-2			-47	2183
5	64804	279	1444	-29	-1			-30	1414
5	64804	429	3261	-65	-3			-68	3193
5	64804	H01	9635	-193	-9			-202	9433
5	64804	H14	88	-2	0			-2	86
5	64804	L39	1677	-34	-2			-36	1641
5	64804	L41	1033	-21	-1			-22	1011
5	64804	L42	962	-19	-1			-20	942
			20330	-408	-19	0	0	-427	19903

ARMY
FY97 COLUMN OF FY98/99 PRES BUD

			A	B	C	D	E	F (B+C+D+E)	G (A-F)
						Sec 8037			
BA	PE	Proj	FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
5	64805	097	1715	-34	-2	-19		-55	1660
5	64805	098	569	-11	-1	-15		-27	542
5	64805	282	7031	-141	-7			-148	6883
5	64805	485	481	-10	0			-10	471
			9796	-196	-10	-34	0	-240	9556
5	64807	812	193	-4	0			-4	189
5	64807	832	1695	-34	-2			-36	1659
5	64807	834	884	-18	-1			-19	865
5	64807	849	2022	-40	-2			-42	1980
			4794	-96	-5	0	0	-101	4693
5	64808	016	5499	-110	-5			-115	5384
5	64808	415	2232	-45	-2	-5	-8	-60	2172
			7731	-155	-7	-5	-8	-175	7556
5	64814	2ST	309	-6	0		-3	-9	300
5	64814	644	9840	-197	-9			-206	9634
			10149	-203	-9	0	-3	-215	9934
5	64816	C87	5872	-117	-6			-123	5749
5	64816	C31	5000	-100	-5			-105	4895
			10872	-217	-11	0	0	-228	10644
5	64817	482	13886	-278	-13		-20	-311	13575
5	64817	901	2897	-58	-3			-61	2836
			16783	-336	-16	0	-20	-372	16411
5	64818	323	7784	-156	-7			-163	7621
5	64818	C34	8645	-173	-8	-290	-15	-486	8159
			16429	-329	-15	-290	-15	-649	15780
5	64823	L85	2551	-51	-2		-2	-55	2496
			2551	-51	-2	0	-2	-55	2496

ARMY
FY97 COLUMN OF FY98/99 PRES BUD

			A	B	C	D	E	F (B+C+D+E)	G (A-F)
						Sec 8037			
BA	PE	Proj	FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
5	64854	509	3000	-60	-3			-63	2937
			3000	-60	-3	0	0	-63	2937
	TOTAL BA 5		1166826	-23338	-1097	-686	-546	-25667	1141159
6	64256	976	11627	-233	-11			-244	11383
			11627	-233	-11	0	0	-244	11383
6	64258	238	6706	-134	-6	-2		-142	6564
6	64258	459	3423	-68	-3			-71	3352
			10129	-202	-9	-2	0	-213	9916
6	64759	983	2423	-48	-2			-50	2373
6	64759	984	32197	-644	-30	-19		-693	31504
6	64759	986	7105	-142	-7			-149	6956
			41725	-834	-39	-19	0	-892	40833
6	65103	732	21763	-435	-20	-200		-655	21108
			21763	-435	-20	-200	0	-655	21108
6	65301	614	146864	-2937	-138			-3075	143789
			146864	-2937	-138	0	0	-3075	143789
6	65502	770		0	0			0	0
6	65502	771		0	0			0	0
6	65502	802		0	0			0	0
6	65502	860		0	0			0	0
6	65502	861		0	0			0	0
6	65502	M40		0	0			0	0
			0	0	0	0	0	0	0
6	65601	618	12826	-257	-12			-269	12557
6	65601	630	4785	-96	-4			-100	4685
6	65601	632	1578	-32	-1			-33	1545
6	65601	E90	17418	-348	-16			-364	17054
6	65601	E91	35172	-703	-33			-736	34436
6	65601	E93	61233	-1225	-58	-5		-1288	59945
			133012	-2661	-124	-5	0	-2790	130222
					xxx				

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FY97 COLUMN OF FY98/99 PRES BUD

			A	B	C	D	E	F (B+C+D+E)	G (A-F)
						Sec 8037			
BA	PE	Proj	FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
6	65602	628	22413	-448	-21			-469	21944
			22413	-448	-21	0	0	-469	21944
6	65604	670	4879	-98	-5			-103	4776
6	65604	671	5818	-116	-5	-10		-131	5687
6	65604	672	3739	-75	-4			-79	3660
6	65604	675	5027	-101	-5			-106	4921
6	65604	677	5337	-107	-5			-112	5225
6	65604	678	5729	-115	-5			-120	5609
6	65604	679	814	-16	-1			-17	797
			31343	-628	-30	-10	0	-668	30675
6	65605	E97	30667	-613	-29	-51		-693	29974
			30667	-613	-29	-51	0	-693	29974
6	65606	092	2905	-58	-3		-4	-65	2840
			2905	-58	-3	0	-4	-65	2840
6	65702	128	6484	-130	-6			-136	6348
			6484	-130	-6	0	0	-136	6348
6	65706	026	4258	-85	-4			-89	4169
6	65706	541	10170	-203	-10			-213	9957
			14428	-288	-14	0	0	-302	14126
6	65709	650	3304	-66	-3			-69	3235
6	65709	C28	4043	-81	-4			-85	3958
			7347	-147	-7	0	0	-154	7193
6	65712	001	21021	-420	-20	-2	-224	-666	20355
6	65712	985	10545	-211	-10			-221	10324
6	65712	987	4396	-88	-4			-92	4304
6	65712	V02	14944	-299	-14			-313	14631
			50906	-1018	-48	-2	-224	-1292	49614

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FY97 COLUMN OF FY98/99 PRES BUD

			A	B	C	D	E	F (B+C+D+E)	G (A-F)
						Sec 8037			
BA	PE	Proj	FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
6	65801	M02	7355	-147	-7			-154	7201
6	65801	M15	3780	-76	-4			-80	3700
6	65801	M16	4045	-81	-4			-85	3960
6	65801	M42	5641	-113	-5			-118	5523
6	65801	M43	5002	-100	-5			-105	4897
6	65801	M44	5969	-119	-6			-125	5844
6	65801	M45	5487	-110	-5	-3	-1	-119	5368
6	65801	M46	2260	-45	-2			-47	2213
6	65801	M47	2632	-53	-2			-55	2577
6	65801	M53	12565	-251	-12	-85	-14	-362	12203
6	65801	M55	3179	-64	-3			-67	3112
6	65801	M58	390	-8	0			-8	382
6	65801	M75	2787	-56	-3			-59	2728
			61092	-1223	-58	-88	-15	-1384	59708
6	65802	798	1566	-31	-1			-32	1534
			1566	-31	-1	0	0	-32	1534
6	65803	720	2626	-53	-2		-9	-64	2562
6	65803	727	2870	-57	-3		-5	-65	2805
6	65803	729	2309	-46	-2			-48	2261
6	65803	730	3448	-69	-3			-72	3376
6	65803	733	2180	-44	-2			-46	2134
6	65803	C16	2798	-56	-3			-59	2739
6	65803	C18	690	-14	-1			-15	675
			16921	-339	-16	0	-14	-369	16552
6	65805	296	682	-14	-1			-15	667
6	65805	857	589	-12	-1			-13	576
6	65805	F21	280	-6	0			-6	274
6	65805	F24	1731	-35	-2			-37	1694
			3282	-67	-4	0	0	-71	3211
6	65853	0CC	1498	-30	-1			-31	1467
6	65853	1CC	115	-2	0			-2	113
6	65853	5CC	146	-3	0			-3	143
			1759	-35	-1	0	0	-36	1723

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			A	B	C	D	E	F (B+C+D+E)	G (A-F)
						Sec 8037			
BA	PE	Proj	FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
6	65854	0PP	546	-11	-1			-12	534
6	65854	1PP	143	-3	0			-3	140
6	65854	5PP	1957	-39	-2			-41	1916
6	65854	7PP	799	-16	-1			-17	782
6	65854	8PP	10449	-209	-10			-219	10230
			13894	-278	-14	0	0	-292	13602
6	65856	0VV	34856	-697	-33			-730	34126
6	65856	1VV	13972	-279	-13			-292	13680
6	65856	4VV	1500	-30	-1			-31	1469
6	65856	5VV	5083	-102	-5			-107	4976
			55411	-1108	-52	0	0	-1160	54251
6	65876	0WW	2766	-55	-3			-58	2708
6	65876	1WW	1062	-21	-1			-22	1040
6	65876	4WW	491	-10	0			-10	481
			4319	-86	-4	0	0	-90	4229
6	65878	0YY	50862	-1017	-48			-1065	49797
6	65878	1YY	15807	-316	-15			-331	15476
6	65878	4YY	3378	-68	-3			-71	3307
			70047	-1401	-66	0	0	-1467	68580
6	65879	0UU	62918	-1258	-59			-1317	61601
6	65879	1UU	24858	-497	-23			-520	24338
6	65879	4UU	4614	-92	-4			-96	4518
			92390	-1847	-86	0	0	-1933	90457
6	65896	0ZZ	148139	-2963	-138			-3101	145038
6	65896	1ZZ	64068	-1281	-60			-1341	62727
6	65896	4ZZ	12442	-249	-12			-261	12181
			224649	-4493	-210	0	0	-4703	219946
6	65898	M65	4801	-96	-5			-101	4700
6	65898	831	14000	-280	-13			-293	13707
			18801	-376	-18	0	0	-394	18407
	TOTAL BA 6		**1095744**	**-21916**	**-1029**	**-377**	**-257**	**-23579**	**1072165**

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			A	B	C	D	E	F (B+C+D+E)	G (A-F)
						Sec 8037			
BA	PE	Proj	FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
7	63778	027	27038	-541	-25		-50	-616	26422
7	63778	050	26324	-526	-25			-551	25773
7	63778	054	10909	-218	-10			-228	10681
			64271	-1285	-60	0	-50	-1395	62876
7	12419	E55	26940	-539	-25			-564	26376
			26940	-539	-25	0	0	-564	26376
7	23726	2ET	4933	-99	-5		-52	-156	4777
7	23726	322	34564	-691	-32	-42	-64	-829	33735
			39497	-790	-37	-42	-116	-985	38512
7	23735	280	3116	-62	-3			-65	3051
7	23735	2TT	2079	-42	-2		-22	-66	2013
7	23735	2UT	1460	-29	-1		-15	-45	1415
7	23735	330	71246	-1425	-67		-5	-1497	69749
7	23735	344	18298	-366	-17			-383	17915
7	23735	371	89635	-1793	-84		-5	-1882	87753
7	23735	718	11900	-238	-11			-249	11651
7	23735	C64	13562	-271	-13		-9	-293	13269
			211296	-4226	-198	0	-56	-4480	206816
7	23740	2HT	3895	-78	-4		-41	-123	3772
7	23740	484	25187	-504	-24	-491	-52	-1071	24116
			29082	-582	-28	-491	-93	-1194	27888
7	23744	430	17914	-358	-17			-375	17539
7	23744	504	250	-5	0			-5	245
7	23744	179	4700	-94	-4			-98	4602
			22864	-457	-21	0	0	-478	22386
7	23752	106	3947	-79	-4		-30	-113	3834
			3947	-79	-4	0	-30	-113	3834
7	23758	374	90180	-1803	-85	-112	-55	-2055	88125
7	23758	376	50000	-1000	-47			-1047	48953
			140180	-2803	-132	-112	-55	-3102	137078

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			A	B	C	D	E	F (B+C+D+E)	G (A-F)
						Sec 8037			
BA	PE	Proj	FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
7	23801	036	47291	-946	-44		-21	-1011	46280
7	23801	303	18668	-373	-18			-391	18277
			65959	-1319	-62	0	-21	-1402	64557
7	23802	2MT	390	-8	0		-4	-12	378
7	23802	304	4469	-89	-4			-93	4376
7	23802	045	3900	-78	-4			-82	3818
7	23802	336	1340	-27	-1		-10	-38	1302
			10099	-202	-9	0	-14	-225	9874
7	23806	C19	3179	-64	-3			-67	3112
			3179	-64	-3	0	0	-67	3112
7	23808	E11	6933	-139	-7		-21	-167	6766
			6933	-139	-7	0	-21	-167	6766
7	28010	107	18693	-374	-18	-55	-17	-464	18229
			18693	-374	-18	-55	-17	-464	18229
7	28053	635	2124	-42	-2		-3	-47	2077
			2124	-42	-2	0	-3	-47	2077
7	31359	381	9042	-181	-8			-189	8853
7	31359	382	394	-8	0			-8	386
7	31359	H87	1749	-35	-2			-37	1712
			11185	-224	-10	0	0	-234	10951
7	33140	491	2574	-51	-2	-6		-59	2515
7	33140	501	587	-12	-1			-13	574
			3161	-63	-3	-6	0	-72	3089
7	33142	253	17063	-341	-16	-451		-808	16255
7	33142	2PT	142	-3	0		-2	-5	137
7	33142	384	17217	-344	-16	-477	-222	-1059	16158
7	33142	386	1029	-21	-1			-22	1007
7	33142	455	878	-18	-1			-19	859
7	33142	456	4348	-87	-4		-18	-109	4239
			40677	-814	-38	-928	-242	-2022	38655

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			A	B	C	D	E	F (B+C+D+E)	G (A-F)
						Sec 8037			
BA	PE	Proj	FY 97 Approp Value	Sec 8136	Sec 8138	FFRDC	Consulting Services	Tot Adj to Approp Value	FY 97 Column on RDDS
7	33150	C86	19804	-396	-19			-415	19389
			19804	-396	-19	0	0	-415	19389
7	35128	H12	487	-10	0			-10	477
			487	-10	0	0	0	-10	477
7	78045	E25	48842	-977	-46			-1023	47819
			48842	-977	-46	0	0	-1023	47819
	TOTAL BA 7		769220	-15385	-722	-1634	-718	-18459	750761
			5062763	-101257	-4757	-3718	-2403	-112135	4930628

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Maintenance and Repair - Research, Development, Testing & Evaluation	0605878A	1261
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Manpower, Personnel and Training Advanced Technology	0603007A	381
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Tactical Surveillance System - Engineering Development	0604740A	842
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ALPHABETICAL LISTING

Program Element Title	PE	PAGE
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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	23443	66462	24138	12637	12623	12599	15637	15855	Continuing	Continuing
D989 Nautilus/THEL	0	44058	16457	0	0	0	0	0	0	60515
D990 Theater Missile Defense (TMD) System Integration	23443	2823	2685	2663	2656	2642	2811	2822	Continuing	Continuing
D997 Battle Integration Center	0	19581	4996	9974	9967	9957	12826	13033	Continuing	Continuing

Mission Description and Budget Item Justification: This program element funds systems analysis, studies, and experimentation designed to validate and integrate the pillars of Theater Missile Defense (TMD): active defense, passive defense, attack operations, and battle management/command, control, communications, computers, and intelligence functions. This integration program produces hardware and software solutions, doctrinal and procedural solutions, interfaces, and architectures; these inter-pillar and intra-pillar products, required to accomplish the integrated TMD mission, exceed the scope of other programs. This program element also funds the U.S. Army Space and Strategic Defense Command's Missile Defense Battle Integration Center (MDBIC) which is building a flexible, linked architecture of pre-existing live, virtual and constructive simulations. This distributed interactive simulation (DIS)-based architecture can operate in the regimes of training, exercises and military operations; advanced concepts and requirements; research, development and acquisition by integrating its simulation environment with other simulations and live entities to achieve a low-cost, high fidelity representation of the modern battlefield. In addition, 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 advanced technology development used 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 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D989

COST (*In Thousands*)	FY 1996 Actual	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
D989 Nautilus/THEL	0	44058	16457	0	0	0	0	0	0	60515

A. Mission Description and Justification: **Project D989-Nautilus/THEL:** These funds will complete the Tactical High Energy Laser (THEL) Advanced Concept Technology Demonstration (ACTD). 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 to deliver the THEL demonstrator by 31 March 1998. The letter contract was definitized about 19 January 1997.

FY 1996 Accomplishments: FY 1996 funds for this effort provided in PE 0605605A.

FY 1997 Planned Program:

- 37981 THEL ACTD design and fabrication.
- 1500 System engineering, analysis and subsystem integration activities.
- 2400 Program management.
- 1100 Government furnished property.
- 1077 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.

Total 44058

FY 1998 Planned Program:

- 12400 Completion of the THEL demonstrator integration and testing at TRW.
- 2000 System engineering, analysis and system integration activities.
- 2057 Program management.

Total 16457

FY 1999 Planned Program: Project not funded in FY 1999

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D989

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	0	0	0
Appropriated Value		44058		
Adjustments to Appropriated Value				
FY 1998 Pres Bud Request	0	44058	16457	0

Change Summary Explanation: Funding - FY 1997 (+44058) Congressional increase to support the THEL Demonstrator
FY 1998 funding reprogrammed (+16457) to complete the integration and testing of the THEL demonstrator.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Nautilus PE 0605605A	4747									7247
THEL PE 0605605A	4747									4747
Nautilus - Israel	1700									1700
THEL - Israel	20000	9500								29500

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
Initiate THEL ACTD				X												
Initiate Long Leads & Fabrication					X											
Complete Fabrication/Integration										X						
Complete TRW THEL ACTD Testing										X						

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D989

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
THEL Demonstrator		40581	14400	
Program Management		2400	2057	
SBIR/STTR		1077		
Total		44058	16457	

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
TRW	Letter/Sole Source	4th Qtr 96	89000	89000			37981	12400			50381
various	various	TBD					2600	2000			4600
Support and Management Organizations											
Govt Support and Support Contracts	MIPR CPFF	Various	TBD	TBD			2400	2057			4457
SBIR/STTR							1077				1077
Test and Evaluation Organizations											
Subtotal Product Development							40581	14400			54981
Subtotal Support and Management							3477	2057			5534
Subtotal Test and Evaluation											
Total Project							44058	16457			60515

Government Furnished Property: Not applicable

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D990

COST (*In Thousands*)	FY 1996 Actual	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
D990 Theater Missile Defense (TMD) System Integration	23443	2823	2685	2663	2656	2642	2811	2822	Continuing	Continuing

A. Mission Description and Justification: Project D990-TMD System Integration: Funds initiatives directed by U.S. Army Space and Strategic Defense Command (USASSDC) in its capacity as the U.S. Army advocate, integrator, and focal point for TMD operations. USASSDC is empowered by the Department of the Army to serve as the Department level, operational representative for theater missile defense. This program conducts 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. This integration program produces hardware and software solutions, doctrinal and procedural solutions, interfaces, and architectures; 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.

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

FY 1996 Accomplishments:

- 3532 Conducted systems analysis, studies, and experimentation designed to validate and integrate the pillars of TMD.
- 19911 Missile Defense Battle Integration Center funding;
  Provides upgraded to the Synthetic Theater of War (STOW) combat environment;
  Completed the development of the Distributed Interactive Simulation (DIS) interface;
  Provided the STOW environment in all tactical operations centers.

Total 23443

FY 1997 Planned Program:

- 2754 Conduct testing and exercising prototypical hardware and software related to integrated TMD operations, enhancements to models and simulations, systems analysis and studies regarding TMD issues.
- 69 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs.

Total 2823

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603308A Army Missile Defense Systems Integration PROJECT D990

FY 1998 Planned Program:

- 2685 Continue to conduct testing and exercising prototypical hardware and software related to integrated TMD operations, enhancements to models and simulations, systems analysis and studies regarding TMD issues.

Total 2685

FY 1999 Planned Program:

- 2663 Continue to conduct testing and exercising prototypical hardware and software related to integrated TMD operations, enhancements to models and simulations, systems analysis and studies regarding TMD issues.

Total 2663

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	23329	2884	2886	2877
Appropriated Value	23985	2823		
Adjustments to Appropriated Value	-542			
FY 1998 Pres Bud Request	23443	2823	2685	2663

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

D. Schedule Profile: Due to the continuous nature of these efforts, milestones or events cannot be provided.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603308A Army Missile Defense Systems Integration PROJECT D990

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Program Management Support	23443	2754	2685	2663
SBIR/STTR		69		
Total	23443	2823	2685	2663

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

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D997

COST (*In Thousands*)	FY 1996 Actual	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
D997 Battle Integration Center	0	19581	4996	9974	9967	9957	12826	13033	Continuing	Continuing

A. Mission Description and Justification: Project D997-Battle Integration Center: The Missile Defense Battle Integration Center (MDBIC) is developing and implementing a synthetic Army battlefield context for integrating missile defense and space assets; supporting requiring activities, materiel developers, and users with distributed, netted computing resources, models, and simulation efforts for warfighter exercise, analytical, and virtual prototyping activities. Provide the warfighter during exercises and deployments with a distributed synthetic battlefield training and planning environment, and with near real-time after action review (AAR) capability. The MDBIC supports the Army and Department of Defense in Cost and Operational Effectiveness Analyses and requirements analyses through the development and operation of an analytical modern battlefield. Enhance materiel development through virtual prototyping and user interface development. The MDBIC's Advanced Concept and Requirements Analysis and Research, Development and Acquisition simulation capabilities support the critical mission areas of Theater Missile Defense, Cruise Missile Defense, National Missile Defense, and Space Operations. The MDBIC's modeling and simulation capabilities interface with other DIS-compatible tools to conduct constructive, virtual and live simulation exercises; model Service and Allies' weapons in realistic scenarios; and develop databases and modeling for weather, tactics, terrain, threat, and advanced weapons integration. These funds will allow further development of the Synthetic Battlefield Environment (SBE) and SBE establishment at exercises, demonstrations, and experiments. In the future, this program will ensure that deploying soldiers will be virtually rehearsed against the force we are facing prior to their deployment. In essence, the American soldier will be a "Virtual Combat Veteran" before he is deployed.

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

FY 1996 Accomplishments: Project not funded in FY 1996

FY 1997 Planned Program:

- 4850 Participate in/support Army and joint exercises and warfighting experiments.
- 6925 Continue the development of the SBE, including required interfaces, to enhance the realism and fidelity of missile defense training, exercises, and testing.
- 2100 Conduct "stand alone" training and further develop AAR capabilities for Force XXI command and control entities and their crews and staffs.
- 2928 Continue research and development of advanced models and simulations to perform missile defense studies and analyses, by incorporating existing testbeds and migration to the DOD's High-Level Architecture (HLA).
- 2300 Provide modeling, simulation, and advanced visualization capabilities for senior decision makers via the Warfighting Analysis and Integration Center
- 478 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.

Total 19581

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603308A Army Missile Defense Systems Integration
	PROJECT D997

FY 1998 Planned Program:

•	3996	Provide a high fidelity, interactive, synthetic battlefield environment as a tool for hands-on training, missile defense integration, utilization in exercises, demonstrations, and Force XXI initiatives, evaluation of battlefield operational issues.
•	500	Develop virtual prototypes of potential battlefield systems.
•	500	Develop long-haul, distributed after action review capabilities.
Total	4996	

FY 1999 Planned Program:

•	5974	Update and provide a high fidelity, interactive, synthetic battlefield environment as a tool for hands on training, missile defense integration, utilization in exercises, demonstrations, Force XXI initiatives, and evaluation of battlefield operational issues.
•	1000	Continue development of virtual prototypes of potential battlefield systems.
•	1000	Implement and utilize long-haul, distributed after action review capabilities.
•	500	Continue migration to DOD high level architecture.
•	1500	Conduct follow-on missile defense and space operation support studies and analyses.
Total	9974	

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	0	0	0
Appropriated Value		19581		
Adjustments to Appropriated Value				
FY 1998 Pres Bud Request	0	19581	4996	9974

Change Summary Explanation: Funding - FY 97 (+19581) Congressional increase to support essential operational and developmental requirements of the MDBIC. FY 98/99 funding adjustments (+4996/+9974) for minimum essential operational and developmental requirements of the MDBIC.

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

D. Schedule Profile: Due to the continuous nature of these efforts, milestones or events cannot be provided.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY **4 - Demonstration and Validation**	PE NUMBER AND TITLE **0603308A Army Missile Defense Systems Integration**
	PROJECT **D997**

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
MDBIC Operations		19103	4996	9974
SBIR/STTR		478		
Total		19581	4996	9974

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

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	35768	27860	18882	11214	10609	17564	8600	9800	Continuing	Continuing
D005 Landmine Advanced Development	0	0	3767	4258	4241	0	0	0	0	12266
D606 Countermine/Barrier Advanced Development	35768	27860	15115	6956	6368	17564	8600	9800	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. Development of minefield command and control equipment will provide new capabilities in landmine warfare and will move the future Army toward the intelligent minefield. 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 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D005

COST (*In Thousands*)	FY 1996 Actual	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
D005 Landmine Advanced Development	0	0	3767	4258	4241	0	0	0	0	12266

A. Mission Description and Justification: This project will improve the capability of mines used by the United States Army and will move the future Army toward the intelligent minefield.

Acquisition Strategy: Intelligent Minefield (IMF) - competitive DEM/VAL contract followed by sole source EMD and initial production.

FY 1996 Accomplishments: Project not funded in FY 96

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program:

•	1100	Conduct interoperability study, trade-off analysis, system integration/analyses, and evaluate methods for Identification, Friend or Foe (IFF).
•	1315	Initiate design and development of gateway, advanced acoustic sensor, and control station.
•	1000	Initiate software algorithm development.
•	352	Test and evaluation.
Total	3767	

FY 1999 Planned Program:

•	1299	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	4258	

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D005

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget			3765	4259
Appropriated Value				
Adjustments to Appropriated Value				
FY 1998 Pres Bud Request			3767	4258

C. Other Program Funding Summary

	FY 1996	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	4968	5384				11255	11960	21786	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 trade-off studies											X					
Complete hardware fabrication and conduct contractor testing																X

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY **4 - Demonstration and Validation**	PE NUMBER AND TITLE **0603619A Landmine Warfare and Barrier - Advanced Development**
	PROJECT **D005**

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development			2215	2105
Test and Evaluation			352	1100
Government Engineering Support			813	853
Government Program Management			387	200
Total			3767	4258

B. Budget Acquisition History and Planning Information Not Applicable

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603619A Landmine Warfare and Barrier - Advanced Development
	PROJECT D606

COST (*In Thousands*)	FY 1996 Actual	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
D606 Countermine/Barrier Advanced Development	35768	27860	15115	6956	6368	17564	8600	9800	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), Anti-personnel Obstacle Breaching System (APOBS) , and Off-Route Smart Mine Clearance (ORSMC) . The program provides for proof-of-principle for these systems.

Acquisition Strategy: ASTAMIDS and HSTAMIDS - Sole source production contracts to be awarded at the conclusion of EMD to the winner of a competitive PDRR phase. PDRR phase consists of two competing contracts; ESMB - Competitive development contracts followed by award of a sole source production contract.

FY 1996 Accomplishments:

•	12485	Conducted system design and Preliminary Design Reviews for ESMB.
•	4479	Initiated Advanced Development design for HSTAMIDS.
•	10796	Completed ASTAMIDS development/fabrication of prototype.
•	3700	Conducted technical and Early User Tests of ASTAMIDS.
•	3644	Initiated effort to field ASTAMIDS prototype for Bosnia
•	350	Initiated effort to field HSTAMIDS prototypes for Bosnia
•	314	Completed Test and evaluation of APOBS fixes
Total	35768	

FY 1997 Planned Program:

•	5572	Complete technical test and evaluation for ESMB.
•	750	Conduct Milestone II Review for ESMB.
•	9342	Develop HSTAMIDS prototype
•	7500	Complete development design and fabricate prototype/test hardware for ASTAMIDS
•	1016	Conduct technical and early user tests for ASTAMIDS
•	3000	Evaluate alternative ASTAMIDS technologies as directed by Congress
•	680	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
Total	27860	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603619A Landmine Warfare and Barrier - Advanced Development
	PROJECT D606

FY 1998 Planned Program:

- 5611 Initiate Advance Development Design and fabricate prototypes for GSTAMIDS
- 1521 Conduct developmental and early user tests for GSTAMIDS
- 7283 Complete Advanced Development Design for HSTAMIDS
- 700 Prepare Milestone II IPR documentation and EMD solicitation package for ASTAMIDS

Total 15115

FY 1999 Planned Program:

- 6503 Continue Advanced Development Design for GSTAMIDS
- 453 Design/integration of sensors and platform (GSTAMIDS).

Total 6956

B. Project Change Summary	FY 1996	FY 997	FY 998	FY 999
FY 1997 President's Budget	32893	16464	6183	4959
Appropriated Value	32839	27860		
Adjustments to Appropriated Value	+2929			
FY 1998 Pres Bud Request	35768	27860	15115	6956

Change Summary Explanation:

Funding: FY 96 was increased (+3999) to fund ASTAMIDS/HSTAMIDS initiative to expedite delivery of prototypes to Bosnia but was offset by (-1070) of undistributed Congressional reductions and rescissions.
In FY97 transfer of $12M by direction of Congress from 0604808 D415 to continue ASTAMIDS DEM/VAL and evaluate alternative technologies.
In FY 98 funds were increased ($8.9M) to accelerate the initiation of GSTAMIDS and complete HSTAMIDS DEM/VAL phase.
In FY 99 funds were increased by $2.0M to accelerate GSTAMIDS.

Schedule: GSTAMIDS initiation advanced by six months. ASTAMIDS DEM/VAL phase extended to 4Q97

C. Other Program Funding Summary	FY 1996	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	1834	2172	22605	44133	41782	16275	13731	13807	Cont	Cont
OPA 3, A Appropriation										

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

DATE: February 1997

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 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
E72800, APOBS					5966	6965				12931
S11500, ASTAMIDS						11144	12003	12009	Cont	Cont
R68200, HSTAMIDS						5812	6830	7032	Cont	Cont
M80300, ESMB						3413	7413	7417	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
Conduct APOBS Flight Tests		X*														
Conduct System Design and Preliminary Design Reviews for ESMB	X*															
Initiate Adv Dev Design for HSTAMIDS			X*													
Complete ASTAMIDS Development/Fabrication of Prototype						X										
Initiate Development Tests and Early User Tests of ASTAMIDS							X									
Conduct Milestone II for ASTAMIDS								X								
Complete Technical Test and Conduct Milestone II Review for ESMB								X								
Conduct HSTAMIDS Technical Testing								X								
Conduct Milestone I for GSTAMIDS											X					
Complete Technical Test/IOT&E for HSTAMIDS											X					
Conduct Milestone II for HSTAMIDS												X				

*Milestone completed

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D606

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Development Primary Hardware	27518	19318	11556	5497
Test and Evaluation	1906	1350	1749	559
Government Engineering	5646	5512	1290	600
Government Program Management	698	1000	520	300
SBIR/STTR		680		
Total	35768	27860	15115	6956

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Raytheon	CPIF	Nov 93	29204	29204	17461	7943	3900			0	29304
Northrop/ Grumman	CPIF	Nov 93	19429	19429	14249	3770	1500			0	19519
Coleman Research	CPIF	May 96	6545	6545	0	1287	3160	2000		0	6447
GDE	CPIF	May 96	11663	11663	0	2042	5338	3883		0	11263
Tracor	CPIF	Dec 95	14503	14503	0	10995	3726			0	14721
TBD	TBD	TBD						5673	5497	Cont	11170
Misc.	Various	Various				2079	1694				3773
SBIR/STTR							680				680
Support and Management Organizations											
NVESD/CECOM						4419	3131	1290	550	Cont	9390
Misc.						1327	3381	520	350	Cont	5578
Test and Evaluation Organizations											
TECOM						1906	1350	1749	559	Cont	5564

Government Furnished Property: None

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603619A Landmine Warfare and Barrier - Advanced Development
	PROJECT D606

	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	31710	28116	19998	11556	5497		96877
Subtotal Support and Management		5746	6512	1810	900		14968
Subtotal Test and Evaluation		1906	1350	1749	559		5564
Total Project	31710	35768	27860	15115	6956		117409

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	2623	6246	0	0	0	0	0	5155	Continuing	Continuing
DE78 Target Defeating Systems	0	0	0	0	0	0	0	5155	Continuing	Continuing
DE79 Smoke, Obscurant - Advanced Development	2623	6246	0	0	0	0	0	0	0	8869

Mission Description and Budget Item Justification: U.S. Forces must be able to effectively neutralize and degrade directed 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 projected 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 1997

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 1996 Actual	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
DE79 Smoke, Obscurant - Advanced Development	2623	6246	0	0	0	0	0	0	0	8869

A. Mission Description and 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 light weight discharger and installation kits for the infantry HMMWV equipped TOW and Military Police HMMWV variants.

Acquisition Strategy: Project DE79 Smoke, Obscurant-Advanced Development: The LVOSS is an in-house effort and will be type classified from the demonstration/validation phase. A make or buy study is being conducted/coordinated with IOC during 2QFY97 for production of the LVOSS grenade.

FY 1996 Accomplishments:

•	60	LVOSS-Conducted Milestone I/II In-Process Review.
•	740	LVOSS-Completed Prototype Design Package.
•	950	LVOSS-Fabricated Pre-Production Test (PPT) Hardware.
•	873	LVOSS-Conducted PPT.
Total	2623	

FY 1997 Planned Program:

•	1800	LVOSS-Fabricate Production Qualification Test (PQT) Hardware.
•	2558	LVOSS-Conduct PPQT and Systems Operational Modeling.
•	1767	LVOSS-Systems Engineering, Planning and Documentation.
•	121	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	6246	

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 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DE79

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	3160	6380	5631	4798
Appropriated Value	3248	6246		
Adjustments to Appropriated Value	-625			
FY 1998 Pres Bud Request	2623	6246		

Change Summary Explanation:

Funding: Due to accelerated RDTE, funds moved to procure LVOSS (FY98 -5631/FY99 -4798).
Funds reprogrammed to higher priority requirements (FY 96 -537).

C. Other Program Funding Summary

	FY 1996	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	1915	0	0	703	937	2552	4814	8362	Cont'd	Cont'd
OPA-3 Appropriation										
G70700 - LVOSS			2164	4752	2317				0	9233
M99104 - M157 Smoke Generator	5052	3472								8524

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
LVOSS-Conduct Milestone I/II IPR	X*															
LVOSS-Fabricate PPT Hardware		X*														
LVOSS-Conduct PPT				X*												
LVOSS-Fabricate PQT Hardware						X										
LVOSS-Conduct PQT							X									
LVOSS-Systems Engineering Planning and Documentation Complete							X									
LVOSS-IOTE								X								

*Milestone completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
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 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development	285	385		
Development Spt Equipment Acquisition	85	85		
Systems Engineering	351	505		
Integrated Logistics Support	95	115		
Quality Assurance	85	85		
Reliability, Maintainability and Availability	75	75		
Configuration Management	85	175		
Technical Data	187	300		
Production Qualification Test	626	2258		
Initial Operational Test and Evaluation		1200		
Contractor Engineering Support	95	150		
Government Engineering Support	400	367		
Program Management	254	425		
SBIR/STTR		121		
Total	2623	6246		

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

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603640A Artillery Propellant Development

PROJECT: DB91

COST (*In Thousands*)	FY 1996 Actual	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
DB91 Artillery Propellant Development	20811	8322	8521	0	0	0	0	0	0	116329

A. **Mission Description and Budget Item Justification**: This program element is a dual-faceted program focused on efforts associated with development of the Modular Artillery Charge System (MACS) and the 155mm Advanced Solid Propellant Armament (ASP-A). The MACS is a solid propellant charge system consisting of two different types of charge increments, designated the XM231 and XM232. Each of these increments contains propellant, center core ignition elements, wear additives, flash and blast reducers and decoppering agent in a combustible case. MACS achieves zoning through the use of multiple increments of XM231 and XM232. MACS continues the older unicharge development which used a single charge increment, the XM230, to achieve zoning. The ASP-A consists of the XM297 Cannon, its Laser Ignition System (LIS), the XM200 Gun Mount and the XM194 Gun Mount. The XM297, LIS and the XM200 are being developed for the Crusader self-propelled howitzer (SPH). The XM194 is being developed to allow "bolt-in/bolt-out" integration of the XM297 into the M109A6 Paladin SPH. Since the ASP-A was selected as the primary armament system for Crusader, beginning in FY97, ASP-A is funded in PE 0603854, Project D505. This program element focuses on the technology demonstration and validation of the MACS and the 155mm ASP-A and is correctly placed in Budget Activity 4.

Acquisition Strategy: Not applicable

FY 1996 Accomplishments:

- 18358 MACS: Continued development and supported the XM297 program; ASP-A: Continued development of the XM297 cannon and its laser ignition system; initiated development of the XM200 gun mount.
- 600 Provided project management support and management engineering services.
- 1853 ASP-A: Continued XM297 Engineering Development Testing (EDT), including completion of EDT phases 7 and 8 and second pre-fatigue test; started the third pre-fatigue test; hydraulic fatigue testing of two each XM297 tubes and breeches.

Total 20811

FY 1997 Planned Program:

- 6186 Continue development of MACS for 39 and 59 caliber type classification.
- 600 Provide project management support and management engineering services.
- 1333 Initiate preliminary testing for 39 caliber type classification.
- 203 Small Business Innovation Research /Small Business Technology Transfer (SBIR/STTR) Programs

Total 8322

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603640A Artillery Propellant Development PROJECT DB91

FY 1998 Planned Program:

- 7821 Continue development of MACS for 52 caliber type classification.
- 300 Project management support and management engineering services.
- 400 Conduct Milestone III testing for type classification of MACS at 39 caliber.

Total 8521

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	21347	18450	9188	0
Appropriated Value	21946	8322		
Adjustments to Appropriated Value	-1135			
FY 1998 President's Budget Request	20811	8322	8521	0

Change Summary Explanation: Funding: FY 97 Congressional decrement of 10128

C. Other Program Funding Summary	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Comp	Total Cost
Procurement, Ammo, Army, ER 8021					28818	40339	64516	67660	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
Acquisition Milestones																
Milestone II IPR (MACS)				X*												
Milestone III IPR (MACS - XM231)												X				
Engineering Milestones																
Combustible Case Design Freeze (MACS)				X												
Initiate Production Readiness Review XM231/XM232					X											
Production Readiness Review XM231											X					
XM297 Cannon Milestones - 2nd Pre-Fatigue Test				X*												

* Milestone completed

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603640A Artillery Propellant Development

PROJECT: DB91

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Product Development	18358	6186	7821	0
Support and Management	600	600	300	0
Test and Evaluation	1853	1333	400	0
SBIR/STTR		203		
Total	20811	8322	8521	

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
ARMTEC Defense Products, Coachella, CA	SS/CPIF	Aug 92	9539	9539	3944	1569	1826	2200		0	9539
Olin Corp, St. Petersburg, FL	FF	Jul 94	640	640	640					0	640
Olin Corp, Marion, IL (Load Assembly & Pk)	FF	Sep 94	4760	4760	1297	287	889	2287		0	4760
DSTI, Greenbelt, MD	FF	May 94	2223	2223	1265	958				0	2223
Hi Shear, Torrence, CA	FF	Mar 95	147	147	147					0	147
Other contracts ($100K or less)					837	522	420	100		0	1879
ARDEC, Picatinny Arsenal, NJ, Rock Island, IL, Watervliet Arsenal, NY	PO				58152	11594	2311	2684		0	74741

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

DATE: February 1997

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Radford Army Ammunition Plant, VA, Hercules Inc.	FFP				2474	1573				0	4047
Army Research Laboratory, Adelphi, MD	PO				2704	1331	470	450		0	4955
Wright-Paterson AFB, Dayton, OH	PO				100	51	270			0	421
Various activities ($100K or less)					616	473		100		0	1189
SBIR/STTR							203				203
Support and Management Organizations											
ARDEC, Picatinny Arsenal, NJ, Various activities	PO				2958	600	600	300		0	4458
Test and Evaluation Organizations											
TECOM, Yuma, AZ	PO				2944	1453	933			0	5330
ARDEC, Picatinny Arsenal, NJ	PO				597	400	400	400		0	1797
Government Furnished Property: None											
Subtotal Product Development					72176	18358	6389	7821			104744
Subtotal Support and Management					2958	600	600	300			4458
Subtotal Test and Evaluation					3541	1853	1333	400			7127
Total Project					78675	20811	8322	8521			116329

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	181647	7803	2007	2008	20496	61894	94697	114741	Continuing	Continuing
DB88 Crusader Resupply Vehicle - Advanced Development	45923	0	0	0	0	0	0	0	0	127370
DQ19 Future Combat System	0	7803	0	0	2004	24843	28877	38457	Continuing	Continuing
D018 Future Scout Vehicle (FSV) - Advanced Development	0	0	2007	2008	18492	37051	65820	76284	Continuing	Continuing
D409 Crusader Self-Propelled Howitzer - Advanced Development	135724	0	0	0	0	0	0	0	0	546347

Mission Description and Budget Item Justification: On 15 Nov 94, the Crusader Projects (DB88 and D409) were approved by the Defense Acquisition Board to proceed into the Demonstration and Validation phase. The Crusader system is the Army's next generation self-propelled howitzer and artillery resupply vehicle for Force XXI. This system will provide an overmatching fire power capability that will support the force commander's goal of dominating the maneuver battle and will incorporate advanced technologies to increase accuracy, rate of fire, survivability, mobility and ammunition handling speed, and decreased crew size. When fielded, Crusader will displace the M109A6 Paladin self-propelled Howitzer and M992 Field Artillery Ammunition Supply Vehicle in rapidly deployable and forward deployed forces. Continuation of Crusader Demonstration and Validation is in PE 0603854A, Project D505. These Crusader projects were combined in FY 97 based on the 14 Nov 94 DAB review. Project DQ19 invests in high pay-off advanced technologies applicable to Abrams series tanks. The Army plans to develop and incorporate a series of fire control, survivability and automotive enhancements to the M1A1 and M1A2 fleet. Several candidates' technologies are being currently evaluated for the optimum solution to anticipated threat systems. Project D018 funds the development and demonstration phase of the Future Scout Vehicle (FSV). The FSV 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 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DB88

COST (*In Thousands*)	FY 1996 Actual	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
DB88 Crusader Resupply Vehicle - Advanced Development	45923	0	0	0	0	0	0	0	0	127370

A. Mission Description and Justification: The Crusader Resupply Vehicle (RSV) will increase ammunition payload and will provide automated, rapid transfer of ammunition, propellant and fuel to the Crusader self-propelled howitzer (SPH). The RSV will support the decentralized and continuous operations of the SPH, thereby increasing SPH mission effectiveness. Automation and robotics in the RSV will allow crew reduction resulting in life cycle cost benefits over the current system. The RSV will have increased ballistic and non-ballistic survivability features. Mobility improvements will allow the Crusader system to keep up with the maneuver force. Beginning in FY 97 this project merges into a single project along with D409 to form D505 Crusader - AD, PE 0603854A, Artillery Systems Advanced Development.

Acquisition Strategy: None Applicable

FY 1996 Accomplishments:

•	36249	Performed Development Phase I/II Contract Efforts; Downselected to Solid Propellant (SP) due to affordability and risk concerns; Conducted System Functional Review (SFR) and commenced preliminary design
•	7949	Continued Product Development Team support, management of the propellant technology and other management support
•	1725	Continued Management Support
Total	45923	

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	59386	0	0	0
Appropriated Value	61054			
Adjustments to Appropriated Value	-15131			
FY 1998 President's Budget Request	45923	0	0	0

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DB88

Change Summary Explanation: Funding: The FY 96 reduction is a result of an approved reprogramming (-12668) and undistributed Congressional reductions and rescissions (-2463).

C. Other Program Funding Summary	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Comp	Total Cost
RDTE, A Budget Activity 5										
PE 0604854A, Project D503 Crusader - ED					311211	434690	433920	202648	Cont	Cont
PE 0604854A, Project D2KT Crusader				499	1156	107	109	3485	Cont	Cont
Operational Test										
RDTE, A Budget Activity 4										
PE 0603854A, Project D505 Crusader - AD		235795	322291	293920	47102				0	921802

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
Conduct SFR and begin preliminary design			X*													

* Milestone completed

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DB88

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Development Requirements Analysis/Component Maturation Phase I & II Contract	36249			
Contractor Engineering Support	1255			
Government Engineering Support	6694			
Program Management Support	1725			
Total	45923			

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
United Defense LP	SS/CPIF	Sep 94	TBD	TBD	22698	36249				0	58947
Martin Marietta, Burlington, VT	SS/CPFF	Mar 93	5565	5565	5565					0	5565
ARDEC, Picatinny Arsenal, NJ	PO				1000	1000				0	2000
Support and Management Organizations											
Dept of Energy - Oak Ridge Nat'l Labs, TN	MIPR				17287					0	17287
PM-Crusader, Picatinny Arsenal, NJ					2851	1725				0	4576
ARDEC, Picatinny Arsenal, NJ	PO				17638	3322				0	20960
Other Field Activities	PO				5603	2372				0	7975

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DB88

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Various other contracts					8805	1255				0	10060
Test and Evaluation Organizations											
TECOM, Yuma Proving Grd, AZ	PO										
Government Furnished Property: None											
Subtotal Product Development					29263	37249					66512
Subtotal Support and Management					52184	8674					60858
Subtotal Test and Evaluation											
Total Project					81447	45923					127370

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DQ19

COST (*In Thousands*)	FY 1996 Actual	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
DQ19 Future Combat System	0	7803	0	0	2004	24843	28877	38457	Continuing	Continuing

A. Mission Description and Budget Item Justification: The Army plans to maintain the capabilities of the Abrams tank with limited improvements until the 2015 to 2020 timeframe when a replacement to the Abrams will be needed. High payoff improvements will be investigated and produced where funding is available. The replacement to the Abrams, called the Future Combat System (FCS), will incorporate, to the extent possible, leap ahead capabilities in lethality, fire control, mobility, survivability, target acquisition, and sustainability.

Acquisition Strategy: The Army will maximize investments in the science and technology base for the selection of high payoff improvements to the Abrams tank. General Dynamics Land Systems Division (GDLS) will remain the prime contractor for integration development and production. The acquisition strategy for the FCS has not been formed, but it will maximize competition in development and production. For FCS, emphasis is being placed on the choice of a main armament system, which will be the principal driver of virtually all other aspects of the design.

FY 1996 Accomplishments: Program not funded in FY 96

FY 1997 Planned Program:

•	3100	Investigate improvements to M1A2 tank lethality ($1.0M) and FCS concept studies ($2.1)
•	2700	Analyze automotive improvements
•	1300	Propose M1A1 Command and Control improvements incorporating digital technology
•	512	Provide Government Support
•	191	Small Business Innovation Research / Small Business Technology Transfer (SBIR / STTR) Programs
Total	7803	

FY 1998 Planned Program: Program not funded in FY 98

FY 1999 Planned Program: Program not funded in FY 99

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DQ19

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	0	0	0
Appropriated Value		7803		
Adjustments to Appropriated Value				
FY 1998 President's Budget Request	0	7803	0	0

Change Summary Explanation: Funding: FY 97 (+7803) Congressional increase.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Abrams IOTE (D2UT)	0	1415	0	0	0	0	0	0	0	1415
Abrams Improvement Program (D330)	40691	69749	33287	6421	2982	3973	9923	34805	Con't	Con't

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
Engineering Studies Completed												X				
Critical Design Review-M1A1Digitization										X						

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DQ19

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
M1A2 Tank Lethality & FCS Concept Analyses		3100		
Automotive Analysis		2700		
M1A1 Command and Control Improvements		1300		
Government Support		512		
SBIR/STTR		191		
Total		7803		

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
GDLS Sterling Hgts, MI		TBD					3900			Con't	3900
TBD		TBD					3200			Con't	3200
SBIR/STTR							191				191
Support and Management Organizations											
PMO / TARDEC Warren, MI	MIPR						512			Con't	512
Test and Evaluation Organizations											
TBD		TBD								Con't	
Government Furnished Property		Not Applicable									
Subtotal Product Development							7291				7291
Subtotal Support and Management							512				512
Subtotal Test and Evaluation											
Total Project							7803				7803

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D018

COST (*In Thousands*)	FY 1996 Actual	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
D018 Future Scout Vehicle (FSV) - Advanced Development	0	0	2007	2008	18492	37051	65820	76284	Continuing	Continuing

A. Mission Description and Justification: The Future Scout Vehicle (FSV), also known as the Future Scout and Cavalry System (FSCS), is the Army's next generation ground reconnaissance and intelligence gathering, combat vehicle system. FSV 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: Current plans call for the competitive selection of a system integrator who will be given responsibility for joint development of an FSV design concept. Extensive modeling and simulation will be utilized to meet and finalize system requirements, verify and validate the requirements, and establish a design definition baseline. The baseline will support follow-on Engineering and Manufacturing Development (EMD). The US Government is also attempting to establish an international cooperative effort with the United Kingdom to share development costs in, at a minimum, the Program Definition and Risk Reduction of a FSV program.

FY 1996 Accomplishments: Project not funded in FY 96

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program:

•	2007	Initiate Project Management (PM); Integrated Product Team Studies
Total	2007	

FY 1999 Planned Program:

•	2008	Continue Project Management; Integrated Product Team Studies
Total	2008	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603645A Armored Systems Modernization - Advanced Development
	PROJECT D018

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	0	0	0
Appropriated Value				
Adjustments to Appropriated Value				
FY 1998 President's Budget Request			2007	2008

Change Summary Explanation: Increases in FY 98 (+2007) and FY 99 (+2008) due to program initiation.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
PE 604645A, D022 - Future Scout Vehicle								33338	Cont	Cont

D. Schedule Profile None

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D018

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Project Management			2007	2008
Total			2007	2008

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations: None											
Support and Management Organizations											
PM Office and IPT	MIPR							2007	2008	Cont	Cont
Test and Evaluation Organizations: None											

Government Furnished Property None

Subtotal Product Development											
Subtotal Support and Management								2007	2008	Cont	Cont
Subtotal Test and Evaluation										Cont	Cont
Total Project								2007	2008	Cont	Cont

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D409

COST (*In Thousands*)	FY 1996 Actual	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
D409 Crusader Self-Propelled Howitzer - Advanced Development	135724	0	0	0	0	0	0	0	0	546347

A. Mission Description and Justification: The Crusader self-propelled howitzer (SPH) is the Army's next generation 155mm SPH system providing high payoff technology capabilities in support of the maneuver force. This project develops AFAS Advanced Technology Demonstrator (ATD); matures the alternative gun technology; matures packaging and formulation of the advanced propellant; matures the fire control/artillery componentry; and, provides funding for the Development Phases I/II efforts. SPH requirements include leap-ahead capabilities in range, rate-of-fire, sustained fire, time-on-target, accuracy, responsiveness, automated ammunition handling/resupply, reduced crew size and survivability. Beginning in FY 97 this project merges into a single project along with DB88 to form D505 Crusader - AD, PE 0603854A, Artillery Systems Advanced Development.

FY 1996 Accomplishments:

•	126548	Product Development - Continued developmental efforts under the Development Phases I/II contract; Downselected to solid propellant due to affordability and risk concerns; Conducted System Functional Review and commenced preliminary design
•	8302	Support and Management - Continued project management efforts, to include scientific and engineering management services
•	874	Test and Evaluation - Began contractor Development Test and Evaluation under the Development Phases I/II contract
Total	135724	

FY 1997 Planned Program: Program not funded in FY 97

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 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	126866	0	0	0
Appropriated Value	130459			
Adjustments to Appropriated Value	+5265			
FY 1998 President's Budget Request	135724	0	0	0

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D409

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, A Budget Activity 5					311211	434690	433920	202648	Cont	Cont
PE 0604854A, Project D503 Crusader - ED										
RDTE, A Budget Activity 5				499	1156	107	109	3485	Cont	Cont
PE 0604854A, Project D2KT Crusader Operational Test										
RDTE, A Budget Activity 4		235795	322291	293920	47102				0	921802
PE 0603854A, Project D505 Crusader - AD										
RDTE, A Budget Activity 5	6058	6585							0	36459
PE 0604645A, Project D175 MOFA										

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
Conduct SFR and begin preliminary design			X*													

* Milestone completed

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D409

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Product Development	126548			
Support and Management	8302			
Test and Evaluation	874			
Total	135724			

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
United Defense, Minneapolis, MN	Comp/CPIF	May 91	76173	76173	76173					0	76173
Martin Marietta, Pittsfield, MA	SS/CPIF/CPF F	Jan 92	TBD	100799	100799					0	100799
United Defense, Minneapolis, MN	SS/CPIF	Sep 94	TBD	TBD	83997	116504				0	200501
ARDEC, Picatinny Arsenal, NJ, Watervliet Arsenal, NY, Rock Island Arsenal, IL	PO				63042	5087				0	68129
ARL, Aberdeen Proving Grd, MD/ Watertown, MA	PO				11799	1294				0	13093
Olin, Charleston, TN	SS/FFP	Sep 93	1988	1988	1988					0	1988

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D409

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Grumman, Bethpage, NY		Nov 93	4275	4275	4275					0	4275
Martin Marietta, Pittsfield, MA	Comp/CPFF	Jan 93	4204	4204	4204					0	4204
LB&M, Lawton, OK	Comp/CPFF	Feb 93	1806	1806	1806					0	1806
Various OGA's and Contractors					23521	3663				0	27184
Support and Management Organizations											
PM Crusader, Picatinny Arsenal, NJ					9372	2889				0	12261
ARDEC, Picatinny Arsenal, NJ	PO				13172	4909				0	18081
TRW, Redondo Beach, CA					3503					0	3503
Various OGA's and Contractors					1612	504				0	2116
Test and Evaluation Organizations											
TECOM, Yuma Proving Grd, AZ; CSTA, Aberdeen Proving Grd, MD	PO				4885	874				0	5759
Morton Thiokol, Elkton, MD	SS/FPI	May 93	3307	3307	3307					0	3307
Olin, Charleston, TN	SS/FPI	May 93	3168	3168	3168					0	3168
TBD-Ammo Purchase		TBD	TBD	TBD	N/A						

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY **4 - Demonstration and Validation**	PE NUMBER AND TITLE **0603645A Armored Systems Modernization - Advanced Development**
	PROJECT **D409**

Government Furnished Property: None

	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	371604	126548					498152
Subtotal Support and Management	27659	8302					35961
Subtotal Test and Evaluation	11360	874					12234
Total Project	410623	135724					546347

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DG24

COST (*In Thousands*)	FY 1996 Actual	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
DG24 M1 Breacher	13591	0	0	0	0	0	0	0	0	72458

A. **Mission Description and Budget Item Justification:** The Grizzly (M1 Breacher) will be developed around the M1 Abrams tank chassis and will integrate a versatile/survivable full-width mine clearing blade with reactive depth control, a power driven excavating arm, and a commander's armored control station. The Grizzly 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 will be as survivable as, the force it is supporting. This program element/project is correctly placed in Budget Activity 4, focusing on efforts associated with advanced technology development to include demonstration and validation in the areas of mine clearing blade reactive depth control, power bus, vetronics, survivability, and hydraulics.

Acquisition Strategy: Research and development efforts have leveraged the accomplishments of the Combat Mobility Vehicle Advanced Technology Transition Demonstrator (CMV-ATTD) contract. Design modifications have been written into the Advanced Development contract for the powertrain and other chassis components/systems necessary to insure that the Grizzly will meet 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.

FY 1996 Accomplishments:

- 1100 Completed Government Development Testing and Conducted Early User Testing
- 10118 Refined Design, Validated Logistics Functions, and Applied Engineering Changes
- 2073 Provided Government/Contractor Program Management and System Engineering
- 300 Completed Dem/Val

Total 13591

FY 1997 Planned Program: The project transitions to PE 0604649A, DG25, for the Engineering and Manufacturing Development (EMD).

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 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DG24

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget Request	9839	0	0	0
Appropriated Value	10115			
Adjustments to Appropriated Value	+3476			
FY 1998 President's Budget Request	13591	0	0	0

Change Summary Explanation:

Funding: FY 1996 (+3476) funding increase was required to extend the Demonstration and Validation phase.
Schedule: Milestone II was accomplished in December 1996 and approval was received to enter the EMD phase.
Technical: Testing validated system performance allowing the Grizzly program to enter EMD.

C. Other Program Funding Summary

	FY 1996	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	6501	34102	43748	51420	58745	39210	19294			253020
PA, WTCV, GZ3200, Breacher MOD				10444	10964	83399	86313	125900	Cont'd	Cont'd
PA, WTCV, GEO175, Breacher Spares							2334	2666	Cont'd	Cont'd
PA, WTCV, G84000, Breacher Trng Dev						397	15726	1527		17650

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
Conduct Development and Early User Testing		X*														
Conduct Milestone II Review					X*											
Award EMD Contract						X*										

* Milestone Completed

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DG24

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Development Engineering	6650			
Logistics Support	2050			
System Test & Evaluation	2518			
System Management	2373			
Total	13591			

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
United Defense, York, PA	SS-CPIF	Sep 92 (K Mod)	60554	60554	49948	10606					60554
Other Contracts	Various	Various			645	166					811
Support and Management Organizations											
TACOM Warren, MI					4901	1488					6389
ANAD Anniston, AL					250						250
Other Gov't Agencies					1225	231					1456
Contract Support to Milestone Rev					230						230
Test and Evaluation Organizations											
TECOM APG, MD					856	780					1636

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

DATE: February 1997

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 1996	FY 1996	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	653	320					973
Subtotal Product Development				50752	10772					61524
Subtotal Support and Management				6606	1719					8325
Subtotal Test and Evaluation				1509	1100					2609
Total Project				58867	13591					72458

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603653A Advanced Tank Armament System

PROJECT: DB99

COST (*In Thousands*)	FY 1996 Actual	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
DB99 Advanced Tank Armament System	9335	11395	8982	8928	15070	26420	31726	25150		141779

A. Mission Description and Budget Item Justification: Our success in Desert Storm was due in large part to the superiority of our armament systems over those of the Iraqi Army. We were able to see, hit and kill the enemy long before they were even aware of our presence. The goal of the Advanced Tank Armament System (ATAS) program is to maintain our 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.

The ATAS Program has two main phases. Phase I develops and demonstrates, in FY 97, 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 develops and matures a highly lethal tank main gun, the XM291, that can kill advanced enemy tanks at long range. Phase II also develops advanced fire control system components consisting of a Continuous Muzzle Reference System, an Equilibrated Gun Turret Drive System, improved ballistics and target state estimating system. In FY 97, the program will study the inclusion of a compact autoloader for an FY 99 test in the ATAS Phase II, M1A2 test vehicle. Maturation of the XM291 gun (including redesign for low cost M1A2 installation) and the gun stabilization system will continue through FY 98. This includes wear resistant barrel coatings applied to the XM291 gun tubes to reduce gun barrel erosion, and modifications to the XM291 gun and the stabilization system to reduce gun vibration and increase fire-on-the move accuracy. These gun components, and possibly an autoloader, will be tested and integrated into an M1A2 tank for a technology demonstration in FY 99. ATAS technology will be applied to Future Weapon Systems platforms such as the Future Scout and Cavalry Vehicle and Future Combat System in both large and medium caliber to reduce the overall cost of Army weapon systems' development. The XM291 gun, advanced gun stabilization system, and autoloader coupled with the advanced fire control system components allow the tank crew to engage enemy targets at increased ranges, faster and more accurately than currently fielded systems. XM291 gun Engineering Manufacturing Development (EMD) will begin in FY 00 to prepare the cannon for possible integration into the Abrams tank.

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 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603653A Advanced Tank Armament System
	PROJECT DB99

FY 1996 Accomplishments:

•	1600	Gun Technology - continued gun maturation program
•	900	Phase I - designed/fabricated/integrated autotarget tracker hardware/software for M1A2 tank
•	6835	Phase II - procured objective fire control hardware, began software integration, initiated turret integration study
Total	9335	

FY 1997 Planned Program:

•	1600	Gun Technology - continue gun maturation program including redesign of the gun mount for low cost M1A2 installation
•	600	Phase I - complete autotarget tracker demonstration
•	6967	Phase II - complete fire control component hardware/software integration, continue turret integration study
•	2000	Ruggedize the Compact Autoloader design
•	228	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
Total	11395	

FY 1998 Planned Program:

•	300	Phase II - complete fire control component testing
•	1930	Phase II - design/apply coatings to XM291 gun tubes
•	2662	Phase II - design/ fabricate modified XM291 gun
•	1130	Phase II - continue turret integration
•	2960	Phase II - design/fabricate stabilization system
Total	8982	

FY 1999 Planned Program:

•	1370	Phase II - test coatings
•	2120	Phase II - test XM291 gun, stabilization system and autoloader as components
•	4838	Phase II - integrate XM291 gun, stabilization system and into M1A2 test tank
•	600	Phase II - test complete XM291 gun, stabilization system
Total	8928	

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	9683	9639	9686	9693
Appropriated Value	9955	11395		
Adjustments to Appropriated Value	-620			
FY 1998 President's Budget Request	9335	11395	8982	8928

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603653A Advanced Tank Armament System
	PROJECT DB99

C. Other Program Funding Summary: Not applicable

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 the improved gun stabilization test (Core Technology)		X*														
Complete hardware/software integration for Autotracker Demo (Phase I)				X*												
Complete Autotracker Demonstration (Phase I)						X										
Procure Objective Hardware	X*															
Initiate Gun Maturation		X*														
Initiate Phase II turret integration only				X*												
Begin integration of Phase II software with hardware				X*												
Complete Phase II fire control hardware/ software integration								X								
Award Compact Autoloader Contract						X										
Ruggedize Autoloader Design								X								
Complete Phase II fire control testing												X				
Begin Gun Tube Coating Analysis										X						
Apply Coatings to Gun Tubes												X				
Complete Gun Tube wear testing													X			
Begin XM291 Gun modification									X							
Finish XM291 modification fabrication													X			
Design Stabilization system & autoloader											X					
Test XM291 Gun, stab system													X			
Begin XM291 System/M1A2 integration													X			
Complete XM291 System /M1A2 integration														X		
Begin XM291 Gun System testing															X	
Complete XM291 Gun System testing																X

*Milestone Completed

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603653A Advanced Tank Armament System

PROJECT: DB99

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development/Contractor	7135	7981	5490	5739
Primary Hardware Development/Government	700	2186	2432	1829
Quality Assurance/ARDEC	300	500	350	350
Developmental Test & Evaluation	600	100	300	600
Program Management (PM-TMAS)	600	400	410	410
SBIR/STTR		228		
Total	9335	11395	8982	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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Texas Instruments	C-CPFF	Sep 90		20575	2733	6935	4181	1900	1939		17688
Benet Laboratories	OGA				1600	800	1886	2432	1829	63166	71713
Hughes Aircraft	SS-CPFF	Jan 93		240	40	100	100				240
GDLS							2000	3590	3800		9390
Western Design Howden							1700				1700
ARDEC	OGA				200		300				500
SBIR/STTR							228				228
Support and Management											
PM-TMAS/ARDEC					100	900	900	760	760	9700	13120
Test and Evaluation											
CSTA					100	600	100	300	600	25500	27200

Government Furnished Property: Not Applicable

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603653A Advanced Tank Armament System PROJECT DB99

	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	4773	9335	11395	8982	8928	98366	141779
Subtotal Support and Management							
Subtotal Test and Evaluation							
Total Project	4773	9335	11395	8982	8928	98366	141779

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603713A Army Data Distribution System

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	6360	23170	21214	10049	5074	3699	3734	3755	0	77168
D370 JTIDS/EPLRS	5699	19632	21214	10049	5074	3699	3734	3755	0	72969
D2QT EPLRS/JTIDS Operational Test	661	3538	0	0	0	0	0	0	0	4199

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), 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 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603713A Army Data Distribution System PROJECT D370

COST (*In Thousands*)	FY 1996 Actual	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
D370 JTIDS/EPLRS	5699	19632	21214	10049	5074	3699	3734	3755	0	72969

A. **Mission Description and Budget Item Justification :** The Near-Term Digital Radio (NTDR) is an Non-Developmental Item (NDI) Research and Development program to procure systems for test and experimentation that will lead to production/fielding for Force Package 1 units. The program's vision is to create the Army Communication data backbone for Platoon to Brigade for Force XXI. It is the 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 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.

Acquisition Strategy: The NTDR program is following a Non-Development Item (NDI) approach with an RDTE contract awarded competitively in January 1996. The Near Terminal Digital Radio acquisition strategy is to fabricate NTDR radios for an IOT&E in 2QFY99. In FY 97, the NTDR units will be utilized for testing and experiments both at 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 NCS-E(D) documentation.

FY 1996 Accomplishments:

•	867	JTIDS Software Development Completion
•	1792	Net Control Station (Downsize) Software Development Completion
•	2337	NTDR Program Hardware and Software development
•	703	Program Management/Test Activities
Total	5699	

FY 1997 Planned Program:

•	15108	Continue NTDR Program
•	1588	Program Management Activities for NTDR
•	476	MIDS Contract Development/Engineering Support
•	1392	NTDR Testing
•	617	Documentation for EPLRS Net Control Station Downsized (NCS-E(D))
•	451	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
Total	19632	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603713A Army Data Distribution System
	PROJECT D370

FY 1998 Planned Program:

•	2595	Continue MIDS Development/Engineering Support
•	2031	Program Management Activities for NTDR
•	4618	Test Activities (NTDR)
•	11783	Continue/Complete NTDR Program Hardware/Software Development
	187	Misc. (GFE, Travel)
Total	21214	

FY 1999 Planned Program:

•	3862	Continue MIDS Development/Engineering Support
•	1347	Program Management Activities for NTDR
•	3027	Test Activities (NTDR)
•	1621	Continue/Complete NTDR Program Hardware/Software Development
	192	Misc. (GFE, Travel)
Total	10049	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY1997 President's Budget	5798	20169	22884	10907
Appropriated Value	5856	19745		
Adjustments to Appropriated Value	-157			
FY1998 Pres Bud Request	5699	19632	21214	10049

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA2, BU1400	44563	67927	57165	55676	42910	40625	39525	50522	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
Class 2M LRIP Award		X*														
Class 2M DT/OT/MS Tests Start			X*													
Class DT/OT/MS Tests Completion					X*											
Class 2M FRP Decision						X										
Class 2M FRP Contract Award							X									

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603713A Army Data Distribution System

PROJECT: D370

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
Start FY94 EDM Delivery			X*													
Complete FY94 EDM Delivery							X									
Class 2M LRIP Delivery										X						
Class 2M FRP Delivery														X		
Start Fielding EDM Terminals						X										
Complete Fielding EDM Terminals									X							
MIDS Development Test										X						
MIDS OT/Multiservice Test														X		
MIDS Transition Decision																X
MIDS Contract Award																X
NTDR Award		X*														
NTDR Option Award											X					
NTDR Operational Assessment											X					
NTDR IOT&E**														X		
Complete NCS-E(D) OT				X*												

*Event has been completed

**NTDR IOT&E Proposed from FY00

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603713A Army Data Distribution System

PROJECT: D370

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Contractor Engineering Support	4323	16201	17078	7010
Program Management Support	730	1588	2218	1539
Miscellaneous (NTDR-GFE)	125	0	0	0
Testing	521	1392	1918	1500
SBIR/STTR		451		
Total	5699	19632	21214	10049

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
SBIR/STTR							451				451
NTDR System Integration	TBD	TBD	7239	7239				2700	1527	3012	7239
Science Application	MIPR	AUG 96	151	151	0	151	0	0	0	0	151
International Misc.	MIPR	TBD	7492	7492	0	0	476	2595	3862	556	7489
Venntronix Corp, Eatontown, NJ	MIPR	APR 96	420	420	0	420	0	0	0	0	420
Lockheed/Martin	MIPR	MAR 97	2001	2001	0	1380	617	0	0	0	1997
ITT Ft Wayne	C/CPIF/FFP	JAN 96	31438	31438	0	2337	15108	11783	1621	500	31439
TBD	TBD	TBD	9057	9057	0	0	0	0	0	9057	9057
VISICOM	SS/CPFF	JUN 96	35	35	0	35	0	0	0	0	35
Support and Management Organizations											
Misc.	MIPR	DEC 95	125	125	0	125	0	0	0	0	125
Misc.	MIPR	TBD	2128	2128	0	0	0	0	0	2128	2128
Misc.	MIPR	FEB 96	7093	7093	0	730	1588	2218	1539	1009	7084

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603713A Army Data Distribution System

PROJECT: D370

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Test and Evaluation Organizations											
EPG	MIPR		0	0	0	0	0	0	0	0	
EPG	MIPR	MAY 96	4916	4916	0	98	1392	1918	1500	0	4908
EPG	MIPR	FEB 96	423	423	0	423	0	0	0	0	423
Government Furnished Property: N/A											
Subtotal Product Development						4323	16652	17078	7010	13125	58188
Subtotal Support and Management						855	1588	2218	1539	3137	9337
Subtotal Test and Evaluation						521	1392	1918	1500		5331
Total Project						5699	19632	21214	10049	16262	72856

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603713A Army Data Distribution System

PROJECT: D2QT

COST (*In Thousands*)	FY 1996 Actual	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
D2QT EPLRS/JTIDS Operational Test	661	3538	0	0	0	0	0	0	0	4199

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 in 1 QTR FY97. 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 1996 Accomplishments:

•	497	JTIDS OT Planning
•	150	JTIDS OT Evaluation Planning
•	14	OT Unit (Test Players) Support
Total	661	

FY 1997 Planned Program:

•	2897	Conduct JTIDS OT
•	337	JTIDS OT Evaluation
•	217	OT Unit (Test Players) Support
•	87	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
Total	3538	

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY1997 President's Budget	678	3653	10	
Appropriated Value	685	3538		
Adjustments to Appropriated Value	-24			
FY1998 Pres Bud Request	661	3538	0	

Change Summary Explanation: Funding - FY 98 - Realigned to higher priority programs (-10)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603713A Army Data Distribution System PROJECT D2QT

C. **Other Program Funding Summary:** Not applicable

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
Conduct JTIDS OT				X*	X*											

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603713A Army Data Distribution System

PROJECT: D2QT

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Operational Test and Evaluation	661	3451	0	0
SBIR/STTR		87		
Total	661	3538	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 1996	FY 1996	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	3/31/96	4314	4314	0	661	3451	0	0	0	4112
SBIR/STTR							87				87

Government Furnished Property: None

Subtotal Product Development				
Subtotal Support and Management				
Subtotal Test and Evaluation	661	3538		4199
Total Project	661	3538		4199

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D535

COST (*In Thousands*)	FY 1996 Actual	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
D535 Intelligence Fusion Analysis Demonstration	5630	3941	0	0	0	0	0	0	0	20104

A. Mission Description and Budget Item Justification: This Program Element 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 flowing down to colleges and universities as grants under oversight of JPL.

FY 1996 Accomplishments:

- 3000 Support battlefield visualization technology demonstration. Developed and evaluated Army Warfighter Experiments and the joint precision strike demonstration program of advanced large screen, automated graphical displays which provided enhanced situational awareness for tactical commanders.
- 1000 Continued to investigate, develop and apply advanced technologies to intelligence fusion prototypes for expanded capabilities and performance in the areas of dynamic situation development/assessment/prediction, collection management, and advanced analysis and correlation. This included continued streamlined integration of collection management tools for more automated, responsive tactical support; extended CI/HUMINT analysis prototype to include automated analysis tools, incorporating the advanced template correlation techniques used in the situation assessment prototype where appropriate; developed and integrated state-of-the-art video photogrammetry tools in support of battle damage and low intensity situation assessment.
- 780 Continued to evaluate, configure and integrate the high-performance, expanded tech base prototype capabilities into operational ASAS prototypes and ASAS Block II development.
- 850 Continued to support the development, evaluation and refinement of operational prototypes of functional and performance upgrades/improvements to ASAS and their integration into mainline ASAS development and acquisition per the Joint Prototyping Plan.

Total 5630

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603745A Tactical Electronic Support Systems - Advanced Development (TIARA)
	PROJECT D535

FY 1997 Planned Program:

•	500	Continue 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.
•	2495	Continue to evaluate, configure and integrate tech base prototype capabilities into operational ASAS prototypes and ASAS Block II development.
•	850	Continue 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.
•	96	Small Business Innovation Research/Small Business Technical Transfer (SBIR/STTR)
Total	3941	

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY1997 President's Budget	5776	2025	0	0
Appropriated Value	5937	3941		
Adjustments to Appropriated Value	-307		0	0
FY1998 Pres Bud Request	5630	3941	0	0

Summary Change Explanation: Funding - FY 97 (+1916) funds to evaluate Integrated Battlefield Intelligence Server (IBIS) developed by DARPA for integration into the ASAS program.

C. Other Program Funding Summary: None

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
Expanded Tech Base Prototypes - Interface Adv Sit Assmt with ASAS Block II			X*				X									
- Integrate HUMINT Anal Spt into ASAS Operational Prototype					X*											

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D535

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
- Integrate Asset Management into ASAS Block II prototypes				X*				X								
- Incorporate Adv Correlation Techniques into ASAS Oper Prototypes						X										
- Apply Adv Processing Tech into Tech Base Prototypes				X*				X								
- Integrate Exp Tech Base Capabilities into ASAS Operational Prototypes								X								

*Integration Started

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

DATE: February 1997

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 1996	FY 1997	FY 1998	FY 1999
Prototype Development Efforts	5630	3845		
SBIR/STTR		96		
Total	5630	3941		

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
JPL	PWD				10533	970	3941				15444
EWA	PWD					2940					2940
Misc. Contracts						1624					1624
SBIR/STTR						96					96
Support and Management Organizations: None											
Test and Evaluation Organizations: None											
Government Furnished Property: None											
Subtotal Product Development					10533	5630	3941				20104
Subtotal Support and Management											
Subtotal Test and Evaluation											
Total Project					10533	5630	3941				20104

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603747A Soldier Support and Survivability

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	6709	6541	7557	7680	9235	8971	11576	10497	Continuing	Continuing
DC09 Unit/Organizational Equipment	2126	1289	1955	1737	2025	1989	2033	1564	Continuing	Continuing
D610 Food Advanced Development	2050	1905	2263	2569	3097	3342	3744	3761	Continuing	Continuing
D669 Clothing and Equipment	2533	3347	3339	3374	4113	3640	5799	5172	Continuing	Continuing

Mission Description and Budget Item Justification: Provide advanced development for unit/organizational equipment, improved individual clothing and equipment, fabric shelters, food, 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 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603747A Soldier Support and Survivability

PROJECT: DC09

COST (*In Thousands*)	FY 1996 Actual	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
DC09 Unit/Organizational Equipment	2126	1289	1955	1737	2025	1989	2033	1564	Continuing	Continuing

A. **Mission Description and Justification:** Develop and field soft shelters, showers, latrines and heaters to improve unit sustainability and combat effectiveness.

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

FY 1996 Accomplishments:

- 381 Redesigned Ammunition Solar Covers (ASC) Type I to meet both Type I and Type II requirements to improve reliability and stability of munitions in hot environment, completed Technical Testing / Operational Testing (TT/OT). Prototyped General Purpose Solar Cover (GPSC) and conducted TT/OT on single solution design. Prepared concept designs for user review of General Purpose Solar Cover which provides lightweight, solar protection that is rapidly erectable and easy to use.
- 465 Performed Early User Testing, downselected best candidate, and initiated TT/OT for the Lightweight Maintenance Enclosure (LME) to improve field maintenance capability and equipment readiness.
- 259 Completed design and procured test prototypes for the Ballistic Protective System (BPS) to reduce vulnerability of palletized supplies.
- 142 Redesigned frame system and assessed seaming technologies for the Modular General Purpose Tent System (MGPTS) Preplanned Product Improvement (P3I) to provide dual support options and interchangeable components for increased flexibility.
- 440 Completed TT/OT on the Containerized Self-Service Laundry to increase quality of life in remote field conditions.
- 439 Built prototypes and conducted TT/OT on the Space Heater Arctic (SHA) and Space Heater Small (SHS) to increase safety, reliability, and efficiency of field heaters.

Total 2126

FY 1997 Planned Program:

- 275 Complete development and Type Classify (TC) the Modular ASC and GPSC, prepared LRIP Plan.
- 130 Complete development and Type Classify the LME, prepare LRIP and Production Contracts.
- 340 Complete TT/OT BPS.
- 512 Complete development of the thermoelectric capability for SHS for integration into the Family of Space Heaters for improved heat distribution and increased efficiency. Type Classify SHA and SHS and transition to production. Complete performance specification.
- 32 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program

Total 1289

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603747A Soldier Support and Survivability
	PROJECT DC09

FY 1998 Planned Program:

•	207	Complete development and TC BPS, complete performance specification and transition to production.
•	360	Conduct market survey of the Family of Field Latrines (FOFL). Procure prototypes of the Maturing Theater Latrine (MTL) and conduct test and evaluation.
•	450	Procure modified non-developmental item (NDI) candidate prototypes of the Aviation Maintenance Shelter (AMS) and conduct technical testing.
•	150	Conduct market survey and procure prototypes of the Initial Deployment Shower (IDS) and Water Heater and conduct concept test and evaluation.
•	680	Award development contract for prototype air beam technology shelter including a lightweight flooring system.
•	108	Update market survey of commercial technologies for a Modular Deck System (MDS), prepare program documents, and build prototype.
Total	1955	

FY 1999 Planned Program:

•	300	Complete test and evaluation of the FOFL and Type Classify the performance specification.
•	450	Conduct operational testing of the AMS and Type Classify the performance specification.
•	300	Procure prototypes and evaluate the IDS.
•	376	Complete prototype fabrication and conduct test and evaluation of the AMS P3I Shelter.
•	311	Update MDS prototype, initiate Development Test/Operational Test.
Total	1737	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	2180	1316	2797	1869
Appropriated Value	2241	1289		
Adjustments to Appropriated Value	-115			
FY 1998 BES/ Pres Bud Request	2126	1289	1955	1737

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0604713.DC40, Unit/Organizational Equipment	3003	1746	1795	1811	1841	2026	2064	2072	Cont	Cont

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603747A Soldier Support and Survivability
	PROJECT DC09

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
Type Classify SHA and SHS						X										
Complete TT/OT of Ammunition Cover				X*												
Type Classify Ammunition Solar Cover						X										
Complete TT/OT for Containerized Self-Service Laundry and Type Classify						X										
Type Classify BPS and transition into production										X						
Conduct market survey on FOFL. Conduct test and evaluation on MIDL and MTL prototypes												X				
Procure and conduct TT on AMS prototypes												X				
Conduct test and evaluation on IDS												X				
Type Classify AMS															X	
Conduct test and evaluation on AMS P3I															X	
Type Classify IDS															X	
Type Classify FOFL															X	
Type Classify LME						X										

*Milestone Complete

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603747A Soldier Support and Survivability

PROJECT: DC09

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Primary Hardware	2126	1257	1955	1737
SBIR/STTR		32		
Total	2126	1289	1955	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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
SSCOM	In-House					1016	732	807	711	Cont	3266
Hunter Mfg	Various	Various				700	350	821	760	Cont	2631
Guild Assoc.											
Weatherhaven											
Hansen Weather											
GTS											
ARO	MIPR					70		30	30	Cont	130
TRADOC											
VA Med Ctr											
McClellan AFB											
Army Nat'l Guard											
Support and Management Organizations											
SSCOM						190	95	97	86	Cont	468
Test and Evaluation Organizations											
TECOM/YPG						150	80	200	150	Cont	580
SBIR/STTR							32				32

Government Furnished Property: None

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603747A Soldier Support and Survivability PROJECT DC09

	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development		1786	1082	1658	1501		6027
Subtotal Support and Management		190	95	97	86		468
Subtotal Test and Evaluation		150	112	200	150		612
Total Project		2126	1289	1955	1737		7107

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603747A Soldier Support and Survivability

PROJECT: D610

COST (*In Thousands*)	FY 1996 Actual	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
D610 Food Advanced Development	2050	1905	2263	2569	3097	3342	3744	3761	Continuing	Continuing

A. **Mission Description and Justification:** 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 DoD Food and Nutrition Research and Engineering Board as part of the Joint Service Food Program. 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 1996 Accomplishments:

- 580 Conducted user evaluation of software developed to automate the Joint Service Recipe System to allow for timely electronic release of updated/new recipes.
- 265 Completed technical and user testing of improved Air Force food service refrigeration system to provide highly mobile, efficient and reliable field refrigeration. Transitioned the technology data package (TDP) to procurement.
- 608 Developed and conducted user evaluations of high potential individual and group ration components. Transitioned components with high acceptance to fielded rations, improving ration quality and increasing available menus. Identified components and developed medical supplement for the Unitized Group Ration (UGR) to increase logistical efficiency of medical field feeding.
- 100 Conducted user testing of new Mobility Enhancing Rations Components (MERC) to increase readiness, ease logistical burden, and improve ration quality.
- 60 Conducted market survey and developed packaging system for Ration Snack Pack to increase acceptability of operational rations.
- 225 Completed development of Long Range Patrol Rations to minimize weight and volume and transitioned to procurement. Identified and evaluated intrapackage modifiers for new composite packaging for rations that will increase consumption and field troop quality of life.
- 212 Evaluated new shelters for Kitchen Company Level Field Feeding-Enhanced. Developed/fabricated prototype components for Mobile Kitchen Trailer-Improvement program to meet future field feeding requirements to improve system performance in all environments.

Total 2050

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BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603747A Soldier Support and Survivability
	PROJECT D610

FY 1997 Planned Program:

•	138	Complete pilot study of electronic recipe distribution and begin transitioning of new/approved recipes to the Services using the automated Joint Service Recipe System.
•	718	Identify and conduct user testing of improvements for individual and group rations. Transition selected heat and serve ration components and Meals Ready to Eat improvements, increasing menu variety. Conduct user evaluation of Snack Packs and design 12 Meal Cold Weather menus. Draft preparation manual for medical supplement for the UGR.
•	288	Design four MRE ration alternatives and conduct initial studies to determine the effects of portion size and variety on acceptance/intake.
•	147	Conduct user evaluations of MERC to provide eat-on-the-move capability. Procure test components for field test.
•	143	Perform technical feasibility testing (TFT) on NDI waste reduction/handling equipment which will reduce the field back-haul and trash removal requirements and transition optimum system to procurement.
•	377	Initiate design and fabrication of Marine Corps Rapid Deployment Kitchen (RDK) based on centralized heating technology providing highly mobile, efficient field feeding capability.
•	47	Evaluate Thermally Efficient Field Serving Equipment to optimize food quality and transition Procurement documentation to Marine Corps for procurement.
•	47	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program
Total	1905	

FY 1998 Planned Program:

•	386	Fabricate Non-electric Field Refrigerator prototype, conduct technical user testing and transition to procurement.
•	474	Complete fabrication and initiate test and evaluation of the Rapid Deployment Kitchen (RDK).
•	176	Design and fabricate specific applications for a Catalytic Diesel Vaporizer (CDV) to effectively integrate with commercial off the shelf food service equipment.
•	164	Conduct demonstration/field test of Horizontal, Form, Fill, Seal (HFFS) food trays as alternatives to metal traycans.
•	538	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. Transition ration pack to procurement. Conduct user evaluation and transition medical supplement for the UGR to procurement. Update B-ration menu.
•	275	Field test MERC to quantify warfighter acceptability / mobility enhancement and transition to procurement.
•	250	Prepare redesigned MRE ration prototypes to minimize weight/cube/cost and conduct initial field test to determine effect on level of acceptance and consumption.
Total	2263	

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	PROJECT D610

FY 1999 Planned Program:

•	308	Fabricate prototype Marine Corps Expeditionary Field Feeding Delivery System
•	280	Complete testing of the Catalytic Diesel Vaporizer and transition to production.
•	250	Develop new system concepts for the Field Feeding Unit - Expendable.
•	225	Develop company-sized kitchen and fabricate prototype of the Mounted Kitchen, Company Level Field Feeding.
•	67	Conduct market survey and evaluate prototypes of the Beverage Cooling Device (BCD) to optimize soldier hydration.
•	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.
•	650	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.
•	339	Conduct 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.
•	250	Complete ration redesign and conduct follow-up field testing to demonstrate improved acceptance/consumption and reduced logistic burden.
Total	2569	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	2103	1946	2429	2774
Appropriated Value	2162	1905		
Adjustments to Appropriated Value	-112			
FY 1998 Pres Bud Request	2050	1905	2263	2569

C. Other Program Funding Summary:

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0604713.D548, Military Subsistence System	802	792	884	1294	1643	1765	1877	1884	Cont	Cont
OPA 3, MA8050, Items Less Than $2.0M (CSS-EQ)	1467	2024	1334	4131	3431	5389	15507	15280	Cont	Cont
OPA 3, MA5800, Refrigeration Equipment	2481	4297		1986	981	981	995	1992	Cont	Cont

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
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	PROJECT D610

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
Conducted user tests of Mobility				X*												
Enhancing Ration Components (MERC)																
Transition heat and serve ration and MRE improvements to procurement								X								
Complete TFT of waste handling equip								X								
Fabricate USMC field kitchen based on centralized heating technology								X								
Transition Long Range Patrol Rations (LRPR) to procurement.				X*												
Complete fabrication/start testing on the RDK										X						
Complete testing of the Catalytic Diesel Vaporizer																X
Evaluate prototypes of the Beverage Cooling Device															X	
Complete Technical/User Testing of Non Electric Field Refrigerator												X				
Initiate development of Mounted Company Level Kitchen													X			

* Milestone Complete

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603747A Soldier Support and Survivability

PROJECT: D610

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development	2050	1858	2263	2569
SBIR/STTR		47		
Total	2050	1905	2263	2569

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
SSCOM	In-House					1424	1145	1326	1538	Cont	5433
GTS	Various	Various				326	380	424	453	Cont	1583
Hunter Mfg											
SSL											
GSA	MIPR										
OGA											
Support and Management Organizations											
SSCOM						100	97	113	128	Cont	438
Test and Evaluation Organizations											
TECOM/OGA						200	236	400	450	Cont	1286
SBIR/STTR							47				47
Government Furnished Property: None											
Subtotal Product Development						1750	1525	1750	1991		7016
Subtotal Support and Management						100	97	113	128		438
Subtotal Test and Evaluation						200	283	400	450		1333
Total Project						2050	1905	2263	2569		8787

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603747A Soldier Support and Survivability

PROJECT: D669

COST (*In Thousands*)	FY 1996 Actual	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
D669 Clothing and Equipment	2533	3347	3339	3374	4113	3640	5799	5172	Continuing	Continuing

A. **Mission Description and Justification** Use state-of-the-art technology to develop improved clothing and individual equipment items to enhance the effectiveness, lethality, sustainability, survivability and quality of life of the individual soldier.

Acquisition Strategy: Developments transition to engineering and manufacturing development (EMD) and then to production.

FY 1996 Accomplishments:

- 100 Conducted market survey, updated requirements document, revised acquisition strategy for Advanced Laser Protective Systems (ALPS) [Formerly (SPECS) Preplanned Product Improvement (P3I)].
- 1304 Evaluated commercial samples and reviewed experimental models for design feasibility of the Modular Load System (MLS) (single point release mechanism) and the Body Armor Set Individual Countermine (BASIC) P3I Boot.
- 1129 Completed scoring conference, draft technical and health hazard assessment report, draft TC documents and procurement package for self-contained toxic environment protective outfit (STEPO).

Total 2533

FY 1997 Planned Program:

- 1447 Conduct market investigation, test new materials, develop initial design concepts for Reduced Weight Explosive Ordnance Disposal (EOD) Suit and Arctic Canteen.
- 1749 Develop initial design concepts, conduct technical and early user evaluations and downselect designs/materials for test prototypes for ALPS
- 75 Complete Phase II Development Test/Operational Test (DT/OT), type classify and transition to production STEPO.
- 76 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program

Total 3347

FY 1998 Planned Program:

- 950 Conduct early user evaluation, freeze design, fabricate test prototypes, and initiate DT/OT of the Reduced Weight EOD Suit and Arctic Canteen.
- 250 Fabricate test prototypes, conduct DT/OT, complete assessment reports, obtain Milestone III approval for the ALPS and transition to production.
- 250 Fabricate test prototypes and conduct Phase I of DT/OT for the Advanced Combat Helmet and transition to EMD.
- 245 Refine initial design concepts, conduct technical tests and early user evaluations, select materials and designs for the Concealable Body Armor, and transition to EMD.

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BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603747A Soldier Support and Survivability
	PROJECT D669

FY 1998 Planned Program: (continued)

- 500 Conduct early user evaluation of materials and designs for an Advanced Combat Uniform and transition to EMD.
- 1144 Conduct market surveys, test new materials, develop designs, and test in early user evaluations an Advanced Special Purpose Ensemble and gloves for special missions.

Total 3339

FY 1999 Planned Program:

- 520 Complete DT/OT and assessment reports, obtain Milestone III approval, and transition the Reduced Weight EOD Suit and Arctic Canteen to production.
- 800 Evaluate materials, develop initial designs, and test Joint Service Modular Eye Protection System (MEPS) in an early user evaluation.
- 2054 Fabricate test prototypes, conduct Phase I of DT/OT, and transition the Advanced Special Purpose Ensemble and gloves for specialized missions to EMD.

Total 3374

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	3415	3418	3590	3650
Appropriated Value	3510	3347		
Adjustments to Appropriated Value	-977			
FY 1998 Pres Bud Request	2533	3347	3339	3374

Change Summary Explanation: FY 96 (-882) reduction realigned to a higher priority requirement.

C. Other Program Funding Summary:

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0604713.DL40, Clothing & Equipment	2094	4851	3684	4330	3592	4476	4865	4889	Cont	Cont
OMA, 114092000, Central Funding & Fielding	40565	87739	42405	54222	79734	82242	84025	85848	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 Phase II of DT/OT and Assessment Reports and Type Classify STEPO							X									
Develop design concept for ALPS and ACH												X				

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DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603747A Soldier Support and Survivability

PROJECT: D669

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
Develop design concepts for SPECS P3I and Advanced Combat Helment (ACH)					X*											
Conduct technical and early user evaluation for SPECS P3I and ACH							X									
Select test prototype designs for SPECS P3I and ACH								X								
SPECS P3I test items//DT and OT and reports// Milestone III and transition to procurement									X		X	X				
ACH test items//Phase I DT and OT and transition to EMD										X		X				
Evaluate commercial samples for MLS	X*															
Review experimental MLS prototypes for feasibility			X*													
Evaluate commercial designs and use CADCAM for BASIC P3I Boot design				X*												
Conduct market survey for Reduced Weight EOD Suit and Arctic Canteen					X*											
Test new materials, develop initial designs for Reduced Weight EOD Suit and Arctic Canteen								X								
Early user evaluation of the Reduced Weight EOD Suit and Arctic Canteen//Test items//DT and OT and reports//Milestone III and transition to procurement									X		X			X		X
Initial designs of the Concealable Body Armor// Technical tests and early user evaluation//Select materials and transition to EMD									X		X	X				
Early user evaluation of materials and designs for the Advanced Combat Uniform//Analyze and transition to EMD											X	X				
Market survey of an Advanced Special Purpose Ensemble and special mission gloves//Material tests//Designs and early user evaluation//Test prototypes//Phase I DT and OT and transition to EMD									X	X		X		X		X

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BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603747A Soldier Support and Survivability

PROJECT: D669

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
Initial materials and designs for the Joint Service Modular Eye Protection System//Early user evaluation														X		X

* Completed Milestone

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603747A Soldier Support and Survivability PROJECT D669

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Clothing and Equipment	2533	3271	3339	3374
SBIR/STTR		76		
Total	2533	3347	3339	3374

B. Budget Acquisition History and Planning Information: Not applicable

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D907

COST (*In Thousands*)	FY 1996 Actual	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
D907 Tactical Exploitation of National Capabilities - Adv Dev	26796	25354	20920	23714	24751	29020	30920	31095	Continuing	Continuing

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. This project supports the advanced development/enhancement of the Electronic Tactical User Terminal (ETUT), 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: The Army Space Program Office (ASPO) strives for an acquisition 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. 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.

FY 1996 Accomplishments:

- 10550 Continued to pursue technology for the refinement of the TENCAP Common Baseline for fully exploiting national capabilities to meet emerging worldwide contingency scenarios such as upgrades to Communication System Processor (CSP) to incorporate Tactical Packet Network (TPN) and Defense Switched Network (DSN) connectivity, the Demand Assigned Multiple Access (DAMA) appliqué to SUCCESS radios and support to the Joint Collection Management Tool (JCMT).
- 5596 Initiated design concept and prototype development of Tactical Exploitation Systems (TES) with state-of-the-art hardware and software.

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BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603766A Tactical Exploitation of National Capabilities (TENCAP) - Dem/Val (TIARA)
	PROJECT D907

FY 1996 Accomplishments: (continued)

•	2434	Completed advanced development effort to retrofit ETUTs with enhanced MITT hardware and software.
•	5120	Continued support to TENCAP program management with administrative activities [e.g., FFRDC (Aerospace), ASPO, systems engineering technical support (SETA), and Topographic Engineering Center (TEC)].
•	3096	Continued support to efforts being developed under PE 0305154D (DARP) Project P531 (e.g., FFRDC (Aerospace), ASPO, SETA, and TEC).
Total	26796	

FY 1997 Planned Program:

•	8082	Continue to pursue technology for the refinement of the TENCAP common baseline for fully exploiting national capabilities to meet emerging worldwide contingency scenarios
•	10027	Initiate advanced development efforts for ground processing technologies for new national sensors capabilities that will be incorporated into TES
•	5077	Continue support to TENCAP program management with administrative activities (e.g., FFRDC (Aerospace), ASPO, SETA, and TEC).
•	1579	Continue support to efforts being developed under PE 0305154D (DARP) Project P531 (e.g., FFRDC (Aerospace), ASPO, SETA, and TEC).
•	589	Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)
Total	25354	

FY 1998 Planned Program:

•	5327	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 Defense Message System (DMS) into the TENCAP systems.
•	8775	Continue advanced development of TES Program
•	4432	Continue support to TENCAP program management with administrative activities (e.g., FFRDC (Aerospace), ASPO, SETA, and TEC).
•	2386	Continue support to efforts being developed under PE 0305154D (DARP) Project P531 (e.g., FFRDC (Aerospace), ASPO, SETA, and TEC).
Total	20920	

FY 1999 Planned Program:

•	5802	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 Defense Message System (DMS) into the TENCAP systems
•	9849	Continue advanced development of TES Program.
•	5258	Continue support to TENCAP program management with administrative activities (e.g., FFRDC (Aerospace), ASPO, SETA, and TEC).
•	2805	Continue support to efforts being developed under PE 0305154D (DARP) Project P531 (e.g., FFRDC (Aerospace), ASPO, SETA, and TEC).
Total	23714	

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D907

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	27460	26060	23200	27094
Appropriated Value	27738	25354		
Adjustments to Appropriated Value	-942			
FY 1998 BES/Pres Bud Request	26796	25354	20920	23714

Change Summary Explanation: Funding - FY 98 & FY 99 reductions are for Spares Pricing Adjustment, T&E Streamlining and civilian salary reduction as result of HQDA redesign. (FY 98 -2280/FY 99 -3380).

C. Other Program Funding Summary

	FY 1996	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	23266	15235	19113	19531	26094	25097	28203	28359	Cont	Cont
RDTE, D Budget Activity 7										
PE 0305154D DARP	41526	50287	0	0	0	0	0	0	Cont	Cont
PE 0305208D DARP			30433	28175	22214	24108	23583	23179		
Other Procurement Army, OPA-2										
BZ 7315 TENCAP	4473	1756	1679	1728	4598	13703	14779	16822	Cont	Cont
Procurement, Defense Wide										
PE 0305154D DARP	80822	89945	0	0	0	0	0	0	Cont	Cont
PE 0305208D DARP			94070	81600	80576	71867	73926	75239		

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
Initiate Prototype Development for TES			X*													
Complete Adv Dev of DAMA Appliqué into TENCAP Common Baseline SUCCESS Radios						X										
Initiate Integration of DSN/DMS into TENCAP Systems										X						
Complete Prototype Development TES Forward																X

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	PROJECT D907

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 Integration of DSN/DMS into TENCAP System														X		

*Denotes completed milestone

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603766A Tactical Exploitation of National Capabilities (TENCAP) - Dem/Val (TIARA)
	PROJECT D907

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Common Baseline (*1)	10550	8082	5327	5802
TES	5596	10027	8775	9849
ETUT	2434	0		
ASPO In-House (*2, *3)	2507	2135	1995	1871
FFRDC	219	87	97	106
System Engineering (Contractor) (*2)	4115	3234	3692	5051
System Engineering (Government) (*2)	1375	1200	1034	1035
SBIR/STTR		589		
Total	26796	25354	20920	23714

(*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 1996 through FY 1999 support efforts being developed under PE 0305154D.P531.
(*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 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	3167	2769	2939	2893	3298	4703	6003	6024	Continuing	Continuing
D131 Night Vision Systems Advanced Development	3167	2769	2939	2893	3298	4193	5150	5172	Continuing	Continuing
D598 LTASS*	0	0	0	0	0	510	853	852	Continuing	Continuing

*Erroneously placed in this PE, should be 0604716A. Title of project will change to Hi-Volume Map Production Equipment during the next budget submit.

Mission Description and Budget Item Justification: This program element 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. The efforts are centered around development of countermeasure and electro-optic sensors for the individual soldiers and combat vehicles to meet stated Army deficiencies. The LTASS program provides for market value analysis and development of high volume cartographic reproduction for table of organization and equipment (TOE) field topographic engineer companies. The focus of theses efforts is on advanced technology development; therefore, this project is properly placed in Budget Activity 4.

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D131

COST (*In Thousands*)	FY 1996 Actual	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
D131 Night Vision Systems Advanced Development	3167	2769	2939	2893	3298	4193	5150	5172	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. The efforts are centered around development of countermeasure and electro-optic sensors for the individual soldiers and combat vehicles to meet stated Army deficiencies. This project provides the mechanism to transition tech base programs for electro-optical sensors to the engineering manufacturing development (EMD) phase of the acquisition cycle. This project provides the funding necessary to institute advances for product improvement or horizontal technology integration (HTI) to upgrade current capabilities.

Acquisition Strategy: The Long Range Advanced Scout Surveillance System and the Advanced Second Generation FLIR both utilize development contracts that were competitively awarded using best value source selection procedures.

FY 1996 Accomplishments:

•	550	Continued support for Stingray participation in the Advanced Warfighting Experiments (AWE) at Fort Hood.
•	1767	Continued Advanced Second Generation FLIR (SGF) improvements (i.e. Standard Advanced Dewar Assembly) for HTI B kit.
•	850	Developed alternative approaches to Long Range Advanced Scout Surveillance System (LRAS3) to support system EMD in FY 97.
Total	3167	

FY 1997 Planned Program:

•	302	Complete support for Stingray participation in exercises and final system disposition.
•	900	Commence Advanced Aviation SGF HTI B Kit trade studies.
•	1507	Develop Advanced SGF B kit features (e.g., frame integration and laser protection) for M2A3, M1A2 and LRAS3.
•	60	Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	2769	

FY 1998 Planned Program:

•	1876	Complete Aviation B kit trade studies.
•	429	Demonstrate sight level ground B kit advanced capabilities.
•	634	Demonstrate advanced aviation SADA detector capability.
Total	2939	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603774A Night Vision Systems - Advanced Development
	PROJECT D131

FY 1999 Planned Program:

- 1021 Demonstrate sight level ground B kit advanced capabilities into M2A3, M1A2, and LRAS3.
- 1632 Develop ATR/ATC capability and interface with Aviation/Ground B kit.
- 240 Demonstrate Aviation B Kit Advanced capabilities.

Total 2893

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	2879	2829	3151	3110
Appropriated Value	2908	2769		
Adjustments to Appropriated Value	259			
FY 1998 Pres Bud Request	3167	2769	2939	2893

C. Other Program Funding Summary

	FY 1996	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	16442	16636	17304	19213	19183	19872	20287	20744	Continue	Continue
PE 0603710A/Night Vision Advanced Development RDTE, A Budget Activity 4	31142	29761	19299	19250	37651	33487	33135	29516	Continue	Continue
PE 0604710A/Night Vision Devices Engineering Development RDTE, A Budget Activity 5	37658	34870	33456	21255	21817	18692	27214	17414	Continue	Continue

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
Implement system participation in AWEs				X*												
Conclude participation in AWEs							X									
Award Advanced Ground B kit features						X										
Demonstrate Ground B Kit Advance Capabilities (Test)												X				
Demonstrate integration of Ground B Kit Advanced capabilities on vehicles (Test)																X

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D131

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
Develop ATR/ATC capability/interface with Aviation and Ground B Kit																X
Award Aviation trade study contract(s)							X									
Finalize Aviation B kit trade study											X					
Demonstrate Advanced Aviation SADA Detection capability (Test)												X				
Demonstrate Aviation Advanced capabilities (Test)																X

*Milestone Completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1997
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603774A Night Vision Systems - Advanced Development / PROJECT: D131

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development	2336	1250	432	1433
Contractor Engineering / Trade Studies	0	900	1626	0
Government Engineering Support	225	212	225	225
Travel	45	40	40	40
Miscellaneous	86	29	33	37
Development Test & Evaluation	475	278	583	1158
SBIR/STTR		60		
Total	3167	2769	2939	2893

B. Budget Acquisition History and Planning Information: Not applicable

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603790A NATO Research & Development

PROJECT: D691

COST (*In Thousands*)	FY 1996 Actual	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
D691 NATO Research and Development	0	9755	13168	11169	11260	11846	12032	12246	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 1996 Accomplishments: This effort funded in OSD PE 0603790D Project P790.

FY 1997 Planned Program:

- 2877 **Combat Identification (CI) Interoperability Demonstration (Partners: France, Germany, United Kingdom):** Integrate the Battlefield Combat Identification System (BCIS) on armored vehicles, complete interoperability trials with FR, GE, and UK prototype systems in Munster, GE.
- 2005 **Battlefield Command and Control (C2) Systems Interoperability (Partner: Germany):** Implement, 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.
- 1500 **Adaptive Beamforming Technology (ABFT) for Wide Band Phased Array Radars (Partner: United Kingdom):** Improve detection in severe Electronic CM environments. Extend narrowband ABFT techniques to THAAD radar, develop ABFT architectures and assess design trade-offs.
- 1200 **Covert Night/Day Operations in Rotorcraft (CONDOR) (Partner: United Kingdom):** Improve helicopter helmet mount display and flight controls. Fabricate Advanced Visionics System (AVS) and Advanced Flight Control System (AFCS) prototypes, system integration and flight tests.
- 405 **High Technology Switch (Partner: France):** Develop 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).
- 385 **Extended Air Defense (AD) Command and Control Interoperability (Partner: Germany):** Develop system specification to achieve interoperability between US and GE air defense tactical operations centers. Analyze interoperability elements and prepare pre-design specifications.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603790A NATO Research & Development
	PROJECT D691

FY 1997 Planned Program: (continued)

•	1050	**Fighting Vehicle Propulsion Technology Using Ceramic Materials (Partner: Japan):** Develop, test and characterize 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. The objective is to double combat propulsion system power density and fuel economy.
•	95	**Report to Congress:** Pursuant to 10 USC 2350a, prepare and provide to USD(A&T) the Army section of the 1997 Report to Congress on the International Cooperative Research and Development Program
•	238	SBIR/STTR
Total	9755	

FY 1998 Planned Program:

•	2791	**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.
•	816	**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.
•	1428	**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.
•	565	**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).
•	66	**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.
•	2500	**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.
•	1020	**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.
•	1020	**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.
•	642	**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.
•	510	**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.
•	510	**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 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603790A NATO Research & Development
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FY 1998 Planned Program: (continued)

- 335 **Short Range Surface-to-Air Missile Guidance Technology (ROKSAM) (Partner: South Korea):** Develop dual mode lock-on-after-launch guidance concepts, and test the concepts using existing seekers through hardware-in-the-loop simulations.
- 305 **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.
- 355 **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.
- 205 **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 1997 Report to Congress on the International Cooperative Research and Development Program

Total 13168

FY 1999 Planned Program:

- 2542 **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.
- 1830 **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.
- 1020 **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.
- 1020 **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.
- 1015 **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.
- 1015 **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.
- 845 **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.
- 510 **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.
- 510 **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.

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BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603790A NATO Research & Development
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FY 1999 Planned Program: (continued)

- 355 **Electronic Warfare Simulation Common Set (Partner: Australia):** Develop a common set of characteristics and countermeasures for advanced missile guidance systems. Test results in hybrid software and hardware-in-the-loop simulations to determine survivability of new guidance systems.
- 305 **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.
- 102 **Short Range Surface-to-Air Missile Guidance Technology (ROKSAM) (Partner: South Korea):** Develop dual mode lock-on-after-launch guidance concepts, and test the concepts using existing seekers through hardware-in-the-loop simulations.
- 100 **Report to Congress:** Pursuant to 10 USC 2350a, prepare and provide to USD(A&T) the Army section of the 1997 Report to Congress on the International Cooperative Research and Development Program

Total 11169

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget Request	0	9963	10207	7454
Appropriated Value		9755		
Adjustments to Appropriated Value				
FY 1998 Pres Bud Request	0	9755	13168	11169

Change Summary Explanation:
Funding: FY 1997: project decremented (-208) for undistributed congressional reductions
FY 1998: DOD program restructured to move ongoing Army cooperative projects from OSD PE to Army PE (+2961).
FY 1999: DOD program restructured to move ongoing Army cooperative projects from OSD PE to Army PE (+3715).

C. Other Program Funding Summary	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, Defense-wide Appropriation 0603790D NATO Cooperative R&D	7700									7700

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
Combat Identification Interoperability																
Complete Fabrication and Integration						X										
Trials and Demonstration Completed							X									
Initial Data Report								X								

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603790A NATO Research & Development

PROJECT: D691

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
Command & Control Interoperability																
Complete Hardware/Software Installation							X									
Complete Lab Demo/Tests & Simulations												X				
Complete Field Demonstration																X
Adaptive Beam Forming Technology																
Complete Algorithms/Architecture					X											
Complete Wideband Subarray					X											
Complete Preliminary Point Design						X										
Complete US Design Assessments							X									
Complete UK Design Evaluation								X								
Complete Final Point Design											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					
Extended Air Defense																
Complete Integration Analysis						X										
Complete Trade-off Analysis									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

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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
Cooperative Eyesafe Laser Project																
Complete Performance Specification						X										
Complete Subsystem Development												X				
Complete Brassboard Integration																X
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
ROKSAM																
MOU Concluded					X											
Complete Analysis Phase										X						
Complete Design & Fabrication Phase																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				X												
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									

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PE NUMBER AND TITLE: 0603790A NATO Research & Development

PROJECT: D691

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 Penetrator Design Studies										X						
Complete Penetrator Development & Test																X
Electronic Warfare Simulation Com Set																
MOU Project Arrangement Concluded					X											
Complete Phase 1 Tech. Assessment										X						
Complete Digital Simulation Evaluation														X		

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603790A NATO Research & Development

PROJECT: D691

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Combat Identification Interoperability Demonstration (CIID)		2877		0
Command and Control Systems Interoperability (C^2SI)		2005	2791	2542
Adaptive Beam Form Technology (ABFT)		1500	816	0
Covert Night/Day Operations in Rotorcraft (CONDOR)		1200	1428	0
High Technology Switch Development (HTSD)		405	565	0
Extended Air Defense Command & Control Interoperability		385	66	0
Fighting Vehicle Propulsion Technology (Ceramic Materials)		1050	2500	1830
Focal Plane Array Countermeasures (FPACM)		0	1020	1020
Cooperative Eyesafe Laser Project (CELRAP)		0	1020	1020
Artillery Systems Cooperation Activities (ASCA)		0	642	845
Short Range Surface to Air Missile Guidance Technology		0	335	102
Low Level Air Picture Interface (LLAPI)		0	305	305
TACJAM-A Electronic Support Subsystem Upgrades		0	355	1015
Autonomous Vehicle Navigation Control System (AUTONAV)		0	205	1015
Laser Stand-Off Chemical Detector (LSCD)		0	510	510
Advance Penetrator Development in Tank Munitions		0	510	510
Electronic Warfare Simulation Common Set		0	0	355
Report To Congress		95	100	100
SBIR/STTR		238	0	0
Total		9755	13168	11169

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 1996	FY 1996	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

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

DATE: February 1997

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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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
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
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			475	4915	7285	Cont	Cont
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

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

DATE: February 1997

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
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
SBIR/STTR							238				238
Support and Management Organizations											
ATCOM Ft Eustis, VA	MIPR						100	100	204	Cont	Cont
CECOM Ft Monmouth, NJ	MIPR						150	250	254	Cont	Cont
TACOM Warren, MI	MIPR						150	250	254	Cont	Cont
ICPA APG, MD	MIPR						200	300	304	Cont	Cont
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	Cont
MICOM Huntsville, AL	MIPR						0	130	254	Cont	Cont
PM TMAS Dover, NJ	MIPR						0	50	154	Cont	Cont
LOGSA Huntsville, AL	MIPR						25	25	134	Cont	Cont

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

DATE: February 1997

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Test and Evaluation Organizations											
AMSAA APG, MD	MIPR						150	250	204	Cont	Cont
CECOM Ft Monmouth, NJ	MIPR						150	150	204	Cont	Cont
Army Research Lab, APG, MD	MIPR						100	200	304	Cont	Cont
Government Furnished Property: None											
Subtotal Product Development							8305	11438	8770	1245	Cont
Subtotal Support and Management							1050	1130	1687		Cont
Subtotal Test and Evaluation							400	600	712		Cont
Total Project							9755	13168	11169	1245	Cont

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603801A Aviation - Advanced Development

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	12893	13104	7132	7450	5809	5898	9252	9583	Continuing	Continuing
DB32 Advanced Maintenance Concepts and Equipment	2136	2181	2656	2599	3026	3065	3454	3568	Continuing	Continuing
DB33 Cargo Handling and Mission Support Equipment	1356	2010	1931	2391	2783	2833	2997	3198	Continuing	Continuing
DB45 Aircrew Integrated Systems	9401	8913	2545	2460	0	0	2801	2817	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 support 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 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603801A Aviation - Advanced Development

PROJECT: DB32

COST (*In Thousands*)	FY 1996 Actual	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
DB32 Advanced Maintenance Concepts and Equipment	2136	2181	2656	2599	3026	3065	3454	3568	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 testing (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 1996 Accomplishments:

- 379 Demonstrated high confidence, automatic identification of voids, delaminations, and occlusions in composite structures.
- 97 Initiated follow-on effort to complete operational implementation and address Tri-Service issues for the knowledge-based automated Non-Destructive Inspection/Non-Destructive Test (NDI/NDT) inspection and repair procedures for composite components.
- 806 Completed the pre-production design and the first unit fabrication of the Advanced Boresight Equipment.
- 679 Initiated an effort via an integrated Army product team (IPT) and cooperative agreement with the four major U.S. helicopter manufacturers, to conceptualize and design an optimal infrastructure for a digitally enhanced aviation logistics environment.
- 47 Completed the acquisition and technical planning documentation for development of advanced portable maintenance module.
- 35 Completed joint Navy Helicopter Integrated Diagnostics System testing of seeded faults using vibration diagnostics to confirm a severely degraded high speed shaft condition and a bearing fault in an SH-60 main transmission module.
- 93 Completed a market survey to identify commercial off-the-shelf, environmentally safe, aircraft cleaning and deicing systems for evaluation.

Total 2136

FY 1997 Planned Program:

- 82 Conduct seeded fault testing for mechanical system diagnostic and prognostic development.
- 1296 Complete an infrastructure definition for on-board diagnostics as part of a digital aviation logistics system. Develop an implementation plan for each aircraft and support system.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603801A Aviation - Advanced Development
	PROJECT DB32

FY 1997 Planned Program: (continued)

•	752	Initiate development of portable maintenance aids designed to utilize the original equipment three dimensional design database for diagnostics and repair, to support flexible scheduling of phased maintenance events, and to integrally incorporate the aircrew as part of the diagnostic and troubleshooting procedures.
•	51	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
Total	2181	

FY 1998 Planned Program:

•	375	Initiate wireless maintenance data network definition.
•	1870	Establish functional allocation for the critical elements of the digital aviation logistics system. Develop procedures and design the diagnostics evaluation program.
•	264	Complete PMA field evaluation and develop definition of fully integrated portable electronic aid.
•	147	Initiate on-condition maintenance credit definition process.
Total	2656	

FY 1999 Planned Program:

•	536	Develop virtual prototype of integrated digital maintenance infrastructure and evaluate feasibility of on-line technical expertise pools.
•	1431	Complete on-board diagnostics definition and demonstrate utility of logistical system interface.
•	335	Develop wireless maintenance data network equipment and interfaces.
•	297	Complete life extension procedures for on-condition maintenance.
Total	2599	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	2306	2228	2853	2806
Appropriated Value	2371	2181		
Adjustments to Appropriated Value	-235			
FY 1998 Pres Bud Request	2136	2181	2656	2599

C. Other Program Funding Summary

	FY 1996	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*	15340	19213	24410	27152	27132	28605	29712	30374	Cont	Cont

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

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603801A Aviation - Advanced Development PROJECT DB32

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
Conduct development and operational test of the UMARK		X*		X												
Complete the dem/val phase of the ABE program				X												
Complete detailed design of the on-board diagnostics system and define the interface with the automated maintenance and logistics system.							X			X					X	
Initiate wireless maintenance data network definition.											X					
Virtual prototype integrated digital maintenance infrastructure.														X		
Complete life extension procedures for on-condition maintenance.																X

*Denotes completed effort

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603801A Aviation - Advanced Development PROJECT DB32

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development	700	370	420	358
Software Development	213	504	475	525
Systems Engineering	30	425	560	510
Integrated Logistics Support	126		85	110
DT/OT	343		100	115
Program Management	150	167	170	165
Research Personnel	479	549	734	718
Miscellaneous	95	115	112	98
SBIR/STTR		51		
Total:	2136	2181	2656	2599

B. Budget Acquisition History and Planning Information: Not applicable

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603801A Aviation - Advanced Development

PROJECT: DB33

COST (*In Thousands*)	FY 1996 Actual	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
DB33 Cargo Handling and Mission Support Equipment	1356	2010	1931	2391	2783	2833	2997	3198	Continuing	Continuing

A. Mission Description and 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 for each individual project is to complete the development effort through government testing (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. Programs are executed in coordination with the user and the gaining organization.

FY 1996 Accomplishments:

•	1356	Completed critical design review of the advanced internal and external cargo handling system. Fabricated the composite floor panels with integral flip-over conveyor rollers, 463L pallet guide rails/restraint system, Night Vision Goggle (NVG) compatible cabin curb lighting, and High Mobility Multi-Purpose Wheeled Vehicle (HMMWV) guide rails. Initiated development and test of winchable cargo hooks.
Total	1356	

FY 1997 Planned Program:

•	595	Complete the demonstration of advanced internal and external cargo handling systems.
•	146	Conduct an aircraft cleaning and de-icing system NDI evaluation.
•	403	Complete knowledge based NDI/NDT inspection and repair procedures for composite components.
•	261	Modify and complete turbine engine diagnostic system for T-700 engine as part of an overall integrated portable engine test set program.
•	405	Initiate portable engine test set development for entire aviation fleet that will handle both the aircraft interface as well as the engine itself.
•	151	Initiate development of a contact maintenance electrical power generator capable of supporting the complete range of power and frequency requirements necessary to support aircraft maintenance actions.
	49	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
Total	2010	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603801A Aviation - Advanced Development
	PROJECT DB33

FY 1998 Planned Program:

•	550	Complete portable engine test set development.
•	701	Initiate demonstration of a cargo movement system for heavy (95th percentile) load.
•	285	Develop environmentally friendly mission support equipment.
•	395	Prototype field repair equipment for low observable composite components.
Total	1931	

FY 1999 Planned Program:

•	1003	Virtual prototype heavy-lift capability and evaluate alternatives.
•	403	Initiate smart coupling for aircraft cargo operations.
•	285	Complete low observable (LO) composite repair demonstration.
•	700	Initiate cargo and logistics management and delivery system.
Total	2391	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	2093	2053	2071	2581
Appropriated Value	2152	2010		
Adjustments to Appropriated Value	-796			
FY 1998 Pres Bud Request	1356	2010	1931	2391

Change Summary Explanation: Funding: FY96 (-737) reprogrammed to higher priority requirements.

C. Other Program Funding Summary

	FY 1996	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.*	15340	19213	24410	27152	27132	28605	29712	30374	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 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603801A Aviation - Advanced Development PROJECT DB33

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 the demonstration of advanced internal and external cargo handling systems					X											
Complete aircraft maintenance unit mobility system											X					
Virtual prototype heavy cargo lift capability										X						
Complete heavy cargo lift demonstration														X		
Complete LO composite repair demonstration																X
Initiate smart coupling for aircraft cargo operations															X	

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE: February 1997
BUDGET ACTIVITY: 4 - Demonstration and Validation	PE NUMBER AND TITLE: 0603801A Aviation - Advanced Development	PROJECT: DB33

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development	500	770	507	408
Software Development			233	390
Systems Engineering	216	230	320	450
Integrated Logistics Support			75	100
Developmental Test/Operational Test (DT/OT)		300	50	100
Program Management	149	100	160	165
Research Personnel	460	502	534	666
Miscellaneous	31	59	52	112
SBIR/STTR		49		
Total	1356	2010	1931	2391

B. Budget Acquisition History and Planning Information: Not applicable

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603801A Aviation - Advanced Development

PROJECT: DB45

COST (*In Thousands*)	FY 1996 Actual	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
DB45 Aircrew Integrated Systems	9401	8913	2545	2460	0	0	2801	2817	Continuing	Continuing

A. Mission Description and 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 1996 Accomplishments:

•	800	Continued CABS development contractor component, environmental, and dynamic system tests required prior to Milestone II (Joint Service)
•	1624	Continued Air Warrior trade studies, prepared developmental contract Request for Proposal (RFP), and integrated AICH effort (Joint Interest)
•	6427	Continued AICH contractor prototype development for laboratory and Comanche cockpit evaluation of miniature flat panel displays
•	550	Initiated NBC Advanced Initiatives Advanced Development for aircrew and air vehicle in conjunction with the Air Warrior project
Total	9401	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603801A Aviation - Advanced Development
	PROJECT DB45

FY 1997 Planned Program:

•	8703	Initiate Air Warrior Program Definition and Risk Reduction contractor effort and continue incorporation of AICH, Improved Noise Reduction and Speech Intelligibility technology, and NBC effort
•	210	Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	8913	

FY 1998 Planned Program:

•	2545	Continue Air Warrior Program Definition and Risk Reduction (PDRR), and flight test of AICH miniature flat panel displays
Total	2545	

FY 1999 Planned Program:

•	2460	Complete Dem Val
Total	2460	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	9636	4104	2733	2654
Appropriated Value	9907	8913		
Adjustments to Appropriated Value	-506			
FY 1998 Pres Bud Request	9401	8913	2545	2460

Change Summary Explanation: Funding: The increase in FY97 (+4809) is due to the Congressional Plus-up for the Aircrew Integrated Common Helmet component of the Air Warrior project.

C. Other Program Funding Summary

	FY 1996	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)	4885	5403	5109	6067	2076	2065	2172	2181	Cont	Cont
Aircraft Procurement, Army (APA) SSN AZ3110 Aircrew Integrated Systems*	7142	13280	12472	10003	8982	8920	23856	36827	Cont	Cont

*Represents the entire APA program for ACIS.

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603801A Aviation - Advanced Development

PROJECT: DB45

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
Air Warrior																
Prepared Draft Request for Proposal (RFP) and trade studies received	X*															
Release Draft Request for Proposal (RFP) for industry response		X*														
Program Definition & Risk Reduction (PDRR) phase incorporated			X*													
Finish Statement of Work for competition				X*												
PDRR RFP released to industry					X*											
Source Selection and award contracts						X										
Post Award Conference							X									
Review Functional Analysis								X								
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
AICH																
Initiated advanced development /design of AICH optical display prototypes			X*													
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			
NBC																
Initiated NBC Initiatives development for air vehicle and aircrew		X*														

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603801A Aviation - Advanced Development

PROJECT: DB45

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
Integrated NBC Advanced Initiatives with Air Warrior PDRR				X*												
Cockpit Air Bags System (CABS)																
UH-60 CABS instrumented flight test	X*															
UH-60 CABS Underwater test		X*														
Transition to EMD phase, UH-60 CABS			X*													
UH-60 CABS EMD contract award				X*												

*Denotes completed effort

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603801A Aviation - Advanced Development

PROJECT: DB45

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Development Organizations	7161	7034	1865	1800
Support and Management Organizations	1725	1169	600	580
Test and Evaluation Organizations	515	500	80	80
SBIR/STTR		210		
Total	9401	8913	2545	2460

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 1996	FY 1996	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	554	0	0	0	0	3183
Air Warrior AICH, Gentex, Carbondale, PA	SS-CPFF	Jul 1995			3134	6427	5614	100	100	Cont	Cont
Air Warrior, various simulation facilities	C-CPFF	Jun 1995	1208	1208	1123	30	20	5	5	25	1208
Air Warrior, AD unknown	C-CPFF	Mar 1997			0	0	1100	1700	1695	Cont	Cont
Air Warrior, HRED, Aberdeen Proving Grnd, MD	MIPR	Jan 1997	360	360	0	0	300	60	0	0	360
Miscellaneous	MIPR		866	866	716	150	0	0	0	0	866
SBIR/STTR							210				210
Support and Management Organizations											
CAS, Huntsville, AL	C-T&M	Dec 1993			656	330	200	140	130	Cont	Cont

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

DATE: February 1997

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Camber, Huntsville, AL	C-T&M	Dec 1993			737	331	200	140	130	Cont	Cont
ATCOM, St. Louis, MO/AMCOM, Huntsville, AL	MIPR				1411	500	499	300	300	Cont	Cont
AFDD, Moffett Field, CA	MIPR	Nov 1993			1588	0	0	5	5	Cont	Cont
USAARL, Ft. Rucker, AL	MIPR	May 1995			780	224	100	5	5	Cont	Cont
AATD, Ft. Eustis, VA	MIPR				640	240	100	5	5	Cont	Cont
Natick R&D Center, Natick, MA	MIPR				445	100	70	5	5	Cont	Cont
Test and Evaluation Organizations											
TECOM/ATTC, Ft. Rucker, AL	MIPR				278	515	500	80	80	Cont	Cont
Government Furnished Property: Not Applicable											
Subtotal Product Development Organizations					13859	8886	8413	2465	2380	Cont	Cont
Subtotal Support and Management Organizations											
Subtotal Test and Evaluation Organizations					278	515	500	80	80		Cont
Total					14137	9401	8913	2545	2460	Cont	Cont

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DAS2

COST (*In Thousands*)	FY 1996 Actual	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
DAS2 Small Arms Improvements	949	0	0	0	1812	2919	1498	1099	0	8277

A. Mission Description and Budget Item Justification: This project aims to achieve improvements in target acquisition, target effect, lethality, training effectiveness, durability, and reliability, availability and maintainability (RAM) for small arms weapons systems. Current small arms systems include a variety of personal defense weapons (.38 cal, .45 cal; 9mm), individual weapons (5.56mm - 7.62mm), and crew served weapons (5.56mm - 40mm). Also included is related equipment such as fire control, training devices, and ammunition. This project will begin development of a small arms fire control system (SAFCS) providing an integrated day/night fire control system with a laser range finder for use on the MK19-3 Grenade Machine Gun. The SAFCS is a continuation of an advanced development effort conducted by the Joint Service Small Arms Program. This project focuses on efforts associated with advanced technology development. It demonstrates general military utility, to include demonstration and validation, of a SAFCS and is correctly placed in budget activity 4.

Acquisition Strategy: Not Applicable

FY 1996 Accomplishments:

•	75	Conducted market survey/Trade-off Determination
•	248	Developed system performance specification
•	75	Prepared and staff Purchase Description
•	75	Prepared procurement package input for test hardware
•	350	Awarded contract for test hardware
•	126	Conducted test and develop reports
Total	949	

FY 1997 Planned Program: Project not funded in FY 97

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 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DAS2

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	949	0	0	0
Appropriated Value	949	0	0	0
Adjustments to Appropriated Value	0	0	0	0
FY 1998 President's Budget Request	949	0	0	0

C. Other Program Funding Summary None

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
Conduct market survey /Trade-off Determination				X												
Develop system performance specification				X												
Prepare and staff Purchase Description				X												
Prepare procurement package input for test hardware					X											
Award Contract for test hardware						X										
Conduct test and develop reports								X								

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DAS2

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Other Government Agency Support	520			
Program Management Support	79			
Contract Support	350			
Total	949			

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
ARDEC	MIPR	Multi	370	370	0	370	0	0	0	5238	5608
Support and Management Organizations											
PM Small Arms	Allot	Multi	79	79	0	79	0	0	0	540	619
TACOM Picatinny Arsenal	DC	2Q97	350	350	0	350	0	0	0	0	350
Test and Evaluation Organizations											
TECOM	MIPR	Multi	35	35	0	35	0	0	0	0	35
TEXCOM	MIPR	Multi	40	40	0	40	0	0	0	0	40
ARDEC	MIPR	Multi	75	75	0	75	0	0	0	1550	1625

Government Furnished Property None

Subtotal Product Development	370			5238	5608
Subtotal Support and Management	429			540	969
Subtotal Test and Evaluation	150			1550	1700
Total Project	949			7328	8277

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

COST (*In Thousands*)		FY 1996 Actual	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
	Total Program Element (PE) Cost	5587	7433	6783	6833	7731	6535	13693	13317	Continuing	Continuing
DGO1	Combat Engineer Equipment Advanced Development	0	0	0	0	0	0	944	1415	Continuing	Continuing
DG10	Advanced Tactical Power Sources	128	129	135	178	198	216	477	475	Continuing	Continuing
DG11	Advanced Electrical Energy Concepts Advanced Development	216	213	214	1371	1020	743	616	570	Continuing	Continuing
DG14	Logistics Support Equipment Advanced Development	92	86	96	98	105	101	103	100	Continuing	Continuing
DK39	General Support Equipment Advanced Development	707	851	1689	1809	1980	2103	2424	2431	Continuing	Continuing
DK41	Petroleum, Oil and Lubricant (POL) Distribution Equipment Advanced Development	864	872	859	824	899	892	944	946	Continuing	Continuing
D266	Airdrop Equipment Advanced Development	1116	1414	1359	1353	1336	1503	4864	4700	Continuing	Continuing
D428	Rigid Wall Shelter Advanced Development	2464	3868	2431	870	983	977	1970	1977	Continuing	Continuing
D526	Marine Orientation Log Equipment Advanced Development	0	0	0	330	1210	0	1351	703	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 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development
	PROJECT DG10

COST (*In Thousands*)	FY 1996 Actual	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
DG10 Advanced Tactical Power Sources	128	129	135	178	198	216	477	475	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-charge 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 1996 Accomplishments:

•	40	Developed an improved rechargeable battery and charger based on the lithium ion battery chemistry for use in the Single Channel Ground and Airborne Radio System (SINCGARS).
•	40	Developed techniques for reducing battery related disposal costs.
•	48	Developed a vehicular mounted battery charging station.
Total	128	

FY 1997 Planned Program:

•	20	Conduct field test and evaluation of next generation of primary lithium based batteries.
•	64	Begin development of high power battery chemistry with no toxic/hazardous materials.
•	45	Develop High Energy/High Power throw away battery for Force XXI Soldier.
Total	129	

FY 1998 Planned Program:

•	108	Develop cost effective, environmentally friendly, ultra thin rechargeable lithium battery for Force XXI Soldier.
•	27	Test, evaluate proof of principle for thin cells and prototype batteries.
Total	135	

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DG10

FY 1999 Planned Program:

- 139 Design and develop conformal battery packaging for Standard Family of Rechargeable Lithium Batteries.
- 39 Conduct field tests and prepare specifications for thin, conformal rechargeable batteries family.

Total 178

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	130	132	130	172
Appropriated Value	135	129		
Adjustments to Appropriated Value	-7			
FY 1998 Pres Bud Request	128	129	135	178

C. Other Program Funding Summary: None

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
Develop Rechargeable Battery & Recharger for SINCGARS				X*			X									
Investigate reduction of battery related disposal costs				X*												
Develop charging station for vehicular batteries					X*											
Field test and evaluation of next generation lithium batteries					X*											
Develop High Energy/High Power battery for Force XXI Soldier								X								
Develop thin rechargeable lithium battery											X					
Test and evaluate Proof of Principle/ prototype of thin cell batteries												X				
Develop conformal battery															X	
Conduct field tests on thin, conformal batteries																X

* Milestones Complete

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
4 - Demonstration and Validation	0603804A Logistics and Engineering Equipment - Advanced Development	DG10

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Hardware Development	128	99	115	148
Test and Evaluation		30	20	30
Total	128	129	135	178

B. Budget Acquisition History and Planning Information: None

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DG11

COST (*In Thousands*)	FY 1996 Actual	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
DG11 Advanced Electrical Energy Concepts Advanced Development	216	213	214	1371	1020	743	616	570	Continuing	Continuing

A. Mission Description and 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 1996 Accomplishments:

•	126	Completed evaluation of commercial digital displays, controls and diagnostics in 60kW engine generators.
•	90	Initiated evaluation of permanent magnet generators with associated electronics.
Total	216	

FY 1997 Planned Program:

•	209	Evaluate digital display controls and diagnostics over the family of generator sets.
•	4	Small Business Innovation Research/Small Business Technology transfer (SBIR/STTR) Program
Total	213	

FY 1998 Planned Program:

•	214	Initiate evaluation of lightweight efficient engine design for 5kW, 10kW, and 15kW generator sets.
Total	214	

FY 1999 Planned Program:

•	706	Complete evaluation of lightweight efficient engine designs for 5kW, 10kW, and 15kW generator sets.
•	665	Complete evaluation of permanent magnet generators and associated electronics.
Total	1371	

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DG11

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	221	217	215	212
Appropriated Value	227	213		
Adjustments to Appropriated Value	-11			
FY 1998 Pres Bud Request	216	213	214	1371

Change Summary Explanation: Funding increase (+1159) in FY 1999 reprogrammed into this project for the evaluation of light weight efficient engine designs for 5kw, 10kw and 15 kw generator sets and completion of the evaluation of permanent magnet generators and associated electronics.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0604804A.D194, Engine Driven Generators Engineering Development	1423	2183	7534	9015	8184	5290	1364	1417	Cont	Cont
OPABA3: Generators & Assoc Equip (MA9800)	13482	29980	7706	74952	101113	90717	41000	38368	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
Evaluate digital display, controls and diagnostics in 60kW set				X*												
Test commercial state-of-the-art technologies for insertion to FY 99 buy							X									
Initial lightweight engine evaluation										X						
Complete lightweight engine evaluations															X	
Complete permanent magnet generator evaluation																X

* Milestone Complete

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DG11

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Hardware Development	99	90	44	962
Test and Evaluation	50	73	125	59
Government Engineering and Support	42	21	25	200
Government Program Support	25	25	20	100
SBIR/STTR		4		50
Total	216	213	214	1371

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
	CPFF/TBD	2Q96	200	200		216	209	214	1159	Cont	1798
SBIR/STTR							4				4
Support and Management Organizations: None											
Test and Evaluation Organizations											
CECOM	In-House	Various							212	Cont	212
Government Furnished Property: None											
Subtotal Product Development						216	213	214	1159		1802
Subtotal Support and Management									212		212
Subtotal Test and Evaluation											
Total Project						216	213	214	1371		2014

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DG14

COST (*In Thousands*)	FY 1996 Actual	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
DG14 Logistics Support Equipment Advanced Development	92	86	96	98	105	101	103	100	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 1996 Accomplishments:

•	38	Initiated contract package for Visibility Improvements for Forklift Carriages (VIC).
•	54	Initiated VIC test.
Total	92	

FY 1997 Planned Program:

•	42	Conduct technical testing of VIC prototypes.
•	42	Initiate materiel change management documentation for VIC.
•	2	Small Business Innovation Research/Small Business Technology transfer (SBIR/STTR) Program
Total	86	

FY 1998 Planned Program:

•	41	Conduct market survey for Lightweight Container Handlers.
•	55	Complete materiel change management documentation for VIC.
Total	96	

FY 1999 Planned Program:

•	98	Initiate preparation of acquisition package for Light Weight Container Handlers.
Total	98	

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DG14

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	95	88	88	87
Appropriated Value	97	86		
Adjustments to Appropriated Value	-5			
FY 1998 Pres Bud Request	92	86	96	98

Change Summary Explanation: Funding increase (+8 in FY 1998 and +11 in FY 1999) reprogrammed into this project for acceleration of the Lightweight Container Handlers effort.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0604804.DH14, Logistics Support Equipment	579	88	4829	100	105	102	103	101	Cont	Cont
OPA 3, M41200, Truck Fork Lift, DE, PT, RT	10587			24396	35774	50181	16863	16894	Cont	Cont
OPA 3, MA8600, Items Less Than $2.0M (MHE)	2754	2664	1724	1715	1854	1843	1984	1988	Cont	Cont
OPA 3, M41800, All Terrain Lifting Articulated System	13640	15941	3554	10498	10505	10510	11903	23851	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
Conduct CCR Milestone II			X*													
Contract for Visibility Improvements for Forklift Carriages (VIC)				X*												
Complete testing of VIC prototypes							X									
Initiate materiel change management documentation for VIC								X								
Complete materiel change management documentation for VIC									X							
Initiate acquisition package for Light Weight Container Handlers													X			

* Milestones Completed

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DG14

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Hardware Development	54			
Test and Evaluation		44	55	58
Government Engineering and Support				
Government Program Support	38	40	41	40
SBIR/STTR		2		
Total	92	86	96	98

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 1996	FY 1996	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			913	92	84	96	98	Cont	1283
TECOM					259						259
SBIR/STTR							2				2

Government Furnished Property: None

Subtotal Product Development											
Subtotal Support and Management											
Subtotal Test and Evaluation					1172	92	86	96	98		1544
Total Project					1172	92	86	96	98		1544

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DK39

COST (*In Thousands*)	FY 1996 Actual	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
DK39 General Support Equipment Advanced Development	707	851	1689	1809	1980	2103	2424	2431	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 1996 Accomplishments:

•	171	Investigated commercial technology applicable to 9K British Thermal Units-Heat (BTUH) Environmental Control Unit (ECU).
•	150	Conducted Milestone I/II IPR for the Lightweight Water Purifier (LWP).
•	161	Prepared contract package for design/fabrication of prototype LWP.
•	225	Completed evaluation of commercially available LWP.
Total	707	

FY 1997 Planned Program:

•	164	Select components and initial ECU system design.
•	450	Design and fabricate prototype LWP.
•	126	Initiate Pre-Production Qualification Testing (PPQT) and Initial Operational Test and Evaluation (IOTE) of LWP.
•	90	Complete market survey of commercial packaged water units and conduct Milestone I/II IPR for PWS.
•	21	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program
Total	851	

FY 1998 Planned Program:

•	491	Investigate commercial technology applicable to 9K BTUH ECU and large diesel heaters (250K+ BTUH).
•	300	Complete PQT and IOTE of LWP.
•	220	Conduct Milestone III IPR and type classify (generic) for the LWP.
•	628	Design and build EMD prototype PWS.
•	50	Initiate preparation of LWP production contract.
Total	1689	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development
	PROJECT DK39

FY 1999 Planned Program:

•	400	Fabricate 9K ECU prototypes.
•	232	Investigate commercial technology applicable to Small Diesel Heaters (60-100K BTUH).
•	500	Conduct PQT and IOTE on the PWS prototype.
•	200	Conduct Early Development Testing (EDT) on prototype Water, Individual Purification System (WIPS) prototype.
•	227	Prepare WIPS program documentation.
•	250	Prepare PWS program documentation.
Total	1809	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	959	869	1449	1428
Appropriated Value	985	851		
Adjustment to Appropriated Value	-278			
FY 1998 Pres Bud Request	707	851	1689	1809

Change Summary Explanation: Reduction in FY 1996 (-278) was reprogrammed to higher priority requirements. FY 1998 (+240)/FY 1999 (+381) increases due to additional RDTE requirements for water systems.

C. Other Program Funding Summary

	FY 1996	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	1319	1641	2286	2589	2247	2187	4688	4238	Cont	Cont
OPA 3, ML5335, Items Less Than $2.0M (Water Equipment)	2584	2968	2862	6464	9098	8505	5654	4391	Cont	Cont
OPA 3, MF9300, Air Conditioners, Various Sizes	3083	1461	1468	4770	4637	4712	1438	1988	Cont	Cont

D. Schedule Profile

	FY 1996	FY 1997	FY 1998	FY 1999
Investigate commercial technology applicable to 9K BTUH ECU unit		X*		
Select components and complete initial ECU system design			X	
Conduct MS I/II LWP IPR		X*		

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development PROJECT DK39

D. Schedule Profile	FY 1996		FY 1997		FY 1998		FY 1999		
Prepare contract package for design/ fabrication of LWP	X*								
Complete evaluation of commercially available LWP		X*							
Design/fabrication of LWP			X						
Initiate PPQT and IOTE for LWP				X					
Complete market survey and conduct MS I/II IPR for Packaged Water Systems				X					
Investigate 9K ECU and large heater technology					X				
Develop 9K ECU prototypes							X		
Investigate small diesel heater technology						X			
Complete PQT/IOTE for LWP					X				
Design and fabricate prototype PWS						X			
Initiate preparation of LWP production contract					X				
Conduct MS III (Generic) IPR for LWP						X			
Conduct PQT/IOTE on PWS prototype								X	
Conduct EDT of WIPS prototype									X
Initiate preparation of WIPS program documentation							X		
Initiate preparation of PWS program documentation to support MS III IPR								X	

* Milestones Complete

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DK39

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Hardware Development	318	440	733	794
Program Management Support	45	60	60	60
Test and Evaluation	25	132	380	550
Government Engineering and Support	213	148	373	255
Integrated Logistics Support	106	50	143	150
SBIR/STTR	0	21	0	0
Total	707	851	1689	1809

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 1996	FY 1996	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/ CECOM	In-House	Various			317	377	181	288	329	Cont	1492
Contractors	CPFF	Mar 97			118		440	650	513	Cont	1721
NFESC	MIPR	Various			400			15	15	Cont	430
ARL	MIPR	Various				15	15	15	30	Cont	75
BRTRC	Task Order	May 96				60		50	50	Cont	160
TECOM	MIPR	Various				25	150	250	400	Cont	825
CECOM	MIPR	Various				30	30	56	247	Cont	363
NSF	MIPR	Various				85					85
ATCOM	MIPR	Various				115	14	50	75	Cont	254
MTMC	MIPR	Dec 96						15			15
CECOM	In-House	Various						170	150	Cont	320

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

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

PROJECT: DK39

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
CECOM	MIPR	Various						130		Cont	130
SBIR/STTR							21				21

Government Furnished Property: None

	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development							
Subtotal Support and Management							
Subtotal Test and Evaluation	835	707	851	1689	1809		5891
Total Project	835	707	851	1689	1809		5891

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DK41

COST (*In Thousands*)	FY 1996 Actual	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
DK41 Petroleum, Oil and Lubricant (POL) Distribution Equipment Advanced Development	864	872	859	824	899	892	944	946	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 1996 Accomplishments:

•	282	Conducted system analysis of petroleum quality analysis set (PQAS) function and configuration.
•	503	Completed system design and initiated fabrication of PQAS technology demonstration model.
•	79	Completed performance Technical Data Package (TDP) for Standard Army Refueling System (SARS) and conduct demonstrations.
Total	864	

FY 1997 Planned Program:

•	50	Update PQAS program management documentation for Milestone II IPR.
•	62	Prepare solicitation package for PQAS EMD Phase.
•	740	Complete fabrication and development testing PQAS technology demonstration model (TDM).
•	20	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program
Total	872	

FY 1998 Planned Program:

•	35	Coordinate PQAS program management documentation and conduct Milestone II IPR.
•	170	Demonstrate feasibility of portable PQAS modules for use in forward areas.
•	95	Prepare Petroleum Quality Surveillance Laboratory (PQSL) program management documentation and conduct Milestone I IPR.
•	424	Award contract for ultralight 350 gallons per minute (GPM) pump assembly prototype.
•	135	Prepare contract package for PQSL technology demonstration model.
Total	859	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development
	PROJECT DK41

FY 1999 Planned Program:

- 80 Continue development of ultralight 350 GPM pump assembly prototype.
- 744 Award PQSL contract for design, fabrication, and test.

Total 824

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	885	891	912	876
Appropriated Value	910	872		
Adjustments to Appropriated Value	-46			
FY 1998 Pres Bud Request	864	872	859	824

C. Other Program Funding Summary

	FY 1996	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	1135	1011	1071	1081	1057	1052	1306	1314	Cont	Cont
OPA3, ML5330, Items Less Than $2 million (POL)	4554	6442	6275	5914	6991	6833	7981	7886	Cont	Cont
OPA3, M90800, Hoseline Outfit Fuel Handling	0	0	0	814	2672	2672	2091	1745	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
Conduct system analysis of PQAS		X*														
Complete SARS performance TDP and conduct demonstrations			X*													
Initiate fabrication of PQAS tech demo model				X*												
Prepare solicitation package for PQAS EMD Phase								X								
Complete fabrication and testing of PQAS technology demonstration model								X								
Update PQAS Program Management Documents (PMD) for Milestone II IPR								X								

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DK41

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
Conduct PQAS Milestone II IPR and coordinate PMD										X						
Demonstrate feasibility of portable PQAS modules for use in forward areas											X					
Prepare PMD for PQSL and conduct Milestone I IPR									X							
Award contract for ultralight 350 GPM pump assembly model									X							
Prepare contract package for PQSL TDM									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 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: DK41

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Hardware Development	669	667	470	511
Test and Evaluation	50	50	63	87
Government Engineering and Support	95	85	276	176
Government Program Support	50	50	50	50
SBIR/STTR	0	20	0	0
Total	864	872	859	824

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations: TARDEC											
Support and Management Organizations: ARL, ATCOM, TACOM											
Test and Evaluation Organizations: TECOM, TEXCOM											
Miscellaneous:											
TARDEC	In-House	Various			546	142	196	273	178	Cont	1335
ETG	CPFF	Sep 95			819	585	511	151		Cont	2066
TECOM	MIPR						120	50			170
TEXCOM	MIPR										
ARL	MIPR	Feb 96			52	15	15	15	10	Cont	107
ATCOM	MIPR	Mar 96			30	50	10			Cont	90
TACOM	MIPR	Mar 96				72				Cont	72
Contractor	CPFF	Dec 97						370	56	Cont	426
Contractor	CPFF	Dec 98							580	Cont	580
SBIR/STTR							20				20

Government Furnished Property: None

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development PROJECT DK41

	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development							
Subtotal Support and Management							
Subtotal Test and Evaluation	1447	864	872	859	824		4866
Total Project	1447	864	872	859	824		4866

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development PROJECT D266

COST (*In Thousands*)	FY 1996 Actual	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
D266 Airdrop Equipment Advanced Development	1116	1414	1359	1353	1336	1503	4864	4700	Continuing	Continuing

A. Mission Description and Justification: Conduct accelerated demonstration and validation of airdrop systems and equipment to provide advanced offset personnel and cargo airdrop capabilities over a range of altitudes with emphasis on improved safety and greater precision, balanced with reduced vulnerability of personnel, aircraft, aircrew and equipment.

Acquisition Strategy: Single cycle accelerated development with type classification directly upon successful conclusion of Demonstration/Validation development.

FY 1996 Accomplishments:

•	1116	Conduct technical testing of the Enhanced Container Delivery System (ECDS).
Total	1116	

FY 1997 Planned Program:

•	680	Initiate EPJD effort; component development, initial developmental testing.
•	300	Award contract for the design and trade off analysis of Advance Tactical Parachute System (ATPS) candidates. Number 1 priority of the XVIII ABN Corps. Increases safety and lethality of Force XXI Airborne Forces.
•	399	Conduct user testing for ECDS
•	35	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program
Total	1414	

FY 1998 Planned Program:

•	1359	Monitor contract development efforts and conduct component level test and evaluation of ATPS.
Total	1359	

FY 1999 Planned Program:

•	1300	Conduct developmental testing of ATPS; initiate operational testing.
•	53	Conduct market survey for 500 feet Low Velocity Aerial Delivery System (LVADS) Heavy
Total	1353	

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D266

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	1452	1444	1452	1452
Appropriated Value	1493	1414		
Adjustments to Appropriated Value	-377			
FY 1998 Pres Bud Request	1116	1414	1359	1353

Change Summary Explanation: Funding reprogrammed (-336) to a higher priority in FY 1996.

C. Other Program Funding Summary

	FY 1996	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	1116	1414	1359	1354	1380	1371	4864	4701	Cont	Cont
OPA 3, R10903, Enhanced Container Delivery System					5270					5270
OPA 3, R10904, Advanced Tactical Parachute System						14924				14924

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
Conclude technical testing of ECDS							X									
Initiate EPJD effort							X									
Award contract for ATPS							X									
Conduct user test for ECDS							X									
Design, fabricate and conduct component testing of ATPS											X					
Conduct developmental testing of ATPS													X			
Begin operational testing of ATPS																X

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D266

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development	574	969	934	930
Test and Evaluation	467	335	350	356
Government Support and Management	75	75	75	67
SBIR/STTR		35		
Total	1116	1414	1359	1353

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
SSCOM	In-House				23711	594	561	285	281	Cont	25432
QMSCH/OGA	MIPR				18	0	408	649	649	Cont	1724
Support and Management Organizations											
SSCOM					643	75	75	75	67	Cont	935
Test and Evaluation Organizations											
TECOM/OGA					1916	322	300	300	300	Cont	3138
SSCOM					120	125	35	50	56	Cont	386
SBIR/STTR							35				35

Government Furnished Property: None

Subtotal Product Development	23729	594	969	934	930	27156
Subtotal Support and Management	643	75	75	75	67	935
Subtotal Test and Evaluation	2036	447	370	350	356	3559
Total Project	26408	1116	1414	1359	1353	31650

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D428

COST (*In Thousands*)	FY 1996 Actual	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
D428 Rigid Wall Shelter Advanced Development	2464	3868	2431	870	983	977	1970	1977	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: Developments transition to Engineering and Manufacturing Development and then to production.

FY 1996 Accomplishments:

•	788	Completed development of Cargo Bed Cover (CBC) variants for High Mobility Multi-Purpose Wheeled Vehicle (HMMWV), completed testing of M105 CBC, and redesign 2 1/2 ton truck CBC.
•	1676	Completed technical testing of Large Standard Integrated Command Post System (SICPS) Shelter, and began fabrication of Operational Test (OT) shelters.
Total	2464	

FY 1997 Planned Program:

•	856	Complete development of M105 CBC and award design/fabrication contract for fourth CBC variant based user survey. Complete retesting and development of 2 1/2 ton truck CBC.
•	1405	Begin effort to apply novel signature management techniques to the HMMWV-mounted SICPS shelter to avoid visual, thermal, radar and IR detection
•	1513	Begin effort to develop a survivable SICPS shelter that provides ballistic protection, protection from directed energy and fuel air weapons, and enhanced NBC protection.
•	94	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program
Total	3868	

FY 1998 Planned Program:

•	1548	Award contract for the design and fabrication of the Survivable SICPS Shelter.
•	545	Complete design, fabrication, and testing of the fourth variant CBC.
•	338	Award development contract for a Family of Rigid/Soft (R/S) Hybrid Shelter.
Total	2431	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603804A Logistics and Engineering Equipment - Advanced Development
	PROJECT D428

FY 1999 Planned Program:

- 210 Complete development of the fourth CBC variant.
- 660 Complete design and conduct fabrication of R/S Hybrid Shelters.

Total 870

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	3482	3951	2594	926
Appropriation Value	3580	3868		
Adjustments to Appropriated Value	-1116			
FY 1998 Pres Bud Request	2464	3868	2431	870

Change Summary Explanation: In FY 1996 (-1018) funding was reprogrammed to higher priority requirements.

C. Other Program Funding Summary	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0604804.D429, Rigid Wall Shelter Engineering Development	2296	3193	1498	1024	1159	1152	2157	2166	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 testing and redesign of M105 Trailer CBC		X*														
Complete development of HMMWV CBC				X*												
Complete technical testing of the Large SICPS Shelter				X*												
Complete development of 2 1/2 ton truck CBC								X								
Begin development of reduced Signature SICPS Shelter						X										
Design and test Survivable Command Post												X				
Test fourth variant CBC											X					
Award contract for Hybrid Shelters										X						

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D428

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 development of fourth Variant CBC															X	
Fabricate R/S Hybrid Shelter																X
Type Classify M105 Trailer CBC							X									
Type Classify HMMWV CBC								X								

*Milestone completed

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D428

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development	1806	3166	421	270
Test and Evaluation	474	305	1000	200
Program Management Support	184	303	1010	400
SBIR/STTR		94		
Total	2464	3868	2431	870

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
SSCOM	In-House				14299	125	360	421	270	Cont	15475
Plastics Research Corp. Brunswick	Various	Various			382	1031	2206			Cont	3619
Ft. Belvoir CASCOM	MIPR				16	650	600			Cont	1266
Support and Management Organizations											
SSCOM					3605	184	303	1010	400	Cont	5502
Test and Evaluation Organizations											
TECOM	MIPR				7508	474	305	1000	200	Cont	9487
SBIR/STTR							94				94

Government Furnished Property: None

Subtotal Product Development	14697	1806	3166	421	270	20360
Subtotal Support and Management	3605	184	303	1010	400	5502
Subtotal Test and Evaluation	7508	474	399	1000	200	9581
Total Project	25810	2464	3868	2431	870	35443

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D526

COST (*In Thousands*)	FY 1996 Actual	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
D526 Marine Orientation Log Equipment Advanced Development	0	0	0	330	1210	0	1351	703	Continuing	Continuing

A. Mission Description and Justification: This project provides advanced development of technology necessary to improve marine logistical equipment. The effort for the concept design for the Landing Craft Utility (LCU) 1600 Service Life Extension Program (SLEP) will focus upon providing enhanced capabilities and reduction of Operating and Support (O&S) costs over the next several decades as well as meet Safety of Life at Sea (SOLAS) requirements.

Acquisition Strategy: RDTE followed by competitive procurement.

FY 1996 Planned Program: Project not funded in FY 96

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program:

- 125 Concept design effort to enhance performance of LCU 1600.
- 135 Concept design effort to reduce O&S costs of LCU 1600.
- 70 Concept design effort to satisfy new SOLAS standards.

Total 330

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	0	0	338
Appropriated Value				
Adjustment to Appropriated Value				
FY 1998 Pres Bud Request	0	0	0	330

C. Other Program Funding Summary: None

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY **4 - Demonstration and Validation**	PE NUMBER AND TITLE **0603804A Logistics and Engineering Equipment - Advanced Development** PROJECT **D526**

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
Report/Concept Acceptance	X*															
LCU 1600 Contract Award (Task Order)														X		
In-process Review																X

*Milestone completed

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D526

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Contractor Engineering Support				304
Program Management Support				26
Total				330

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Miscellaneous	SS-FP				447				279	Cont	726
Support and Management Organizations											
NSWC	MIPR				318				29	Cont	347
ATCOM	MIPR				69				22	Cont	91
Test and Evaluation Organizations: None											
Government Furnished Property: None											
Subtotal Product Development					447				279		726
Subtotal Support and Management					387				51		438
Subtotal Test and Evaluation											
Total Project					834				330		1164

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	13228	12689	7673	7783	1860	1863	1877	1885	Continuing	Continuing
D091 Combat Service Support Control System	11764	10771	5914	5997	0	0	0	0	0	136361
D246 Tactical Communications System-Advanced Development	1464	1918	1759	1786	1860	1863	1877	1885	Continuing	Continuing

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 therefore are appropriately funded in Budget Activity 4.

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

DATE: February 1997

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 1996 Actual	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
D091 Combat Service Support Control System	11764	10771	5914	5997	0	0	0	0	0	136361

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 builds 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 will extend 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. FY 97 is a transition year, with the Version 3 TRW contract in an extension period through 30 Sep 97. TRW will provide software maintenance and update support to CSSCS through IOTE-II, Task Force XXI and Division XXI preparation activities. Lockheed Martin Corporation (LMC) will provide training support in FY 97, and will transition to Version 4 and Version 5 software development beginning in FY 98.

FY 1996 Accomplishments:

- 5715 Continued Version 3 software development
- 1194 Began Version 4 software development
- 2000 Continued LRIP activity in accordance with Acquisition Decision Memo at III Corps
- 1055 Prepared for and conduct Army Warfighter Experiment (AWE) and Task Force XXI activities.
- 800 Prepared and conduct Version 4 Preliminary Design Review (PDR) and Critical Design Review (CDR)
- 1000 Prepared for and begin IOTE-II

Total 11764

FY 1997 Planned Program:

- 5007 Complete Version 3 software development
- 537 Continue Version 4 software development
- 694 Begin Version 5 development
- 1000 Conclude IOTE-II

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603805A Combat Service Support Control Systems Evaluation and Analysis
	PROJECT D091

FY 1997 Planned Program: (continued)

- 1200 Prepare for and conduct Army Warfighter Experiment (AWE), Task Force XXI and Division XX activities
- 800 Prepare documentation and conduct ASARC III (Full Scale Production (FSP)) and C3I Committee Review
- 533 Begin fielding of Version 3
- 750 Begin Version 4 Limited User Test (LUT)
- 250 Small Business Innovation Research/Small Business Technical Transfer (SBIR/STTR)

Total 10771

FY 1998 Planned Program:

- 2897 Complete Version 4 development
- 2367 Continue Version 5 development
- 450 Conclude LUT
- 200 Begin FOT&E

Total 5914

FY 1999 Planned Program:

- 5897 Complete Version 5 development
- 100 Complete FOT&E

Total 5997

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	12054	11119	5937	5936
Appropriated Value	12176	10884		
Adjustments to Appropriated Value	-412			
FY 1998 Pres Bud Request	11764	10771	5914	5997

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Procurement, OPA 2 (W34600)	4547	5806	5759	5740	13845	13749	14018	14674	31200	115254
Spares (MA9706/BS9706)	450	884	293	187	178	177	189	189	200	2747

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

DATE: February 1997

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 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
V4 PDR			X*													
V4 CDR			X*													
V3 IOTE-II					X*											
ASARC III (FSP)						X										
FUE V3							X									
V4 Technical Test							X									
V5 PDR							X									
V5 CDR								X								
V4 LUT								X								
V3 IOC									X							
V5 FOTE									X							
Begin Fielding V4										X						
Begin Fielding V5														X		

*Milestone Complete

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

DATE: February 1997

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 1996	FY 1997	FY 1998	FY 1999
Software Development	6909	7407	4289	4597
Program Management Support	2555	2004	1200	1200
COE/CHS/Common Support	1800	733	200	100
Operational Test and Evaluation	500	377	225	100
SBIR/STTR		250		
Total	11764	10771	5914	5997

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
TRW	C/CPFF	7/87	15731	15731	15731	0	0			0	15731
TRW	C/CPAF	2/91	65354	65354	53432	5715	6107			0	65254
Lockheed Martin	C/CPAF	12/94	TBD	TBD	1500	1194	1105	4289	4597	0	12685
COE/Com Spt	MIPR				3990	1300	445	200	100	0	6035
SBIR/STTR							250				250
Support and Management Organizations											
PM CSSCS					13451	659	495	275	275	0	15155
CECOM	MIPR				910	304	160	70	70	0	1514
SDC-LEE	MIPR				136	265	265	130	130	0	926
SDC-HUACHUCA	MIPR				485	165	100	50	50	0	850
EER/VITRO/ FEDSIM	MIPR				2511	1162	1300	675	675	0	6323
Test and Evaluation Organizations											
GOVT	MIPR				2289	310	165	150	100	0	3014
EPG/CAC	MIPR				413	170	159	75		0	817
OPTEC					1558	20	20			0	1598

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D091

Government Furnished Property

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property										
CHS-TRW/LMC	MIPR			3101	500	200			0	3801
Support and Management Property: None										
Test and Evaluation Property										
CHS-III CORPS	MIPR			2408	0	0			0	2408
Subtotal Product Development				77754	8709	8107	4489	4697		103756
Subtotal Support and Management				17493	2555	2320	1200	1200		24768
Subtotal Test and Evaluation				6668	500	344	225	100		7837
Total Project				101915	11764	10771	5914	5997		136361

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

DATE: February 1997

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 1996 Actual	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
D246 Tactical Communications System-Advanced Development	1464	1918	1759	1786	1860	1863	1877	1885	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: The efforts funded in this project are non-system specific, therefore no acquisition strategy is provided.

FY 1996 Accomplishments:

- 579 Established Tactical Internet Testbed and baseline for the performance of hardware, software and protocols
- 535 Conducted near term experiments to address the internet architecture for the Task Force (TF) XXI Exercise
- 250 Provided technical support for the Task Force XXI field testing and training
- 100 Began incorporation of Digital Battlefield Communications (DBC)/Battlefield Information Transmission System (BITS) near term products into the tactical internet

Total 1464

FY 1997 Planned Program:

- 431 Provide on-site tactical internet technical support at Ft Hood and Ft Irwin for TF XXI
- 586 Insert new technologies and expand the testbed to address requirements for division size networks
- 250 Develop and provide empirical test data for the Division 98 simulation exercise
- 104 Incorporate latest DBC/BITS Products

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603805A Combat Service Support Control Systems Evaluation and Analysis PROJECT D246

FY 1997 Planned Program: (continued)

•	500	Research and test on the ground, new and improved video systems. Candidate video systems will be installed on an airborne platform for flight testing with the Near Term Digital Radio prototype and the Surrogate Digital Radio
•	47	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
Total	1918	

FY 1998 Planned Program:

•	300	Resolve technical issues identified during the TF XXI and Division Simulation Exercise
•	609	Insert latest technologies and expand the testbed to address requirements for corps size networks
•	240	Develop and provide empirical test data for the Corps 99 Simulation Exercise
•	110	Incorporate next set DBC/BITS Products
•	500	Demonstrate advanced networking capabilities on an airborne platform by incorporating the NTDR production model on an airborne platform
Total	1759	

FY 1999 Planned Program:

•	325	Resolve technical issues identified during the Corps exercise
•	811	Optimize technical solutions for Force XXI fieldings
•	150	Incorporate final set of DBC/BITS products
•	500	Demonstrate a multiband/multimode capability on an airborne platform to show the insertion of the Future Digital Radio
Total	1786	

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	1501	2021	1884	1922
Appropriated Value	1516	1918		
Adjustments to Appropriated Value	-52			
FY 1998 Pres Bud Request	1464	1918	1759	1786

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603805A Combat Service Support Control Systems Evaluation and Analysis PROJECT D246

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
CECOM RDEC Internal Technical Support	790	1172	1028	1074
Contractor Technical Support	630	570	595	584
Travel & Misc. (Routers, Cables, Connectors)	44	129	136	128
SBIR/STTR		47		
Total	1464	1918	1759	1786

B. Budget Acquisition History and Planning Information: Not applicable

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	9878	9996	6765	8700	9326	9306	10939	10508	Continuing	Continuing
D808 DoD Drug and Vaccine-Advanced Development	3598	3754	2202	3696	3687	3652	4046	4047	Continuing	Continuing
D811 Military HIV Vaccine and Drug-Advanced Development	2532	2581	0	517	782	795	818	786	Continuing	Continuing
D836 Combat Medical Materiel-Advanced Development	2593	2844	3723	3616	3752	3765	3997	3797	Continuing	Continuing
D837 Soldier System Protection-Advanced Development	1155	817	840	871	1105	1094	2078	1878	Continuing	Continuing

Mission Description and Budget Item Justification: This program element (PE) funds the advanced development of medical materiel necessary to field an effective capability for infectious diseases. The PE funds Advanced Development (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 OOTW while reducing logistical support requirements. The PE also funds AD systems which 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, and 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 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D808

COST (*In Thousands*)	FY 1996 Actual	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
D808 DoD Drug and Vaccine-Advanced Development	3598	3754	2202	3696	3687	3652	4046	4047	Continuing	Continuing

A. Mission Description and Justification: This project funds demonstration and validation 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, so as to prevent casualties, sustain operational performance and minimize deaths and disability of armed forces during military operations. Some major contractors are The Salk Institute, Swiftwater, PA, University of Illinois, Chicago, IL, South Florida Research Institute, Miami, FL, 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 FDA licensure.

FY 1996 Accomplishments:

•	1407	Continued safety and efficacy evaluations of antimalarial drugs, azithromycin, Halofantrine, WR238605 and antileishmanial drug WR6026. Initiate development of antimalarial drug arteether and topical antileishmanial drug paromomycin.
•	1027	Completed expanded Phase II trials of a malaria blood stage vaccine Spf66.
•	137	Completed Phase II testing of the recombinant Hantaan vaccine.
•	536	Continued Phase I/II trials of the *Campylobacter* vaccine.
•	491	Demonstrated and validated off the shelf technologies to develop telemedicine hardware and concepts in the prevention, diagnosis and treatment of infectious diseases.
Total	3598	

FY 1997 Planned Program:

•	1768	Conduct expanded trial to evaluate safety and efficacy of antimalarial drugs WR238605, arteether, Halofantrine, and antileishmanial drugs WR6026 and paromomycin.
•	453	Conduct Phase I testing of a vaccine against hemorrhagic fever renal syndrome caused by Hantaan virus.
•	444	Demonstrate and validate off the shelf technologies to develop telemedicine hardware and concepts in the prevention, diagnosis and treatment of infectious diseases.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development PROJECT D808

FY 1997 Planned Program: (continued)

•	49	Begin Phase I safety trials on the Leishmania Skin Test Antigen.
•	49	Initiate Phase II trials on Leishmaniasis Topical Treatment.
•	850	Complete Phase I/IIa safety/efficacy trials for RTS,S malaria vaccine.
•	49	Begin Phase II testing of *Shigella flexneri* vaccine.
•	92	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
Total	3754	

FY 1998 Planned Program:

•	750	Conduct expanded Phase II field trials with RTS,S malaria vaccine.
•	181	Complete Phase I efficacy trials for detoxified LPS-OMP Group B meningococcal vaccine.
•	250	Initiate Phase I safety trials for a vaccine to protect against hemorrhagic fever with renal failure syndrome.
•	200	Initiate Phase II clinical trials for *Shigella sonnei* vaccine.
•	80	Conduct Phase II study on Leishmania Skin Test Antigen.
•	250	Continue Phase I/II studies for *S. flexneri* vaccine.
•	491	Complete Phase II efficacy studies for antimalarial drug WR238605.
Total	2202	

FY 1999 Planned Program:

•	1025	Complete Phase I safety trials and initiate Phase I/II efficacy trials for a vaccine to protect against hemorrhagic fever with renal failure syndrome.
•	350	Continue Phase II field trials with RTS,S malaria vaccine.
•	165	Conduct Phase I safety and immunogenicity trials for *Shigella sonnei* vaccine.
•	100	Conduct Phase II efficacy study for Leishmania Skin Test Antigen.
•	250	Initiate Phase I safety studies for Puumula vaccine.
•	500	Begin Phase I studies for a Dengue Tetravalent vaccine.
•	100	Initiate testing of a diagnostic kit for visceral Leishmania.
•	100	Initiate testing of a diagnostic kit for *P. falciparum* malaria.
•	1106	Initiate clinical studies for malaria vaccine, reduced immunization schedule.
Total	3696	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development PROJECT D808

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	3845	3835	3790	3746
Appropriated Value	3953	3754		
Adjustments to Appropriated Value	-355			
FY 1998 Pres Bud Request	3598	3754	2202	3696

Change Summary Explanation: Funding: FY98: Funds reprogrammed (-1588) to higher priority requirements.

C. Other Program Funding Summary: Not Applicable

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

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Malaria Spf66 MLST 1/2			X*													
Campylobacter MLST 1																
MLST 2 IPR						X										
Hantaan MLST Special IPR						X										
Shigella flexneri 2aSpecial 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										
Antimalarial Drug Azthromycin MLST 0/1	X*															
Antimalarial Drug Halofantrine MLST 1						X										
Puumula Vaccine MS I													X			
Dengue, Tetravalent Vaccine MSI														X		
Diagnostic Kit, Visceral Leishmaniasis													X			
Diagnostic Kit, *P. falciparum*													X			
Malaria Vaccine, Reduced Schedule													X			
LSTA, MS I						X										

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development PROJECT D808

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
RTS, S, MS I				X*												
Cholera vaccine, special IPR						X										
LSTA, MS II											X					

* Milestone complete

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D808

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Test & Evaluation	2904	2789	1539	3015
Product Development	211	618	251	351
Project Management	483	347	412	330
Total	3598	3754	2202	3696

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Contracts						0	0	251	351	Cont	602
Salk Institute	CPFF	APR 1988	50556	50556	43325	211	618	0	0	Cont	44154
Support and Management Organizations											
USAMMDA						313	222	295	234	Cont	1064
Contracts						170	125	117	96	Cont	508
Test and Evaluation Organizations											
Walter Reed Army						1809	899	216		Cont	2924
Inst of Research											
Army Laboratories						341	94		225	Cont	660
Navy Laboratories						455	803			Cont	1258
Contracts						299	993	1323	2790	Cont	5405
Government Furnished Property: None											
Subtotal Product Development					43325	211	618	251	351		44756
Subtotal Support and Management						483	347	412	330		1572
Subtotal Test and Evaluation						2904	2789	1539	3015		10247
Total Project					43325	3598	3754	2202	3696		56575

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D811

COST (*In Thousands*)	FY 1996 Actual	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
D811 Military HIV Vaccine and Drug-Advanced Development	2532	2581	0	517	782	795	818	786	Continuing	Continuing

A. **Mission Description and Justification:** This project funds Congressionally-mandated, militarily relevant 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 1996 Accomplishments:

•	1583	Conducted safety and immunogencity studies in human volunteers in Thailand to determine the best candidate to transition.
•	949	Characterized potential cohorts for upcoming field trial.
Total	2532	

FY 1997 Planned Program:

•	2517	Transition to Engineering and Manufacturing Development a vaccine for the prevention of HIV-1.
•	64	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
Total	2581	

FY 1998 Planned Program: Project not funded in FY 98.

FY 1999 Planned Program:

•	517	Evaluate vaccines for prevention of HIV to meet FDA data requirements to prove safety and efficacy.
Total	517	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development
	PROJECT D811

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	2598	2636	1945	1461
Appropriated Value	2671	2581		
Adjustments to Appropriated Value	-139			
FY 1998 Pres Bud Request	2532	2581	0	517

Change Summary Explanation:

Funding: FY98: Funds reprogrammed (-1945) to higher priority programs.
FY99: Funds reprogrammed (-944) to higher priority programs.

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 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D811

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Test & Evaluation	2532	2581	0	517
Product Development	0	0	0	0
Project Management	0	0	0	0
Total	2532	2581		517

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 1996	FY 1996	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	0
Contracts						2532	2581	0	517	Cont	Cont
Government Furnished Property: None											
Subtotal Product Development						0	0	0	0	0	0
Subtotal Support and Management						0	0	0	0	0	0
Subtotal Test and Evaluation						2532	2581	0	517	Cont	Cont
Total Project						2532	2581	0	517	Cont	Cont

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D836

COST (*In Thousands*)	FY 1996 Actual	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
D836 Combat Medical Materiel-Advanced Development	2593	2844	3723	3616	3752	3765	3997	3797	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 1996 Accomplishments:

•	52	Conducted prototype electrochemical sterilization system.
•	179	Conducted evaluation of dental filmless imaging system.
•	1368	Developed Armored Treatment Vehicle (ATV) prototype; delivered to EXFOR, Ft. Hood, TX.
•	64	Demonstrated performance and safety of far forward suction device.
•	930	Demonstrated and validated off the shelf technologies to develop telemedicine hardware and concepts for the treatment of combat casualties.
Total	2593	

FY 1997 Planned Program:

•	32	Conduct user and technical testing of a system for life support for trauma and transport.
•	117	Transition medical/dental imaging system to procurement.
•	1934	Modify US and allied military and commercial medical equipment used for patient examination, diagnosis and treatment in the field; incorporate technological advances into field medical equipment as they come on-line.
•	691	Demonstrate and validate off the shelf technologies to develop telemedicine hardware and concepts for the treatment of combat casualties.
•	70	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
Total	2844	

FY 1998 Planned Program:

•	326	Initiate human safety and initiate efficacy studies of a microencapsulated antibiotic (cephalosporin) and a silver nylon burn dressing for treatment of combat casualties.
•	885	Conduct MEDITAG testing at Center for Total Access.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development PROJECT D836

FY 1998 Planned Program: (continued)

•	6	Complete development and evaluation of the electrochemical sterilization system.
•	809	Conduct technical and user testing of the Life Support for Trauma and Transport System.
•	1697	Evaluate Armored Treatment Vehicle prototypes; (DT Testing at Yuma Proving Ground - 800), (Program Mgmt Support PM Bradley - 200), (Division XXI - 697)
Total	3723	

FY 1999 Planned Program:

•	1357	Continue human safety and expand efficacy studies of a microencapsulated antibiotic (cephalosporin) and a silver nylon burn dressing for treatment of combat casualties.
•	812	Continue MEDITAG testing.
•	150	Initiate development and evaluation of microwave infusion warming device.
•	685	Complete technical and user testing of the Life Support for Trauma and Transport System.
•	612	Evaluate new concepts for a total IV anesthesia system.
Total	3616	

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	2660	2905	2893	2867
Appropriated Value	2734	2844		
Adjustments to Appropriated Value	-141			
FY 1998 Pres Bud Request	2593	2844	3723	3616

Change Summary Explanation:

Funding: FY 1998: Funds reprogrammed (+830) into this project for the Life Support for Trauma System.
FY 1999: Funds reprogrammed (+749) into this project for the Life Support for Trauma System.

C. **Other Program Funding Summary**: Not Applicable.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
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 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Silver Nylon Burn Dressing MLST 0										X						
Self-Contained Ventilator MLST 1/3 IPR	X*															
Medical-Dental Filmless Imaging System MLST 2 IPR				X												
Intraosseous Infusion Device MLST 1/3 IPR									X							
Armored Treatment and Transport Vehicle MS 1/2					X											
MS 3																X
Field Anesthesia Machine MS 1							X									
MS 2																X
Life Support for Trauma and Transport MS 1												X				
MS 2															X	
MS 3																
Microwave Infusion warming device													X			

* Milestone complete

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D836

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Test and Evaluation	741	567	595	883
Product Development	1098	1910	2479	2220
Project Management	754	367	649	513
Total	2593	2844	3723	3616

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Contracts						806	1462	1942	1720	Cont	5930
USAMMDA						292	447	537	500	Cont	1776
Support and Management Organizations											
USAMMDA						616	300	534	420	Cont	1870
Contracts						138	68	115	93	Cont	414
Test and Evaluation Organizations											
Army Laboratories						741	567	595	883	Cont	2786
Subtotal Product Development						1098	1909	2479	2220		7706
Subtotal Support and Management						754	368	649	513		2284
Subtotal Test and Evaluation						741	567	595	883		2786
Total Project						2593	2844	3723	3616		12776

Government Furnished Property: None

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D837

COST (*In Thousands*)	FY 1996 Actual	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
D837 Soldier System Protection-Advanced Development	1155	817	840	871	1105	1094	2078	1878	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 1996 Accomplishments:

- 887 Demonstrated Digital Field Medical Treatment Facility telemedicine appliqué.
- 268 Develop coupling attachments for feasibility study on M-40 protective mask blower as an improved air circulation source for chemical warfare agent protective patient wrap; developed alternative air sources using non-developmental item acquisition strategy.

Total 1155

FY 1997 Planned Program:

- 11 Continue evaluation of Combat Stress Analysis System.
- 50 Continue to prepare specifications and fabrication of Armored Ambulance Prototype.
- 736 Validate far-forward telementoring and Mobile Medical Mentoring vehicle tactical telemedicine appliqués through participation in digital Force XXI Bde-Corps Advanced Warfighting Exercise.
- 20 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.

Total 817

FY 1998 Planned Program:

- 795 Evaluation alternatives for Warfighting Personnel Status Monitoring.
- 45 Complete evaluation of Combat Stress Analysis System.

Total 840

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603807A Medical Systems - Advanced Development PROJECT D837

FY 1999 Planned Program:

- 829 Warfighting Personnel Status Monitoring Limited User Assessment Testing, Advanced Technology Demonstration.
- 42 Initiate production prototyping of Combat Stress Analysis System.

Total 871

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	1185	835	829	857
Appropriated Value	1218	817		
Adjustments to Appropriated Value	-63			
FY 1998 Pres Bud Request	1155	817	840	871

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 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

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

PROJECT: D837

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Test & Evaluation	0	0	0	0
Product Development	1103	797	798	827
Project Management	52	20	42	44
Total	1155	817	840	871

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Contracts						1103	797	798	827	Cont	3525
Support and Management Organizations											
USAMMDA						52	20	42	44	Cont	158
Test and Evaluation Organizations: None											
Government Furnished Property: None											
Subtotal Product Development						1103	797	798	827		3525
Subtotal Support and Management						52	20	42	44		158
Subtotal Test and Evaluation											
Total Project						1155	817	840	871		3683

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603854A Artillery Systems Advanced Development

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	0	238590	324380	294495	47102	0	0	0	0	904567
D505 Crusader - Advanced Development	0	235795	322291	293920	47102	0	0	0	0	899108
DC68 TRACTOR YEOMAN	0	2795	2089	575	0	0	0	0	0	5459

Mission Description and Budget Item Justification: This program element supports the Demonstration and Validation efforts for the Crusader - AD Program. Formerly, these efforts were included in PE 0603645A, Armored Systems Modernization (ASM) Advanced Development as Projects D409 Advanced Field Artillery System-Advanced Development and DB88 Future Armored Recovery Vehicle-Advanced Development. This single project combines both Crusader Self Propelled Howitzer-Advanced Development (D409) and Crusader Re-Supply Vehicle-Advanced Development (DB88) into one line in FY 97 based upon the 15 Nov 94 Defense Acquisition Board (DAB) review. The Crusader system is the Army's next generation SPH and 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. 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 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603854A Artillery Systems Advanced Development

PROJECT: D505

COST (*In Thousands*)	FY 1996 Actual	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
D505 Crusader - Advanced Development	0	235795	322291	293920	47102	0	0	0	0	899108

A. Mission Description and Justification: This project supports the demonstration and validation efforts for the Crusader - AD Program. Formerly, these efforts were included in PE 0603645A, Armored Systems Modernization (ASM) Advanced Development as Projects D409 AFAS-AD and DB88 FARV-AD. This single project combines both Crusader Self Propelled Howitzer-Advanced Development (D409) and Crusader Re-Supply Vehicle-Advanced Development (DB88) into one line in FY 97 based upon the 15 Nov 94 Defense Acquisition Board (DAB) review. The Crusader system is the Army's next generation SPH and artillery 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 mission execution. 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.

Acquisition Strategy: Not applicable

FY 1996 Accomplishments: See Projects D409 and DB88 in PE 0603645A for accomplishments.

FY 1997 Planned Program:

•	205346	Product development: Continue developmental efforts under the Crusader developmental Phases I & II contract; continue efforts in support of maturation and integration of critical technologies. Initiate prototype fabrication and demonstration. Conduct system design review. Conduct Phase I IPR
•	19067	Support and management: Continue project management efforts, to include scientific and engineering analysis, product development team support, and engineering management services.
•	5620	Test and evaluation: Purchase propellant, ammunition and fuzes required for the initiation of Engineering Development Testing (EDT)-A testing; begin EDT-A testing.
•	5762	Small Business Innovation Research /Small Business Technology Transfer (SBIR/STTR) Programs
Total	235795	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603854A Artillery Systems Advanced Development
	PROJECT D505

FY 1998 Planned Program:

•	293990	Product development: Continue developmental efforts under the Crusader development Phase II contract. Continue Prototype fabrication and demonstration.
•	19990	Support and management: Continue project management efforts; to include scientific and engineering analysis, product development team support and engineering management services.
•	8311	Test and evaluation: Purchase ammo for EDT and continue EDT-A testing.
Total	322291	

FY 1999 Planned Program:

•	261423	Product development: Continue developmental efforts under the Crusader development Phase II contract. Initiate long lead item buys. Complete Prototype fabrication and demonstration.
•	20570	Support and management: Continue project management efforts; to include scientific and engineering analysis, product development team support and engineering management services.
•	11927	Test and evaluation: Continue EDT-A testing and initiate combined Developmental Testing/Operational Testing.
Total	293920	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	255916	324285	296054
Appropriated Value		235795		
Adjustments to Appropriated Value				
FY 1998 President's Budget Request	0	235795	322291	293920

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, A Budget Activity 4 PE 0603645A, Project D409 Crusader SPH-AD	135724								0	546347
RDTE, A Budget Activity 4 PE 0603645A, Project DB88 Crusader RSV-AD	45923								0	127370
RDTE, A Budget Activity 5 PE 0604854A, Project D503 Crusader - ED					311211	434690	433920	202648	Cont	Cont
RDTE, A Budget Activity 4 PE 0604854A, Project D2KT Crusader OT				499	1156	107	109	3485	Cont	Cont

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603854A Artillery Systems Advanced Development

PROJECT: D505

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, A Budget Activity 5 PE 0604645A, Project D175 MOFA	6058	6585							0	36159

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
Award Dev Phases I/II Contract System						X										
Design Review																
Dev Phase I In Process Review (Authorization to enter Phase II)							X									
Integration Checkout													X			
SPH/RSV available for test														X		

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603854A Artillery Systems Advanced Development

PROJECT: D505

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Product Development		205346	293990	261423
Support and Management		19067	19990	20570
Test and Evaluation		5620	8311	11927
SBIR/STTR		5762		
Total		235795	322291	293920

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
United Defense, Minneapolis, MN	SS/CPIF	Sep 94	TBD	TBD			179143	274693	246531	41730	742097
ARDEC, Picatinny Arsenal, NJ	PO						23258	17255	13904	50	54467
TACOM, Warren, MI	PO						867	469	401	0	1737
ARL, Aberdeen Proving Ground, MD	PO						1378	1123	137	35	2673
Various OGAs							375	375	375	0	1125
Various contracts							325	75	75	0	475
Support and Management Organizations											
PM Crusader, Picatinny Arsenal, NJ							4472	5360	5600	840	16272
ARDEC, Picatinny Arsenal, NJ	PO						9084	9000	9000	600	27684

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)											DATE: February 1997
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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
ACALA, Rock Island, IL	PO						148	150	160	80	538
TACOM, Warren, MI	PO						2008	2100	2200	1150	7458
ARL, Aberdeen Proving Ground, MD	PO						800	830	860	450	2940
Various OGA's							956	1000	1050	600	3606
Various Contracts							1599	1550	1700	400	5249
SBIR/STTR							5762				5762
Test and Evaluation Organizations											
TECOM, Yuma Proving Grd, AZ, CSTA, APG, MD	PO						5620	8311	11927	1167	27025
Government Furnished Property: None											
Subtotal Product Development							205346	293990	261423	41815	802574
Subtotal Support and Management							24829	19990	20570	4120	69509
Subtotal Test and Evaluation							5620	8311	11927	1167	27025
Total Project							235795	322291	293920	47102	899108

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603856A SCAMP BLK II (SPACE)

PROJECT: D389

COST (*In Thousands*)	FY 1996 Actual	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
D389 SCAMP BLK II*	0	8250	73	9669	15668	34284	26823	24833	Continuing	Continuing

*$5.5M SCAMP BLK II Engineering Feasibility Efforts (EFE) reported under 0303142A.D386 in FY 1996

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. In addition to operation on MILSTAR satellites, the SCAMP Block II will operate on all satellites which utilize the MIL-STD-1582C LDR waveform. 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 FY99. These efforts will provide confidence in technical approach and lead to a Milestone II Engineering Manufacturing Phase. This project provides for the demonstration and validation of advanced technologies and is therefore appropriately funded in Budget Activity 4.

Acquisition Strategy: SCAMP BLK II will be a manpackable terminal in the 12-15 lb. range. SCAMP BLK 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.

FY 1996 Accomplishments: Program funded under PE 0303142A.D386 (See asterisked note above)

FY 1997 Planned Program:

•	5963	Implements integration of Engineering Feasibility Efforts (EFE) for functional prototype terminals
•	763	Continues paging prototype system efforts
•	1331	Continues Defense Advanced Research Project Agency (DARPA) advanced communications technologies and System engineering efforts
•	193	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
Total	8250	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603856A SCAMP BLK II (SPACE)
	PROJECT D389

FY 1998 Planned Program:

•	73	Continue prototype development
Total	73	

FY 1999 Planned Program:

•	4985	Completes Prototype development
•	3534	Test, evaluate and demonstrate the prototype
•	1150	Conduct Milestone II Decision Review
Total	9669	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	8080	9302	3663
Appropriated Value	0	7910		
Adjustments to Appropriated Value	0			
FY 1998 Pres Bud Request	0	8250	73	9669

Change Summary Explanation:

Funding: FY97: Not a new start. Funds reprogrammed to 0603856A.D389 from 0303142A.D386.
FY98: (-9229) Funds reprogrammed to higher priority requirements
FY99: (+6006) Continue/complete prototype development/evaluations/demonstrations/reviews

C. Other Program Funding Summary

	FY 1996	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	0	30052	62569	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
Continue EFE					X*											
Prototype Development and Integration						X										
Prototype Demonstrations/Evaluations															X	
MSII																X

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

DATE: February 1997

BUDGET ACTIVITY: 4 - Demonstration and Validation

PE NUMBER AND TITLE: 0603856A SCAMP BLK II (SPACE)

PROJECT: D389

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Contractor		2013	0	737
Government Systems Engineering and Project Management		6044	73	8932
SBIR/STTR		193		
Total		8250	73	9669

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Other Contracts	C-CP	Various	N/A	TBD			1793	0	737	Cont	2530
Govt Support	MIPR/PWD	Various		TBD			2929	0	4248	Cont	7177
SBIR/STTR							193				193
Support and Management Organizations											
Other Contracts	MIPR/PWD	Various		TBD			1140	0	887	Cont	2027
Govt Support	MIPR/PWD	Various		TBD			666	73	1175	Cont	1914
Lincoln Labs	MIPR	Various		TBD			255	0	200	Cont	455
Lab Activities	MIPR	Various		TBD			1274	0	2422	Cont	3696
Test and Evaluation Organizations: None											
Subtotal Product Development							4915		4985		9900
Subtotal Support and Management							3335	73	4684		8092
Subtotal Test and Evaluation											
Total Project							8250	73	9669		17992

Government Furnished Property: None

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604201A Aircraft Avionics

PROJECT: DC97

COST (*In Thousands*)	FY 1996 Actual	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
DC97 Aircraft Avionics	20073	14694	21669	12729	6111	1107	52427	36759	Continuing	Continuing

A. Mission Description and Budget Item Justification: This Program Element funds the development of avionics systems required to horizontally and vertically integrate the battlefield (commonly referred to as "digitization of the battlefield"). The following 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.

Project DC97 - Aircraft Avionics:

- The AN/ARC-220 Nap-Of-Earth (NOE) Communications High Frequency (HF) Radio provides a long-range (300 kilometers), non-line-of-sight digital and voice communication capability which is reliable, secure, easy to operate, with automatic link establishment and electronic counter-countermeasures. The AN/ARC-220 will be form/fit interchangeable with the AN/ARC-199 HF radio, meet military standards for compatibility with the 1553 data bus, night vision lighting, data transmission, and shipboard operations.
- 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.

Acquisition Strategy: This project is comprised of multiple systems. The A2C2S is being developed by the Naval Research Laboratory. The production contract will be competitively awarded.

FY 1996 Accomplishments:

- 2859 Continued EMD for AN/ARC-220 NOE Communications HF Radio (5 prototypes)
- 479 Continued program management support for the AN/ARC-220 NOE Communications HF Radio

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604201A Aircraft Avionics
	PROJECT DC97

FY 1996 Accomplishments: (continued)

•	9707	Initiated development of Enhanced Joint Communications Interface Terminals (JCIT): four A2C2S prototypes
•	311	Continued design and development of A2C2S Workstation Consoles
•	538	Initiated technical documentation for A2C2S
•	327	Initiated A2C2S Workstation Software
•	837	Continued development of A2C2S Antenna Interface Module (AIM) - Phase II
•	3710	Initiated test and integration for A2C2S
•	919	Continued program management support for the A2C2S
•	386	Initiated systems engineering, logistics processes for A2C2S
Total	20073	

FY 1997 Planned Program:

•	8484	Continue development of Enhanced JCIT, workstation consoles and other A2C2S prime mission equipment
•	1211	Continue development of A2C2S Antenna Interface Module (AIM)
•	1224	Continue development of A2C2S Workstation Software
•	553	Continue test and integration procedures for A2C2S Engineering Development Model
•	1957	Continue system engineering, logistics, and technical documentation for A2C2S
•	906	Continue program management support for the A2C2S
•	359	Small Business Innovation Research /Small Business Technology Transfer (SBIR/STTR) Programs
Total	14694	

FY 1998 Planned Program:

•	14806	Continue development of Enhanced JCIT, workstation consoles and other A2C2S prime mission equipment
•	2600	Continue 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
Total	21669	

FY 1999 Planned Program:

•	9679	Continue development of Enhanced JCIT, Workstation Consoles and other A2C2S prime mission equipment
•	1000	Complete development of A2C2S Antenna Interface Module (AIM)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604201A Aircraft Avionics
	PROJECT DC97

FY 1999 Planned Program: (continued)

•	100	Complete development of A2C2S Workstation Software
•	400	Continue test and integration procedures for A2C2S Engineering Development Model (EDM)
•	500	Continue system engineering, logistics, and technical documentation for A2C2S
•	1050	Continue program management support for the A2C2S
Total	12729	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	21442	15008	14787	1335
Appropriated Value	22044	14694		
Adjustments to Appropriated Value	-1971			
FY 1998 Pres Budget Request	20073	14694	21669	12729

Change Summary Explanation: Funding: FY98 (+6882) and FY99 (+11394) increased to continue EMD.

C. Other Program Funding Summary

Aircraft Procurement, Army (APA):	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Airborne Communications -AA0705 BLIN 1033*	17320	42047	47450	43395	45803	0	24283	20511	Cont	Cont
Airborne Command and Control Console AA0710 BLIN 1026**				12890	13424	18243	37641	53600	53600	189398

* Represents ARC-220 only, which is a portion of the funding in SSN AA0705.
** Represents A2C2S only, which is a portion of the funding in SSN AA0710.

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
Initiated Preproduction Qualifications - AN/ARC-220 HF radio	X*															
Continued AN/ARC-220 NDI EMD Effort	X															
Initiate development of Enhanced JCIT Prototypes	X*															
Continue design and Development of A2C2S Workstation Consoles	X				X				X				X			

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604201A Aircraft Avionics

PROJECT: DC97

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
Develop Technical Documentation - A2C2S Test and Integration Procedures	X				X				X				X			
Initiate A2C2S Prototype Integration	X*															
Initiate A2C2S Tests and Demonstrations	X*															
Continue development of A2C2S Antenna Interface Module (AIM)	X				X				X				X			
Initiate/continue A2C2S Systems Engineering, Logistics Processes		X*			X				X				X			
Continue development of Enhanced JCIT, Work Station Consoles and other Prime Mission Equipment					X				X				X			
Continue development of A2C2S Workstation Software	X				X				X				X			

* Denotes completed effort

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604201A Aircraft Avionics

PROJECT: DC97

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Product Development	17336	13429	20519	11679
Program Management Support:	1398	906	1150	1050
Test and Evaluation Support	1339			
SBIR/STTR		359		
Total	20073	14694	21669	12729

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Rockwell International Corporation Cedar Rapids, IA	FFP/OPT	Aug 94	12486	12486	10966	1520					12486
Naval Research Laboratory	MIPR		66980	66980	8630	14270	11421	18419	10079	4161	66980
Aviation Applied Technology Directorate	MIPR		Cont	Cont	718	1546	2008	2100	1600	Cont	Cont
Support and Management Organizations											
Aviation Electronic Combat PM	MIPR		Cont	Cont	50	432	449	600	500	Cont	Cont
Communications and Electronics Command	MIPR		Cont	Cont	3426	700	62	150	150	Cont	Cont
USA Aviation and Troop Command	MIPR		Cont	Cont		186	366	400	400	Cont	Cont

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

DATE: February 1997

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Support and Management Organizations (cont)											
Army Research Lab/ Air Force			129	129	20	80	29			0	129
Test and Evaluation Organizations:											
USA TEXCOM	MIPR		1339	1339		1339					1339
SBIR/STTR							359				359
Government Furnished Property: Not Applicable											
Subtotal Product Development					20314	17336	13429	20519	11679	Cont	Cont
Subtotal Support and Management					3496	1398	906	1150	1050		Cont
Subtotal Test and Evaluation						1339	359				1698
Total Project					23810	20073	14694	21669	12729	Cont	Cont

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

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

PROJECT: D538

COST (*In Thousands*)	FY 1996 Actual	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
D538 Crew Station Mission Equipment Trainer (CSMET)	688	1130	0	0	0	0	0	0	0	1818

A. Mission Description and Budget Item Justification: The Crew Station Mission Equipment Trainer (CSMET) is a desktop 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 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 phases 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 1996 Accomplishments:

•	510	Awarded Phase I Development Contract - Study Effort and Development of Prototype
•	178	Government support
Total	688	

FY 1997 Planned Program:

•	778	Award Phase II Development Contract - Prototype Build/Systems Integration
•	40	Award Contract - Upgrade Government-Furnished Equipment
•	242	Maintenance support for operational testing development and for operational testing
•	42	Government Support
•	28	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) programs
Total	1130	

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

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

PROJECT: D538

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	706	1154	0	0
Appropriated Value	726	1130		
Adjustments to Appropriated Value	-38			
FY 1998 Pres Bud Request	688	1130	0	0

C. Other Program Funding Summary	FY 1996	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)*			3230	7390	4210	2550				17380

*Represents only part of the funding in SSN AZ2200.

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
Award Development Contract (May 96)			X*													
Design Phase (May 96)			X*													
Initiate Build Phase (Nov 96)					X*											
Begin Test Phase (Feb 97)						X										

*Denotes completed effort

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604220A Armed, Deployable OH-58D PROJECT D538

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Engineering Development				
Prototype Build/System Integration	688	703		
Developmental Testing		115		
Government Support of Developmental Testing		22		
Operational Testing		242		
Government Support of Operational Testing		20		
SBIR/STTR		28		
Total	688	1130		

B. Budget Acquisition History and Planning Information: Not Applicable

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604223A Comanche

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	284131	331424	282009	371927	441309	586978	634102	634580	Continuing	Continuing
DC72 T800 Engine Engineering Development (LH)	35885	41234	44533	41107	34690	33498	32384	31288	Continuing	Continuing
D2LT Comanche Operational Test	0	0	0	0	36	107	333	768	Continuing	Continuing
D327 Comanche	248246	290190	237476	330820	406583	553373	601385	602524	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 the 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 will replace the obsolete Vietnam era fleet (AH-1, OH-6, and OH-58A/C). Project DC72 provides for development and qualification of the T800 and growth engines 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 & 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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604223A Comanche

PROJECT: DC72

COST (*In Thousands*)	FY 1996 Actual	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
DC72 T800 Engine Engineering Development (LH)	35885	41234	44533	41107	34690	33498	32384	31288	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project DC72 - T800 Engine Engineering Development (LH): This project includes tasks to design, develop and qualify an advanced technology engine. It includes the development and qualification of the T800 and 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 1996 Accomplishments:

•	7968	Continued basic engine air vehicle support
•	18339	Continued growth engine development and conducted growth engine Critical Design Review (CDR)
•	9578	Continued contractor development testing
Total	35885	

FY 1997 Planned Program:

•	8535	Continue basic engine air vehicle support
•	13969	Continue growth engine development
•	13663	Continue contractor development testing
•	4079	Begin manufacturing growth engine for flight test
•	988	Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	41234	

FY 1998 Planned Program:

•	10475	Continue basic engine air vehicle support
•	13960	Continue growth engine development
•	12752	Continue contractor development testing
•	7346	Continue manufacturing growth engines for flight test
Total	44533	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604223A Comanche
	PROJECT DC72

FY 1999 Planned Program:

- 7744 Continue basic engine air vehicle support
- 14974 Continue growth engine development
- 13678 Continue contractor development testing
- 4711 Continue manufacturing growth engines for flight test

Total 41107

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	35830	35616	35663	35531
Appropriated Value	36835	41234		
Adjustments to Appropriated Value	-950			
FY 1998 BES/Pres Bud Request	35885	41234	44533	41107

Change Summary Explanation: Funding - FY98 (+8870) and FY99 (+5576) change is primarily due to a realignment of funds between the Comanche air vehicle and the engine, and reductions for savings in matrix support. FY97 (+5618) Congressional increase.

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

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
Continue basic engine air vehicle support	X															
Continue growth engine development	X															
Continue contractor development testing	X															
Begin mfg growth engines for flight test	X															
Continue basic engine air vehicle support					X											
Continue growth engine development					X											
Continue contractor development testing					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			

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604223A Comanche

PROJECT: DC72

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Product Development	35400	40099	44246	40814
Program Management Support	485	147	287	293
Government Furnished Personnel/Equipment/Facilities	0	0	0	0
Test & Evaluation	0	0	0	0
SBIR/STTR		988		
Total	35885	41234	44533	41107

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations (includes contractor testing)											
LHTEC (0453)	C/CPFF	April 92			156366	35400	40099	44246	40814	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
SBIR/STTR							988				988
Support and Management Organizations											
Comanche PMO & Gov't Agencies	MIPR				12364	85	147	287	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
Test and Evaluation Organizations											
Gov't Agencies	MIPR			9613	9613						9613

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

DATE: February 1997

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 1996	FY 1996	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	0	13133
Test and Evaluation Property: None										
Subtotal Product Development				562173	35400	41087	44246	40814	Cont	Cont
Subtotal Support and Management				28399	485	147	287	293	Cont	Cont
Subtotal Test and Evaluation				9613					0	9613
Total Project				600185	35885	41234	44533	41107	Cont	Cont

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604223A Comanche PROJECT D327

COST (*In Thousands*)	FY 1996 Actual	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
D327 Comanche	248246	290190	237476	330820	406583	553373	601385	602524	Continuing	Continuing

A. Mission Description and Budget Item 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 1996 Accomplishments:

•	24825	Began digitization effort
•	176357	Continued Dem/Val prototype engineering development
•	38258	Conducted first flight, prototype # 1 and continued flight test program
•	8806	Continued manufacturing of prototype # 2
Total	248246	

FY 1997 Planned Program:

•	29019	Continue digitization effort
•	203835	Continue Dem/Val prototype engineering development
•	40440	Continue flight test program for prototype #1
•	9915	Complete manufacturing of prototype #2
•	6981	Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	290190	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604223A Comanche
	PROJECT D327

FY 1998 Planned Program:

•	23748	Continue digitization effort
•	158687	Continue Dem/Val prototype engineering development
•	39371	Conduct first flight of prototype #2 and continue flight test program for prototype #1
•	8299	Update prototypes #1 and #2
•	7371	Begin manufacturing Early Operational Capability (EOC) aircraft
Total	237476	

FY 1999 Planned Program:

•	33082	Continue digitization effort
•	183236	Continue Dem/Val prototype engineering development
•	58370	Continue flight test program for prototypes #1 and #2
•	8615	Continue to update prototypes #1 and #2
•	47517	Continue manufacturing Early Operational Capability (EOC) aircraft
Total	330820	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	255106	253028	253127	348693
Appropriated Value	262268	290190		
Adjustments to Appropriated Value	-14022			
FY 1998 Pres Bud Request	248246	290190	237476	330820

Change Summary Explanation: Funding: FY98 (- 15651) and FY99 (-17873) change is primarily due to a realignment of funds between the Comanche air vehicle and the engine, and reductions for savings in matrix support. FY97 (+37162) Congressional increase.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Total Cost
APA									
A08300 Comanche							104128	149249	Cont

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604223A Comanche

PROJECT: D327

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
Begin digitization effort	X															
Continue Dem/Val prototype engineering development	X															
Conduct first flight, prototype #1 and continue flight test program		X														
Continue manufacturing of prototype #2	X															
Continue digitization effort					X											
Continue Dem/Val prototype engineering development					X											
Continue flight test program for prototype #1					X											
Complete manufacturing of prototype #2								X								
Continue digitization effort									X							
Continue Dem/Val prototype engineering development									X							
Conduct first flight of prototype #2 and continue flight test program for prototype #1												X				
Update prototypes #1 and #2									X							
Begin manufacturing Early Operational Capability (EOC) aircraft											X					
Continue digitization effort													X			
Continue Dem/Val prototype engineering development													X			
Continue flight test program for prototypes #1 and #2													X			
Continue to update prototypes #1 and #2													X			
Continue manufacturing Early Operational Capability (EOC) aircraft													X			

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604223A Comanche

PROJECT: D327

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Product Development	223182	258742	215488	306699
Program Management Support	23111	18679	18080	18087
Government Furnished Personnel/Equipment/Facilities	1395	3393	1446	2717
Test & Evaluation	558	2395	2462	3317
SBIR/STTR		6981		
Total	248246	290190	237476	330820

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations (includes contractor testing)											
Boeing Sikorsky	C/CPIF	April 91			1724958	223182	254596	211393	302708	Cont	Cont
JPO A004 Product Develop-(Other)							4146	4095	3991	Cont	Cont
Other Completed Contracts					370288	0	0	0	0	0	370288
SBIR/STTR							6981				6981
Support and Management Organizations											
Rail	C/FFP	Sep 87			32954	4822	4723	5000	5000	Cont	Cont
SysTeam	C/FFP	Oct 91	15181	15181	12461	2720	0	0	0	0	15181
PATS contracts	C/FFP				13	62	1147	1500	1500	Cont	Cont
Other Contracts	Agreement				12208	3613	3439	1815	1604	Cont	Cont
PMO/Gov't Agencies	MIPR				67807	11894	9370	9765	9983	Cont	Cont
Test and Evaluation Organizations											
Gov't Agencies	MIPR				7463	558	2395	2462	3317	Cont	Cont

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE February 1997
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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property: None										
Support and Management Property										
Other Gov't Agencies	MIPR			10190	1395	3393	0	0	Cont	Cont
Test and Evaluation Property										
Other Gov't Agencies	MIPR						1446	2717	Cont	Cont
Subtotal Product Development				2095246	223182	265723	215488	306699	Cont	Cont
Subtotal Support and Management				135633	24506	22072	18080	18087	Cont	Cont
Subtotal Test and Evaluation				7463	558	2395	3908	6034	Cont	Cont
Total Project				2238342	248246	290190	237476	330820	Cont	Cont

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	62250	73886	66212	51490	11499	10334	23712	31636	Continuing	Continuing
DL12 Signals Warfare Development	13360	16065	13874	7228	5239	5650	15583	17545	Continuing	Continuing
DL15 Army Reprogramming and Analysis Team (ARAT)	2830	3764	4024	3323	0	0	0	0	0	17670
DL16 TROJAN Development	517	1261	1278	1333	0	0	0	0	0	4389
DL18 SHORTSTOP Development	6800	9151	0	0	0	0	0	0	0	24475
D665 Aircraft Survivability Equipment Development	38743	43645	46870	37248	6144	4684	8129	14091	Continuing	Continuing
D2VT Suite of Integrated Infrared Countermeasures Operational Test (SIIRCM)	0	0	166	2358	116	0	0	0	0	2640

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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: DL12

COST (*In Thousands*)	FY 1996 Actual	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
DL12 Signals Warfare Development	13360	16065	13874	7228	5239	5650	15583	17545	Continuing	Continuing

A. **Mission Description and 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 accuracies 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 and Communication 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 (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 (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 1997
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 unclassified project is joint 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.

Acquisition Strategy: GBCS provides the commanders of Divisions, Brigades and ACR with an organic capability to 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, and identify and precisely locate threat countermortar and counterbattery ground surveillance radar emissions, and other communications nets. The system is specifically designed to ensure transportability, prime mover maintainability, and over terrain mobility equal to that of the supported divisions, regiments, and brigades while exploiting or eliminating - at the commander's discretion - the latest, most modern type of hostile modulations and transmissions techniques at the key time and place on the battlefield. 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 by enhancing software or 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 defenses centers.

FY 1996 Accomplishments:

•	241	Completed TACJAM-A ESM Development
•	7401	Continued (GBCS/AQF) Integration effort - Fielded EMD Models of GBCS and AQF Systems to Task Force XXI - Improved GBCS/AQF by including other advanced communication modifications/techniques as well as advanced signal analysis and improved signal sorting parameters - Began integration of TACJAM-A ECM into AQF
•	1749	Conducted operation demonstration customer test/development test (OCDT) on GBCS
•	3044	High level software design and initiated hardware development
•	925	Provided contractor maintenance support for Task Force XXI
Total	13360	

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FY 1997 Planned Program:

•	87	Conduct special in-process review (SIPR) on AQF ECM
•	4622	Continue GBCS/AQF improvements to include advanced digital modulations and techniques, remote collection techniques, finish ECM subsystem integration into AQF and begin integration into GBCS-L and GBCS-H, other product improvements resulting from Task Force XXI
•	6900	GBCS-L/AQF software fixes
•	1106	Conduct training and provide contractor depot repair in support of IOT&E for GBCS-L
•	1072	Contractor maintenance support for Task Force XXI
•	1900	ADEXJAM incremental
•	378	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
Total	16065	

FY 1998 Planned Program:

•	2996	Begin integration of ECM subsystem into GBCS-L and GBCS-H
•	1367	Complete signal analyzer upgrade and provide for production line cutover
•	4289	Start GBCS/AQF pre-planned product improvement (P3I); continued advanced digital modulations, reconfigurable tuner, co-channel analysis, analog-to-digital converter, improved signal analysis, enhanced sorting parameters capability and improve HF tuners
•	2945	OCDT for GBCS-H and AQF
•	1629	Conduct training and provide contractor depot repair in support of IOT&E for GBCS-H and AQF
•	318	Conduct Milestone III for GBCS-H and AQF
•	186	Complete IOTE on GBCS-L
•	144	Conduct Milestone III for GBCS-L
Total	13874	

FY 1999 Planned Program:

•	6694	Continue GBCS/AQF P3I
•	245	Conduct testing on previously implemented improvements
•	289	Complete GBCS/AQF development of advanced capabilities and remote collection
Total	7228	

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BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: DL12

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget Request	13692	16414	16223	9884
Appropriated Value	13831	16065		
Adjustments to Appropriated Value	-471			
FY 1998 Pres Bud Request:	13360	16065	13874	7228

Change Summary Explanation:

Funding: FY 1998/FY 1999: Funding reductions from President's Budget are the result of Army Science Board report (Reengineering the Institutional Army, the Acquisition Perspective) recommended reductions (FY 98 -2349/FY 99 -2656)

Schedule: IOT&E for GBCS-L rescheduled from 4QFY96 to 4QFY97 due to integration problems. IOT&E for AQF rescheduled from 4QFY97 to 3QFY98 due to subsystem availability.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA (SSN BZ7326)	45470	47033	26817	37269	88615	90635	93674	107640	Cont'd	Cont'd
OPA (SSN BZ9753)	0	0	0	0	6179	12561	13083	21987	Cont'd	Cont'd
APA (SSN AB3000)	37142	13899	38140	37301	55833	68509	78011	86141	Cont'd	Cont'd
RDTE Budget Activity 7 DCP PE 030885G, GBCS	18949	19824	19324	19624	19724	20893	20924	21260	Cont'd	Cont'd
RDTE Budget Activity 7 DCP PE 030885G, CHALS-X	3038	2998	4165	5515	6046	6828	4201	4285	Cont'd	Cont'd

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
Acquisition Milestones																
Award Limited Production Contract	X*															
Milestone III on GBCS-L									X							
Milestone III on AQF												X				
Milestone III on GBCS-H												X				
Complete Development of Advanced Capabilities																X
T&E Milestones																
Begin IOTE on GBCS-L								X								

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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 IOTE on GBCS-L									X							
Conduct IOTE on AQF											X					
Conduct IOTE on GBCS-H											X					
Contract Milestones																
Field RDT&E Model of GBCS-L		X*														
SIPR - AQF ECM					X											
Task Force XXI		X*	X*	X*	X	X										

*Denotes completed milestone

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: DL12

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development	3504	2627	3750	2983
Software Development	3216	6641	4283	2216
Systems Engineering	421	1739	703	365
Integrated Logistics Support	841	1032	894	465
Quality Assurance; Reliability; Maintainability & Availability	672	825	715	371
Developmental Test & Evaluation	784	962	2824	433
Government Engineering Support	1658	713	355	199
Program Management Support	606	326	98	55
Program Management Personnel	1658	822	252	141
SBIR/STTR		378		
Total	13360	16065	13874	7228

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	*Total Program
Product Development Organizations											
Sanders/AEL	C-CPIF	Jun 89	216686	216334	205051	5880	1900	985	0	0	213816
IBM/Loral	SS-CPFF	Jun 90	52997	52997	47623	300	0	0	0	0	47923
ESI	C-CPAF	Sep 91	189463	186424	103764	685	1000	0	0	0	105449
FMC	SS-CPFF	Sep 90	15913	15913	12377	1436	1900	700	500	0	16913
LMFS-O (GBCS/AQF)	C-FFP	Nov 95	94577	94577	0	887	6337	8974	6323	Cont'd	Cont'd
Loral-AD/EXJAM	SS-CPIF	Mar 96			0	0	1900	0	0	0	1900
Misc.					2638	250	0	10	3	Cont'd	Cont'd
SBIR/STTR					0	0	378	0	0	0	378
Support and Management Organizations											
QuesTech	FFP	May 95				630	625	80	15	Cont'd	Cont'd

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

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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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	*Total Program
In-House	Direct				5566	1724	1515	625	380	Cont'd	Cont'd
CECOM Ft Monmouth NJ	MIPR				4904	1026	0	0	0	Cont'd	Cont'd
Test and Evaluation Organizations											
EPG/Ft. Hood	MIPR				2035	542	510	2500	7	Cont'd	Cont'd

Government Furnished Property

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
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: N/A

Test and Evaluation Property: N/A

Subtotal Product Development	371453	9438	13415	10669	6826		411801
Subtotal Support and Management	10470	3380	2140	705	395		17090
Subtotal Test and Evaluation	2035	542	510	2500	7		5594
Total Project	383958	13360	16065	13874	7228		434485

*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).

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DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: DL15

COST (*In Thousands*)	FY 1996 Actual	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
DL15 Army Reprogramming and Analysis Team (ARAT)	2830	3764	4024	3323	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.

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 1996 Accomplishments:

- 1083 Tested and evaluated off-the-shelf and developmental memory loading devices for aviation electronic combat (AEC) equipment
- 425 Modified or developed database management tools for AEC equipment
- 500 Evaluated hardware/software and developed measurement and signature intelligence (MASINT) on-line database access capability
- 375 Upgraded ARAT communications systems
- 447 Expanded on the application of Electronic Intelligence (ELINT) flagging models for additional Mission Data Sets

Total 2830

FY 1997 Planned Program:

- 1517 Modify or develop database management tools for ADA, IEW, Fire Support and Armor TSS
- 1120 Test and evaluate off-the-shelf and developmental loading devices for ADA, IEW, Fire Support and Armor TSS
- 375 Initiate study on the feasibility of electronic broadcast reprogramming

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	PROJECT DL15

FY 1997 Planned Program: (continued)

•	380	Improve or modify ARAT flagging capability for ELINT systems
•	280	Enhance MASINT database on-line capability
•	92	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
Total	3764	

FY 1998 Planned Program:

•	975	Initiate integration of Electro-optic/Infrared (EO/IR) based systems into reprogramming infrastructure
•	427	Develop and design communications architecture paths to support CONUS and OCONUS field unit communications
•	1583	Begin to implement support plans for PM, Aviation Electronic Combat (SIRFC to AMPS interface)
•	702	Begin development of specific flagging models for AN/APR-39A(V)2 Radar Warning Receiver
•	337	Development of Multi-Service Electronic Combat Secure Web Site.
Total	4024	

FY 1999 Planned Program:

•	828	Finalize implementation of support plans for PM, Aviation Electronic Combat (SIRFC to AMPS interface)
•	749	Test and evaluate the communications architecture paths to support CONUS to OCONUS field unit communications
•	379	Finalize Flagging Model for the AN/APR-39A(V)2 Radar Warning Receiver
•	883	Begin Flagging Model for the Suite of Integrated RF Countermeasures (SIRFC)
•	484	Develop training materials for commanders staff & unit level personnel (Warfighters Handbook)
Total	3323	

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	2903	3845	4331	3596
Appropriated Value	2933	3764		
Adjustments to Appropriated Value	-103			
FY 1998 Pres Bud Request	2830	3764	4024	3323

C. **Other Program Funding Summary:** Not applicable.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development PROJECT DL15

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
Test and evaluate off-the-shelf and developmental loading devices for aviation combat equipment.		X*														
Modify or develop database management tools for aviation combat equipment.			X*													
Initiate study on the feasibility of electronic broadcast reprogramming.				X												
Modify or develop database management tools for ADA, IEW, Fire Support and Armor TSS					X		X									
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								
Enhance MASINT database on-line capability						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				
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				

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DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: DL15

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
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)													X			X
Test and evaluate the communications architecture paths to support CONUS to OCONUS field unit communications														X		X
Finalize Flagging Model for the AN/APR-39A(V)2 Radar Warning Receiver													X		X	
Begin Flagging Model for the Suite of Integrated RF Countermeasures (SIRFC)														X		X
Develop Training Materials for Commanders Staff & Unit level personnel (Warfighters Handbook)															X	X

*Denotes a completed effort

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development — PROJECT: DL15

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Government Engineering Support	425	510	511	524
Contract Engineering Support	1570	1837	1488	949
Development Support Equipment Acquisition	90	575	600	600
Operational Training	150	150	200	150
PM Support	300	300	700	700
Test and Evaluation	200	200	300	200
Travel	95	100	225	200
SBIR/STTR		92		
Total	2830	3764	4024	3323

B. Budget Acquisition History and Planning Information: Not applicable

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: DL16

COST (*In Thousands*)	FY 1996 Actual	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
DL16 TROJAN Development	517	1261	1278	1333	0	0	0	0	0	4389

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 1996 Accomplishments:

•	123	Conducted operational test, evaluation and engineering of video compression/processing technologies to the TROJAN intelligence processing workstation
•	394	Performed operational evaluation of specific TROJAN applications for non-standard modulations using digital signal processing technologies
Total	517	

FY 1997 Planned Program:

•	375	Continue operational evaluation on specific TROJAN applications for non-standard modulations techniques using digital processing technologies (1Q97-4Q97)
•	328	Complete operational test, evaluation and engineering of video compression/processing technologies on fielded TROJAN systems
•	527	Acquire previously developed specialized software for classified pre-processing and enhanced signal processing algorithms
•	31	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
Total	1261	

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BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development
	PROJECT DL16

FY 1998 Planned Program:

•	267	Operational test and evaluation of previously developed specialized software and enhanced signal processing algorithms
•	500	Implement and test Area Common User System (ACUS) Interfaces technology for the TROJAN intelligence network
•	511	Acquire and apply multi-bandwidth compression algorithm technology to maximize TROJAN intelligence collection network throughput
Total	1278	

FY 1999 Planned Program:

•	512	Continue operational assessment of multi-bandwidth compression algorithm technology to maximize TROJAN intelligence collection network throughput
•	321	Apply IEW dissemination applications based on Task Force XXI lessons learned
•	500	Apply tactical transcription functionality at the RSOCs to support tactical to national partnership
Total	1333	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	531	1288	1363	1430
Appropriated Value	536	1261		
Adjustments to Appropriated Value	-19			
FY 1998 Pres Bud Request	517	1261	1278	1333

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA BA0331	3176	2114	3349	3648	4505	4659	4770	4896	Cont'd	Cont'd
OPA BA0333	15336	2085	479	478	0	0	0	0		

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
Acquisition Milestones	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Contract Award for Video Compression/Processing		X*														
Contract Award for Non-Standard Mod using Digital Signal Processing Tech.		X*														
Contract Award for Spec Software for Sig Proc Algorithms						X										

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PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: DL16

D. Schedule Profile

Acquisition Milestones	FY 1996 1	2	3	4	FY 1997 1	2	3	4	FY 1998 1	2	3	4	FY 1999 1	2	3	4
Contract Award for enhanced Sig Proc Algorithms						X										
Contract Award for Area Common User System (ACUS) Interfaces for TROJAN Intel Network										X						
Contract Award for Multi-bandwidth compression algorithms										X						
Contract Award for dissemination applications														X		
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							
Area Common User System (ACUS) 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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: DL16

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Hardware Development	312	753	760	792
Software Development	205	477	518	541
SBIR/STTR		31		
Total	517	1261	1278	1333

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 1996	FY 1996	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	0	517	1230	1278	1333		4358
	MIPR	Jan 97	1261	1261							
	MIPR	Jan 98	1278	1278							
	MIPR	Jan 99	1333	1333							
SBIR/STTR							31				31
Test and Evaluation Organizations: None											

Government Furnished Property: None

Subtotal Product Development					
Subtotal Support and Management	517	1261	1278	1333	4389
Subtotal Test and Evaluation					
Total Project	517	1261	1278	1333	4389

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: DL18

COST (In Thousands)	FY 1996 Actual	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
DL18 SHORTSTOP Development	6800	9151	0	0	0	0	0	0	0	24475

A. Mission Description and Budget Item Justification SHORTSTOP development is the continuation of the SHORTSTOP program which was initiated as a Quick Reaction Program (QRP) to a CENTCOM Statement of Need (SON) developed in the early part of Operation Desert Shield/Desert Storm. Thirty six Limited Procurement Urgent units (AN/VLQ-9) were procured and fourteen have been upgraded to a multi-band configuration (AN/VLQ-10). Sixteen AN/VLQ-9s and ten AN/VLQ-10s are currently deployed in Bosnia in support of Operation Joint Endeavor. The SHORTSTOP Operational Requirements Document, approved Apr 94, calls for a system with a lightweight autonomous configuration which shall be quickly and easily deployed via vehicles or manpack. In order to maximize tactical utility, it further requires that the set be capable of operation from either a battery or suitable external power source. The current EMD program for the SHORTSTOP Electronic Protection System will provide a lightweight, fully integrated Radio Frequency Countermeasure system to provide protection for personnel and other high value assets against proximity fuzed munitions. There will be three configurations of the SHORTSTOP Electronic Protection System: a manpack system, a stand alone system, and a vehicle mounted system. SHORTSTOP will be used by Infantry, Engineering, Armored, Field Artillery, and Intelligence units to enhance survivability.

Acquisition Strategy: A contract was awarded in July 1994 on a competitive basis for the development of a lightweight autonomous configuration of the SHORTSTOP Electronic Protection System.

FY 1996 Accomplishments:

•	4369	Completed hardware design
•	1336	Completed software design and began integration with hardware
•	1095	Began fabrication of nine (9) prototypes
Total	6800	

FY 1997 Planned Program:

•	6032	Complete fabrication/contractor qualification testing of nine (9) prototypes
•	500	Award T&M contract for support of Government Technical and Operation Test
•	485	Design/fabricate Fuze Immulator to support testing
•	435	Design/develop 1553 instrumentation data interface to support live fire test
•	95	Develop installation kit for vehicle mount version
•	1380	Conduct technical and operational test
•	224	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
Total	9151	

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PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: DL18

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	7488	9348	0	0
Appropriated Value	7563	9151	0	0
Adjustments to Appropriated Value	-763			
FY 1998 Pres Bud Request	6800	9151	0	0

C. Other Program Funding Summary	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Other Procurement, Army										
SSN: VA8000 - SHORTSTOP	0	5000	0	0	0	0	0	0	0	5000

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 hardware design				X*												
Complete software design and begin integration with hardware				X*												
Begin fabrication of nine (9) prototypes				X*												
Complete fabrication of nine (9) prototypes							X									
Conduct contractor qualification testing							X									
Award T&M support contract							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 Test								X								
Conduct Operational Test								X								

*Denotes completed milestone

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development PROJECT DL18

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development	5626	4962		
Test and Evaluation		2875		
Government Engineering Support	735	731		
Program Management Support	439	359		
SBIR/STTR		224		
Total	6800	9151		

B. Budget Acquisition History and Planning Information: Not Applicable

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: D665

COST (*In Thousands*)	FY 1996 Actual	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
D665 Aircraft Survivability Equipment Development	38743	43645	46870	37248	6144	4684	8129	14091	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 1996 Accomplishments:

- 15950 Continued EMD of Suite of Integrated Infrared Countermeasure (SIIRCM). New nomenclature assigned - formerly ATIRCM/CMWS.
- 3246 Continued EMD of Advanced Infrared Countermeasure Munitions (AIRCMM)
- 15704 Continued EMD of the AN/ALQ-211 Suite of Integrated Radio Frequency Countermeasures (SIRFC). New nomenclature assigned - formerly ATRJ
- 1171 Continued development of Advanced Visual-Electro-Optical Signature Suppression and Analysis (AVESSA)
- 250 Continued integration efforts of ASE systems
- 2422 Continued in-house and program management administration

Total 38743

FY 1997 Planned Program:

- 19431 Continue EMD of SIIRCM
- 2530 Continue EMD of AIRCMM
- 16228 Continue EMD of SIRFC
- 1139 Continue development of AVESSA

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development
	PROJECT D665

FY 1997 Planned Program: (continued)

•	100	Complete integration efforts of ASE systems
•	3226	Continue in-house and program management administration
•	991	Small Business Innovative Research/Small Business Technical Transfer (SBIR/STTR)
Total	43645	

FY 1998 Planned Program:

•	28968	Continue EMD of SIIRCM
•	1897	Continue EMD of the AIRCMM
•	11964	Continue EMD of SIRFC
•	800	Continue development of AVESSA
•	3241	Continue in-house and program management administration
Total	46870	

FY 1999 Planned Program:

•	27859	Continue EMD of SIIRCM
•	1250	Complete EMD of the AIRCMM
•	4000	Complete EMD of the SIRFC
•	554	Complete development of AVESSA
•	3585	Continue in-house and program management administration
Total	37248	

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	38828	38579	34606	34542
Appropriated Value	39219	43645		
Adjustments to Appropriated Value	-476			
FY 1998 Pres Bud Request	38743	43645	46870	37248

Change Summary Explanation: Funding: +12264 of ASE APA, BA4 AZ3504 was converted to RDT&E in FY98; +2706 of ASE APA, BA4 AZ3504 was converted to RDT&E in FY99.

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: D665

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
APA, BA 4 AZ3504 ASE	50109	436	905	34412	46203	41601	100667	104090	Cont	Cont
APA, BA 2 AA0720 ASE Modifications	12915	25777	4578	3922	11982	22592	17975	15351	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
Continue EMD of SIIRCM	X															
Continue EMD of AIRCMM	X															
Continue EMD of SIRFC	X															
Continue dev of AVESSA	X															
Continue EMD of SIIRCM						X										
Continue EMD of AIRCMM						X										
Continue EMD contract of SIRFC						X										
Continue dev of AVESSA						X										
Continue EMD of SIIRCM									X							
Continue EMD of AIRCMM									X							
Continue EMD of SIRFC									X							
Continue EMD of AVESSA									X							
Continue EMD of SIIRCM													X			
Complete EMD of AIRCMM														X		
Complete EMD of SIRFC														X		
Complete development of AVESSA															X	

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: D665

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
R&D Contracts	32091	33534	31209	18156
Test and Evaluation	432	1724	8557	11536
Government Engineering Support	1177	1124	704	549
Program Management Engineering Support	5043	6272	6400	7007
SBIR/STTR		991		
Total	38743	43645	46870	37248

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 1996	FY 1996	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	6740	6740	1000	2300	1710	1070	660	0	6740
ITT Corp (SIRFC)	C/CPAF	Jul 94	55756	55756	19450	15018	14700	5337	1140	111	55756
Sanders(ATIRCM)	C/CPAF	Sep 95	57910	57910	2282	12414	10981	19879	12218	136	57910
Misc.	Contracts				6980	2359	6143	4923	4138	Cont	Cont
Misc.	MIPR				1099	1177	1124	704	549	Cont	Cont
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			562	545	640	515	515	Cont	Cont
Misc.	MIPR				6522	4498	5632	5885	6492	Cont	Cont
Test and Evaluation Organizations: Note: Miscellaneous includes funding to various activities for ASE programs.											
Misc.	MIPR				853	432	1411	1525	254	Cont	Cont
TECOM	MIPR							3069	8446	0	11515
EPG	MIPR						313	3963	2836		7112
SBIR/STTR							991			0	991

Government Furnished Property: None

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604270A Electronic Warfare (EW) Development PROJECT D665

	Total Prior to FY1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	30811	33268	34658	31913	18705	Cont	Cont
Subtotal Support and Management	7084	5043	6272	6400	7007	Cont	Cont
Subtotal Test and Evaluation	853	432	1724	8557	11536	Cont	Cont
SBIR/STIR			991			0	991
Total Project	38748	38743	43645	46870	37248	Cont	Cont

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: D2VT

COST (*In Thousands*)	FY 1996 Actual	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
D2VT Suite of Integrated Infrared Countermeasures Operational Test (SIIRCM)	0	0	166	2358	116	0	0	0	0	2640

A. Mission Description and Justification: This project supports the operational test for the Suite of Integrated Infrared Countermeasures (SIIRCM) and is new start in FY 1998. 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-64, MH-47E, MH-60K, RC-12K, 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: Not applicable

FY 1996 Accomplishments: Project not funded in FY 96

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program:

•	166	Commence SIIRCM Operational Test Support
Total	166	

FY 1999 Planned Program:

•	2358	Continue SIIRCM Operational Test Support
Total	2358	

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	0	0	0
Appropriated Value	0			
Adjustments to Appropriated Value				
FY 1998 Pres Bud Request	0	0	166	2358

Change Summary Explanation: Funding: Project initiated in FY 1998 to support SIIRCM operational test. (FY 98 +166; FY99 +2358)

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: D2VT

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
APA, BA 4 AZ3507 ASE (ATIRCM)				10634	18064	13649	64557	67842	Cont	Cont
APA, BA 2 AA0720 ASE Modifications* (ATIRCM)		9167		1112	9396	13657	14835	15351	Cont	Cont

*Represents only part of the funding in this SSN.

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
Initiate SIIRCM Test Support										X						
Continue SIIRCM Test Support													X			

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604270A Electronic Warfare (EW) Development

PROJECT: D2VT

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Test and Evaluation			166	2358
Total			166	2358

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 1996	FY 1996	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								166	2358	116	2640

Government Furnished Property: None

Subtotal Product Development				
Subtotal Support and Management				
Subtotal Test and Evaluation	166	2358	116	2640
Total Project	166	2358	116	2640

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604321A All Source Analysis System (TIARA)

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	49912	39308	24045	26228	22695	31632	30880	30118	Continuing	Continuing
DB19 ASAS Evolutionary Acquisition	48496	35660	21598	23813	22695	31632	30880	30118	Continuing	Continuing
D2FT ASAS Operational Test	1416	3648	2447	2415	0	0	0	0	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 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604321A All Source Analysis System (TIARA)
	PROJECT DB19

COST (*In Thousands*)	FY 1996 Actual	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
DB19 ASAS Evolutionary Acquisition	48496	35660	21598	23813	22695	31632	30880	30118	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 and collection management, all-source target and situation analysis, single- and multi-source processing, intelligence reporting, electronic warfare, and operational security as well as 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 functionalities 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 Common Operating Environment (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. This strategy provides early user capabilities and streamlines acquisition. Building upon experience and feedback gained from the fielded ASAS and other tactical fusion prototypes, ASAS Block II will undergo Army Systems Acquisition Review Council (ASARC) Milestone III review in FY 99.

In March 1994, the Army was directed to accelerate fielding the ASAS capability across the force (including all Military Intelligence reserve units and National Guard brigades) by FY99. This ASAS-Extended program accomplishes this through: reuse of proven Block I software; leveraging the traditional acquisition successes of Block I; use of relatively low cost NDI equipment; and tailoring the existing training and maintenance support structure. The Army's intent is to keep fielded ASAS technology as current as possible by initiating value engineering and technology insertion to the fielded ASAS, and by packaging some of the ASAS Block II software drops into capability packages and inserting them into the fielded ASAS. These capability packages will be used with all of the fielded ASAS systems and modules. ASAS Block II will be fielded to Army active and reserve armored cavalry regiments, separate brigades, divisions, corps, and echelons-above corps. Brigades and Battalions will receive Collateral Remote Workstations.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604321A All Source Analysis System (TIARA) / PROJECT: DB19

FY 1996 Accomplishments:

•	43281	Continued ASAS Block II Evolutionary E&MD Capability Packages -Developed and integrated ASAS Common Applications -Developed and integrated Joint Collection Management Tools -Incorporated DOD directed Common Operating Environment (COE) -Add MIDB Capability -Developed Remote Workstation-Collateral for Task Force XXI
•	2343	Conducted Development/Operational/Assessment Testing
•	2872	Procured and provided GFE for Product Development & Test
Total	48496	

FY 1997 Planned Program:

•	31253	Continue ASAS Block II Evolutionary Acquisition E&MD Capability Packages -Implement COE-Compliant System Services and Common Applications -Complete Unified Database Schema -Develop Operational Diagnostic Capability -Rehost and improve All Source intelligence functionality from Blk I to Blk II -Enhance RWS to meet evolving DIV XXI capabilities
	3572	Conduct Development/Operational/Assessment Testing
	835	Small Business Innovation Research/Small Business Technical Transfer (SBIR/STTR)
Total	35660	

FY 1998 Planned Program:

•	19213	Continue ASAS Block II Evolutionary Acquisition E&MD Capability Packages -Implement COE-Compliant System Services and Common Applications -Develop, Integrate and Test CP3 All Source Comms Module -Develop Operational Diagnostic Capability -Complete MIDB Effort -Integrate and Test CP4 (enhanced comms functionality; jump/degraded mode ops) -Rehost and improve All Source intelligence functionality from Blk I to Blk II -Enhance RWS to meet evolving EXFOR XXI capabilities
	2385	Conduct Development/Operational/Assessment Testing
Total	21598	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604321A All Source Analysis System (TIARA)
	PROJECT DB19

FY 1999 Planned Program:

- 21378 Continue ASAS Block II Evolutionary Acquisition E&MD Capability Packages
  - -Integrate and Test CP4 (enhanced comms functionality; jump/degraded mode ops)
  - -Rehost and improve All Source intel functionality from Blk I to Blk II
  - -Enhance RWS to meet evolving EXFOR XXI capabilities
  - -Level 5/6 COE migration and hardening
  - -Develop objective target analysis capability
  - -Interface initial CI/HUMINT capability into ACE
- 2435 Complete CP4 Testing (PQT) including:
  - -Block II Operational Test
  - -CP4 Material Release
  - -Block II Milestone III and Block III Milestone II

Total 23813

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY1997 President's Budget	49716	32433	21666	23918
Appropriated Value	50218	35660		
Adjustments to Appropriated Value	-1722			
FY1998 Pres Bud Request	48496	35660	21598	23813

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA (K28801) ASAS Modules	10277	12282	7772	25256	57216	65847	59056	49482	Cont	Cont
Spares (BS9704)	1982	0	0	0	1868	5561	8893	10207	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
Phase 2 (Remote Workstation Functionality) Prototype Delivery			X*	X*	X*	X	X									
ASAS-Extended Unit Sets	X*					X	X	X		X	X			X	X	
Block II Unit Sets																X

*Initial software drop delivered

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604321A All Source Analysis System (TIARA)

PROJECT: DB19

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Systems Development	39405	30825	17640	19077
Contractor Engineering	2502	2100	1600	2000
Government In House Support	3717	1900	1600	1900
Test	2872	0	758	836
SBIR/STTR		835		
Total	48496	35660	21598	23813

B. Budget Acquisition History and Planning Information: Following for Block II ASAS.

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Lockheed Martin	CPAF	Oct 93	113600	113600	41289	26748	23025	11242	10739	Cont	113043
Tobyhanna Depot	MIPR					4075	2835	1000	2200	Cont	10110
Contractor Eng						5347	4750	4239	4541	Cont	18877
Systems Eng						1300	1050	800	1200	Cont	4350
SBIR/STTR						835					835
Support and Management Organizations											
Contractor Spt						2502	2100	1600	2000	Cont	8202
Gov't In House						3717	1900	1600	1900	Cont	9117

Test and Evaluation Organizations: None

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604321A All Source Analysis System (TIARA) / PROJECT DB19

Government Furnished Property

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property										
CHS II	MIPR			1587	1100	0	359	397	0	3443
Support and Management Property: None										
Test and Evaluation Property										
Test sets CHS II				0	2872	0	758	836	0	4466
Subtotal Product Development				42876	39405	31660	17640	19077		150658
Subtotal Support and Management					6219	4000	3200	3900		17319
Subtotal Test and Evaluation					2872		758	836		4466
Total Project				42876	48496	35660	21598	23813		172443

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604321A All Source Analysis System (TIARA)

PROJECT: D2FT

COST (*In Thousands*)	FY 1996 Actual	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
D2FT ASAS Operational Test	1416	3648	2447	2415	0	0	0	0	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. TECOM provides the Army leadership with testing of the ASAS, and is not a new start.

Acquisition Strategy: Not applicable, see B19 above.

FY 1996 Accomplishments:

•	1416	Conducted ASAS Block II Technical and Operational Testing and Evaluation
Total	1416	

FY 1997 Planned Program:

•	3559	Conduct ASAS Block II Technical and Operational Testing and Evaluation
•	89	Small Business Innovation Research/Small Business Technical Transfer (SBIR/STTR)
Total	3648	

FY 1998 Planned Program:

•	2447	ACE Characterization Test and Evaluation
Total	2447	

FY 1999 Planned Program:

•	2415	Phase IV PPQT
Total	2415	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604321A All Source Analysis System (TIARA)
	PROJECT D2FT

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY1997 President's Budget	1452	3767	2515	2514
Appropriated Value	1467	3648		
Adjustments to Appropriated Value	-51			
FY1998 Pres Bud Request	1416	3648	2447	2415

C. Other Program Funding Summary: Not Applicable

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
ASAS Testing																
- CP-Single Source							X	X								
- CP-Remote Workstation									X	X						
- CP-ACE												X	X			
- CP-Comms														X		

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604321A All Source Analysis System (TIARA)

PROJECT: D2FT

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Operational Test , Evaluation , Assessment	1416	3559	2447	2415
SBIR/STTR		89		
Total	1416	3648	2447	2415

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 1996	FY 1996	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	3559	2447	2415	Cont	9837
SBIR/STTR							89				89
Government Furnished Property: None											
Subtotal Product Development											
Subtotal Support and Management											
Subtotal Test and Evaluation						1416	3648	2447	2415		9926
Total Project						1416	3648	2447	2415		9926

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604325A Follow-On To TOW

PROJECT: DE18

COST (*In Thousands*)	FY 1996 Actual	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
DE18 Follow-On to TOW	944	5479	13949	50884	71935	63147	73127	72503	Continuing	Continuing

A. Mission Description and Budget Item Justification: Provides for Engineering and Manufacturing Development 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 Improved Target Acquisition System (ITAS) and on the Bradley Fighting Vehicle (BFV) with Improved Bradley Acquisition Sub-System (IBAS) 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. Projects within this 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 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 both missile design and platform integration.

FY 1996 Accomplishments:

•	944	EMD Preparation: Initiated Program Milestone II Documentation; Prepared Draft Request for Proposal; and Conducted System and Technical Analysis.
Total	944	

FY 1997 Planned Program:

•	1045	Continue EMD Preparation: Develop Milestone II Documentation , System Specification and Final Request for Proposal.
•	4300	Support Contractor Pre-EMD Risk Reduction Tests: Provide Range Support, Range Instrumentation Suite, Range Facility Support, Range Target Sets, Range Test Management, Execution and Data Reduction, TOW Platform Shipment, Integration and Refurbishment.
•	134	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
Total	5479	

FY 1998 Planned Program:

•	1696	Release EMD RFP; Conduct Source Selection; Complete Milestone II; and Award EMD Contract.
•	1097	Pre-CDR Component Hardware Analysis and Procurement of Component Hardware to Support Pre-CDR Tests.
•	9685	Initiate Component Design and System Engineering Analysis for Preliminary Design Review.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1997
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604325A Follow-On To TOW / PROJECT: DE18

FY 1998 Planned Program: (continued)

•	598	Prepare for Early User Assessment.
•	873	Procure Open System Integration and Simulation Laboratory (SIL) Hardware and Software.
Total	13949	

FY 1999 Planned Program:

•	1493	Conduct Early User Assessment and Post Assessment Analysis to support PDR.
•	12764	Conduct Component Design and System Engineering Analysis for PDR; Conduct PDR.
•	18138	Initiate Procurement of Hardware for Pre-Production Test.
•	5910	Conduct Pre-CDR Tests and Update FOTT Systems Simulations associated with HMMWV and BFVS Virtual Prototypes, Hardware-in-the-Loop, and SIL.
•	12579	Continue System Engineering Analysis for Critical Design Review.
Total	50884	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	968	5596	15397	49387
Appropriated Value	995	5479		
Adjustments to Appropriated Value	-51			
FY 1998 Pres Bud Request	944	5479	13949	50884

Change Summary Explanation: FY1998/FY1999 Funding Adjustments (FY 98 -1448/FY 99 +1497) for higher priority requirements.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Missile Procurement, Army										
TOW 2 C59300	9686	13571	1326	0	0	0	0	0		2280829
FOTT H04500								34092	20854	54946

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
Release RFP									X							
Complete Source Selection											X					
Award EMD Contract											X					
Preliminary Design Review															X	

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604325A Follow-On To TOW

PROJECT: DE18

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development			11655	45413
Program Management Support	894	1045	1696	1986
Developmental Test and Evaluation	50	4300	598	3485
SBIR/STTR		134		
Total	944	5479	13949	50884

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Prime	TBD	TBD	TBD	TBD				11655	45413	Cont'd	57068
Support and Management Organizations											
PM CCAWS, RSA, AL	PO					279	400	471	523		1673
MICOM, RSA, AL	PO					605	672	953	1072		3302
Miscellaneous	PO					10	73	272	391		746
Test and Evaluation Organizations											
TECOM, APG, MD	PO					50	4200	598	3485		8333
SBIR/STTR							134				134

Government Furnished Property: None

Subtotal Product Development			11655	45413	57068
Subtotal Support and Management	894	1145	1696	1986	5721
Subtotal Test and Evaluation	50	4334	598	3485	8467
Total Project	944	5479	13949	50884	71256

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604604A Medium Tactical Vehicles

PROJECT: DH07

COST (*In Thousands*)	FY 1996 Actual	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
DH07 Family of Medium Tactical Vehicles (FMTV)	2923	5874	3729	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. Body styles currently under development under Project DH07 were deferred from the first five year multi-year contract due to budget constraints. Bringing these vehicles on line as soon as possible supports the pure fleeting of FMTV to reduce the logistics impact and operating and support costs. This project supports the development of the FMTV Special Body Variants [Medium Tactical Vehicle (MTV) Tanker, MTV Expansible Van, Light Medium Tactical Vehicle (LMTV) Trailer and MTV Trailer]. FMTV is required to fill 2 1/2 (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 1996, 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 through FY99 harmonizes the Army effort with the U.S. Marine Corps Medium Tactical Vehicle Remanufacture (MTVR) program as directed by Congress. 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 is to obtain a Level III Technical Data Package for the FMTV Special Body Variants that were omitted from the first production contract due to budget constraints. This Technical Data Package will be combined with the Technical Data Package obtained from the first contract to enable all models to be produced under the second FMTV production contract. The acquisition strategy for the Medium Tactical Truck Remanufacture Program (MTTR) is to award two prototype contracts, which will lead to production.

FY 1996 Accomplishments:

- 1500 FMTV Technical Data Package
- 976 Prototype Contracts (MTTR)
- 191 Source Selection Evaluation Board (SSEB) (MTTR)
- 106 Technical Support Contract (MTTR)
- 150 Government Engineering (MTTR)

Total 2923

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604604A Medium Tactical Vehicles	PROJECT DH07

FY 1997 Planned Program:

•	4162	Prototype Contracts (MTTR)
•	250	Technical Support Contract (MTTR)
•	569	Support Costs (Engineering/Quality/Matrix) (MTTR)
•	750	Developmental Testing (MTTR)
•	143	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	5874	

FY 1998 Planned Program:

•	2850	Developmental Testing (MTTR)
•	750	Support Costs (Engineering/Quality/Matrix) (MTTR)
•	129	Technical Support Contract (MTTR)
Total	3729	

FY 1999 Planned Program: Program not funded

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	1459	0	0	0
Appropriated Value	1500	5874		
Adjustments to Appropriated Value	+1423			
FY 1998 Pres Bud Request	2923	5874	3729	0

Change Summary Explanation:

Funding: FY96 - + 1500 DA reprogramming to FMTV (Tech Data Package).
FY97 - + 5874 Congressional Add
FY98 - + 3729 Reprogrammed during the FY 98 POM cycle.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA1 Family of Medium Tactical Vehicles (MYP) D15500	146043	238868	209446	364843	272948	332484	444648	459061	Cont	Cont
OPA1 5 Ton Extended Svc Pgm (ESP) DV0010				47314	81983	81715	32700	32786	Cont	Cont

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604604A Medium Tactical Vehicles PROJECT DH07

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
Release Request For Proposal (MTVR)			X*													
Source Selection Evaluation (MTTR)				X*												
Award Prototype Contract (MTTR)					X*	X*										
Developmental Testing (MTTR)								X								
Award Production Contract (MTTR)													X			

* Milestone Complete

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604604A Medium Tactical Vehicles PROJECT DH07

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Product Development	2923	5024	879	
Developmental Testing		707	2850	
SBIR/STTR		143		
Total	2923	5874	3729	

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Teledyne (Prototype)	C-FFP	Oct 88	13515	13515	13515						13515
Tactical Truck (Prototype)	C-FFP	Oct 88	14500	14500	14500						14500
Stewart Stevenson (Prototype)	C-FFP	Oct 88	17204	17204	17204						17204
Stewart Stevenson (Tech Data Pkg)	C-FFP	Oct 91	10100	10100	10100						10100
Stewart Stevenson (Tech Data Pkg update)	SS-FFP	Jun 92	3416	3416	1916	1500					3416
Stewart Stevenson (Special Bodies Prototype)	SS-CPFF	Sep 92	12774	12774	12774						12774
In-House/Eng			3142	3142	1673	150	569	750			3142
TACOM, MI											
Govt Eng (all other fld activities)			1024	1024	1024						1024

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604604A Medium Tactical Vehicles

PROJECT: DH07

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
SSEB, TACOM, MI (MTTR)			191	191		191					191
Oshkosh Truck Corp. (Prototype MTTR)	C-CPFF		2415	2415		488	1927				2415
AM General (Prototype MTTR)	C-CPFF		2723	2723		488	2235				2723
Camber (Tech Spt Contract)			485	485		106	250	129			485
SBIR/STTR			143	143			143				143
Support and Management Organizations: N/A											
Test and Evaluation Organizations											
TECOM (APG) (FMTV)			7765	7765	7765						7765
TECOM (YPG) (FMTV)			3000	3000	3000						3000
TEXCOM (FMTV)			4964	4964	4964						4964
TECOM (MTTR)			3600	3600			750	2850			3600
Government Furnished Property - None											
Subtotal Product Development					72706	2923	5124	879			81632
Subtotal Support and Management											
Subtotal Test and Evaluation					15729		750	2850			19329
Total Project					88435	2923	5874	3729			100961

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

DATE: February 1997

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 1996 Actual	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
D200 Smoke/Obscurant Systems	1915	0	0	703	937	2552	4814	8362	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; (2) Generator, Smoke, Mechanical, Mechanized Smoke Obscurant System, M58, consists of components of the M56 mounted on a M113A3 carrier. The M58 will equip smoke units in heavy units resulting in improved vehicle maneuverability and survivability; (3) M81 MMW/IR Smoke Grenades which support the Vehicle Integrated Defense System; (4) Vehicle Engine Exhaust Smoke System which provides on-board obscuration of heavy armor systems. The M81 provides IR and MMW screening from smart Anti-Tank Guided Missiles (ATGM) and top attack weapons. The project in this Program Element supports efforts in the engineering and manufacturing development phase of the acquisition strategy and is therefore correctly placed in Budget Activity 5.

Acquisition Strategy: Project D200 - Smoke/Obscurants: The M58 Mechanized Smoke System, primarily an in-house effort, was type classified from the EMD phase. The M58 will purchase smoke generator components, the driver's viewer enhancer and gas particulate filter units on contracts and furnish as GFE to Anniston Army Depot to integrate the components on the converted platform (M113A3). The M56 P3I Modularity program is an in-house effort in the EMD phase. The program will increase the visual obscuration capability of the system from 60 to 90 minutes, and will be developed and tested at CBDCOM. The proven design will then be integrated into the on-going competitively awarded five-year multi-year production contract for the M56 Smoke Generator System. The Vehicle Engine Exhaust Smoke System (VEESS) will be developed in-house and will be applied to systems via modification work order.

FY 1996 Accomplishments:

•	1515	M56-P3I Modularity: Completed design (drawings/technical data).
•	300	M56-P3I Modularity: Conducted technical/user testing.
•	100	M56-P3I Modularity: Conducted Milestone III In-Process Review.
Total	1915	

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program: Project not funded in FY 98.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604609A Smoke, Obscurant and Target Defeating System - Engineering Development
	PROJECT D200

FY 1999 Planned Program:

- 703 VEESS-Integrate engineering study/proof of principle and initiate maintenance work order preparation and approval.

Total 703

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	1945			2745
Appropriated Value	2000			
Adjustments to Appropriated Value	-85			
FY 1998 Pres Budget Request	1915			703

Change Summary Explanation: FY 1999 funding (-2042) reprogrammed to PE 0602622A, A552 to support technology base for P3I MMW program.

C. Other Program Funding Summary	FY 1996	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	1728	2259	4739	6691	4167	4231	4314	4411	Cont'd	Cont'd
RDTE,A Budget Activity 4, PE 063627A, Project DE79 Smoke, Obscurant and Equipment Defeating Systems	2623	6246	0	0	0	0	0	5155	Cont'd	Cont'd
OPA-3,A Appropriation										
M99103, M56 Smoke Generator	0	12506	12560	19115	0	0	20831	18882	Cont'd	Cont'd
M99107, M58 Smoke Generator	12301	11587	9195	10895	7965	10566	11903	9937	Cont'd	Cont'd
M99104, M157A2 Smoke Generator	5052	3475	0	0	0	0	0	0	0	8527
G70700, LVOSS	0	0	2164	4752	2317	0	0	0	0	9233

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604609A Smoke, Obscurant and Target Defeating System - Engineering Development PROJECT D200

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
M56-Complete P3I Modularity Design	X*															
M56-Complete P3I Mod Tech/User Test		X*														
M56-Conduct P3I Modularity MS III			X*													
VEESS-Initiate Maint Work Order													X			

*Milestone completed

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

DATE: February 1997

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 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development	290			
Systems Engineering	422			703
Integrated Logistics Support	190			
Quality Assurance	100			
Reliability, Maintainability and Availability	10			
Configuration Management	50			
Technical Data	90			
Test and Evaluation	263			
Government Engineering Support	200			
Program Management Support	150			
Program Management Personnel	150			
Hardware				
Total	1915			703

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

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604611A Javelin

PROJECT: D499

COST (*In Thousands*)	FY 1996 Actual	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate		Cost to Complete	Total Cost
D499 JAVELIN	2249	6014	8018	5277	0	0	0	0	0	634870

A. Mission Description and Budget Item Justification This Program Element (PE) 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 PE 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. Integration of Advanced Main Charge Warhead and Lethality Improvement Tracker Enhancement 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 1996 Accomplishments:

•	93	Program Management
•	1667	Test Support
•	378	Lethality Improvement Tracker Enhancement (LITE)
•	111	Advanced Main Charge Warhead (AMCW)
Total	2249	

FY 1997 Planned Program:

•	301	Program Management
•	600	Test Support
•	1035	Lethality Improvement Tracker Enhancement
•	3931	Advanced Main Charge Warhead
•	147	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
Total	6014	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604611A Javelin
	PROJECT D499

FY 1998 Planned Program:

•	400	Program Management
•	1044	Test Support
•	1403	Lethality Improvement Tracker Enhancement
•	5171	Advanced Main Charge Warhead
Total	8018	

FY 1999 Planned Program:

•	264	Program Management
•	4661	Test Support
•	352	Advanced Main Charge Warhead
Total	5277	

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1998
FY 1997 President's Budget	973	1643	1548	0
Appropriated Value	1000	6014		
Adjustments to Appropriated Value	+1249			
FY 1998 Pres Budget Request	2249	6014	8018	5277

Change Summary Explanation: FY96 funding (+1249) reprogrammed in for tracker performance upgrade.
FY 98/99 adjustments (FY 98 +6470/FY 99 +5277) to support Advanced Main Charge Warheads.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete	Total Cost
Missile Procurement, Army										
CC0007 Javelin (AAWS-M)	200858	195281	143112	326623	465962	409511	475873	7061	95314	2756628

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
Conduct System Level Live Fire Tests		X*														
First Unit Equipped			X*													
Full Rate Production Decision (ASARC)							X									
Award Year One of First Multiyear Contract							X									

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604611A Javelin

PROJECT: D499

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
Advanced Main Charge Warhead(AMCW)						X										
AMCW Final Design										X						
AMCW Lethality Test												X				
AMCW Live Fire Phase I/II Tests															X	

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604611A Javelin

PROJECT: D499

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Program Management	93	301	400	264
Test Support	1667	600	1044	4661
Lethality Improvement Tracker Enhancement	378	1035	1403	
Advanced Main Charge Warhead	111	3931	5171	352
SBIR/STTR		147		
Total	2249	6014	8018	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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
TI/MM JV EMD	C/CPIF	21Jun89	462700	465500	493456	0	3884				493456
TI/MM JV AMCW	CPIF	28Mar94	N/A	N/A	4521	111	1082	5171	352		14086
TI/MM JV LITE	CPAF	28Jun96	N/A	N/A		378	1802	1403			2963
SBIR/STTR							147				
Support and Management Organizations											
Support Contractor	8(a) CPFF		N/A	N/A	6747						6747
Program Mgmt					80232	93	301	400	264		81290
Test and Evaluation Organizations											
TECOM					19513	705	600	1044	4661		26523
OPTEC					8843	937					9780
ARL						25					25

Government Furnished Property: Not Applicable.

Subtotal Product Development Organizations	497977	489	5113	6574	352	510505
Subtotal Support and Management Organizations	86979	93	301	400	264	88037
Subtotal Test and Evaluation Organizations	28356	1667	600	1044	4661	36328
Total	613312	2249	6014	8018	5277	634870

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604619A Landmine Warfare

PROJECT: D088

COST (*In Thousands*)	FY 1996 Actual	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
D088 Wide Area Munition (WAM)	29453	26288	19800	23075	0	0	0	0	0	251916

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 with two-way command and control and redeployable capabilities will use advanced sensors, computer technology, and warhead technology to extend the range and lethality of the WAM. 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 4QFY97. 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. Type Classification standard of the improved WAM is planned for 4QFY99.

FY 1996 Accomplishments:

•	4887	Completed basic WAM integration and assembly design
•	12291	Fabricated technical test/initial operational test and evaluation (TT/IOTE)/live fire hardware for basic WAM
•	6800	Initiated TT/IOTE/live fire test for basic WAM
•	650	Designed and built basic WAM prototype individual trainer and collective trainer software
•	4825	Initiated design efforts for WAM PIP integration of two-way command & control and redeployablility
Total	29453	

FY 1997 Planned Program:

•	21427	Complete TT/IOTE/live fire test for basic WAM
•	750	Conduct testing for basic WAM individual trainer and collective trainer software
•	3508	Conduct WAM PIP Initial Platform and Control Unit design effort
•	603	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	26288	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604619A Landmine Warfare
	PROJECT D088

FY 1998 Planned Program:

•	8841	Conduct WAM PIP preliminary design and functional configuration audit
•	2809	Procure hardware for WAM PIP contractor prototype testing and TT/IOTE
•	3300	Conduct contractor prototype testing
•	650	Conduct testing of WAM PIP prototype individual trainers and collective trainer software
•	4200	Complete design of control station, trainers and software
Total	19800	

FY 1999 Planned Program:

•	10130	Complete WAM PIP design and conduct functional configuration audit
•	5145	Complete fabrication of TT/IOTE hardware for WAM PIP
•	6500	Complete TT/IOTE for WAM PIP
•	1300	Complete testing of trainers and software
Total	23075	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY97 President's Budget	30179	17609	17500	19027
Appropriated Value	31028	26288		
Adjustments to Appropriated Value	-1575	0		
FY 1998 President's Budget Request	29453	26288	19800	23075

Change Summary Explanation:

Funding: FY 1998 (+2300) and FY 1999 (+4048) adjustments were required to offset shortfalls in WAM basic program and allow WAM PIP to maintain scheduled (4Q99) Type Classification.

C. Other Program Funding Summary

RDTE, A Budget Activity 5	FY 1996	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	4968	5384	0	3600	4000	11255	11960	21786	Cont'd	Cont'd
Ammunition, A Appropriation										
WAM, E78100	14581	9991	15323	17891	28132	31469	60972	61092	Cont'd	Cont'd
WAM Individual Trainer, E78103	1819	0	0	0	0	0	0	0	0	1819
WAM Collective Trainer, E78104	0	1928	0	0	1721	1624	0	0	0	5273

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604619A Landmine Warfare

PROJECT: D088

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
Conduct Basic WAM Low Rate Production Milestone Review			X*													
Complete Live Fire Test					X*											
Complete TT/IOTE Testing								X								
Complete Functional Configuration Audit								X								
Complete Basic WAM Milestone III								X								
Complete Initial WAM PIP Trade-Off Studies & Initiate Design Efforts				X*												
Complete WAM PIP Ground Platform Preliminary Design Review								X								
Complete Contractor System Test												X				
WAM PIP Functional Specification														X		
Complete Procurement, Fabrication of TT System Hardware														X		
Complete IOT&E Testing															X	
WAM PIP Milestone III																X

* Milestone Completed

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604619A Landmine Warfare

PROJECT: D088

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development	18621	17080	12850	10678
Test and Evaluation	3321	2501	1900	6000
Government Engineering Support	6735	5436	4300	5597
Government Program Management	776	668	750	800
SBIR/STTR		603		
Total	29453	26288	19800	23075

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Textron	CPIF	June 1996	40443	40443	0	2000	14915	12850	10678	0	40443
Textron	CPIF	June 1990	138876	138876	120090	16621	2165	0	0	0	138876
Support and Management Organizations											
ARDEC					15803	3072	3441	2500	3050	0	27866
PM-MCD					3452	776	668	750	800	0	6446
Other (Misc)					9254	3663	1995	1800	2547	0	19259
SBIR/STTR					0	0	603	0	0	0	603
Test and Evaluation Organizations											
TECOM					4701	3321	2501	1900	6000	0	18423
Subtotal Product Development					120090	18621	17080	12850	10678		179319
Subtotal Support and Management					28509	7511	6707	5050	6397		54174
Subtotal Test and Evaluation					4701	3321	2501	1900	6000		18423
Total Project					153300	29453	26288	19800	23075		251916

Government Furnished Property: None.

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604622A Family of Heavy Tactical Vehicles

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	2605	1958	0	0	0	0	13757	18773	Continuing	Continuing
D659 Family of Heavy Tactical Vehicles	803	1958	0	0	0	0	0	0	2761	2761
DE43 Semi-Trailer Van	1802	0	0	0	0	0	0	0	1802	1802
DE49 Heavy Expanded Mobility Tactical Truck	0	0	0	0	0	0	8785	8831	Continuing	Continuing
DE53 Line Haul/Light Equipment Transporter	0	0	0	0	0	0	4972	9942	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. 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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604622A Family of Heavy Tactical Vehicles

PROJECT: D659

COST (*In Thousands*)	FY 1996 Actual	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
D659 Family of Heavy Tactical Vehicles	803	1958	0	0	0	0	0	0	2761	2761

A. Mission Description and Justification: This project supports requirements to develop expanded heavy tactical vehicle capabilities to meet the emerging needs of Army users. Specific requirements have been identified for development of alternate flatrack studies; a Palletized Load System (PLS) Universal Power Interface Kit, which will provide interface for various PLS flatrack or module-based applications; a Heavy Expanded Mobility Tactical Truck-Load Handling System (HEMTT-LHS), required to determine the effectiveness of the lighter PLS in meeting the mission requirement of airborne units through its enhanced air deployability; the HEMTT Extended Service Program (ESP); and the Forward Repair System (FRS), intended to meet the requirements for a maintenance shop capability to keep up with rapidly moving combat vehicles.

Acquisition Strategy: The acquisition strategy is to develop and test prototypes to determine producibility and feasibility of incorporating vehicles into future production contracts.

FY 1996 Accomplishments:

•	136	Flatrack Prototype Overrun/Testing/Studies.
•	142	GFE for Prototype/Concept Evaluation (FRS).
•	20	Vehicle Modeling for 5000 Gallon Fueler.
•	135	HEMTT-LHS Conversion.
•	60	PLS Universal Power Interface Kit Development.
•	220	Modeling/Testing for Fuel Tank Flatrack/Rollover Studies.
•	90	PLS Alternator.
Total	803	

FY 1997 Planned Program:

•	200	Analysis of HEMTT ESP design alternatives
•	570	Analysis of selected designs
•	380	HEMTT ESP modeling
•	760	HEMTT ESP testing
•	48	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	1958	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604622A Family of Heavy Tactical Vehicles
	PROJECT D659

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 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	824	0	0	0
Appropriated Value	845	1958		
Adjustments to Appropriated Value	-42			
FY 1998 Pres Bud Request	803	1958	0	0

Change Summary Explanation: Funding: FY97 (+1958) Congressional increase to support development of the HEMTT ESP

C. Other Program Funding Summary	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA1, DA0500, Family of Heavy Tactical Vehicles	119655	243841	9071	162647	59098	97389	124946	124254	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
Provided GFE for FRS Prototype		X*														
FRS Concept Evaluation/Test				X*												
Awarded Prototype Contract (HEMTT-LHS)				X*												
Award HEMTT Dev/Prototype Contract						X										
HEMTT ESP test								X								

*Milestone Complete

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604622A Family of Heavy Tactical Vehicles

PROJECT: D659

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Product Development	590	1150		
Developmental Testing	213	760		
SBIR/STTR		48		
Total	803	1958		

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Oshkosh Truck Corp	CPFF	Sep 96				94					94
Oshkosh Truck Corp.	FFP	Sep 96				213					213
Niehoff	FFP	Sep 96				90					90
In-House Eng		Jul 96				102					102
GFE		Mar 96				91					91
Oshkosh Truck Corp	CPFF	Mar 97					1150				1150
SBIR/STTR							48				48
Support and Management Organizations: None											
Test and Evaluation Organizations											
TECOM		Sep 96				213	760				973
Government Furnished Property: None											
Subtotal Product Development						590	1198				1788
Subtotal Support and Management											
Subtotal Test and Evaluation						213	760				973
Total Project						803	1958				2761

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE: February 1997
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604622A Family of Heavy Tactical Vehicles	PROJECT: DE43

COST (*In Thousands*)	FY 1996 Actual	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
DE43 Semi-Trailer Van	1802	0	0	0	0	0	0	0	1802	1802

A. Mission Description and Justification: This project supports requirements to develop expanded heavy tactical vehicle capabilities to meet the emerging needs of Army users. Specific requirements have been identified for development of potable water in the corps/brigade support areas. Currently, the XM1098 is the only 5000 Gallon Water Carrier in the Army's inventory. This vehicle can only be utilized in warm weather climates where there is no danger of the water freezing or becoming too hot for consumption. The users' water requirements will be better satisfied by enabling the XM1098 to be used in a variety of temperature scenarios. The heater/chiller kit will enhance the XM1098 capability by maintaining the tanker water temperature in the desirable range of 40-80 degrees Fahrenheit. The kit will also provide the capability of providing on-demand hot (180 degree F) and cold (55 degree F) water, regardless of ambient conditions. This funding supports the second phase of this project which will be an integrated technical demonstration of the feasibility of a heater/chiller system comprised of an external insulation, integrated power supply, an on-demand heating/cooling system and a recirculation system. This effort also includes fluid level and temperature gauges, and upgraded lighting systems not currently available on the XM1098.

Acquisition Strategy: The acquisition strategy is to develop and demonstrate two technology test beds to address the potential technology enhancements to the XM1098.

FY 1996 Planned Program:

•	100	Market survey of Technical Alternatives.
•	200	Thermal Simulation and Analysis.
•	200	System characteristics (Develop Corrosion Resistant Coating).
•	200	Cross Country Mobilization Simulation & Analysis.
•	150	Technology Integration.
•	200	Conceptual Design.
•	400	Technology Component Acquisition.
•	50	System Modification.
•	200	System Installation.
•	52	Technology Demonstration.
•	50	Final Report.
Total	1802	

FY 1997 Planned Program: Program not funded in FY 97

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604622A Family of Heavy Tactical Vehicles

PROJECT: DE43

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 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	1848	0	0	0
Appropriated Value	1900			
Adjustment to Appropriated Value	-98			
FY 1998 Pres Bud Request	1802	0	0	0

C. Other Program Funding Summary: None

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
Market Survey		X*														
Thermal Simulation and Analysis		X*														
System Characteristics (Develop Corrosion Resistant Coating)		X*														
Cross Country Mobilization Simulation					X											
Technology Integration					X											
Conceptual Design						X										
Tech Component Acquisition						X										
System Modification							X									
System Installation								X								
Technology Demonstration									X							
System Test										X						
Final Report											X					

*Milestone Complete

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604622A Family of Heavy Tactical Vehicles

PROJECT: DE43

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Project Development	1802			
Integration/Demonstration				
Total	1802			

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
CAETECH	CPFF	Nov 95				1802					1802
Support and Management Organizations: None											
Test and Evaluation Organizations: None											
Government Furnished Property: None											
Subtotal Product Development						1802					1802
Subtotal Support and Management											
Subtotal Test and Evaluation											
Total Project						1802					1802

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604633A Air Traffic Control

PROJECT: D586

COST (*In Thousands*)	FY 1996 Actual	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
D586 Air Traffic Control	5073	7377	1705	1729	2026	2079	2251	2354	Continuing	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 1996 Accomplishments:

ATNAVICS

- 4657 Continued Prototype System for Developmental Testing/Initial Operational Test Evaluation
- 295 System performance

TAIS

- 50 System concept design definition
- 71 Conducted suitability study and cost saving data

Total 5073

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604633A Air Traffic Control	PROJECT D586

FY 1997 Planned Program:

ATNAVICS

•	6577	Continue development of prototype
•	574	Developmental and Operational Testing

MOTS

•	50	Pre-market analysis for state of the art systems solution
•	176	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	7377	

FY 1998 Planned Program:

ATNAVICS

•	1130	Development and Operational Testing
•	475	Refurbishment for Fielding

MOTS

•	50	Market Analysis
•	50	Evaluation and Suitability Study and Cost Savings Data
Total	1705	

FY 1999 Planned Program:

MOTS

•	360	Design Definitization/Integration Analysis
•	1369	Procure Prototype System for Developmental Testing
Total	1729	

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	1764	5549	1825	1860
Appropriated Value	1813	7377		
Adjustments to Appropriated Value	+3260			
FY 1998 Pres Bud Request	5073	7377	1705	1729

Change Summary Explanation: Funding: FY 96 (+3260) reprogrammed in support of ATNAVICS development. FY97 (+1828) Congressional reprogramming from procurement for ATNAVICS.

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604633A Air Traffic Control

PROJECT: D586

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
APA AA0050 - Air Traffic Control	12555	6395	5802	5854	9210	40256	30797	36364	Cont'd	Cont'd

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
ATNAVICS System Performance				X						X						
ATNAVICS Testing							X						X			
MOTS Pre-Market Analysis (State of Art Sys 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					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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604633A Air Traffic Control

PROJECT: D586

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Contractor Engineering Support	344	297	145	145
Primary Hardware Development	4061	5943		969
Program Management Support	456	387	430	435
Development Test and Evaluation		574	1130	180
Government Furnished Equipment	212			
SBIR/STTR		176		
Total	5073	7377	1705	1729

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Raytheon	CPFF	Mar 96		13631	9570	4061				0	13631
Raytheon	CPFF	Dec 97		6658			5943			715	6658
MOTS	TBD	Dec 99							969	Cont	Cont
Support and Management Organizations											
Army Aviation & Troop Command (ATCOM)					708	456	387	345	350	Cont	Cont
CECOM					1248	344	297	230	230	Cont	Cont
Test and Evaluation Organizations											
TEXCOM							574	1130	180	Cont	Cont
SBIR/STTR							176				176

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property										
					212					212
Support and Management Property: None										
Test and Evaluation Property: None										
Subtotal Product Development				9570	4273	5943		969	Cont	Cont
Subtotal Support and Management				1956	800	684	575	580	Cont	Cont
Subtotal Test and Evaluation						750	1130	180	Cont	Cont
Total Project				11526	5073	7377	1705	1729	Cont	Cont

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604640A Advanced Command and Control Vehicle

PROJECT: DG27

COST (*In Thousands*)	FY 1996 Actual	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
DG27 Future Command and Control Vehicle	17306	7734	8867	0	0	0	0	0	0	111934

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. It 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 focus on testing and production planning to meet Initial Operational Test and Evaluation (IOTE) and First Unit Equipped (FUE) in FY99.

FY 1996 Accomplishments

- 4525 Developed Technical Data Package; Began Producibility Engineering Effort
- 2657 Logistics Engineering Effort
- 4234 Continued Design Engineering; Component/Production Verification and Contractor Test Support
- 961 Prototype Manufacturing
- 759 Began Live Fire Testing
- 2016 Conducted Technical Testing and Limited User Testing
- 2154 Project Management

Total 17306

FY 1997 Planned Program:

- 652 Complete Technical Data Package/Continue Producibility Engineering Effort
- 1382 Logistics Effort
- 775 Prototype Manufacturing
- 872 Complete Technical Testing

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604640A Advanced Command and Control Vehicle
	PROJECT DG27

FY 1997 Planned Program: (continued)

•	1549	Continue Live Fire Testing
•	1085	Direct Support Electrical System Test Set/Advanced Collective Integrated Protective System Development/Procurement
•	1245	Project Management
•	174	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	7734	

FY 1998 Planned Program

•	1804	Complete Contractor Test Support; Perform Refurbishment/Rework of Test Vehicles
•	2602	Complete Live Fire Testing
•	4418	Complete Production Verification Testing
•	43	Project Management
Total	8867	

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	17739	6649	6759	0
Appropriated Value	18238	7734		
Adjustments to Appropriated Value	-932			
FY1998 President's Budget Request	17306	7734	8867	0

Change Summary Explanation:

Funding: 1085 increase in FY 97 applied to DSESTS/ACIPS.

Funding: 2108 increase in FY 98 due to realignment from WTCV to complete Live Fire testing.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
GA84200 Command & Control Vehicle		48939	30897	62681	100013	122929	86755	123902	Cont.	Cont.
GE0173 Spares (Initial) C2V			941	882					Cont.	Cont.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604640A Advanced Command and Control Vehicle PROJECT DG27

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
Deliver Pre-Production Vehicles	X*															
Begin Live Fire Testing		X*														
LRIP IPR				X*												
Award LRIP Contracts					X*											
Complete Developmental/Technical Tests						X										
Support to Task Force XXI						X										
Complete Production Verification Test												X				
Complete Live Fire Testing												X				

* Milestone Completed.

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604640A Advanced Command and Control Vehicle

PROJECT: DG27

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Design Engineering	11416	3119	1804	
Prototype Manufacture	961	775		
Test	2775	2421	7020	
Project Management	2154	1245	43	
SBIR/STTR		174		
Total	17306	7734	8867	

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
United Defense LP			63914	65718	50528	10577	2809	1804			65718
Other Contracts			18046	19131	16246	1800	1085				19131
Support and Management Organizations											
TACOM					3343	1300	945	23			5611
CECOM					4059	854	300	20			5233
US Army Europe					2481						2481
SBIR/STTR							174				174
Test and Evaluation Organizations											
APG, YPG, White Sands					1370	2775	2421	7020			13586

Government Furnished Property: None

Subtotal Product Development	66774	12377	3894	1804	84849
Subtotal Support and Management	9883	2154	1419	43	13499
Subtotal Test and Evaluation	1370	2775	2421	7020	13586
Total Project	78027	17306	7734	8867	111934

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604641A Tactical Unmanned Ground Vehicle

PROJECT: DE47

COST (*In Thousands*)	FY 1996 Actual	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
DE47 Tactical Unmanned Ground Vehicle (TUGV)	0	2823	2687	2663	2656	2641	0	0	0	13470

A. Mission Description and Budget Item Justification: The Army has 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 98). This PE supports the critical transition of Defense Advance Research Project Agency (DARPA) developed technologies to the Project Manager (PM) Unmanned Ground Vehicles 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. This project is not a new start, was previously funded by OSD PE 0603709D. 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, NBC 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 1996 Accomplishments: Project funded in FY 1996 under OSD PE 0603709D.

FY 1997 Planned Program:

•	2754	Transfer mature technologies from DARPA Demonstration (Demo) II Program [off-road and way point navigation, low bandwidth teleoperation and mission planning, and long-range Thermal Weapon Site (TWS)]. Integrate and demonstrate HTI of critical sensor technologies from both Demo II and other Program Managers. Support user appraisal activities with the US Army Infantry School, Ft. Benning, GA.
•	69	Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR)
Total	2823	

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604641A Tactical Unmanned Ground Vehicle

PROJECT: DE47

FY 1998 Planned Program:

- 2687 Complete transfer of mature technologies from DARPA Demo II Program (off-road and way point navigation, low bandwidth teleoperation and mission planning, and long-range TWS). Integrate and demonstrate HTI of critical sensor technologies from both Demo II and other PMs.

Total 2687

FY 1999 Planned Program:

- 2663 In compliance with Evolutionary Acquisition Strategy, identify and transition technological enhancement candidates from DARPA into TUGV EMD design.

Total 2663

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	2884	2886	2877
Appropriated Value	0	2823	0	0
Adjustments to Appropriated Value	0	0	0	0
FY 1998 BES/Pres Bud Request	0	2823	2687	2663

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OSD funding in PE 0603709D.		10363	11974	13079	13687	14806	10283			

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
Milestone I Decision		X*														
Approved Joint ORD		X*														
Begin Developmental Testing		X*														
Initiate User Appraisals				X*												
Critical Tech Tr - Contract Award					X*											
Develop Draft EMD RFP					X*											
Release EMD RFP							X									
Initiate EMD Source Selection								X								
Initiate Milestone II Documentation								X								
Complete Phase I User Appraisal											X					
EMD MS II Decision												X				

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604641A Tactical Unmanned Ground Vehicle

PROJECT: DE47

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
Award EMD Contract													X			
Initiate DARPA Tech Enhancement Effort														X		

*Denotes completed effort

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604641A Tactical Unmanned Ground Vehicle

PROJECT: DE47

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
DARPA Technology transfer, integration, assessment & HTI		2754	2687	2663
SBIR/STTR		69		
Total		2823	2687	2663

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Lockheed Martin	CPFF	Jan 97					2370	2301	2286	Cont	6957
Support and Management Organizations											
MICOM RDEC RSA, AL	MOA	Oct 96					384	386	377	Cont	1147
Test and Evaluation Organizations:											
SBIR/STTR							69				69
Subtotal Product Development							2370	2301	2286		6957
Subtotal Support and Management							384	386	377		1147
Subtotal Test and Evaluation							69				69
Total Project							2823	2687	2663		8173

Government Furnished Property: N/A

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604642A Light Tactical Wheeled Vehicle

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	3970	2937	9909	39919	896	1766	0	0	59397	59397
DE40 Hi Mob Multi-Purp Whld Veh (HMMWV) Prototype	0	2937	9909	39919	896	1766	0	0	55427	55427
DE41 Armored Security Vehicle (ASV)	3970	0	0	0	0	0	0	0	3970	3970

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 FY 1996 Project DE41 funds the Armored Security Vehicle (ASV) and HMMWV Extended Service Program (ESP). Beginning in FY 1997, Project DE40 funds the RDT&E effort for development of the remanufacture program as well as the next generation HMMWV leading to procurement in FY 2000. The next generation HMMWV represents a new start in FY1998. 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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604642A Light Tactical Wheeled Vehicle

PROJECT: DE40

COST (*In Thousands*)	FY 1996 Actual	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
DE40 Hi Mob Multi-Purp Whld Veh (HMMWV) Prototype	0	2937	9909	39919	896	1766	0	0	55427	55427

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 family of wheeled vehicles. The HMMWV continued production is required to support expanding mission roles. In addition to the continued roles of Personnel Carrier, TOW Anti-tank Carrier, Armament Carrier, Shelter Carrier and Ambulance, new missions and threats have generated the need to increase payload and protection levels for the HMMWV. The new HMMWV's will have reduced vehicle width which will permit the vehicle to be loaded into the CH-53, as well as operate better in Third World environments on narrow streets. The HMMWV will comply with all Federal and European Community safety and environmental standards, to include full roll-over protection in accordance with Federal Motor Vehicle Safety Standards (FMVSS) for off-road construction equipment. 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. 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 development phase of the HMMWV is to award one prototype contract, which will lead to a non-competitive award of a five-year multi-year production contract in FY 2000.

FY 1996 Accomplishments: In FY 1996 Project DE41 funds the Armored Security Vehicle (ASV) and HMMWV Extended Service Program (ESP).

FY 1997 Planned Program:

•	2605	Service Support Contract
•	260	Support Costs (Engineering/Quality/Matrix)
•	72	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	2937	

FY 1998 Planned Program:

•	5000	Prototype Contract (HMMWV II)
•	2600	Prototype Contract (ReMan HMMWV)
•	1000	Source Selection Evaluation
•	1309	Support Costs (Engineering/Quality/Matrix)
Total	9909	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604642A Light Tactical Wheeled Vehicle
	PROJECT DE40

FY 1999 Planned Program:

•	16271	Prototype Contract (HMMWV II)
•	3100	Prototype Contract (ReMan HMMWV)
•	5700	Technical Data
•	7533	Support Costs (Engineering/Quality/Matrix)
•	7315	Developmental Testing
Total	39919	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget				
Appropriated Value		2937		
Adjustments to Appropriated Value				
FY 1998 Pres Bud Request		2937	9909	39919

Change Summary Explanation:

Funding: FY97 (+ 2937) Congressional increase

FY98 (+9909) and FY99 (+39919) restructure to support next generation HMMWV.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA1 HMMWV (D15400)	124959	162691	66233	14124	120494	114498	129019	234510	Cont	Cont
OPA1 HMMWV ESP (DV0230)				49890	85195	89863	31710	31793	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
Source Selection Evaluation (RDT&E)									X							
Award RDT&E Contract										X						
Integrated Testing														X		

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604642A Light Tactical Wheeled Vehicle

PROJECT: DE40

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Product Development		2865	9909	32604
Developmental Testing			0	7315
SBIR/STTR		72		
Total		2937	9909	39919

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Contractor TBD	CPFF							7600	19371	150	27121
SSEB TACOM, MI								1000			1000
In-House/Eng TACOM, MI							260	1309	7533	1012	10114
AM General, System Tech Spt							2605				2605
Technical Data Pkg Contract TBD									5700	1500	7200
SBIR/STTR							72				72
Support and Management Organizations											
N/A											
Test and Evaluation Organizations											
TECOM (APG)									7315		7315
Government Furnished Property - None											
Subtotal Product Development							2937	9909	32604	2662	48112
Subtotal Support and Management											
Subtotal Test and Evaluation									7315		7315
Total Project							2937	9909	39919	2662	55427

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604642A Light Tactical Wheeled Vehicle

PROJECT: DE41

COST (*In Thousands*)	FY 1996 Actual	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
DE41 Armored Security Vehicle (ASV)	3970	0	0	0	0	0	0	0	3970	3970

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 (HMMWV). The ASV is required to provide improved ballistic protection and to increase 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 the 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. In FY 1996, Project DE41 also includes funding for the HMMWV Extended Service Program (ESP). The Program Executive Office, Tactical Wheeled Vehicles initiated the Joint Army/Marine Corps HMMWV ESP program in FY 1995. FY 1996 funding will continue this previous effort, thus enabling procurement of vehicles with updated design, which will allow insertion of evolving performance requirements and extend the service life of the vehicle another 14 years. 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 ASV awarded one prototype contract (Dec 95), which leads to a non-competitive award of a four-year production contract in FY 1997. The acquisition strategy for the HMMWV ESP is to develop a remanufacture package.

FY 1996 Accomplishments:

- 1606 Prototype Contract (ASV)
- 624 Government Engineering/Quality Support (ASV)
- 294 Pre-Production Qualification Test (PPQT) (ASV)
- 1446 Initiate Remanufacture Package (HMMWV ESP)

Total 3970

FY 1997 Planned Program: Program not funded in FY 97

FY 1998 Planned Program: Program not funded in FY 98

FY 1999 Planned Program: Program not funded in FY 99

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604642A Light Tactical Wheeled Vehicle

PROJECT: DE41

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	4073			
Appropriated Value	4187			
Adjustments to Appropriated Value	-217			
FY 1998 Pres Bud Request	3970			

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA1 Armored Security Vehicle (D02800)		18230	9470	8877	7052					43629

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
Initiate Remanufacture Package (HMMWV ESP)				X*												
PPQT Testing (ASV)						X										
Release Production Request For Proposal (ASV)							X									
Production Contract Award (ASV)								X								

*Milestone Complete

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604642A Light Tactical Wheeled Vehicle

PROJECT: DE41

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Product Development	3676			
Developmental Testing	294			
Total	3970			

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
TEXTRON (ASV Prototype)	FFP	Dec 95				1606					1606
In-House/Eng						624					624
TACOM, MI											
AM General (Reman Pkg)						1446					1446
HMMWV ESP											
Support and Management Organizations											
N/A											
Test and Evaluation Organizations											
TECOM (APG)						294					294

Government Furnished Property - None

	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development		3676					3676
Subtotal Support and Management							
Subtotal Test and Evaluation		294					294
Total Project		3970					3970

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604645A Armored Systems Modernization (ASM) - Engineering Development

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	32425	6585	0	0	0	0	0	33338	Continuing	Continuing
D022 Future Scout Vehicle (FSV)	0	0	0	0	0	0	0	33338	Continuing	Continuing
D175 Advanced Field Artillery System Multi-Option Fuze	6058	6585	0	0	0	0	0	0	0	36159
D413 Armored Gun System (AGS)	26367	0	0	0	0	0	0	0	0	269476

Mission Description and Budget Item Justification: This program element supports the Engineering and Manufacturing Development efforts for the Advanced Field Artillery System (AFAS) Multi-Option Fuze for Artillery (MOFA), Armored Gun System (AGS) and the Future Scout Vehicle (FSV). MOFA will provide proximity, time delay and point detonation functions for 105mm and 155mm bursting projectiles. The AGS is a strategically deployable, tactically transportable, lightly armored, highly mobile, direct fire weapon system. 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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604645A Armored Systems Modernization (ASM) - Engineering Development

PROJECT: D175

COST (*In Thousands*)	FY 1996 Actual	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
D175 Advanced Field Artillery System Multi-Option Fuze	6058	6585	0	0	0	0	0	0	0	36159

A. Mission Description and Justification: Crusader is the Army's next generation 155mm self-propelled howitzer system that will provide a significant increase in artillery survivability, mobility and operational capability and effectiveness through utilization and integration of advanced technology in its subsystems and combat components. This project finances the Engineering and Manufacturing Development phase of MOFA. MOFA will provide proximity, delay, time and point detonation functions for 105mm and 155mm bursting projectiles. MOFA will be inductively (or manually) set contributing to Crusader's critical automated ammunition handling capability, allowing Crusader to meet rate of fire (10-12 rounds/min) and autonomous operations requirements.

FY 1996 Accomplishments:

•	4980	Final hardware design, integration and build
•	568	Program management, management engineering services
•	510	Qualification testing/development and operational testing
Total	6058	

FY 1997 Planned Program:

•	4076	Design enhancements and updates, production readiness review
•	750	Program management, management engineering services
•	1598	Continuation of Developmental and Operational testing, completion of qualification testing and type classification testing
•	161	Small Business Innovation Research /Small Business Technology Transfer (SBIR/STTR) Programs
Total	6585	

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 1997

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 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	6215	6726	0	0
Appropriated Value	6388	6585		
Adjustments to Appropriated Value	-330			
FY 1998 President's Budget Request	6058	6585	0	0

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Comp	Total Cost
RDTE, A Budget Activity 4 PE 603645, Project D409 - AFAS	135724									546347
Ammo, A Appropriation ER8017 MOFA Production				6056	30890	59040	59950	61192	119200	336328
RDTE, A Budget Activity 4 PE 603854, Project D505 Crusader - AD		235795	322291	293920	47102					899108

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
Acquisition Milestones (AM)																
AM - Hardware Delivery (PPQT)			X*			X										
T&E Milestones - Pre-Production Qualification Test (PPQT)						X	X									
T&E Milestones - Baseline Design Testing	X*															
Contract Completion (Task V)						X										
Type Classification I								X								

* Milestone completed

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604645A Armored Systems Modernization (ASM) - Engineering Development

PROJECT: D175

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Product Development	4980	4076		
Support and Management	568	750		
Test and Evaluation	510	1598		
SBIR/STTR		161		
Total	6058	6585		

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Alliant Tech Sys Hopkins, MN	CPIF	May 92	20233	20331	14023	2766	2500			0	19389
Raytheon/TI Joint Ventures, Twesbury, MA	SS-CPFF	Mar 94			1788					0	1788
AMCCOM, ARDEC, Dover, NJ; Adelphi, MD					4412	2214	1415			0	8102
SBIR/STTR							161				
Support and Management Organizations											
AMCCOM, ARDEC, Dover NJ; Adelphi, MD					2347	568	750			0	3665
Test and Evaluation Organizations											
TECOM, Yuma, AZ, APG, ARL, ARDC, HAFB					946	510	1598			0	3054

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604645A Armored Systems Modernization (ASM) - Engineering Development PROJECT D175

Government Furnished Property: None

	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	20223	4980	4076				
Subtotal Support and Management	2347	568	750				
Subtotal Test and Evaluation	946	510	1598				
Total Project	23516	6058	6585				

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604645A Armored Systems Modernization (ASM) - Engineering Development

PROJECT: D413

COST (*In Thousands*)	FY 1996 Actual	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
D413 Armored Gun System (AGS)	26367	0	0	0	0	0	0	0	0	269476

A. Mission Description and Justification: The Armored Gun System (AGS) is a strategically deployable, tactically transportable, lightly armored, highly mobile, direct fire weapon system. The AGS will support light infantry forces in offensive and defensive operations, low and mid intensity conflicts. The AGS will be employed during contingency force operations; therefore it must be capable of insertion via low velocity air drop (LVAD) and execute forced entry operations. Its role is to support infantry units in direct fire mode for point fire target destruction, generally against bunkers, threat medium armor systems, buildings, and in Military Operations in Urban Terrain. System capabilities include C-130 LVAD (Level I Armor), Roll-on/Roll-off C130/C141 (Level II Armor), Roll-on/Roll-off C-17 (Level III Armor), 105mm main gun (XM35) with autoloader, 3 man crew, fire control equivalent to M1 and mobility with Level III armor greater than the M551 Sheridan. The Army terminated the AGS program because of changing Research Development and Acquisition (RDA) priorities and budgetary pressures.

Acquisition Strategy: The AGS program was terminated. The funding in FY 1996 will be used for an orderly close-out of the program.

FY 1996 Planned Program:

•	22450	EMD
•	456	Technical Testing phase-out
•	236	Vulnerability Testing Completion
•	3225	Project Management
Total	26367	

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	32758	0	0	0
Appropriated Value	33677			
Adjustments to Appropriated Value	-7310			
FY 1998 President's Budget Request	26367	0	0	0

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604645A Armored Systems Modernization (ASM) - Engineering Development PROJECT D413

Change Summary Explanation: Funding: In FY 96 (-7310) funds were reprogrammed to higher priority programs.

C. Other Program Funding Summary: None

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 Vulnerability Testing		X*														

* Milestone Completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604645A Armored Systems Modernization (ASM) - Engineering Development PROJECT D413

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Prototype Design, Mfg & Support	6132			
XM35 Gun Design, Mfg, & Support	1105			
Government Testing	823			
Training Devices	50			
Program Management	3225			
Other Govt Support	181			
EMD Termination	14851			
Total	26367			

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
United Defense LP San Jose, CA	SS/CPIF	Jun 92	TBD	215472	190969	19254				0	210223
SAAB Tng Sys Huskvarna, Swed	FFP	Sep 94	4605	4605	4605					0	4605
Misc Govt Agcy	MIPR				10207	2174				0	12381
Support and Management Organizations											
PM AGS Warren, MI	MIPR				7884	3225				0	11109
Miscellaneous	MIPR				1955	181				0	2136
Test and Evaluation Organizations											
ATC APG, MD	MIPR				8487	699				0	9186
Misc Govt Agcy	MIPR				2471	124				0	2595

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604645A Armored Systems Modernization (ASM) - Engineering Development

PROJECT: D413

Government Furnished Property:

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property										
XM35 Gun	MIPR	Aug 91	Nov 92	11068					0	11068
Support and Management Property										
XM35 Gun	MIPR			3112	480				0	3592
Test and Evaluation Property										
XM35 Gun	MIPR			2351	230				0	2581
Subtotal Product Development				216849	21428					238277
Subtotal Support and Management				12951	3886					16837
Subtotal Test and Evaluation				13309	1053					14362
Total Project				243109	26367					269476

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604649A Engineer Mobility Equipment Development

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	19114	46705	56196	63069	58914	39210	19294	0	0	343859
DG15 TRACTOR CARD	219	0	415	1492	0	0	0	0	0	2126
DG25 M1 Breacher	6501	34102	43748	51420	58745	39210	19294	0	0	253020
DG26 Heavy Assault Bridge	12394	12603	12033	10157	169	0	0	0	0	88674

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. Two programs are included in the PE: the Grizzly (M1 Breacher) and the Wolverine (Heavy Assault Bridge). The base for both vehicles is an M1 Abrams Tank chassis. The Grizzly will integrate a versatile/survivable full-width mine clearing blade with automatic depth control, a power driven excavating 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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604649A Engineer Mobility Equipment Development

PROJECT: DG25

COST (*In Thousands*)	FY 1996 Actual	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
DG25 M1 Breacher	6501	34102	43748	51420	58745	39210	19294	0	0	253020

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. It will provide the maneuver force with the freedom required to successfully execute assigned ground combat mission requirements. Funding in this phase will support vehicle system technical evolution to meet operational requirements prior to production, production planning, and government testing prior to a Milestone III decision; and in addition, will support the development of Grizzly training devices.

Acquisition Strategy: Research and development efforts have leveraged the accomplishments of the Combat Mobility Vehicle Advanced Technology Transition Demonstrator (CMV-ATTD) contract. Design modifications have been written into the Advanced Development contract for the powertrain and other chassis components/systems necessary to insure that the Grizzly will meet 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 on existing commercial off-the-shelf hardware and software.

FY 1996 Accomplishments:

•	815	Prepared Grizzly EMD Contract
•	1205	Provided Government and Contractor Program Management and Systems Engineering
•	4481	Conducted EMD Design Refinement and Logistics Development Efforts
Total	6501	

FY 1997 Planned Program:

•	22760	Perform Design Refinement and Prototype Refurbishment
•	4271	Conduct Logistics Analysis, Component Testing and Simulation
•	6238	Provide Government and Contractor Program Management and Systems Engineering to Include Integrated Process Teams, Product Assurance, Vulnerability Analyses, Vetronics, Digitization and Logistics Support Analyses
•	833	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	34102	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604649A Engineer Mobility Equipment Development
	PROJECT DG25

FY 1998 Planned Program:

•	21961	Complete EMD Vehicle Design and Rebuild Two Prototype Vehicles
•	8413	Perform Component Testing and Simulation and Accomplish Program Logistics Requirements
•	468	Procure System Support Package
•	9452	Provide Government and Contractor Program Management and Systems Engineering to Include Integrated Process Teams, Product Assurance, Vulnerability Analyses, Vetronics, Digitization and Logistics Support Analyses
•	3454	Begin Design of Grizzly Training Devices
Total	43748	

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
•	16152	Continue Refinement of Design to Support Vehicle Production Configuration
•	11891	Provide Government and Contractor Program Management and Systems Engineering to Include Integrated Process Teams, Product Assurance, Vulnerability Analyses, Vetronics, Digitization and Logistics Support Analyses
•	2967	Complete Design of Training Devices
Total	51420	

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget Request	10619	33337	20032	8530
Appropriated Value	10918	34102		
Adjustments to Appropriated Value	-4417			
FY 1998 President's Budget Request	6501	34102	43748	51420

Change Summary Explanation:

Funding: Decreased funding in FY 1996 (-3999) was a result of extending the Demonstration and Validation phase of the program and congressional adjustments (-418).

Additional funding in FY 1998 (+23716) and FY 1999 (+42890) supports live fire test requirements, simulator development, test vehicle costs, and unit cost reduction efforts.

Schedule: The EMD phase was extended approximately 28 months to mitigate risk in system design maturation.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604649A Engineer Mobility Equipment Development PROJECT DG25

C. Other Program Funding Summary

	FY 1996	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	13591									71128
PA, WTCV, GZ3200, Breacher MOD				10444	10964	83399	86313	125900	Cont'd	Cont'd
PA, WTCV, G84000, Breacher Trng Dev						397	15726	1527		17650
PA, WTCV, GEO175, Breacher Spares							2334	2666	Cont'd	Cont'd

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
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					
Begin Pre-Production Qualification Test (PQT) I																X

* Milestone Completed

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604649A Engineer Mobility Equipment Development

PROJECT: DG25

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Development Engineering	3773	22760	25415	19119
Logistics Support	638	4079	7067	11958
System Test & Evaluation	70	192	1814	8452
System Management	2020	6238	9452	11891
SBIR/STTR		833		
Total	6501	34102	43748	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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
United Defense York, PA	SS-CPIF	Jan 97	NA	128986		5312	25768	35142	34976	27788	128986
United Defense York, PA	SS-CPFF	Apr 00	NA	64316						64316	64316
General Dynamics Land Sys (GDLS), Warren, MI	SS-CPFF	Dec 96	NA	5313		100	3503	400	1310		5313
Unk (simulator)	Competitive-Cost Plus	Jan 98	Unknown	5715				3074	2641	0	5715
Other Contracts	Various	Various	NA	910		345	200	150	130	430	1255
Support and Management Organizations											
TACOM Warren, MI						553	2280	2609	3001	1797	10240
Other Gov't Agencies						61	1108	1785	1602	508	5064

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604649A Engineer Mobility Equipment Development

PROJECT: 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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Contract Spt to Program						130	410	120	840	310	1810
SBIR/STTR							833				833
Test and Evaluation Organizations											
TECOM APG, MD									6790	21970	28760

Government Furnished Property

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Test and Evaluation Property										
System Support Package	Requisition	Mar 97	Jun 97				468	130	130	728
Subtotal Product Development					5757	29471	38766	39057	92534	205585
Subtotal Support and Management					744	4631	4514	5443	2615	17947
Subtotal Test and Evaluation							468	6920	22100	29488
Total Project					6501	34102	43748	51420	117249	253020

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604649A Engineer Mobility Equipment Development

PROJECT: DG26

COST (*In Thousands*)	FY 1996 Actual	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
DG26 Heavy Assault Bridge	12394	12603	12033	10157	169	0	0	0	0	88674

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 Abrams Tank chassis. The Wolverine simulator is an institutional operator training system (near term implementation) and will evolve into a future unit collective training system (mid to far term) implementation. Five institutional operator simulator systems will be located and housed at Ft. Leonard Wood to accomplish Advanced Individual Training (AIT) for the Military Occupational Specialty (MOS) 12B Combat Engineer on Wolverine driver/operator mission functions. Each simulator system will have the capability to train two Wolverine crews (4 MOS 12Fs) concurrently. The simulators will optimize training effectiveness at reduced institutional 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 2 Wolverine systems with an option for four additional systems 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. It is planned that the contractor will develop simulators for both Wolverine and the Grizzly. Maximum use will be made of existing software from M-1 Tank Driver Trainer and actual system vehicle dynamics and operation software.

FY 1996 Accomplishments:

- 7657 Continued EMD Phase II Contract; Completed Prototype Build; Completed Contract Testing and Supported Government Testing
- 2600 Continued Developmental Contract
- 119 Awarded Various Engineering Services Contracts
- 2018 Performed Program Management; Conducted Logistics Demonstration, Started PPQT

Total 12394

FY 1997 Planned Program:

- 10222 Engineering Development Contract for Migration to System Enhancement Program and Test Program Sets (TPS) development
- 2073 Complete EMD II Contract
- 308 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs

Total 12603

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604649A Engineer Mobility Equipment Development PROJECT DG26

FY 1998 Planned Program:

- 400 Contractor Support For Test
- 1600 Developmental Contract
- 287 Program Management
- 6698 Start Live Fire Test and Purchase System Support Package
- 335 Award Design for Training Device Contract and Provide Government Program Management
- 2713 Begin Design of Simulator

Total 12033

FY 1999 Planned Program:

- 800 Contractor Support of Test
- 1000 Developmental Contract and Refurbishment of Test Vehicles
- 298 Program Management
- 5438 Conclude Live Fire Test, Conduct Production Verification Test, and Support IOT&E
- 288 Provide Government Program Management for Training Devices
- 2333 Complete Design of Simulator

Total 10157

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	12714	2073	4548	8191
Appropriated Value	13071	12603		
Adjustments to Appropriated Value	-677			
FY 1998 President's Budget Request	12394	12603	12033	10157

Change Summary Explanation:

Funding: Increase in FY 1997 reflects a congressional increase of 9300 for migration to Abrams System Enhancement Program (SEP) and 1230 for Test Program Sets development. Increase in FY 1998 (7485) and FY 1999 (1966) for Live Fire Test requirements and the inclusion of the Wolverine training device R&D funding.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604649A Engineer Mobility Equipment Development PROJECT DG26

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
PA, WTCV, GZ3250, HAB MOD	14611	51322	42205	51950	71190	90110	111467	122511	Cont'd	Cont'd
PA, WTCV, GE0177, HAB Spares			930	887	1416	1475	1864	2191	Cont'd	Cont'd
PA, WTCV, G84600 HAB Training Devices				398	15723	1313	1100			18534

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
Begin Prod. Qualification Testing (PQT)			X*													
Award of 6 Test Vehicles				X*												
End PQT Testing						X										
Milestone IIIa						X										
LRIP Contract Award							X									
Award of Contract for Test Vehicles										X						
Begin Live Fire/Vulnerability Test									X							
End Live Fire/Vulnerability Test													X			
Begin PVT														X		
Begin IOT&E																X
End PVT																X

* Milestone Completed

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604649A Engineer Mobility Equipment Development

PROJECT: DG26

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Development Engineering	9711	12150	3642	2256
Logistics Support	666	145	640	550
System Test & Evaluation	1280		7129	6765
System Project Management	737		622	586
SBIR/STTR		308		
Total	12394	12603	12033	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 1996	FY 1996	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	36420	26690	7657	2073				36420
Gen Dyn Land Sys Sterling Hgts, MI	SS-CPFF	Feb 96	NA	NA		2600	10222	2000	1300		16122
SMS Corp St. Louis, MO	SS-FFP	May 92	NA	NA	5798						5798
Unknown (Training Devices)	Competitive-Cost Plus	Jan 98	NA	5046				2713	2333	0	5046
Other Contracts	Various	Various	NA	NA	753	119					872
Support and Management Organizations											
PMO Support					5267	727		287	298		6579
ANAD Anniston, AL					396						396
SBIR/STTR							308				308
PM STRICOM	MIPR	Oct 97						335	288	169	792

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

DATE: February 1997

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Other Gov't Agencies					1375	10					1385
Test and Evaluation Organizations											
TECOM APG, MD					635	1247			5738		7620
AMSAA APG, MD								5150			5150
WSMR White Sands, NM					25				200		225
Government Furnished Property											
Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date		Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property											
Various Gov't Sources	MIPR	Various	Various		379	1					380
Test and Evaluation Property											
To Be Determined	MIPR	Apr 96	Jun 96			33		1548			1581
Subtotal Product Development					33620	10377	12295	4713	3633		64638
Subtotal Support and Management					7038	737	308	622	586	169	9460
Subtotal Test and Evaluation					660	1280		6698	5938		14576
Total Project					41318	12394	12603	12033	10157	169	88674

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

COST (*In Thousands*)		FY 1996 Actual	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
	Total Program Element (PE) Cost	37658	34870	33456	21255	21817	18692	27214	17414	Continuing	Continuing
DL69	Horizontal Technology Integration Second Generation FLIR (HTI SGF)	27872	18036	11477	0	0	0	0	0	0	95765
DL70	Night Vision Devices Engineering Development	9786	9283	9981	11277	21817	18692	27214	17414	Continuing	Continuing
DL74	Long Range Advanced Scout Surveillance System (LRAS3)	0	7551	11998	9978	0	0	0	0	0	29527

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, laser, thermal and radar systems and systems integration of related multi-sensor suites will enable near to long range target identification, acquisition and engagement as well as improve battlefield command and control in "around the clock" combat operations. Project DL69 is focused on inserting key thermal sensor technology into common battle groups. Project DL70 focuses on a variety of night vision electro-optical equipment for use by individual soldiers and a variety of other systems such as a Synthetic Aperture Radar (SAR), Moving Target Indicator (MTI) radar and the Target Location Observation System (TLOS). Project DL74 focuses on a long range multi-sensor system utilizing Horizontal Technology Integration Second Generation Forward Looking Infrared (FLIR) (HTI SGF) thermal sensors and other technologies, for use by US Army scouts. 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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

PROJECT: DL69

COST (*In Thousands*)	FY 1996 Actual	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
DL69 Horizontal Technology Integration Second Generation FLIR (HTI SGF)	27872	18036	11477	0	0	0	0	0	0	95765

A. Mission Description and Justification- Horizontal Technology Integration Second Generation Forward Looking Infrared (FLIR) (HTI SGF) will enable the Army to insert key thermal sensor technology into the highest priority forces [the M2A3 Bradley Fighting Vehicle System (BFVS), the Long Range Advanced Scout Surveillance System (LRAS3), and the M1A2 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. In addition, Aviation B Kit capabilities will be demonstrated to meet FY 1997 Congressional direction.

Acquisition Strategy: The common Second Generation FLIR sensor and display "B" Kit is being developed and fabricated using a competitively awarded cost plus award fee contract.

FY 1996 Accomplishments:

•	25895	Continued development, fabrication of "B" Kit, integration kits and pilot line.
•	810	Initiated sight level qualifications (contractor technical testing) of EMD prototypes for HTI SGF.
•	1167	Performed qualification testing of EMD "B" kit prototypes.
Total	27872	

FY 1997 Planned Program:

•	12317	Complete development and fabrication of "B" kit for M1A2 and M2A3.
•	286	Complete sight level qualification testing of EMD prototypes for HTI SGF.
•	5000	Fabricate prototype Aviation B Kit for demonstration
•	433	Small Business Innovative Research / Small Business Technology Transfer (SBIR/STTR)
Total	18036	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development
	PROJECT DL69

FY 1998 Planned Program:

- 409 Support M1A2 Vehicle Testing.
- 408 Support BFVS Vehicle Testing.
- 8410 Fabricate "B" Kits for LRAS3 test units.
- 2250 Finalize Ground HTI "B" Kit Interface Control Document and final specifications.

Total 11477

FY 1999 Planned Program: No planned program

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	28584	13443	3317	0
Appropriated Value	28873	18036		
Adjustments to Appropriated Value	-1001			
FY 1998 Pres Bud Request	27872	18036	11477	0

Change Summary Explanation: Funding: FY 1998 adjustments due to Army Science Board efficiency reductions (-223) and for proper funding of LRAS3 LRIP units (+7937).

C. Other Program Funding Summary

	FY 1996	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)	0	7551	11998	9978	0	0	0	0	0	29527
6.7 RDTE 0203735A, A Kit (D330)	22438	38113	3599	0	0	0	0	0	0	144042
LRAS3 K38300 OPA2	0	0	0	37567	45473	45795	40552	44886	Cont	Cont
WTCV G80717 M2A3 Bradley "B" Kit	0	25752	16409	53407	53645	64437	50997	53047	Cont	Cont
WTCV GA0700 M1 Abrams A and "B" Kit	0	0	0	0	11491	54591	75331	79163	Cont	Cont
WTCV GA0750 Abrams Upgrade A and "B" Kit	0	22951	73926	103228	87381	61603	35658	39401	Cont	Cont

The 0203735A program element funds the "A" kit portion of the HTI SGF development, for the M1 Abrams Tank. WTCV funds the production tails for these platforms.

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

PROJECT: DL69

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
Initiate Developmental Testing for M2A3 Vehicle				X*												
"B" Kit Initial Qualification				X*												
M1A2 sight Qualification				X*												
Special In-Process Review for B Kit					X*											
Initiate M2A3 Limited User Test						X										
Low Rate Initial Production M2A3							X									
Support M1A2 Vehicle Testing									X							
Support BFVS Vehicle Testing									X							
Finalize ICD and Specs for Ground HTI "B" Kit										X						
Aviation B Kit Fabrication								X								
Aviation B Kit Integration into AH-64 (platform funded)									X							
Aviation B Kit Flight Demo (platform funded)										X						

*Milestone Completed

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

PROJECT: DL69

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development	25872	16161	10916	0
Government Engineering Support	1543	981	395	0
Project Management Support	457	461	166	0
SBIR/STTR		433		
Total	27872	18036	11477	

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Producibility Contracts	Various	March 94	3876	3876	3876	0	0			0	3876
Texas Instruments, McKinney, TX	C/CPAF	July 94	70401	70401	28124	22232	9203	10842		0	70401
SADA II, SBRC	C/FP	March 96	2116	2116	0	2116	0	0		0	2116
T&M Hughes, El Segundo, CA	SS/T&M	July 96	3556	3556	0	1524	1958	74		0	3556
Lockheed Martin, Orlando, FL	CPFF	February 97		5000	0	0	5000	0		0	5000
Support and Management Organizations											
Project Mgmt					856	457	461	166		0	1940
ASARC Support	MIPR				250	0	0	0		0	250
CECOM NVESD	MIPR				5274	1543	981	395		0	8193
SBIR/STTR							433				433

Test and Evaluation Organizations: None. Technical/qualification tests are performed by contractor and all Operational Tests are funded by Host platforms.

Government Furnished Property: None

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development PROJECT DL69

	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	38380	27872	18036	11477			95765
Subtotal Support and Management							
Subtotal Test and Evaluation							
Total Project	38380	27872	18036	11477			95765

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

PROJECT: DL70

COST (*In Thousands*)	FY 1996 Actual	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
DL70 Night Vision Devices Engineering Development	9786	9283	9981	11277	21817	18692	27214	17414	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. Near term systems in development are: Thermal Weapon Sight (TWS) Pre-planned Product Improvements (P3I) - TWS a forward looking infrared (FLIR) used for surveillance and fire control with individual and crew served weapons. The TWS with P3I is a part of the Land Warrior program, and supports crew-served weapon applications. The TWS P3I module is an eyesafe laser rangefinder (LRF) with compass/vertical angle measurement (C/VAM) and ballistic calculation and adjustment. Target Location Observation System (TLOS) - an active/passive day/night sight for individual soldiers to detect Optical and Electro Optical threat, can be used as a covert illuminator and fire direction pointer. Driver's Vision Enhancer (DVE) - a thermal imaging device used for driving combat, combat service, and combat service support vehicles and allows drivers to see obstacles through fog and battlefield obscurants. The DVE P3I will enhance the image quality for the driver by optimizing the interaction between the driver, sensor and environmental observables, and will incorporate an image intensifier (I2) channel in order to provide the driver with the optimum image in all weather conditions. Lightweight Laser Designator/Rangefinder (LLD/R) - a day/night manportable laser designator/rangefinder capable of designating vehicle targets out to 5km and ranging targets out to 9995 meters and processing target location data for export through a digital interface. Integrated Sensor Suite (ISS) programs will provide the structure for interoperability of sensors to include: MELIOS, LLD/R, TLOS, LVRS, TWS, DVE, LRAS-3, Synthetic Aperture Radar (SAR), Infrared Line Scanner (IRLS), FLIR, visible imagers, hyperspectral cameras and Moving Target Indicator (MTI) radars. This will facilitate the merging of existing sensor data for digital distribution within the Army's Technical Architecture (ATA). Continue development and evaluation of multispectral (infrared and visual) target acquisition capabilities to be incrementally inserted into ongoing production efforts (TLOS, LRAS-3 and other laser systems).

Acquisition Strategy: The several programs under development in this line (i.e., TWS, TLOS, LLDR, DVE and ISS) are based on competitively awarded cost plus incentive fee contracts.

FY 1996 Accomplishments:

•	1194	Integrated commercial off-the-shelf (COTS) components and evaluated as potential upgrades to TLOS program.
•	873	Conducted TLOS P3I studies.
•	1319	Conducted operational evaluation of TWS P3I that incorporates a Laser Rangefinder.
•	1168	Initiated development for DVE P3I prototypes.
•	1766	Continued development of LLDR engineering prototype.
•	3466	Initiated an ISS utilizing MTI radar, FLIR and daylight imagers for use on remotely controlled airships and other airborne platforms.
Total	9786	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development
	PROJECT DL70

FY 1997 Planned Program:

•	573	Complete development of TLOS-related prototypes incorporating results from COTS evaluation and studies.
•	900	Conduct HTI Laser trade studies to support developmental/COTS/NDI Integration program
•	2203	Complete development of DVE P3I prototypes.
•	1428	Provide TWS support to Land Warrior program and complete P3I efforts.
•	2146	Conduct limited user test on engineering prototype LLDR, Award LLDR EMD contract.
•	1819	Conduct Integration and Demonstration of the ISS.
•	214	Small Business Innovative Research / Small Business Technology Transfer (SBIR/STTR)
Total	9283	

FY 1998 Planned Program:

•	3920	Develop and integrate LLDR EMD models.
•	4040	Conduct ISS integration, test and evaluation to include data dissemination for multiple applications.
•	2021	Continue development and evaluation of multispectral target acquisition capabilities
Total	9981	

FY 1999 Planned Program:

•	3800	Conduct technical tests and user operational evaluation of LLDR EMD models.
•	4207	Continue ISS integration and technical tests.
•	3270	Prepare to transition identified multispectral target acquisition capabilities
Total	11277	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	10029	12482	11304	16256
Appropriated Value	10130	9283		
Adjustments to Appropriated Value	-344			
FY 1998 Pres Bud Request	9786	9283	9981	11277

Change Summary Explanation: Funding: FY 1998 and FY 1999 adjustments due to Army Science Board efficiency reductions (FY 98 -1323/FY 99 -4979).

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Night Vision Devices KA3500 OPA2	83726	164862	85312	83805	141813	141979	149915	148841	Continue	Continue

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

PROJECT: DL70

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 TWS user test (IOTE)						X										
TWS Milestone III Production decision							X									
TWS Full Production competitive award										X						
Initiate DVE Enhancements		X*														
Initiate DVE Enhancements DT/OT			X*													
DVE Milestone III IPR						X										
Initiated TLOS P3I FLIR finder Demonstrator	X*															
Complete TLOS related prototypes						X										
Initiate HTI Laser Trade Studies							X									
Award Multispectral Target Acquisition										X						
LLDR Limited User Evaluation							X	X								
LLDR Milestone I/II IPR						X										
LLDR EMD Award							X									
LLDR EMD Integration										X						
LLDR Technical Test														X		
LLDR User Operational Tests																X
Conduct HTI Laser NDI system user evaluation										X	X					
Initiate ISS Integration		X*														
Initiate ISS Test, Evaluation & Demonstration					X											
ISS Data Dissemination Evaluation										X						
Conduct ISS Technical Tests													X			

*Milestone Completed

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

PROJECT: DL70

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development	5318	5073	7450	8250
Contractor Engineering / Trade Studies	873	900	0	0
Government Engineering Support	528	458	471	551
Project Management Support	352	300	325	325
Test and Evaluation	2715	2338	1735	2151
SBIR/STTR		214		
Total	9786	9283	9981	11277

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Hughes Aircraft Co., El Segundo, CA	C/CPIF	Dec 90	42490	42490	42490	0	0			0	42490
Lockheed-Sanders, Nashua, NH	C/CPIF	Feb 92	18769	18769	18769					0	18769
Magnavox, Mahwah, NJ	C/CPIF	Aug 93	8321	8321	7571	250	500			0	8321
Texas Instruments, McKinney, TX	C/CPIF	Aug 93	11524	11524	10774	250	500			0	11524
Various (Studies and Prototypes)	C/CPIF	3Q96				2591	573				3164
Litton Laser, Apopka, FL	C/CP	Aug 95			1556	1000	0			0	2556
LLDR (TBS)	C/CP	2Q97				0	1800	3500	3050	750	9100

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

DATE: February 1997

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Nichols Research, Huntsville, AL (ISS Integration)	C/CPIF	2Q96		700	0	100	200	200	200	0	700
HTI Laser Trade Studies (TBS)	C/CP	3Q97					900			0	900
Multispectral target acq. (TBS)	C/CPIF	2Q98						1900	3000	Continue	4900
EOIR, VA (ISS)	C/CP	2Q97			0	0	750			0	750
California Microwave, MD	C/CPIF	Mar 96			0	2000	750			0	2750
ISS (TBS)	C/CP	2Q98			0	0	0	1850	2000	Continue	3850
Support and Management Organizations											
Project Mgmt					2203	352	300	325	325	Continue	3505
CECOM NVESD	MIPR				5585	453	383	396	476	Continue	7293
Other Support	MIPR				2230	75	75	75	75	Continue	2530
SBIR/STTR							214				214
Test and Evaluation Organizations											
OPTEC	MIPR				3739	980	1377	955	1345	Continue	8396
Oth. Gov't Agency	MIPR				0	1735	961	780	806	Continue	4282
Government Furnished Property: None											
Subtotal Product Development					81160	6191	5973	7450	8250	750	109774
Subtotal Support and Management					10018	880	972	796	876		13542
Subtotal Test and Evaluation					3739	2715	2338	1735	2151		12678
Total Project					94917	9786	9283	9981	11277	750	135994

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

PROJECT: DL74

COST (*In Thousands*)	FY 1996 Actual	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
DL74 Long Range Advanced Scout Surveillance System (LRAS3)	0	7551	11998	9978	0	0	0	0	0	29527

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 HTI SGF thermal sensor and will enable scouts to function "around the clock" in adverse weather and penetrate battlefield obscurants

Acquisition Strategy: This project will pursue a competitive acquisition utilizing best value source selection procedures for the Engineering and Manufacturing Development contract.

FY 1996 Accomplishments: Project not funded in FY 96

FY 1997 Planned Program:

•	100	Milestone I/II IPR to acquire 4 prototypes for Development Test (DT), 2 for limited user test, and 10 LRIP units for Operational Test
•	135	Conduct Source Selection Evaluation Board for LRAS3
•	7132	Award EMD contract.
•	184	Small Business Innovative Research / Small Business Technology Transfer (SBIR/STTR)
Total	7551	

FY 1998 Planned Program:

•	4700	Complete EMD prototype development for LRAS3 DT.
•	1273	Conduct DT
•	5000	Fabricate "A" Kits for LRAS3 LRIP.
•	500	Perform operational assessment
•	525	Initiate refurbishment of LRAS3 Prototypes used in DT to support OT.
Total	11998	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development
	PROJECT DL74

FY 1999 Planned Program:

- 4700 Complete refurbishment of Prototypes and spares for OT and LRIP units after OT.
- 4021 Conduct Operational Test.
- 1257 Milestone III/Full Production/Type Classification IPR

Total 9978

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	7712	7025	4475
Appropriated Value		7551		
Adjustments to Appropriated Value				
FY 1998 Pres Bud Request	0	7551	11998	9978

Change Summary Explanation: Funding: FY 1998 and FY 1999 increases are to accelerate funding of LRIP test units (FY 98 +4973/FY 99 +5503)

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
0603774A D131 Budget Activity 4	3167	2769	2939	2893	3298	4193	5150	5172	Continue	Continue
6.4 RDTE 0604710A, B Kit (DL69)	27872	18036	11477	0	0	0	0	0	0	95765
LRAS-3 K38300 OPA2	0	0	0	37567	45473	45795	40552	44886	Continue	Continue

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
Milestone I/II/LRIP IPR						X										
Award EMD Contract							X									
PDR							X									
CDR								X								
Initiate fabrication of test units.									X							
Complete Prototype Development for DT										X						
Conduct Development Test												X				
Initiate Prototype Refurbishment												X				
Conduct Operational Assessment										X						
Complete Refurbishment/Spares for OT												X				

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604710A Night Vision Systems - Engineering Development PROJECT DL74

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
Initiate Operational Test														X		
Complete Refurbishment of LRIP Units															X	
Milestone III/FP/TC IPR															X	
Award Production															X	

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604710A Night Vision Systems - Engineering Development

PROJECT: DL74

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development		7132	11077	6546
Project Management Support		135	141	141
Test and Evaluation		0	500	3011
Government Engineering Support		100	280	280
SBIR/STTR		184		
Total		7551	11998	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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
TBS	C/CPIF	2Q97				0	7132	11077	6546	0	24755
Support and Management Organizations											
Project Mgmt						0	135	141	141	0	417
CECOM NVESD	MIPR					0	100	280	280	0	660
SBIR/STTR							184				184
Test and Evaluation Organizations											
TEXCOM	MIPR					0	0	500	0	0	500
OPTEC	MIPR					0	0	0	3011	0	3011
Subtotal Product Development							7132	11077	6546		24755
Subtotal Support and Management							419	421	421		1261
Subtotal Test and Evaluation								500	3011		3511
Total Project							7551	11998	9978		29527

Government Furnished Property: None

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

DATE: February 1997

BUDGET ACTIVITY: **5 - Engineering and Manufacturing Development**

PE NUMBER AND TITLE: **0604713A Combat Feeding, Clothing, and Equipment**

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	16049	76428	55964	43539	31947	31865	34527	32833	Continuing	Continuing
DC40 Unit/Organizational Equipment	3003	1746	1795	1811	1841	2026	2064	2072	Continuing	Continuing
DL40 Clothing and Equipment	2094	4851	3684	4330	3592	4476	4865	4889	Continuing	Continuing
D548 Military Subsistence System	802	792	884	1294	1643	1765	1877	1884	Continuing	Continuing
D667 Land Warrior	0	47893	33031	16965	7664	8892	11204	9388	Continuing	Continuing
D668 Soldier Enhancement Program	10150	21146	14563	14645	14706	14706	14517	14600	Continuing	Continuing
D680 Mounted Warrior	0	0	2007	4494	2501	0	0	0	0	8992

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 device support items: small, large and collective protective shelters; decontamination items; and improved space heaters to shelter and sustain the soldiers in the field and improve quality of life. The Land Warrior program will produce the first fully integrated fighting system for dismounted combat soldiers. The Soldier Enhancement Program provides "soldier items" that can be procured in three years or less. 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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: DC40

COST (*In Thousands*)	FY 1996 Actual	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
DC40 Unit/Organizational Equipment	3003	1746	1795	1811	1841	2026	2064	2072	Continuing	Continuing

A. Mission Description and Justification: Develop and field soft shelters, showers, latrines and heaters to improve unit sustainability and combat effectiveness. The Force Provider package of tents, laundries, showers, and latrines supports improved soldier quality of life as well as humanitarian aid and disaster relief. Improved maintenance tents will ensure continuous operation and combat readiness of helicopters and vehicles. The Family of Space Heaters replaces unsafe and inefficient space heaters and offers new capabilities to heat modern tents. The Laundry Advanced System (LADS) replaces aging M85 Field Laundries on a 1:4 basis.

Acquisition Strategy: Developments transition to procurement.

FY 1996 Accomplishments:

- 1995 Completed testing and made production decision on latrines and batch laundry as part of the Force Provider pre-planned product improvement (P3I) designed to provide rest and refit facilities in an austere environment.
- 320 Completed PQT and type classified the Space Heater - Convective (SHC) to increase safety, reliability and efficiency of field heaters.
- 45 Completed development and type classified the Modular General Purpose Tent System (MGPTS) for Low Rate Initial Production contract.
- 643 Initiated procurement action second generation LAS prototypes for Technical Testing and Operational Testing (TT/OT).

Total 3003

FY 1997 Planned Program:

- 1670 Award integrated contract for development and procurement of the LADS which includes water recycle capability and eliminates hazardous waste products.
- 34 For Family of Field Latrines (FOFL), type classify the Force Provider latrine as the Army's follow-on latrine.
- 42 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program

Total 1746

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT DC40

FY 1998 Planned Program:

•	1000	Conduct DT/OT on LADS prototypes, type classify, and transition to production.
•	259	Conduct Milestone II decision. Upgrade the NBC Protective Cover for fire protection capability for use in the hospital tent liner. Conduct market search, and award contract for fabric development.
•	400	Fabricate upgraded frame support system for the MGPTS Pre-planned Production Improvement.
•	136	Conduct market investigation for the Recon Heater, procure NDI prototypes, and conduct concept evaluation.
Total	1795	

FY 1999 Planned Program:

•	356	Conduct technical testing on the NBC Protective Cover.
•	300	Conduct test and evaluation for the MGPTS upgraded frame system and upgraded specification to improve modularity, flooring, and ventilation capability.
•	355	Conduct technical and operational test and evaluation on the Recon Heater and type classify the performance specification.
•	200	Conduct market survey for field reproduction and procure NDI prototypes.
•	150	Conduct market survey for command post equipment and procure NDI prototypes for evaluation.
•	150	Conduct market survey for Field Pressure Washer and procure NDI prototypes for evaluation.
•	300	Develop upgraded equipment/sub-components for the Advanced Cloth Reproduction.
Total	1811	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	4106	1784	1923	1949
Appropriated Value	4220	1746		
Adjustments to Appropriated Value	-1217			
FY 1998 Pres Bud Request	3003	1746	1795	1811

Change Summary Explanation: Funding - In FY 1996 reduction was reprogrammed to higher priority requirements (-1103).

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0603747.DCO9, Unit/Org Equipment	2126	1289	1955	1737	2025	1989	2033	1564	Cont	Cont
OPA 3, M80200, Force Provider	11892	24981	11633	24188	23390	22956	19839	19876	Cont	Cont
OPA 3, M86200, LADS				5401	8334	6822	14284	9938	Cont	Cont

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: DC40

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
Conduct TT for Force Provider (laundry and latrines)				X*												
Conduct TT/OT of LADS prototypes								X								
TC MGPTS				X*												
TC Space Heater and SHC						X										
Awards LADS R&D/Procurement Contract						X					X					
Conduct TT/OT on LADS																
Type Classify LADS													X			
Fabricate MGPTS Frame P3I												X				
Develop NBC-PC Fabric Upgrade												X				
Conduct TT/OT on Recon Heater													X			
Type Classify Recon Heater																X
Type Classify Follow-on-Latrine						X										
Conduct TT for NBC-Protective Cover (PC)														X		

*Milestone completed

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: DC40

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development	3003	1704	1795	1811
SBIR/STTR		42		
Total	3003	1746	1795	1811

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
SSCOM	In-House				298	861	429	359	411	Cont	2358
Acumen	Various	Various			5068	1264	782	947	810	Cont	8871
Foster Miller											
Tech Rsch Grp											
Hunter Mfg											
GTS											
ARO	MIPR				29						29
OGA											
Support and Management Organizations											
SSCOM					915	378	71	89	90	Cont	1543
Test and Evaluation Organizations											
TECOM/ATC	MIPR				2651	500	422	400	500	Cont	4473
CRIC											
SBIR/STTR							42				42

Government Furnished Property: None

Subtotal Product Development	5395	2125	1211	1306	1221	11258
Subtotal Support and Management	915	378	71	89	90	1543
Subtotal Test and Evaluation	2651	500	464	400	500	4515
Total Project	8961	3003	1746	1795	1811	17316

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: DL40

COST (*In Thousands*)	FY 1996 Actual	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
DL40 Clothing and Equipment	2094	4851	3684	4330	3592	4476	4865	4889	Continuing	Continuing

A. Mission Description and Justification: Develop state-of-the-art individual clothing and equipment to improve the effectiveness, sustainability and quality of life of the individual soldier. Funding shown in FY 1996-FY 1998 reflects transfer of funds from DL40 to OSD PE 0604384BP to support the Chemical/Biological Defense program in accordance with Public Law 103-60 Title XVII.

Acquisition Strategy: Soldier Modernization will be accomplished via integrated acquisition programs embodying procurement approaches ranging from NDI/modified NDI through integrated programs such as Land Warrior, Mounted Warrior, and Air Warrior. Acquisition strategies will vary from: 1) quick fixes in 36 months or less from concept to type classification (TC) such as Soldier Enhancement Programs (SEP); 2) modular improvements which require limited RDT&E and can be completed in more than 36 months from concept to TC; and 3) more technically challenging areas of integration and digitization in the Land Warrior program.

FY 1996 Accomplishments:

- 264 Refined requirements based upon Operation Joint Endeavor threat, conducted Design Review, finalized component designs, awarded contract for DT/OT prototypes for Body Armor Set Individual Basic (BASIC) P3I.
- 887 Conducted mini-test #2 and Design Review, started DT/OT for the Improved Toxological Agent Protective (ITAP) Suit.
- 855 Form Integrated Product Team (IPT) for Modular Body Armor (MBA) and Modular Load System (MLS), completed Acquisition Strategy for one contract for both systems, conducted pre-proposal conference with draft request for proposal (RFP), received proposals and completed source selection.
- 88 Procured test items and initiated evaluation of the Optional Uniform Fabric.

Total 2094

FY 1997 Planned Program:

- 550 Conduct DT/OT, complete assessment reports, obtain Milestone III approval, transition Technical Data Package (TDP) to Defense Personnel Support Center for the BASIC P3I.
- 250 Complete DT/OT and assessment reports, obtain MS III approval, transition to procurement for the ITAP.
- 3664 Award single RDTE contract for MBA and MLS, evaluate up to three competing designs in Customer Evaluation and lab testing downselect (using Expert Choice to select up to two competing designs for DT/OT test items), conduct Explosive Ordnance Detachment (EOD) suit domestic/foreign market survey and procure EOD suit prototypes, downselect for prototype test items.
- 98 Milestone I Decision on the Optional Uniform, procure test item and initiate field test.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment
	PROJECT DL40

FY 1997 Planned Program: (continued)

•	173	Procure prototypes, conduct feasibility evaluation, modify patterns and size tariff, complete technical data and forward to procurement center for integrated sizing of the Battle Dress Uniform.
•	116	Small Business Innovation Research/Small Business technology Transfer (SBIR/STTR) Program
Total	4851	

FY 1998 Planned Program:

•	155	Conduct a pre-production prove-out of the BASIC P3I.
•	2648	Fabricate test items and initiate the DT/OT of the MBA and MLS.
•	323	Develop design modifications and procure prototypes for a wear test and acceptability evaluation of the Maternity Utility Work Uniform and Coat, Men's Dress Coat and Trousers, Women's Coat, and the All-Weather Coat (Men's and Women's).
•	300	Conduct a market survey, test new materials, develop designs, and initiate test of a Disposable Emergency Ensemble.
•	258	Procure test prototypes, conduct an abbreviated DT/OT, obtain approval of Static Resistant Cold Weather Clothing, and transition to procurement.
Total	3684	

FY 1999 Planned Program:

•	620	Complete DT/OT and assessment reports for the MBA and MLS.
•	305	Conduct a wear test and acceptability evaluation of the Maternity Utility Work Uniform and Coat, Men's Dress Coat and Trousers, Women's Coat, and the All-Weather Coat (Men's and Women's).
•	800	Modify designs, procure test prototypes, and initiate the DT/OT of the Advanced Combat Uniform.
•	900	Modify designs, procure test prototypes, complete DT/OT, and obtain Milestone III approval of the Advanced Combat Helmet (ACH) and the Concealable Body Armor.
•	500	Complete test of the Disposable Emergency Ensemble, obtain Milestone III approval, and transition to procurement.
•	1205	Develop initial designs, conduct an early user evaluation, and refine designs for Climate Control Equipment (heating and cooling) for the individual soldier.
Total	4330	

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	2145	4955	3962	4690
Appropriated Value	2205			
Adjustments to Appropriated Value	-111			
FY 1998 Pres Bud Request	2094	4851	3684	4330

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: DL40

C. Other Program Funding Summary:

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0603747.D669, Clothing & Equipment	2533	3347	3339	3374	4113	3640	5799	5172	Cont	Cont
RDTE, 0604384BP.L40, JSLIST	3108									3108
RDTE, 0603884BP.IP4, Individual Protection		1937								1937
RDTE, 064384BP.IP5, Individual Protection		1184	5768	5250						12202
DoD CBDP, MA0400, Protective Clothing		19677	35245	39788	40628	31499	39029	40600	Cont	Cont
OMA, 114092000, Central Funding and Fielding	40565	87739	42405	54222	79734	82242	84025	85848	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
Conduct Market Surveys/Design Reviews: Modular Body Armor, and Modular Load Bearing Equipment						X*										
Conduct Market Surveys/Design Reviews: Advanced Combat/Garrison Uniform, Extreme Cold Weather Clothing System Undergarments		X*														
Procure test items/initiate DT/OT: Modular Body Armor and Modular Load Bearing Equipment										X						
Design modifications of Maternity Uniforms, Men's and Women's Dress Items and All Weather Coats//Test prototypes//Wear test and acceptability evaluation//Reports and Milestone III										X		X			X	X
Market Survey for a Disposable Emergency Ensemble//Material tests and designs//DT and OT//Reports, Milestone III and transition to production									X			X		X		X

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT DL40

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
Test prototypes of Static Resistant Cold Weather Clothing Material//DT and OT//Reports, approval and transition to production									X		X	X				
Complete DT and OT of MBA and MLS//Reports and type classify														X		X
Design modifications of the Advanced Combat Uniform//Test prototypes//Start DT and OT													X		X	X
Design modifications of the ACH and Concealable Body Armor//Test prototypes//Phase II DT and OT, MSIII, transition to production													X	X		X
Initial designs of Climate Control Equipment for the individual soldier//Early user evaluation//Design modifications														X	X	X

* Milestone completed

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: DL40

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development	2094	4735	3684	4330
SBIR/STTR		116		
Total	2094	4851	3684	4330

B. Budget Acquisition History and Planning Information: Not applicable

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: D548

COST (*In Thousands*)	FY 1996 Actual	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
D548 Military Subsistence System	802	792	884	1294	1643	1765	1877	1884	Continuing	Continuing

A. Mission Description and 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 1996 Accomplishments:

- 244 Completed technical/operational testing and type classified the Multi-Fuel Burner Unit (MBU) designed to replace the M2 Burner which uses current battlefield fuels for safer, more efficient heating in all field kitchen systems.
- 98 Conducted technical and user testing of the Air Force Initial Deployment Kitchen and transitioned Technical Data Package (TDP) to procurement to increase mission responsiveness and improve customer satisfaction by means of an all-electric, rapidly deployable, all-climate feeding system.
- 460 Fabricated test prototypes and initiated Development Testing/Early User Test and Evaluation (DT/EUT&E) on the Containerized Kitchen to increase flexibility and efficiency of future field feeding system.

Total 802

FY 1997 Planned Program:

- 131 Complete design/development of MBU interface components for integration into the Army Field Feeding System (AFFS).
- 335 Complete DT/EUT&E and type classify, and develop procurement documentation for the Containerized Kitchen.
- 165 Procure, fabricate and evaluate in a complete kitchen low cost safety improvements for the Mobile Kitchen Trailer (MKT).
- 142 Procure and evaluate electrification upgrades to Air Force field kitchens.
- 19 Small Business Innovation Research/Small Business technology Transfer (SBIR/STTR) Program

Total 792

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment
	PROJECT D548

FY 1998 Planned Program:

•	363	Design/fabricate vented components and equipment to remove combustion by-products of the MBU.
•	178	Develop component efficiency upgrades for field kitchen Improved Heat and Serve Ration Heater.
•	303	Conduct field evaluations for improvements to the MKT.
•	40	Conduct in-house development of the Tilt Griddle/Deep Fat Fryer to improve operational effectiveness/ performance of field kitchens.
Total	884	

FY 1999 Planned Program:

•	230	Conduct technical and user testing and transition the TDP for vented Army field feeding equipment for use with the MBU.
•	400	Complete technical and user testing of the Rapid Deployment Kitchen and transition TDP to procurement.
•	380	Fabricate prototypes and begin DT/OT of the Thermal Powered Washer for the Food Sanitation Center.
•	123	Fabricate prototype and initiate testing of Tilt Griddle/ Deep Fat Fryer.
•	161	Conduct market survey and develop prototype for modification of existing Army equipment for the Containerized Ice Maker.
Total	1294	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	823	809	938	1388
Appropriated Value	844	792		
Adjustment to Appropriated Value	-42			
FY 1998 /Pres Bud Request	802	792	884	1294

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0603747.D610, Food Adv Dev	2050	1905	2263	2569	3097	3342	3744	3761	Cont	Cont
OPA 3, M86400, Kitchen, Containerized, Field				7626	7429	7502	6033	10823	Cont	Cont
OPA 3, MA8050, Items Less Than $2.0M (CSS-EQ) [MDEP RJS2]	901	872	154	240	392	1053	1991	1992	Cont	Cont
OPA 3, M66500, Sanitation Center, Field Feeding	685	664			696	3349	1934	1938	Cont	Cont

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT D548

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 DT/OT of MBU	X*															
Type Classify MBU				X*												
Conducted DT/OT of Initial Deployment Kitchen (IDK)	X*															
Transition TDP of IDK to procurement				X*												
Conduct DT/OT of Containerized Field Kitchen						X										
Type Classify Containerized Field Kitchen								X								
Test MKT prototypes												X				
Complete fabrication of vented equipment for MBU												X				
Transition TDP of vented MBU equipment															X	
Transition RDK to procurement															X	

*Milestone completed

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: D548

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development	802	773	884	1294
SBIR/STTR		19		
Total	802	792	884	1294

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
SSCOM	In-House				5459	312	281	312	710	Cont	7074
GTS Hunter Mfg	Various	Various			61	250	200	328	120	Cont	959
ATCOM	MIPR				35						35
Support and Management Organizations											
SSCOM					365	40	40	44	64	Cont	553
Test and Evaluation Organizations											
TECOM/ATC					1162	200	252	200	400	Cont	2214
SBIR/STTR							19				19
Subtotal Product Development					5555	562	481	640	830		8068
Subtotal Support and Management					365	40	40	44	64		553
Subtotal Test and Evaluation					1162	200	271	200	400		2233
Total Project					7082	802	792	884	1294		10854

Government Furnished Property: None

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: D667

COST (*In Thousands*)	FY 1996 Actual	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
D667 Land Warrior	0	47893	33031	16965	7664	8892	11204	9388	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 an integrated individual soldier computer/radio, enhancements to protective clothing and individual equipment, integrated headgear with helmet mounted display and image intensifier, and modular weapon system with thermal weapon sight, infrared aiming light, laser rangefinder, digital compass, video camera, and close combat optic. LW will bring the dismounted soldier into the digital battlefield.

Acquisition Strategy: The LW Engineering and Manufacturing Development (EMD) program is designed to field currently existing/mature technologies to meet soldier requirement deficiencies. The Force XXI Land Warrior program will be developing advanced technology components for insertion into the LW consolidated program. An Integrated Product Team (IPT) was formed to determine which technologies from the S&T program will be integrated into the LW program. LW EMD transitions to procurement.

FY 1996 Accomplishments: Funded in RDTE PE 0603001.DJ50, Force XXI Soldier

FY 1997 Planned Program:

•	6850	Fabricate LW prototypes for Development Testing (DT) and procure long lead items for Initial Operational Test and Evaluation (IOTE).
•	4376	Conduct LW contractor and government testing, and prepare test support package.
•	12419	Fix deficiencies resulting from Early Operational Exercise (EOE) and contractor testing, finalize LW hardware/software design/integration, and conduct independent verification and validation (IV&V) of software. Ensure contractor and government compliance with Army Technical Architecture.
•	12193	Implement LW functional plans: Integrated Logistics Support (ILS), configuration management, etc., publish LW draft system manuals; and conduct maintenance training in preparation for Logistics Demo.
•	1600	Technical Insertion Integrated Product Team (IPT) activities between LW and Force XXI LW efforts (PE 0603001A).
•	6403	Program Management, Government and contractor engineering support, from other government agencies to provide oversight of contractor effort.
•	500	Initial program management and engineering support for other government agencies to provide studies and market surveys for the Mounted Warrior program.
•	2383	HQ and BASOPS support.
•	1169	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program
Total	47893	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT D667

FY 1998 Planned Program:

•	7431	Contractor program management, complete Production Qualification Test (PQT) (C); fix deficiencies, and conduct IV&V of software. Ensure system compliance with Army Technical Architecture.
•	6283	Fabricate and deliver prototypes for PQT (G) and Initial Operational Test and Evaluation (IOTE) and to support Early User Test (EUT) which is Force XXI LW demo. Procure IOTE items and supplies.
•	9403	Conduct PQT(G), logistics demo, IOTE training, and conduct IOTE
•	1697	Government participation (IPT) for Design and Development and Technical Insertion Integrated Product Team (IPT) activities between LW and Force XXI LW efforts (PE 0603001A).
•	4914	Program management and engineering support from other government agencies to provide oversight of contractor effort. Write specifications for LW production contract
•	3303	HQ and BASOPS support.
Total	33031	

FY 1999 Planned Program:

•	10447	Contractor program management, fix deficiencies from IOTE, and conduct IV&V of software. Ensure system compliance with Army Technical Architecture.
•	3125	Program Management and engineering support from other government agencies to provide oversight of contractor effort. Conduct technical and program reviews (FCA, PCA, and PRR) and briefings to achieve MS III. Develop/coordinate documentation of release of RFP and conduct SSEB to award production contract.
•	1697	Government participation (IPT) for design and development and Technical Insertion Integrated Product Team (IPT) activities between LW and Force XXI LW efforts (PE 0603001A).
•	1696	HQ and BASOPS support.
Total	16965	

B. Program Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 Presidents Budget	0	48917	37616	20354
Appropriated Value		47893		
Adjustment to Appropriated Value				
FY 1998 Pres Request	0	47893	33031	16965

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
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 1996	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	30548	15936	11298	7016	6423	6434	7669	7997	Cont	Cont
OPA 3, M80500, Land Warrior				66206	94486	104601	24089	119101	Cont	Cont
OPA 4, MS3610, Initial Spares-Land Warrior					215	251	270	268	Cont	Cont
WTCV, GB3007, M4 Carbine Mods	900	2114	2152	5318	5640					16124
WTCV GZ2800 M16 Rifle Mods	2751	5526	7603	7060						22940

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
Early Operational Experimentation (EOE) Hardware Preliminary Design Review (PDR)			X*													
LW Software Design Review and Mock-ups			X*													
EOE Hardware Critical Design Review (CDR)			X*													
EOE					X*											
LW Hardware PDR						X										
LW CDR							X									
Fabricate/Deliver DT prototypes								X								
Contractor Production Qualification Test									X							
Government Production Qualification Test									X							
Logistics Demonstration										X						
Fabricate/Deliver OT items										X						
IOTE Training											X					
IOTE												X				
Early User Test												X				
Milestone III/Production Award														X		

*Milestone completed

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: D667

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
System Engineering and Program Management		4434	3795	2325
System Test and Evaluation		1476	7600	1669
Prototype Development and Manufacturing		37262	18333	11275
Other RDTE Costs		3552	3303	1696
SBIR/STTR		1169		
Total		47893	33031	16965

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Hughes	CPIF	Jul 95			244		40860	21681	13267	Cont	76052
NRDEC	MIPR										
CECOM	MIPR										
TACOM (PM-SA)	MIPR										
ARL	MIPR										
SIBR/STTR							1169				1169
Support and Management Organizations											
SSCOM	FAD				252		4388	3750	2029	Cont	10419
PM Soldier	In-House										
Modern Tech Corp	Task Order										
Test and Evaluation Organizations											
ARL-SLAD	MIPR						1476	7600	1669	Cont	10745
OPTEC	MIPR										
TECOM	MIPR										
AMSAA	MIPR										
IV&V Contractor	Task Order										

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	244		42029	21681	13267		77221
Subtotal Support and Management	252		4388	3750	2029		10419
Subtotal Test and Evaluation			1476	7600	1669		10745
Total Project	496		47893	33031	16965		98385

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: D668

COST (*In Thousands*)	FY 1996 Actual	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
D668 Soldier Enhancement Program	10150	21146	14563	14645	14706	14706	14517	14600	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 are technologically challenging requiring 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 1996 Accomplishments:

•	1670	Completed development/type classification: 40mm IR Illumination Round, HMMWV Mount, Medium Machine Gun, Close Combat Optics, M24 Flash Suppresser/Blast Attenuator, Miniature Binoculars, Portable Periscope, Improved Butt Pack, Improved Rain Suit, Small Unit Shower, Mounted Crewman Boot, Improved Personnel Armor System Ground Troops (PASGT) Helmet Suspension, Inconspicuous Body Armor, Fighting Position Excavator, Soldier Fighting Cover, Armor Crew/Infantry Mask, and Selectable Lightweight Attack Munitions.
•	5119	Continued development/procured prototypes and/or tested: Modular Weapon System, Surveillance Battle Damage Assessment (BDA) Device, Machine Gun Optics, XM84 Stun Hand Grenade II, M203 for the M4 Carbine, Lightweight Chemical Overgarment, Improved Chemical/Biological Glove, Combat Medic Vest, Improved Flotation Device, Small Unit Shower, Fighting Position Revetment Kit, Enhanced Incendiary Grenade, and Individual Soldier Radio.
•	1874	Initiated market surveys and developed: Commercial Boot Survey, Midsize Riot Control Disperser, Non-Lethal 40mm Grenade, Shin/Knee Guards for Riot Control, Anti-Reflection Device, Compression Sack, and Non-Lethal 5.56mm Cartridge and M249 Feed Tray Cover.
•	972	Program Management and in-house efforts.
•	515	Terminated: Lightweight Leader Computer, 40MM Smoke Projectile and Individual Sand Bagging Accessory.
Total	10150	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT D668

FY 1997 Planned Program:

•	6221	Complete development/type classify: Modular Weapon System, M203 for the M4 Carbine, Surveillance BDA Device, Machine Gun Optics, XM84 Stun Hand Grenade II, M249 Feed Tray Cover, M4 Improved Buttstock, Lightweight Chemical Overgarment, Improved Chemical/Biological Glove, Shin/Knee Guards for Riot Control, Combat Medic Vest, Compression Sack, Improved Flotation Device, Small Unit Shower, Midsize Riot Control Disperser, Individual Soldier Radio and Fighting Position Revetment Kit.
•	4948	Continue development/procure prototypes and/or test: Non Lethal 40MM Grenade, Non-Lethal 5.56MM Cartridge, Enhanced Incendiary Grenade and Anti-Reflection Device.
•	7466	Initiate market surveys and/or development: Heavy Sniper Weapon System, M249 Flexmount, Weapon Flashlight, Back-up Iron Sight for M4/M16, Close Quarters Battle Sling for the M4 Carbine, Shoulder Holster for 9mm Pistol (Left/Right Handed), Boresight Device for PAQ4, 12 Gauge Non-Lethal Point and Crowd Control, 40mm High Velocity Canister Cartridge, Blast Protective Boots, Elbow and Knee Pads for BDU, On the Move Hydration System, Ballistic Shin Guards, Pistol Belt Extender, Improved Underlying Insulating Layers for Extended Cold Weather Clothing System (ECWCS), Alternate Wear Hot Weather Boot, Extreme Cold Weather Boot, Ballistic/Non-Ballistic Face and Body Shield, Fuel Bar, Handheld Infrared Flare/Smoke & Grenade, and Blacklight.
•	30	Terminated: Canteen Cup Cooler
•	1980	Program management and in-house efforts.
•	501	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program
Total	21146	

FY 1998 Planned Program:

•	3076	Complete development/type classify: Anti-Reflection Device, M249 Flexmount, M4 Improved Buttstock, Weapon Flashlight, Close Quarters Battle Sling for the M4 Carbine, Back-up Iron Sight for M4/M16, Blast Protective Boots, Elbow and Knee Pads for BDU, On the Move Hydration System, Ballistic Shin Guards, Pistol Belt Extender, Improved Underlaying Insulating Layers for ECWCS, Alternate Wear Hot Weather Boot, Extreme Cold Weather Boot, Ballistic/Non-Ballistic Face and Body Shield, Fuel Bar, Low Profile Flotation Collar, Emergency Breathing Device, and Enhanced Incendiary Grenade.
•	4275	Continue development/procure prototypes and/or test: Heavy Sniper Weapon System, Boresight Device for PAQ4, 12 Gauge Non-Lethal Point and Crowd Control, 40mm High Velocity Canister Cartridge, Physical Fitness Uniform, Handheld Infrared Flare/Smoke, Grenade and Blacklight.
•	5862	Initiate market surveys/development on new items, in the process of approval, to begin development in FY 1998.
•	1350	Program management and in-house efforts.
Total	14563	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT D668

FY 1999 Planned Program:

- 2076 Complete development/type classify: Heavy Sniper Weapon System, Boresight Device for PAQ4, 12 Gauge Non-Lethal Point and Crowd Control, 40mm High Velocity Canister Cartridge, Physical Fitness Uniform, Handheld Infrared Flare/Smoke Grenade and Blacklight
- 6148 Continue development/procure prototypes and /or test projects for which market surveys/development commenced in FY 1998.
- 5071 Initiate market surveys/development on new items to commence in FY 1999.
- 1350 Program management and in-house efforts.

Total 14645

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	10398	21598	20743	35368
Appropriated Value	10690	21146		
Adjustments to Appropriated Value	-540			
FY 1998 Pres Bud Request	10150	21146	14563	14645

Change Summary Explanation: FY1998 and FY1999 funding reprogrammed to support higher priority requirements.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA 3, MA6800, Soldier Enhancement			1709	7157	8532	5815	3963	3971	Cont	Cont
WTCV, GC0076, Small Arms (SEP)	2350	5839	4178	5598	6536	6954	2488	1992	Cont	Cont
WTCV, GZ1290, Squad Automatic Weapon (MODS)					8874	11605	8468	7877	Cont	Cont
WTCV, GZ2800, M16 Rifle Mods	2751	5526	7603	7060						23023
WTCV, GB3007, M4 Carbine Mods	900	2116	2152	5318	5640					16169
WTCV, GZ1300, MG Mods	6292									6292
WTCV, GL3200, Items Less Than 2M	668	1007								1676
WTCV, GC0925, Mods		800	1413	1404	1268	1260				6146
PAA, F47500, 7.62mm AP	3944	1998	1994	1979						9915
PAA, F47600, 5.56mm AP	1655	1998	1976	1979	1979	1980	1985	1990	Cont	Cont
PAA, F00900, 40mm Canister								6000		6000
OPA 2, BA5300, Soldier Enhancement (C/E)			1003	7496	6487	9824	7925	8651	Cont	Cont
OPA 2, K30800, LVRS	2314	2592	2483	3477	4179	1293	1488	1492	Cont	Cont
OMA, 114092000, Central Funding and Fielding	40565	87739	42405	54222	79734	82242	84025	85848	Cont	Cont

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT D668

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
SEP Requirements Reviews		X*	X*			X										
SEP Projects Reviews				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 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT D668

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Soldier Enhancement Program	10150	20645	14563	14645
SBIR/STTR		501		
Total	10150	21146	14563	14645

B. Budget Acquisition History and Planning Information: Not applicable

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: D680

COST (*In Thousands*)	FY 1996 Actual	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
D680 Mounted Warrior	0	0	2007	4494	2501	0	0	0	0	8992

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) contaminations, spall, flame and heat, and will provide for better performance of crew tasks without reducing tactility and agility.

Acquisition Strategy. The MW program is designed to field currently existing/mature technologies to meet the needs of the Combat Vehicle Crewman (CVC).

FY 1996 Accomplishments: Project not funded in FY 96

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program:

- 250 Complete source selection and award contract for MW program integration.
- 1069 Identify existing and mature technologies for MW system design. Ensure contractor and government compliance with Army Technical Architecture.
- 500 Conduct early operational evaluation (EOE) of components.
- 188 Program management and government oversight of contractor effort.

Total 2007

FY 1999 Planned Program:

- 540 Fabricate MW prototypes for Developmental Testing (DT).
- 360 Program management and government oversight of contractor effort.
- 1000 Conduct MW DT (contractor and government testing) and prepare test support package.
- 1400 Fix deficiencies, finalize MW hardware/software design/integration, and conduct independent verification and validation of software.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604713A Combat Feeding, Clothing, and Equipment PROJECT D680

FY 1999 Planned Program: (continued)

•	1000	Implement MW functional plans: integrated logistics support (ILS), configuration management, etc.; publish MW draft system manuals; and conduct maintenance training in preparation for the Logistics Demonstration.
•	194	Procurement of MW long lead items for IOTE.
Total	4494	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY1997 President Budget	0	0	0	0
Appropriated Value				
Adjustments to Appropriated Value				
FY 1998 Pres Bud Request	0	0	2007	4494

Change Summary Explanation: Funding - Project is a new start in FY 1998 (+2007), FY 1999 increased (+4494) to continue.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA 3, M80600, Mounted Warrior						997	2491	4491	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
MS 0	X*															
Trade-off determination			X*													
Operational Requirements Document						X										
Approval																
Milestone I/II						X										
Development contract award									X							
Early operational evaluation components												X				
Fabricate MW prototypes for DT													X			
Conduct MW DT														X		
Procure MW long lead items for IOTE														X		

*Milestone completed

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604713A Combat Feeding, Clothing, and Equipment

PROJECT: D680

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Program Management			188	360
System Engineering			1069	2400
System Test and Evaluation			500	1000
Develop and Manufacture Prototypes				734
Other RDTE			250	
Total			2007	4494

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Contractor-TBD	CPIF	Oct 98						869	2234	Cont	3103
RDEC SPT	MIPR							200	400		600
Spt Contractor	Task Order							250	1000		1250
Support and Management Organizations											
PM Soldier	In-House							188	360		548
Test and Evaluation Organizations											
OPTEC	MIPR							150	350	Cont	500
TECOM	MIPR							350	150		500

Government Furnished Property: None

Subtotal Product Development	1319	3634		4953
Subtotal Support and Management	188	360		548
Subtotal Test and Evaluation	500	500		1000
Total Project	2007	4494		6501

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604715A Non-System Training Devices - Engineering Development

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	50140	48788	76749	73048	65533	46932	47560	57057	Continuing	Continuing
DC82 Louisiana Maneuvers	1525	0	0	0	0	0	0	0	0	10030
DC91 Distributive Interactive Simulation	7985	0	0	0	0	0	0	0	0	9345
D241 Non-System Training Devices	28996	35951	60512	57306	49309	30811	26222	39600	Continuing	Continuing
D396 Tactical Simulation (TIARA)	1975	2722	5665	5047	4765	4494	5963	6357	Continuing	Continuing
D573 STRICOM and Naval Air Warfare Center Training Systems Division (NAWCTSD)	9659	10115	10572	10695	11459	11627	15375	11100	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 provide 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 DC82, Louisiana Maneuvers, was intended to energize and guide the restructuring of the Army while simultaneously keeping it combat-ready for any contingency. Project DC91, Distributive Interactive Simulation (DIS), included engineering development of techniques and technology for DIS and related simulations and simulator efforts (transferred to PE 0604760 in FY 97). Project D241, Non-System Training Devices-Combined Arms, develops simulation training devices for Army-wide use, including the CTCs. Project D396, Tactical Simulation, is an intelligence simulation/driver for both training [intelligence driver for Corps Battle Simulation (CBS) and Warfighter Simulation 2000 (WARSIM)] and testing. 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 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development PROJECT DC82

COST (*In Thousands*)	FY 1996 Actual	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
DC82 Louisiana Maneuvers	1525	0	0	0	0	0	0	0	0	10030

A. Mission Description and Justification: DC82 - Louisiana Maneuvers (LAM): LAM served as a laboratory for the Army to practice its roles and missions, to develop and explore options, to assess and direct progress, to provide a framework for decisions by senior leaders, and to facilitate the Army's transformation. LAM consisted of a series of related exercises forming a campaign to assess the Army of the 21st century in areas of policy, doctrine, organization, training, materiel, leader development, and soldier issues shaping the force. As an evolving process, LAM exploited the results and outcomes of each exercise by incorporating lessons learned in order to enhance the value of follow-on exercises. Overall, LAM focused the Army's self-assessment of institutional effectiveness, provided direction for change, and oriented the Army's leadership to accomplish the national military strategy with available resources.

Acquisition Strategy: Competitive development.

FY 1996 Accomplishments:

•	465	Continued development of analytic and operational models, simulation and other technology in support of Force XXI.
•	1060	Support of AUSA events.
Total	1525	

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	5810	0	0	0
Appropriated Value	5973			
Adjustment to Appropriated Value	-4448			
FY 1998 Pres Bud Request	1525	0	0	0

Change Summary Explanation: In FY 1996, (-4285)funding was reprogrammed to higher priority requirements.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development PROJECT DC82

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA2, Appropriation	940	0	0	0	0	0	0	0	0	940
BE4162 MACOM Automation Systems										

D. Schedule Profile: Not Applicable

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development PROJECT DC82

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Program management	1225	0	0	0
Exercise support	300	0	0	0
Total	1525			

B. Budget Acquisition History and Planning Information: Not Applicable

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604715A Non-System Training Devices - Engineering Development

PROJECT: DC91

COST (*In Thousands*)	FY 1996 Actual	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
DC91 Distributive Interactive Simulation	7985	0	0	0	0	0	0	0	0	9345

A. Mission Description and Justification: DC91 - Distributive Interactive Simulation (DIS) - This project focuses on engineering development of techniques and DIS technology of wide area simulation networking in support of modeling and simulation, doctrinal development, training, and operations, utilizing live, virtual and constructive simulations. Effective FY 97 this project is transferred to PE 0604760A, which more clearly describes the program effort.

Acquisition Strategy: Competitive development leading to competitive procurement against performance specifications.

FY 1996 Accomplishments:

•	1348	Provided system engineering, configuration management, systems interoperability and standards development for the Army Synthetic Environment.
•	950	Performed DIS verification, validation and accreditation methodology.
•	531	Developed enhancements to modular semi-automated forces software.
•	2856	Continued engineering and development of Battlelab Reconfigurable Simulators.
•	2300	Development conducted in support of Army Warfighting Experiment and Synthetic Theater of War.
Total	7985	

FY 1997 Planned Program: Project moved to PE 0604760A.

FY 1998 Planned Program: Project not funded.

FY 1999 Planned Program: Project not funded.

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	5972	0	0	0
Appropriated Value	6139			
Adjustment to Appropriated Value	+1846			
FY 1998 Pres Bud Request	7985	0	0	0

Change Summary Explanation: Funding - FY 96 (+2013) Funding increase to support Army Warfighting Experiements.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development PROJECT DC91

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA 3, Appropriation KA6000, Recon Simulators	12222	13825	13823	12803	8997	8282	4960	4969	Cont'd	Cont'd
OMA, Reconfigurable Simulators	16900	11634	16033	13000	13000	14000	18000	18000	Cont'd	Cont'd

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
Award Contract	X*															
DIS Verification and Validation		X*														
Reconfigurable Simulator Contract	X*															

* Completed Milestones

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development PROJECT DC91

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Develop module definition for Soldier Combat Service Support and early entry simulations	2197			
Simulation Software upgrades	3555			
DIS Verification and Validation	2233			
Total	7985			

B. Budget Acquisition History and Planning Information: Not Applicable

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604715A Non-System Training Devices - Engineering Development

PROJECT: D241

COST (*In Thousands*)	FY 1996 Actual	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
D241 Non-System Training Devices	28996	35951	60512	57306	49309	30811	26222	39600	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. Brigade/Battalion Battle Simulation (BBS) is a simulation that trains commanders and their staffs in command and control skills via two sided, free play, real time computer driven exercises. Combat Service Support Training Simulation System (CSSTSS) is a training simulation which supports training at battalions through echelons-above-corps levels to provide the level of detail required to train logistics commanders and staffs. CSSTSS will be incorporated into the Warfighter Simulation (WARSIM). WARSIM will be the next generation battle simulation to replace CBS and BBS. 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. Multiple Integrated Laser Engagement Simulation 2000 (MILES 2000) will provide additional cost effective weapon system capabilities during tactical engagement exercises. 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) to include Opposing Forces Surrogate Vehicles (OSV's) for display of doctrinally correct threat at the 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 and additional OPFOR tracked vehicles 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 DIS compatibility. 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 1996 Accomplishments:

- 568 Continued limited BBS enhancements.
- 1585 Completed development of CSSTSS for transition into WARSIM.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development
	PROJECT D241

FY 1996 Accomplishments: (continued)

•	6485	Continued development of devices, simulators and simulations to support training at the Combat Training Centers, Air Ground Engagement System (AGES) II/CTC, JRTC MOUT, JRTC-Instrumentation System (IS).
•	3355	Completed CBS 1.5.3 and continued limited enhancements to CBS.
•	10340	Exercised contract option to downselect to prime contractor for WARSIM 2000 EMD.
•	6663	Continued development of FSCATT Phase I.
Total	28996	

FY 1997 Planned Program:

•	20629	Development of WARSIM 2000 EMD.
•	820	Initiate development MILES 2000 for new weapon systems (i.e., M1A2, M1A2 System Enhancement Program and Bradley A3).
•	3749	Complete development of FSCATT Phase I.
•	3209	Continue limited enhancements to CBS.
•	6665	Continue development of devices, simulators and simulations to support training at Combat Training Centers to include JRTC MOUT Phase II.
•	879	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
Total	35951	

FY 1998 Planned Program:

•	40863	Development of WARSIM 2000 EMD.
•	1113	Initiate development of Engagement Skills Trainer.
•	18080	Continue development of devices, simulators and simulations to support training at Combat Training Centers to include JRTC Opposing Forces Surrogate Vehicle (OSV) BMP(2000), JRTC MOUT Phase II(3216), CTC OPFOR Tracked Vehicles(10500) and NTC OIS(2364).
•	456	Continue limited /high priority refinements to CBS Source Code, to support major training exercises (i.e., Prairie Warrior 98).
Total	60512	

FY 1999 Planned Program:

•	33389	Development of WARSIM 2000 EMD and commencement of test.
•	4897	Continue development of Engagement Skills Trainer.
•	18936	Continue development of devices, simulators and simulations to support training at the Combat Training Centers, to include JRTC MOUT Phase II(5183), CTC OPFOR Tracked Vehicles(8300) and NTC OIS(5453).
•	84	Continue limited /high priority refinements to CBS Source Code, to support major training exercises (i.e., Prairie Warrior 99).
Total	57306	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development
	PROJECT D241

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	27354	29752	31390	26925
Appropriated Value	28121	35951		
Adjustment to Appropriated Value	875	0		
FY 1998 Pres Bud	28996	35951	60512	57306

Change Summary Explanation: Funding: FY 98 (+29122)/FY 99 (+30381) - funding increase to support WARSIM, the Combat Training Center programs and Engagement Skills Trainer.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA3, Appropriation	70455	84153	49668	60349	126360	164249	104968	116938	Cont'd	Cont'd
NA0100 Training Devices, Non-System										
OPA3, Appropriation	39959	17311	26724	30444	43898	58929	74263	36425	Cont'd	Cont'd
MA6600 CTC Support										
OPA3, Appropriation	0	17377	19860	28359	25578	16630	0	0	0	107804
NA0174 Fire Support Combined Arms Tactical Trainer										

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
WARSIM Downselect Option/Award			X*													
AGES II/CTC-IS Site Integration		X*														
EST Contract Award									X							
EST Preliminary Design Review (PDR)												X				
EST Critical Design Review (CDR)														X		
JRTC-IS IOC							X									
JRTC OSV BMP MS I/III								X								
JRTC OSV BMP PDR										X						
JRTC OSV BMP TEST											X					
JRTC OSV BMP CDR												X				
JRTC MOUT Phase II MS I/III							X									

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development PROJECT D241

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
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 PDR												X				
NTC OIS CDR														X		
FSCATT IOC							X									
Miles 2000 New Weapon System Initiate						X										

*Complete Milestones

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
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 1996	FY 1997	FY 1998	FY 1999
System Development	27464	34400	54396	50782
Test and Evaluation	1296	87	5697	6270
Technical Data	236	585	419	254
SBIR/STTR		879		
Total	28996	35951	60512	57306

B. Budget Acquisition History and Planning Information: Not Applicable

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604715A Non-System Training Devices - Engineering Development

PROJECT: D396

COST (*In Thousands*)	FY 1996 Actual	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
D396 Tactical Simulation (TIARA)	1975	2722	5665	5047	4765	4494	5963	6357	Continuing	Continuing

A. Mission Description and Justification: D396 - Tactical Simulation (TACSIM): TACSIM/ Warfighters' Simulation (WARSIM) 2000 Intelligence Module (WIM): TACSIM is the intelligence driver for the Corps Battle Simulation (CBS). WIM will replace TACSIM in FY98 and will be used as the intelligence driver for WARSIM 2000. 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). TACSIM/WIM is a TIARA program.

Acquisition Strategy: Competitive development leading to competitive procurement against performance specifications.

FY 1996 Accomplishments:

•	868	Completed TACSIM 2.1.5.3 development.
•	175	Completed TACSIM/Aggregate Level Simulation Protocol (AGSP) interface development.
•	457	Initiated TACSIM 2.1.5.4 development/compatibility with CBS.
•	475	Continued development of WARSIM intelligence capability.
Total	1975	

FY 1997 Planned Program:

•	400	Provide Government project management, engineering, technical, and contract support.
•	733	Maintain contractor support services to WIM project effort.
•	1522	Contract award for development of WIM capability.
•	67	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
Total	2722	

FY 1998 Planned Program:

•	420	Provide Government project management, engineering, technical, and contract support.
•	410	Maintain contractor support services to WIM project effort.
•	4835	Continue WIM software development under contract.
Total	5665	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development PROJECT D396

FY 1999 Planned Program:

•	100	Provide Government/Contract support.
•	420	Maintain support services to WIM project effort.
•	4327	Finalize WIM Initial Operating Capability (IOC) software development; continue development of WIM Full Operating Capability (FOC) software version.
•	200	Support formal technical testing of WIM software for IOC.
Total	5047	

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	2025	2781	3100	2295
Appropriated Value	2083	2722		
Adjustment to Appropriated Value	-108	0		
FY 1998 Pres Bud	1975	2722	5665	5047

Change Summary Explanation: Funding: FY 98(+2565)/FY 99(+2752) - funding increase to support the WARSIM 2000 intelligence model.

C. Other Program Funding Summary: Not applicable

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
Software Build				X*				X								
Developmental Test and Evaluation		X*				X										
WIM Contract Award						X										
WIM IOT&E Complete																X
WIM IOC																X

* Completed Milestones

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - Engineering and Manufacturing Development	0604715A Non-System Training Devices - Engineering Development	D396

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Software Development	518	1000	4000	3320
System Engineering	478	522	835	1007
Configuration Management	360	0	0	0
Project Management	0	1133	830	520
Technical Data	260	0	0	0
Developmental Test and Evaluation	359	0	0	200
SBIR/STTR		67		
Total	1975	2722	5665	5047

B. Budget Acquisition History and Planning Information: Not Applicable

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604715A Non-System Training Devices - Engineering Development

PROJECT: D573

COST (*In Thousands*)	FY 1996 Actual	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
D573 STRICOM and Naval Air Warfare Center Training Systems Division (NAWCTSD)	9659	10115	10572	10695	11459	11627	15375	11100	Continuing	Continuing

A. Mission Description and Justification: D573 - STRICOM and NAWCTSD: 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 1996 Accomplishments:

•	8459	Funded STRICOM personnel and support.
•	1200	Funded NAWCTSD support.
Total	9659	

FY 1997 Planned Program:

•	8915	Funds STRICOM personnel and support.
•	1200	Funds NAWCTSD support.
Total	10115	

FY 1998 Planned Program:

•	9322	Funds STRICOM personnel and support.
•	1250	Funds NAWCTSD support.
Total	10572	

FY 1999 Planned Program:

•	9445	Funds STRICOM personnel and support.
•	1250	Funds NAWCTSD support.
Total	10695	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604715A Non-System Training Devices - Engineering Development PROJECT D573

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	9717	10332	10761	10679
Appropriated Value	9987	10115		
Adjustment to Appropriated Value	-328	0		
FY 1998 Pres Bud	9659	10115	10572	10695

C. Other Program Funding Summary: Not applicable

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 1997
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 1996	FY 1997	FY 1998	FY 1999
Fund STRICOM Personnel & support	8459	8915	9322	9445
Fund NAWCTSD Support	1200	1200	1250	1250
Total	9659	10115	10572	10695

B. Budget Acquisition History and Planning Information: Not Applicable

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604716A Terrain Information - Engineering Development (TIARA)

PROJECT: D579

COST (*In Thousands*)	FY 1996 Actual	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
D579 Field Army Map Sys Eng Dev	8509	7144	2942	2686	2034	2502	2247	2163	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 configuration 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 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. The CTIS project office was tasked with the mission to issue the DTSS-MSIP as an interim measure to topographic units. The project in this Program Element supports research efforts in the Engineering and Manufacturing Development (E&MD) phases of the acquisition strategy and is therefore correctly placed in Budget Activity 5.

Acquisition Strategy: The Acquisition Strategy being pursued for the DTSS/QRMP 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 plan is to utilize the Combat Terrain Information Systems (CTIS) System Engineering and Integration (SE&I) contractor to execute the EMD phase, to perform system integration, and provide units for formal test and evaluation. The procurement of the Multi-Spectral Image Processor (MSIP) was approved by the Army. The acquisition of the MSIP relied upon existing contracts and commercial-off-the-shelf to the fullest extent possible. Existing DTSS units will be upgraded to a 5-ton ISO 20 foot shelter configuration. The upgraded 5-ton systems will provide an integrated 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 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 DTSS/QRMP. Upgrades to the existing DTSS units will also be accomplished through the CTIS SE&I contract. The computer workstations for CTIS programs are being procured through the PM for Common Hardware and Software.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604716A Terrain Information - Engineering Development (TIARA)
	PROJECT D579

FY 1996 Accomplishments:

•	2000	Completed development of DTSS Upgrade
•	5674	Continued development of downsized DTSS /QRMP
•	600	Continued P3I Program (Interoperability)
•	235	Initiated test and evaluation of EMD Prototypes
Total	8509	

FY 1997 Planned Program:

•	5469	Complete development of downsized DTSS/QRMP
•	500	Conduct test and evaluation of EMD Prototypes
•	1000	Initiate P3I development for DTSS/QRMP
•	175	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
Total	7144	

FY 1998 Planned Program:

•	2942	Continue P3I development for DTSS/QRMP - communications and ABCS interoperability
Total	2942	

FY 1999 Planned Program:

•	2686	Continue P3I development for DTSS/QRMP - communications and ABCS interoperability.
Total	2686	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 Presidents Budget	8728	7369	3108	2877
Appropriated Value	8817	7144		
Adjustments to Appropriated Value	-308			
FY 1998 Pres Bud Request	8509	7144	2942	2686

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA - KA2550 - DTSS	6736	6417	7465	8405	10607	9831	4763	6268	Cont	Cont

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604716A Terrain Information - Engineering Development (TIARA)

PROJECT: D579

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
Delivery of DTSS/QRMP Build 1 S/W		X*														
Delivery of Enhanced DTSS-MSIPs			X*													
Initiated DTSS (Heavy) Upgrades				X*												
Complete DTSS (Heavy) Upgrades										X						
Start Downsized DTSS/QRMP Developmental Test and Evaluation/ Operational Test and Evaluation (DT&E/OT&E)					X*											
Initiate Fielding of Upgraded DTSS								X								
Downsized DTSS/QRMP Milestone III								X								
Award DTSS/QRMP Production Contract									X							
Conduct Production Verification Testing of Downsized DTSS/QRMP													X			
Initiate Fielding of Downsized DTSS/QRMP														X		

*Milestone Complete

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604716A Terrain Information - Engineering Development (TIARA)

PROJECT: D579

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Primary System Development	3358	1800	500	500
Software Development	2508	2272	1300	1100
Government Furnished Equipment	150	500	30	30
Government Engineering Support (includes Test Support)	632	1044	300	229
Contractor Engineering Support	900	500	300	300
Licenses and Maintenance	11	30	12	27
Project Management and Administration	950	823	500	500
SBIR/STTR		175		
Total	8509	7144	2942	2686

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 1996*	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Loral Defense Akron, OH	C/CPFF/FFP Prod Option	7/87	35657	35657	35657	0	0			0	35657
Lockheed Martin Ft Wash, PA	C/CPFF	1/93	21023	21023	11100	5851	3955			0	20906
In-House Support/TEC	MIPR					976	970	512	527	Cont	2985
TBD	TBD	TBD						1800	1600	Cont	3400
SBIR/STTR							175				175
Support and Management Organizations											
CSC Fairfax, VA											
SYTEX McLean, VA	FFP thru PM Intel Fusion					400	150	100	100	Cont	750

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

DATE: February 1997

BUDGET ACTIVITY: **5 - Engineering and Manufacturing Development**

PE NUMBER AND TITLE: **0604716A Terrain Information - Engineering Development (TIARA)**

PROJECT: **D579**

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 1996*	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
MITRE Corp McLean, VA	FFRDC thru CECOM					500	350	200	200	Cont	1250
OGAs	MIPR					397	544	300	200	Cont	1441
Test and Evaluation Organizations											
TECOM	MIPR					235	500		29	Cont	764

Government Furnished Property

Item Description	Contract Method/Type or Funding Vehicle	Award of Obligation Date	Delivery Date	Total Prior to FY 1996*	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property										
SUN's (ECS)	REQS	VAR	VAR	300	150				0	450
TBD				0		500	30	30	Cont	560

Support and Management Property: None

Test and Evaluation Property: None

Subtotal Product Development	47057	6977	5600	2342	2157		64133
Subtotal Support and Management		1297	1044	600	500		3441
Subtotal Test and Evaluation		235	500		29		764
Total Project	47057	8509	7144	2942	2686		68338

*NOTE: Prior year funding only covers the Prime Contractors.

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604726A Integrated Meteorological System (IMETS) (TIARA)

PROJECT: DD85

COST (*In Thousands*)	FY 1996 Actual	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
DD85 Integrated Meteorological System (IMETS)	0	0	1946	1931	2398	1851	0	0	0	8126

A. **Mission Description and Budget Item Justification:** This program element, Integrated Meteorological System (IMETS), funds the development of the IMETS evolving upgrades to the IMETS Block II, 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. 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 eleven 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 of 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 1996 Accomplishments: Project not funded in FY 96.

FY 1997 Planned Program: Project not funded in FY 97.

FY 1998 Planned Program:

•	1000	Develop, investigate and apply advanced technologies to the IMETS prototype for expanded capabilities and performance in the area of battlescale forecast modeling, addition to the Integrated Weather Effects Decision Aid, evaluation of the DoD Meteorological Satellite Program Special Sensor Data, environmental record data, for integration into the Weather Effects database.
•	946	Evaluate, configure and integrate high performance expanded tech base prototype capabilities into operational IMETS prototypes
Total	1946	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604726A Integrated Meteorological System (IMETS) (TIARA)
	PROJECT DD85

FY 1999 Planned Program:

- 1000 Continue 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 weather applications capabilities.
- 931 Continue to evaluate, configure and integrate tech base prototype capabilities into operational IMETS prototypes

Total 1931

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	0	0	0
Appropriated Value				
Adjustments to Appropriated Value				
FY1998 Pres Bud Request	0	0	1946	1931

Change summary Explanation: FY 98 and FY 99 fund develop IMETS Block II integration of Army Research Laboratory and Air Force weather products.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA 2 - SSN: BW 0021-IMETS	7463	3140	1379	0	8846	0	0	0	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
Develop tech base prototype											X					
Expand Battlescale Forecast model											X					
Expand Integrated Weather Effects Decision Aid											X		X			
Integrate Defense MetSat Program Environmental Data Record													X			
Develop/integrate Vis5D program											X					
Develop heat/cold tactical decision aid														X		
Generate basic Down Wind Message from BFM													X			
Develop Target Area Meteorological capability												X				

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604726A Integrated Meteorological System (IMETS) (TIARA)
	PROJECT DD85

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
Develop visibility, thunderstorm and turbulence model												X				

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604726A Integrated Meteorological System (IMETS) (TIARA)

PROJECT: DD85

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Systems Development			1296	1281
Project Management			250	250
Matrix Management			350	350
Test			50	50
Total			1946	1931

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Logicon					9600						9600
ARL	MIPR							1000	1000	1800	3800
Misc. Contracts	PWD							946	931	1800	3677
Support and Management Organizations											
CECOM	MIPR									649	649

Test and Evaluation Organizations: None

Government Furnished Property: None

Subtotal Product Development					9600			1946	1931	3600	17077
Subtotal Support and Management										649	649
Subtotal Test and Evaluation											
Total Project					9600			1946	1931	4249	17726

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604739A JTT/CIBS-M (TIARA)

PROJECT: D702

COST (*In Thousands*)	FY 1996 Actual	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	0	4765	4499	4447	4426	4409	0	0	Continuing	Continuing

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 services 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 a FY 97 new start 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 phases of the Acquisition Strategy and is therefore, 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 (e.g. MATT, CTT, TRE) systems. Additionally, this line provides for necessary modifications to IBS modules as the broadcast networks continue to evolve and modify their formats and protocols.

FY 1996 Accomplishments: Project not funded in FY 96.

FY 1997 Planned Program:

•	3359	Develop CIBS Module discrete designs and combinations
•	911	Develop DAMA Compliant CIBS-M software module
•	378	Integrate and Test DAMA Compliant software module
•	117	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	4765	

FY 1998 Planned Program:

•	1450	Complete CIBS-Module prototype fabrication
•	1644	Complete CIBS-Module Development
•	1405	Host system integration/test
Total	4499	

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604739A JTT/CIBS-M (TIARA)

PROJECT: D702

FY 1999 Planned Program:

•	2800	Design Next Generation CIBS-Modules
•	799	Design/Develop "Over the Air" Software Load Capability
•	848	Host System Integration/Test
Total	4447	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 Presidents Budget	0	4867	4845	4819
Appropriated Value	0	4765		
Adjustments to Appropriated Value	0			
FY 1998 Pres Bud Request	0	4765	4499	4447

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
V29600 JTT/CIBS-M (Tiara)	29076	18991	11438	11703	25527	26450	12904	13554	Cont	Cont
BA1081 Integrated Broadcast Terminal Mod (Tiara)	0	3361	3294	932	0	0	0	0	0	7587

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
Award CIBS-M Contract				X												
DAM Module Design Review							X									
Prototype Test								X								
Initial CIBS Module																
Preliminary Design Review								X								
Critical Design Review										X						
Prototype Test												X				
Next Generation Module																
Preliminary Design Review													X			
Critical Design Review														X		
Prototype Test															X	

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604739A JTT/CIBS-M (TIARA)

PROJECT: D702

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Hardware Development		2492	693	850
Software Development		1211	1645	2471
Host System Integration		0	1405	848
Technical Test		740	541	173
Project Management		205	215	105
SBIR/STIR		117		
Total		4765	4499	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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
TBD	C/PFF	Feb 97	TBD	TBD	0	0	4443	4284	4342	Cont	13069
SBIR/STTR							117				117
Support and Management Organizations											
CECOM	MIPR					0	205	215	105		525
Test and Evaluation Organizations: None											
Government Furnished Property: None											
Subtotal Product Development							4560	4284	4342		13186
Subtotal Support and Management							205	215	105		525
Subtotal Test and Evaluation											
Total Project							4765	4499	4447		13711

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604740A Tactical Surveillance System - Engineering Development

PROJECT: D661

COST (*In Thousands*)	FY 1996 Actual	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
D661 Suite of Survivability Enhancements System	2954	0	0	0	0	0	0	0	0	2954

Mission Description and Budget Item Justification: This program element which involves the Suite of Survivability Enhancements Systems (SSES) program is a Horizontal Technology Integration (HTI) effort to develop, produce and apply an integrated suite of common electronic sensors and countermeasures to Army ground combat vehicles. SSES will protect Army vehicles by providing advance warning of attack and activating countermeasures which will obscure our vehicles and jam, decoy or deflect enemy munitions. The first phase of the SSES program will field Laser Warning Receivers (LWR) to Bradley A3 vehicles. Initially, AN/AVR-2A Laser Warning Receivers, currently in production for Army aviation platforms, will be modified for ground vehicle use. In addition, a Commander's Decision Aid (CDA) will be developed that will integrate current and future sensors and countermeasures to provide manual, semiautomatic and automatic activation of countermeasures. The next phase of the SSES program will field Missile Warning Receivers to Bradley A3 vehicles. Additional phases of this program are contemplated which will provide additional countermeasures to the suite, and field the suite to other vehicles. 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: Follow-on to existing contracts.

FY 1996 Accomplishments:

- 1400 Modified 3 vehicle sets of AN/AVR-2A's
- 1000 Initiated integration of Laser Warning Receiver into Bradley A3
- 444 Provided Technical Support to SSES
- 110 Designed Integration (GDLS)

Total 2954

FY 1997 Planned Program: Funded under PE 0203735A Project D718 Combat Vehicle Improvement Programs

FY 1998 Planned Program: Funded under PE 0203735A Project D718 Combat Vehicle Improvement Programs

FY 1999 Planned Program: Funded under PE 0203735A Project D718 Combat Vehicle Improvement Programs

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604740A Tactical Surveillance System - Engineering Development

PROJECT: D661

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	0	0	0
Appropriated Value	2844	0	0	0
Adjustments to Appropriated Value	110	0	0	0
FY 1998 President's Budget Request	2954	0	0	0

C. Other Program Funding Summary: Not Applicable

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
Milestone Decision Authority IPR			X*													
Laser Warning Receiver Modification				X*												
Bradley A3 A-Kit Development				X												

* Milestones Completed

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604740A Tactical Surveillance System - Engineering Development

PROJECT: D661

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Technical Support	242			
Program Management Support	203			
Contract - Hughes, UDLP, GDLS	2509			
Total	2954			

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Hughes	Prod/FFP	Jun 96	1400	1400		1400					1400
UDLP	CPFF	Jun 96	1000	1000		850					850
GDLS	CPFF	Aug 96				140					140
Camber	CPAF	Aug 96				119					119
Support and Management Organizations											
PM ASI	MIPR	Jun 96				168					168
Surviac	MIPR	Aug 96				15					15
CECOM	MIPR	Jun 96				100					100
SLAD, NM	MIPR	Jul 96				100					100
STRICOM, FL	MIPR	Jul 96				42					42
TARDEC	MIPR	Jun 96				20					20
Test and Evaluation Organizations: None											
Government Furnished Property: None											
Subtotal Product Development						2509					2509
Subtotal Support and Management						445					445
Subtotal Test and Evaluation											
Total Project						2954					2954

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604741A Air Defense Command, Control, Intelligence - Engineering Development

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	21810	20031	18350	6698	7635	8536	22163	19204	Continuing	Continuing
D126 FAAD Command and Control Engineering Development	18966	20031	18350	6698	7635	8536	22163	19204	Continuing	Continuing
D146 Air Defense Tactical Operations Center	2844	0	0	0	0	0	0	0	Continuing	Continuing

Mission Description and Budget Item Justification: The Forward Area Air Defense Command, Control and Intelligence (FAAD C2I) System provides critical forward area air defense automated information to support the command and control decision process at various levels of command. The mission is to collect, digitally process and disseminate target information, air threat warning, and command and control information to all FAAD weapons [AVENGER, Bradley STINGER Fighting Vehicle (BSFV), Manportable Air Defense System (MANPADS), and combined arms]. Unique FAAD C2I software will provide the mission capability by integrating FAAD C2 engagement operations software using Common Hardware/Software (CHS), Standard Integrated Command Post System (SICPS), Enhanced Position Location Reporting System (EPLRS), Joint Tactical Information Distribution System (JTIDS), Single Channel Ground and Air Radio System (SINCGARS), Light and Special Division Interim Sensor (LSDIS), Global Positioning System (GPS), Airborne Warning and Control System (AWACS), Ground Based Sensor (GBS), and the Army Battle Command System (ABCS) architecture. 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 1997

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 1996 Actual	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
D126 FAAD Command and Control Engineering Development	18966	20031	18350	6698	7635	8536	22163	19204	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 1996 Accomplishments:

•	18100	Continued Block III Software Development
•	400	Prepared for Block III Users Test
•	466	Prepared for Technology Insertion
Total	18966	

FY 1997 Planned Program:

•	1877	Conduct Block III Users Test (UT)
•	17447	Continue Block III Software Development
•	300	Prepare for Block III Development Test (DT)
•	407	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	20031	

FY 1998 Planned Program:

•	2499	Digitization integration
•	15751	Continue Block III development
•	100	Block III System Certification Test
Total	18350	

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604741A Air Defense Command, Control, Intelligence - Engineering Development

PROJECT: D126

FY 1999 Planned Program:

•	100	System Certification Test
•	1201	Complete Block III SW development
•	3247	Digitization integration
•	2150	Begin Block IV development
Total	6698	

B. Project Change Summary

	FY 1996	F 1997	FY 1998	FY 1999
FY1997 President's Budget	19281	20516	14944	2042
Appropriated Value	19474	20031		
Adjustments to Appropriated Value	-508			
FY 1998 Pres Bud Request	18966	20031	18350	6698

Change Summary Explanation: Funding: FY98 (+3406) 2499 for digitization; 907 for Blk III SW development/FY99 (+4656) 3247 for digitization; 1409 to initiate Blk IV SW development

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, DE10 - SENTINEL GBS	500				6094	9589	9289			25472
OPA 2, WK5053 - SENTINEL GBS	61882	68783	41014	40071	34283	51545	16688	34206	CONT	CONT
OPA 2, AD5050 - FAAD C2	42880	36715	13080	8262	0	0	0	8261	0	135157
OPA 2, AD5070 - AD TAC OPNS CTR							14779	14844	CONT	CONT
Spares (BA9702/MA9702/BS9702) - FAAD C2	1600	1259	1555	885	0	0	0		0	9617
Spares (BS973BS97322) - SENTINAL GBS	2324	3610	5258	5382	0	0	0	0	0	16920

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
First Unit Equipped Block II	X*															
System Certification Test						X										
System Certification Test									X							
System Certification Test													X			
First Unit Equipped - Objective System															X	

*Denotes completed milestone

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

DATE: February 1997

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 1996	FY 1997	FY 1998	FY 1999
Major Contracts	15405	15301	14821	4949
Support Contract	500	1000	1000	200
PMO/In-house/Other	2542	2414	2229	1249
GFE/Testing	519	909	300	300
SBIR/STTR		407		
Total	18966	20031	18350	6698

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
TRW	C/CPIF	Sep 86	176461	176461	176461						176461
TRW	SS/CPIF	Aug 92	32206	32206	32206						32206
TRW	SS/CPIF	Sep 94	53194	53194	7700	14200	13311	12821	4949	CONT	52981
TRW	SS/T&M	Sep 93	4900	4900	1000	1205	1888	2000		CONT	6093
Matrix (RDEC)	MIPR				2163	1188	1072	1130	554	CONT	6107
SBIR/STTR							407				407
Support and Management Organizations											
SETA, CAS	SS/CPFF	Feb 91	10879	10879	10879						10879
In-House/ Other					6108	1854	2343	2099	895	CONT	13299
Test and Evaluation Organizations											
ADATD, Ft Bliss					8687	319	810	100	100	CONT	10016
OPTEC					2000						2000

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property										
CHS	MIPR			400	200	200	200	200	CONT	1200
JTIDS	MIPR	1988		6000					0	6000
Support and Management Property: None										
Test and Evaluation Property: None										
Subtotal Product Development				225930	16793	16878	16151	5703		281455
Subtotal Support and Management				16987	1854	2343	2099	895		24178
Subtotal Test and Evaluation				10687	319	810	100	100		12016
Total Project				253604	18966	20031	18350	6698		317649

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604741A Air Defense Command, Control, Intelligence - Engineering Development

PROJECT: D146

COST (*In Thousands*)	FY 1996 Actual	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
D146 Air Defense Tactical Operations Center	2844	0	0	0	0	0	0	0	Continuing	Continuing

A. Mission Description and Justification: Project D146 - Air Defense Tactical Operations Center: Air Defense Artillery (ADA) requires a standardized, integrated, automated command post (CP) and fire direction center (FDC) capability that will fully interoperate with all US Army and Joint C3I and Air Defense systems, and selected systems of allied nations. These capabilities will be incorporated in an Air Defense Tactical Operations Center (ADTOC). The ADTOC must incorporate air defense and theater missile defense force operations and engagement operations functions into a single command, control, communications and intelligence system. Project D146 finances the direct costs of developing an ADTOC that will be used to provide a single system command, control, communications, and intelligence system that will support the requirements of any air defense weapon system at any echelon of Corps and below.

Acquisition Strategy: The acquisition strategy relies heavily on NDI and existing modules of Army/Joint/DoD software which will be integrated to provide a modular, reconfigurable, standard digital ADTOC for all air defense units, battery to brigade. Brigade ADTOCs will be automated first with expansion to all weapon systems.

FY 1996 Accomplishments:

•	2844	Development and integration studies
Total	2844	

FY 1997 Planned Program: Project not funded in FY 1997

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 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	968			
Appropriated Value	978			
Adjustments to Appropriated Value	+1866			
FY 1998 Pres Bud Request	2844			

Change Summary Explanation: Funding: FY 1996 (+1866) for unfunded ADTOC development.

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604741A Air Defense Command, Control, Intelligence - Engineering Development

PROJECT: D146

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Contracts	2221			
In-house/Other	623			
Total	2844			

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Misc. Contrs	PWD					2221					2221
Matrix Support	MIPR					410					410
Support and Management Organizations											
In-house/Other						213					213
Test and Evaluation Organizations: None											
Government Furnished Property: None											
Subtotal Product Development						2631					2631
Subtotal Support and Management						213					213
Subtotal Test and Evaluation											
Total Project						2844					2844

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604746A Automatic Test Equipment Development

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	10648	9575	2582	2533	5365	4642	7589	7049	Continuing	Continuing
DL59 Diagnostic/Expert System Development	3732	9575	2582	2533	5365	4642	7589	7049	Continuing	Continuing
D537 Integrated Family of Test Equipment	6916	0	0	0	0	0	0	0	0	64290

Mission Description and Budget Item Justification: This program element provides for development of modular, reconfigurable automatic test equipment (ATE) to satisfy test and fault isolation requirements across equipment commodities and to meet operational readiness needs of sophisticated systems and state-of-the-art technologies. An urgent requirement exists at all levels of maintenance for ATE to support complex communications and electronics-intensive commodities such as missiles, aircraft, and combat vehicles. The Integrated Family of Test Equipment (IFTE), with improvements as required to keep pace with technologies employed in the supported weapon systems, can meet these mission requirements into the next century. This program element further provides for identification and evaluation of the capabilities of commercial and nondevelopmental items to satisfy requirements for manual and semi-automatic general purpose test, measurement, and diagnostic equipment at the division level. Expert systems and artificial intelligence applications are also being developed under this program element to provide paperless maintenance manuals/procedures and battlefield electronic 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 systems to meet the test and diagnostic requirements of the Army's weapon systems, and for incorporation of state-of-the-art technologies into the Army's ATE systems.

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604746A Automatic Test Equipment Development

PROJECT: DL59

COST (*In Thousands*)	FY 1996 Actual	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
DL59 Diagnostic/Expert System Development	3732	9575	2582	2533	5365	4642	7589	7049	Continuing	Continuing

A. Mission Description and 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 for: support to 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 programs sets (TPS) for use with standard automatic test equipment (ATE). 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 development projects is obtained by contract from the commercial supplier. Candidate nondevelopmental items (NDI) and commercial equipment are identified and evaluated through market surveys and bid sample testing.

FY 1996 Accomplishments:

•	1583	Commenced development of software tools for new contact test sets (CTS).
•	140	Performed bench testing of NDI equipment.
•	2009	Performed initial integration and testing of prototype Electro-Optic Test Facility.
Total	3732	

FY 1997 Planned Program:

•	655	Test new CTS hardware.
•	390	Test new state-of-the-art commercial equipment for use in Army test equipment programs.
•	1023	Continue integration and testing of Electro-Optic Test Facility (EOTF).
•	340	Continue development of software tools for new CTS.
•	3444	Complete development of Kiowa Warrior electronic TPS.
•	3500	Commence development/rehost of Apache TPS.
•	223	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program
Total	9575	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604746A Automatic Test Equipment Development
	PROJECT DL59

FY 1998 Planned Program:

•	682	Continue to test new state-of-the-art commercial equipment for use in Army test equipment programs.
•	1200	Complete integration and testing of EOTF.
•	700	Complete development of software tools for new CTS.
Total	2582	

FY 1999 Planned Program:

•	510	Continue to test new state-of-the-art commercial equipment for use in Army test equipment programs.
•	1000	Develop diagnostic software for use with Army automatic test equipment.
•	1023	Evaluate common solutions for Army and other Service test and diagnostic requirements.
Total	2533	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	5288	2793	2770	2733
Appropriated Value	5437	9575		
Adjustments to Appropriated Value	-1705			
FY 1998 Pres Bud Request	3732	9575	2582	2533

Change Summary Explanation: FY 1996 adjustment reprogrammed for higher priority Army requirements.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA2, K18400, Base Shop Test Facility	35511	17076								307736
OPA3, MB4001, Base Shop Test Facility			4321	17013	34625	5451	4464	1988	Cont	Cont
OPA2, K51600, Contact Test Set	1953	4408								94364
OPA3, MB4002, Contact Test Set			10507	24164	11432	53308	39380	48894	Cont	Cont
OPA3, MB2201, Electronic Repair Shelter			5678	3789	3787	2975	1716			17945
OPA2, KA4100, Electro Optic Equipment	3859									3859
OPA3, MB4003, Electro Optic Equipment				14262	5782	5423	8927	8944	Cont	Cont

D. Schedule Profile: Not Applicable.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604746A Automatic Test Equipment Development PROJECT DL59

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Systems Engineering	1932	2187	1232	983
Software Development/Engineering	592	5944	450	1000
Testing	734	655	750	300
Miscellaneous	474	566	150	250
SBIR/STTR		223		
Total	3732	9575	2582	2533

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
McDonnell Douglas Corp., Huntington Beach, CA	SS/FFP	May 96	4100	4100	4100						4100
Honeywell, Inc. Albuquerque, NM	SS/FFP	Apr 96	4675	4675	4675						4675
McDonnell Douglas Corp., Mesa, AZ	SS/CPIF	Mar 96	8225	8225	8225						8225
Northrop Grumman, Bethpage, NY						1385	6152	900	500	Cont	8937
Other Contracts					35537	1182	1889	482	833	Cont	39923
Gov't In-House					8260	1165	1311	1200	1200	Cont	13136
SBIR/STTR							223				223

Support and Management Organizations: None

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604746A Automatic Test Equipment Development

PROJECT: DL59

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Test and Evaluation Organizations: None											
Government Furnished Property: None.											
Subtotal Product Development					60797	3732	9575	2582	2533		79219
Subtotal Support and Management											
Subtotal Test and Evaluation											
Total Project					60797	3732	9575	2582	2533		79219

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604746A Automatic Test Equipment Development

PROJECT: D537

COST (*In Thousands*)	FY 1996 Actual	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
D537 Integrated Family of Test Equipment	6916	0	0	0	0	0	0	0	0	64290

A. Mission Description and Justification: This project provides for development and upgrade of automatic test equipment (ATE) to support electronics-intensive weapon systems at all maintenance levels. The IFTE systems will automatically test and verify the operation of line replaceable units and screen shop replaceable units through use of test program sets (TPS) and software developed or upgraded under this project.

Acquisition Strategy: When the necessary expertise and capacity are available within the Department of Defense, services are ordered from the government source; otherwise, commercial contracts are used.

FY 1996 Accomplishments:

•	3738	Developed/modified TPS for Kiowa Warrior improved processors
•	54	Rehosted TPSs for use with Electronic Repair Shelter
•	1999	Developed/rehosted Kiowa Warrior and Apache TPSs for use with the Electro-Optics Test Facility
•	1125	Developed software interface for Contact Test Set, Soldier Portable On-System Repair Tool (CTS SPORT) with automated logistics systems.
Total	6916	

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	9727	0	0	0
Appropriated Value	10000			
Adjustment to Appropriated Value	-3084			
FY 1998 Pres Bud Request	6916	0	0	0

Change Summary Explanation: FY 1996 adjustment reprogrammed for higher priority Army requirements.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604746A Automatic Test Equipment Development PROJECT D537

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA2, K18400, Base Shop Test Facility	35511	17076								307736
OPA3, MB4001, Base Shop Test Facility			4321	17013	34625	5451	4464	1988	Cont	Cont
OPA2, K51600, Contact Test Set	1953	4408								94364
OPA3, MB4002, Contact Test Set			10507	24164	11432	53308	39308	48894	Cont	Cont
OPA3, MB2201, Electronic Repair Shelter			5678	3789	3787	2975	1716			17945
OPA2, KA4100, Electro Optic Equipment	3859									3859
OPA3, MB4003, Electro Optic Equipment				14262	5782	5423	8927	8944	Cont	Cont

D. Schedule Profile: Not Applicable.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604746A Automatic Test Equipment Development PROJECT D537

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Systems Engineering	1999			
Software Development	4917			
Total	6916			

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
SAIC, San Diego, CA	C/CPAF	Various	1961	1961	1961						1961
Northrop Grumman, Bethpage, NY	SS/FFP	Jan 95 -Jul 96	3856	3856	2340	1516					3856
Grumman Aerospace Corp., Bethpage, NY	Various	Various	40873	40873	40873						40873
Honeywell, Inc., Albuquerque, NM	SS/FFP	Oct 96	3738	3738		3738					3738
Other Contracts					2934	1264					4198
Gov't In-House					8592	398					8990
Funded Reqstns					674						674

Government Furnished Property: Not Applicable.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604746A Automatic Test Equipment Development	PROJECT D537

	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	57374	6916					64290
Subtotal Support and Management							
Subtotal Test and Evaluation							
Total Project	57374	6916					64290

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	0	15631	20895	9242	18603	15974	16466	16914	Continuing	Continuing
DC73 Synthetic Theater of War	0	10033	5837	0	0	0	0	0	0	15870
DC74 Developmental Simulation Technology	0	2577	2436	3008	3525	3593	3702	3801	Continuing	Continuing
DC77 Interactive Simulation	0	3021	8622	4224	9092	8391	8780	8928	Continuing	Continuing
DC78 Computer Generated Forces*	0	0	4000	2010	5986	3990	3984	4185	Continuing	Continuing

*Project DC78 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).

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 multiple and distant locations, using different simulation equipment, tied together 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 recreate 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) and Force XXI. Project DC74, Developmental Simulation Technology, provides engineering development of DIS tools, 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 DIS and related simulations and simulator efforts. 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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

PROJECT: DC73

COST (*In Thousands*)	FY 1996 Actual	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
DC73 Synthetic Theater of War	0	10033	5837	0	0	0	0	0	0	15870

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) and Force XXI. 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 1996 Accomplishments: Project not funded

FY 1997 Planned Program:

•	2997	Develop and apply distributed simulation technology to support the Synthetic Theater of War.
•	1330	Conduct Army Model and Simulation assessment and develop an interactive database catalog of Army systems and their characteristics.
•	5461	Develop and integrate emerging simulation technology in support of Force XXI training program.
•	245	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
Total	10033	

FY 1998 Planned Program:

•	4837	Continue development of distributed simulation technology to support the Synthetic Theater of War.
•	1000	Develop and integrate emerging simulation technology in support of Force XXI training program.
Total	5837	

FY 1999 Planned Program: Project not funded in FY 99.

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

PROJECT: DC73

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	10248	6287	0
Appropriated Value	0	10033		
Adjustments to Appropriated Value	0	0		
FY 1998 Pres Bud	0	10033	5837	0

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA3, KA6000, Reconfigurable Simulators	12222	13825	13823	12803	8997	8282	4960	4969	Cont'd	Cont'd
RDTE, A Budget Activity 5, PE0604715A, Project DC91, Distr Interactive Simulation	5685	0	0	0	0	0	0	0	0	5685
OMA, Reconfigurable Simulators	12100	10899	10070	7150	6650	8150	11950	11950	Cont'd	Cont'd

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
Award Engr & Integration Contract					X*				X							

*Milestone Complete

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

PROJECT: DC73

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Systems Engineering & Integration		2868	4043	
Hardware Design & Development		1750	490	
Reliability, Availability and Maintainability		738	920	
Training Support Packages		4027	0	
Verification, Validation & Accreditation		405	384	
SBIR/STTR		245		
Total		10033	5837	

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 1996	FY 1996	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	0	2849	3240	0	0	6089
Cubic Applications Inc., Lacey, WA	DO/CPIF	Jan 97	TBD	1330	0	0	1290	0	0	0	1290
ARI, Alexandria, VA	DO/CPIF	Feb 97	TBD	4710	0	0	3747	963	0	0	4710
SBIR/STTR							245				245
Support and Management Organizations											
Miscellaneous	Various	Various	2707	2707	0	0	1497	1250	0	0	2747
Test and Evaluation Organizations											
Miscellaneous	Various	Various	789	789	0	0	405	384	0	0	789

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY **5 - Engineering and Manufacturing Development**	PE NUMBER AND TITLE **0604760A Distributive Interactive Simulations - Engineering Development**
	PROJECT **DC73**

	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development			8131	4203			12334
Subtotal Support and Management			1497	1250			2747
Subtotal Test and Evaluation			405	384			789
Total Project			10033	5837			15870

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

PROJECT: DC74

COST (*In Thousands*)	FY 1996 Actual	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
DC74 Developmental Simulation Technology	0	2577	2436	3008	3525	3593	3702	3801	Continuing	Continuing

A. Mission Description and Justification : **Project DC74 - Developmental Simulation Technology:** This project supports the Core Distributed Interactive Simulation (DIS) Facilities (CDF) at Fort Knox, KY, Fort Rucker, AL, Fort Benning, GA and the Operational Support Facility in Orlando, FL, which provide 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 1996 Accomplishments: Development activities funded in PE 0604759A, Major Test and Evaluation, Project DC55, Distributive Dev Simulation Technology.

FY 1997 Planned Program:

•	1150	Develop DIS tools such as exercise conduct and visual systems generation, which enable combat, materiel and training developers and testers to perform experiments to test tactics, doctrine and weapon design.
•	1364	Continue development and systems integration of new and emerging equipment and software technology for use in the Core DIS Facilities.
•	63	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
Total	2577	

FY 1998 Planned Program:

•	900	Develop Dismounted Warrior Network which will integrate technologies to provide dismounted and small unit simulation capability to support experimentation, concept evaluation, and materiel acquisition.
•	850	Continue development of tools which provide improved capabilities for experiment and exercise generation and after-action analysis.
•	686	Continue development and systems integration of new and emerging equipment and software technology for use in the Core DIS Facilities.
Total	2436	

FY 1999 Planned Program:

•	3008	Continue development of Advanced Distributed Simulation Technology support which enables combat, materiel and training developers and testers to perform experiments to test tactics, doctrine and weapon design.
Total	3008	

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

PROJECT: DC74

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	2632	2615	3249
Appropriated Value	0	2577		
Adjustments to Appropriated Value	0	0		
FY 1998 Pres Bud	0	2577	2436	3008

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, A Budget Activity 5, PE 0604715A, Project DC91, Distr Interactive Simulation	5685	0	0	0	0	0	0	0	0	9370
RDTE, A Budget Activity 5, PE 0604760A, Project DC77, Interactive Simulation	0	3021	8622	4224	9092	8391	8780	8928	Cont'd	Cont'd
OPA3, KA6000, Reconfigurable Simulators	12222	13825	13823	12803	8997	8282	4960	4969	Cont'd	Cont'd
OMA, Reconfigurable Simulators	12100	10899	10070	7150	6650	8150	11950	11950	Cont'd	Cont'd

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
Advanced Distributed Simulation Technology (ADST) II Delivery Order Contract Award					X*				X				X			

*Milestone Complete

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

PROJECT: DC74

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Systems Engineering & Integration	0	1689	1486	1847
Primary Hardware Development	0	425	600	675
Reliability, Availability and Maintainability	0	400	350	486
SBIR/STTR		63		
Total		2577	2436	3008

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Lockheed-Martin, Orlando, FL	DO/CPAF	Nov 96	TBD	TBD	0	0	1905	1796	2260	Cont'd	5961
SBIR/STTR							63				63
Support and Management Organizations											
Miscellaneous	Various	Various	TBD	TBD	0	0	409	440	448	Cont'd	1297
Test & Evaluation Organizations											
Miscellaneous	Various	Various	TBD	TBD	0	0	200	200	300	Cont'd	700
Subtotal Product Development							1968	1796	2260		6024
Subtotal Support and Management							609	640	748		1997
Subtotal Test and Evaluation											
Total Project							2577	2436	3008		8021

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

PROJECT: DC77

COST (*In Thousands*)	FY 1996 Actual	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
DC77 Interactive Simulation	0	3021	8622	4224	9092	8391	8780	8928	Continuing	Continuing

A. Mission Description and Justification: Project DC77 - Interactive Simulation: This project focuses on engineering development of techniques and DIS technology 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 1996 Accomplishments: Funded under Project DC 91, Distributive Interactive Simulation, PE 0604715A

FY 1997 Planned Program:

•	508	Provide systems engineering and develop standards, interoperability and accreditation processes, and DIS tools to support the synthetic environment.
•	450	Develop software upgrades/enhancements to support the re-architecture of modular semi-automated forces (MODSAF) computer generated forces system.
•	1989	Continue development of the Ground, Early Entry Operations, and Aviation Battlelab Reconfigurable Simulators.
•	74	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
Total	3021	

FY 1998 Planned Program:

•	1087	Provide systems engineering and continue development of standards, interoperability and accreditation processes, and DIS tools to support the synthetic environment.
•	6535	Continue development of the Aviation, C4I and Dismounted Infantry Battlelab Reconfigurable Simulators.
•	1000	Develop improved representation of C4I and environmental effects in the synthetic environment
Total	8622	

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

PROJECT: DC77

FY 1999 Planned Program:

•	2424	Provide systems engineering and continue development of standards, interoperability and accreditation processes, and DIS tools to support the synthetic environment.
•	1000	Continue development of the C4I and Dismounted Infantry Battlelab reconfigurable simulators.
•	800	Develop dynamic terrain and mobility models for use by the simulation community.
Total	4224	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	3086	10956	6737
Appropriated Value	0	3021		
Adjustments to Appropriated Value	0	0		
FY 1998 Pres Bud	0	3021	8622	4224

Change Summary Explanation:

Funding: FY 98(-2334)/FY 99(-2513) funds moved to Computer Generated Forces (DC78) for central management/accomplishment identity as determined by the Army Modeling Simulation Office (AMSO).

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, A Budget Activity 5, PE 0604715A, Project DC91, Distr Interactive Simulation	5685	0	0	0	0	0	0	0	0	9370
OPA3, KA6000, Reconfigurable Simulators	12222	13825	13823	12803	8997	8282	4960	4979	Cont'd	Cont'd
OMA, Reconfigurable Simulators	12100	10899	10070	7150	6650	8150	11950	11950	Cont'd	Cont'd

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
Advanced Distributed Simulation Technology II Delivery Order Contract Award					X*				X				X			
Software Engineering Institute (SEI) Delivery Order Contract Award					X*				X				X			

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604760A Distributive Interactive Simulations - Engineering Development PROJECT DC77

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
BLRSI (Battlelab Reconfigurable Simulator) Option Contract Award					X*				X				X			

* Milestones Complete

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

PROJECT: DC77

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Systems Engineering & Integration		500	1337	2324
Develop DIS tools, techniques, standards		458	750	900
Reconfigureable Simulator Hardware/Software Development		1989	6535	1000
SBIR/STTR		74		
Total		3021	8622	4224

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Hughes Training Inc., Orlando, FL	CPIF	Feb97	TBD	TBD	0	0	487	4456	300	Cont'd	5243
Lockheed-Martin, Orlando, FL	DO/CPAF	Oct96	TBD	TBD	0	0	886	2021	2845	Cont'd	5752
Support and Management Organizations											
Miscellaneous	Various	Various	TBD	TBD	0	0	1349	1725	849	Cont'd	3923
SBIR/STTR							74				74
Test and Evaluation Organizations											
Miscellaneous	Various	Various	TBD	TBD	0	0	225	420	230	Cont'd	875
Subtotal Product Development							1373	6477	3145		10995
Subtotal Support and Management							1423	1725	849		3997
Subtotal Test and Evaluation							225	420	230		875
Total Project							3021	8622	4224		15867

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

PROJECT: DC78

COST (*In Thousands*)	FY 1996 Actual	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
DC78 Computer Generated Forces*	0	0	4000	2010	5986	3990	3984	4185	Continuing	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.

Acquisition Strategy: Competitive development leading to competitive procurements against performance specifications.

FY 1996 Accomplishments: Funded within Project DC 91, Distributive Interactive Simulation, PE 0604715A.

FY 1997 Planned Program: Funded within Project DC 77, Interactive Simulation, PE 0604760A.

FY 1998 Planned Program:

•	900	Develop and integrate expansion of ModSAF battlefield operating systems representation/upper echelon behavior capabilities.
•	2615	Development/re-architecture of ModSAF to provide for High Level Architecture (HLA) and Close Combat Tactical Trainer (CCTT) SAF compatibility.
•	485	Verification and validation of newly integrated software.
Total	4000	

FY 1999 Planned Program:

•	310	Develop and integrate expansion of ModSAF battlefield operating systems representation/upper echelon behavior capabilities.
•	1420	Continue engineering development of the ModSAF-CCTT Semi-Automated Forces merge.
•	280	Verification and validation of newly integrated software.
Total	2010	

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

PROJECT: DC78

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	0	0	0
Appropriated Value	0	0		
Adjustments to Appropriated Value	0	0		
FY 1998 Pres Bud	0	0	4000	2010

Change Summary Explanation:

Funding: FY 98(+4000)/FY 99(+2010) funds moved from Interactive Simulation (DC77) to more appropriately identify/manage accomplishments of Computer Generated Forces (DC78) as determined by the Army Modeling Simulation Office (AMSO).

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, A Budget Activity 5, PE 0604715A, Project DC91, Distributive Interactive Simulation	5685	0	0	0	0	0	0	0	0	5685
RDTE, A Budget Activity 5, PE 0604760A, Project DC77, Interactive Simulation	0	3021	8622	4224	9092	8391	8780	8928	Cont'd	Cont'd

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
ADST II Delivery Order Contract Award									X				X			

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604760A Distributive Interactive Simulations - Engineering Development

PROJECT: DC78

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Engineering Development and Integration			3515	1720
Verification and Validation			485	290
Total			4000	2010

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Lockheed-Martin Inc., Orlando, FL	DO/CPAF	Dec 98	TBD	TBD	0	0	0	2915	1150	Cont'd	4065
Support and Management Organizations											
Miscellaneous	Various	Various	TBD	TBD	0	0	0	600	570	Cont'd	1170
Test and Evaluation Organizations											
Miscellaneous	Various	Various	TBD	TBD	0	0	0	485	290	Cont'd	775
Subtotal Product Development								2915	1150		4065
Subtotal Support and Management								600	570		1170
Subtotal Test and Evaluation								485	290		775
Total Project								4000	2010		6010

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

DATE: February 1997

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 1996 Actual	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
D909 Tactiical Exploitation of National Capabilities - Eng Dev	23266	15235	19113	19531	26094	25097	28203	28359	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 (CIGSS) 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: The Army Space Program Office (ASPO) strives for an acquisition 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 1996 Accomplishments:

- 12102 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.
- 606 Completed the retrofit of ETUT with enhanced MITT hardware and software.
- 2356 Continued effort to combine ETUT and EPDS capabilities into AEPDS.
- 900 Completed building/fielding of five additional MITTs.
- 1094 Initiated engineering development of TES.
- 6208 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 23266

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
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 1997 Planned Program:

•	4608	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.
•	5106	Continue engineering development of TES.
•	2197	Complete effort to combine ETUT and EPDS capabilities into AEPDS.
•	2958	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.
•	366	Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)
Total	15235	

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.
•	8585	Continue engineering development of TES.
•	3563	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	19113	

FY 1999 Planned Program:

•	5703	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.
•	10405	Continue engineering development of TES.
•	3423	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	19531	

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)

PROJECT: D909

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	23861	15758	20631	21235
Appropriated Value	24101	15235		
Adjustments to Appropriated Value	-835			
FY 1998 BES/Pres Bud Request	23266	15235	19113	19531

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE,A Budget Activity 4										
PE 0603766A Project D907	26796	25354	20920	23714	24751	29020	30920	31095	Cont	Cont
TENCAP-Adv Dev									Cont	Cont
RDTE, D Budget Activity 7										
PE 0305154D DARP	41526	50287	0	0	0	0	0	0		
PE 0305208D DARP			30433	28175	22214	24108	23583	23179		
Other Procurement Army, OPA-2										
BZ7315 TENCAP	4473	1756	1679	1728	4598	13703	14779	16822	Cont	Cont
Procurement, Defense Wide									Cont	Cont
PE 0305154D DARP	80822	89945	0	0	0	0	0	0		
PE 0305208D DARP			94070	81600	80576	71867	73926	75239		

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 Development and Field five Additional MITTs		X*														
Complete Retrofit and Refield ETUTs			X*													
Complete and Field DAMA Appliqué into SUCCESS Radios								X								
Initiate Engineering Development of TES				X*												
Install GSD into FAST Systems				X*												
Complete AEPDS						X										

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604766A Tactical Exploitation of National Capabilities (TENCAP) - Engineering & Manufacturing Development (TIARA)

PROJECT: D909

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Initiate integration of GBS into AEPDS/TES										X						
Initiate integration of JTT into AEPDS/TES													X			
Complete integration of GBS into AEPDS/TES															X	

* Milestone completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997

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 1996	FY 1997	FY 1998	FY 1999
MITT	900	0		
ETUT	2962	2197		
TES	1094	5106	8585	10405
Common Baseline (*1)	12102	4608	6965	5703
FFRDC	1767	1220	1274	1297
System Engineering (Contractor)	4441	1738	2289	2126
SBIR/STTR		366		
Total	23266	15235	19113	19531

(*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)]

B. Budget Acquisition History and Planning Information: Not Applicable

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	190472	161816	202302	129466	146633	126860	65653	22287	0	1797674
D641 BAT	101439	67186	46077	2548	4075	0	0	0	0	948801
D687 BAT P3I	35214	18819	64556	70774	77488	61948	10727	5172	0	359652
D688 ATACMS BLK II	53535	75806	91669	44777	13233	12076	0	0	0	300851
D686 ATACMS BLK IIA	0	0	0	11094	47983	52836	54926	17115	0	183954
D2NT BAT Operational Test	284	5	0	273	3854	0	0	0	0	4416

Mission Description and Budget Item Justification: The BAT system supports the Army's deep fires 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 without human interaction. 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 targets of high value. 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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition

PROJECT: D641

COST (*In Thousands*)	FY 1996 Actual	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
D641 BAT	101439	67186	46077	2548	4075	0	0	0	0	948801

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 armored, mobile targets. BAT submunitions are carried deep into enemy territory by a variant of the Army Tactical Missile System (ATACMS Block II), then dispensed over numerous high-payoff targets to selectively attack and destroy individual targets. By utilizing acoustic technology, BAT has the advantage of a large footprint which allows it to compensate for target location errors. Being a certified round, the BAT submunition has a low sustainment cost.

Acquisition Strategy: The BAT system is a sole source EMD program.

FY 1996 Accomplishments:

•	73550	Conducted EMD Program
•	19089	Conducted Carrier Integration Activities and other studies
•	8800	Conducted Test Range and Target Operation, Maintenance and Improvements
Total	101439	

FY 1997 Planned Program:

•	53329	Conduct EMD Program
•	5458	Conduct Carrier Integration Activities and other studies
•	6800	Conduct Test Range and Target Operations, Maintenance and Improvements
•	1599	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	67186	

FY 1998 Planned Program:

•	25432	Procure Operational and Live Fire Test Hardware and Support [90 Low Rate Initial Production (LRIP) units]
•	14910	Support Carrier Flight Testing and Other Integration Activities
•	5535	Conduct Test Range and Target Operation, Maintenance and Improvement
•	200	Studies, development, and validation of future improvement programs
Total	46077	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition
	PROJECT D641

FY 1999 Planned Program:

- 2313 Conduct Test Range and Target Operation, Maintenance and Improvement
- 115 Conduct Integration Activities
- 100 Deliver Operational Test and Live Fire Test Assets
- 20 Studies, development, and validation of future improvement programs

Total 2548

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	96324	68622	24789	0
Appropriated Value	99028	67186		
Adjustments to Appropriated Value	+2411			
FY 1998 Pres Bud Request	101439	67186	46077	2548

Change Summary: FY 1998 funding adjustment to support procurement of LRIP IOTE test articles and testing (+21288). FY 1999 funding adjustment to support delivery of articles and testing (+2548).

C. Other Program Funding Summary	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Complete	Cost
Missile Procurement, Army										
CA 6100 BAT			85208	100137	170243	200839	200109	238948	762459	1757943

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 Design Verification Test (DVT)			X*													
Complete Wind Tunnel/Sled Tests						X										
Complete Subsystem Qual							X									
Initiate Contractor Developmental Test (CDT)				X*												
Complete CDT							X									
Award LRIP I Contract										X						
Award LRIP II Contract													X			
Start LRIP I Deliveries																X

* Milestone completed.

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition

PROJECT: D641

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Contractor Engr Support	86665	49509	37655	120
Developmental Test & Evaluation	4581	5262	1600	2113
Program Management Spt	3775	4356	2223	000
Program Management Personnel	6418	6460	4599	315
SBIR/STTR		1599		
Total	101439	67186	46077	2548

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 1996	FY 1996	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			545192	86665	49509	37655	120	000	719141
SBIR/STTR							1599				1599
In-House Support	PO	OCT			57563	6418	6460	4599	315	000	75355
Support and Management Organizations											
SETA & Program Mgmt Spt	SS/CPFF	NOV			53057	1934	2594	1165	000	000	58750
Misc. OGA	PO	OCT			42930	1841	1762	1058	000	000	47591
Test and Evaluation Organizations											
Range Support	PO	OCT			15881	2736	2458	600	1908	3600	27183
Other Test	PO	OCT			12853	1845	2804	1000	205	475	19182
Government Furnished Property: Not applicable.											
Subtotal Product Development					602755	93083	57568	42254	435		796095
Subtotal Support and Management					95987	3775	4356	2223			106341
Subtotal Test and Evaluation					28734	4581	5262	1600	2113	4075	46365
Total Project					727476	101439	67186	46077	2548	4075	948801

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition

PROJECT: D687

COST (*In Thousands*)	FY 1996 Actual	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
D687 BAT P3I	35214	18819	64556	70774	77488	61948	10727	5172	0	359652

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 targets to selectively attack and destroy individual targets. BAT P3I is intended to increase submunition lethality and expand the target arrays to be attacked. Being a certified round, 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/demonstrations pertaining to technology advancements, alternate carriers, target recognition, and acoustic/infrared/millimeter wave characterization of expanded target sets.

Acquisition Strategy: The BAT P3I system is a sole source Program Definition and Risk Reduction (PDRR) program with competitive seeker subcontractors.

FY 1996 Accomplishments:

•	30260	Conducted P3I PDRR program
•	3958	Hardware-in-the-Loop (long lead and design)
•	996	Test Range/Warhead Activities
Total	35214	

FY 1997 Planned Program:

•	16012	Conduct P3I PDRR program
•	723	Receipt and Assembly of Major Components of the Hardware-in-the-Loop Facility
•	915	Develop Warhead Lethality Models
•	609	Conduct Captive Flight Test (CFT)
•	100	Studies, Development and Validation of Future Improvement Programs
•	460	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	18819	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition
	PROJECT D687

FY 1998 Planned Program:

•	53270	Continue System Development and Complete P3I PDRR Program
•	1226	Continue Simulation and Testing Program
•	2300	Conduct CFTs
•	4613	Integrate and Test Seekers in the Hardware-in-the-Loop Facility
•	2947	Conduct Warhead Testing
•	200	Studies, development, and validation of future improvement programs
Total	64556	

FY 1999 Planned Program:

•	60144	Begin EMD
•	3301	Conduct Integration Testing Program
•	1976	Continue Hardware-in-the-Loop Seeker Assessments
•	5153	Conduct Simulations and Algorithm Development
•	200	Studies, development, and validation of future improvement programs
Total	70774	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	36121	34221	64804	64137
Appropriated Value	37136	18819		
Adjustments to Appropriated Value	-1922			
FY 1998 Pres Bud Request	35214	18819	64556	70774

Change Summary Explanation: FY 1999 funding increase to support restructure of BAT P3I EMD program and additional funding required to maintain LRIP schedule (+6637).

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

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
Captive Flight Tests (CFT)						X				X		X				
Target Signature Collection	X*															
Warhead Testing				X*	X*				X	X	X					

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition

PROJECT: D687

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
Hardware-in-the-Loop Testing											X					
Milestone II													X			
EMD CFT													X	X	X	
Design Verification Test																X

*Milestone completed.

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition

PROJECT: D687

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Contract Engineering Support	26759	15448	50849	60804
Developmental Test & Evaluation	697	530	3150	3804
Program Management Support	1306	606	3227	1329
Program Management Personnel	6452	1775	7330	4837
SBIR/STTR		460		
Total	35214	18819	64556	70774

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Northrop Grumman Corp	SS-CPIF	DEC			9990	26759	15448	50849	60804	111549	275399
SBIR/STTR							460				460
In-House Support	PO	OCT			2260	6452	1775	7330	4837	11988	34642
Support and Management Organizations											
SETA & Prog Mgmt Spt	SS-CPFF	NOV			710	491	251	725	854	2521	5552
MISC OGA Activities	PO	OCT			1039	815	355	2502	475	950	6136
Test and Evaluation Organizations											
Range Support	PO	OCT			25	0	0	700	2200	8260	11185
Other Test Activities	PO	OCT			930	697	530	2450	1604	20067	26278

Government Furnished Property: Not applicable.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition PROJECT D687

	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	12250	33211	17683	58179	65641	123537	310501
Subtotal Support and Management	1749	1306	606	3227	1329	3471	11688
Subtotal Test and Evaluation	955	697	530	3150	3804	28327	37463
Total Project	14954	35214	18819	64556	70774	155335	359652

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition

PROJECT: D688

COST (*In Thousands*)	FY 1996 Actual	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
D688 ATACMS BLK II	53535	75806	91669	44777	13233	12076	0	0	0	300851

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) will be 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 postulated high-payoff targets. Once the BAT P3I submunition is incorporated into the ATACMS BLK II, these targets will include cold stationary armored combat vehicles, mobile 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 automatically track and destroy numerous high-payoff targets. GPS technology will increase accuracy in flight, mitigating target location errors. ATACMS BLK II will be launched from the M270 launcher. Further, these funds will allow for future improvement program studies/demonstrations pertaining to technology advancements, payload variants, propulsion, guidance and control, and fire control improvements. This includes studies addressing Block II integration with other platforms.

Acquisition Strategy: The Army Tactical Missile System Block II is a sole source performance specification requirement program.

FY 1996 Accomplishments:

•	47654	EMD including initiation of Block II/BAT Integration Activities.
•	300	Initiated Range Planning and Activities to Accommodate Block II Flight Tests
•	5581	Accelerated planned activities for an early Development Flight Test
Total	53535	

FY 1997 Planned Program:

•	71360	Conduct EMD Program to include Preliminary Design Review(PDR), Critical Design Review(CDR) and Block II/BAT Integration Activities
•	400	Conduct Sled Tests (OGA)
•	570	Prepare for and begin Production Proveout Test (PPT) Flight Program (OGA)
•	1374	Begin Command and Control Software Design, Development and Test
•	250	Studies, development, and validation of future improvement programs
•	1852	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	75806	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition / PROJECT: D688

FY 1998 Planned Program:

•	14000	Begin Pilot Production Line and Begin IOT&E Activities
•	69594	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
•	250	Studies, development, and validation of future improvement programs
Total	91669	

FY 1999 Planned Program:

•	36412	Continue EMD and Subsystem Qualification
•	3189	Complete PQT and conduct DT/OT Flight Tests
•	1075	Conduct M270A1 Integration Tests
•	1451	Conduct C4I System Integration Tests
•	1300	Continue Command and Control Software Design, Development and Test
•	1100	Prepare for Ground and Flight Operational Test
•	250	Studies, development, and validation of future improvement programs
Total	44777	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	62095	77559	76779	36319
Appropriated Value	63840	75806		
Adjustments to Appropriated Value	-10305			
FY 1998 Pres Bud Request	53535	75806	91669	44777

Change Summary Explanation: FY 1996 funding adjustment due to undistributed Congressional reductions and rescissions (-3305) and reprogramming to BAT Program (Project D641) (-7000) which was a higher priority requirement. FY 1998/1999 funding adjustments to support BAT P3I integration activities with the Block II missile (+14890/+8458).

C. Other Program Funding Summary

Missile Procurement, Army	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete	Total Cost
CA 6105 ATACMS BLK II				60781	80741	109907	84471	128281	509138	973319

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition

PROJECT: D688

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
Static Test	X*	X*														
Sled Test					X*											
CDR							X									
PDR					X*											
PPT Flight Test								X	X							
PQT Flight Test											X	X	X			
DT/OT Flight Test														X		
Award LRIP Contract														X		

*Milestone Completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition
	PROJECT D688

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Contractor Engr Support	47112	56000	63226	24441
Development Test & Evaluation	712	5640	13969	9109
Program Management Spt	1678	4944	5984	4454
Program Management Personnel	4033	7370	8490	6773
SBIR/STTR		1852		
Total	53535	75806	91669	44777

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
LMV	SS/CPIF	JULY 95			7411	47112	56000	63226	24441	2664	200854
In-House Support	PO	OCT			1419	4033	7370	8490	6773	2199	30284
SBIR/STTR							1852				1852
Support and Management Organizations											
SETA & Program Mgmt Spt	SS/CPFF	OCT			858	1166	1133	1777	1564	1944	8442
Misc. OGA Activities	PO	OCT				512	3811	4207	2890	9210	20630
Test and Evaluation Organizations											
Range Support	PO	OCT				450	5191	12309	8318	6998	33266
Other Test Activities	PO	OCT			67	262	449	1660	791	2294	5523
Government Furnished Property: Not applicable.											
Subtotal Product Development					8830	51145	65222	71716	31214	4863	232990
Subtotal Support and Management					858	1678	4944	5984	4454	11154	29072
Subtotal Test and Evaluation					67	712	5640	13969	9109	9292	38789
Total Project					9755	53535	75806	91669	44777	25309	300851

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition

PROJECT: D686

COST (*In Thousands*)	FY 1996 Actual	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
D686 ATACMS BLK IIA	0	0	0	11094	47983	52836	54926	17115	0	183954

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 six BAT P3I submunitions as its payload. The ATACMS Block IIA will be launched from the M270 launcher in response to the same Command and Control (C2) nodes applicable to the Block I, Block IA, and Block II missiles. Since the Block IIA payload only houses six submunitions rather than 13, as in the Block II, it is capable of achieving extended ranges comparable to the Block IA. 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 requirement program.

FY 1996 Accomplishments: Project not funded in FY 1996

FY 1997 Planned Program: Project not funded in FY 1997

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program:

•	300	Department of the Army In-Process Review (DA IPR)
•	8937	Initiate and Conduct EMD Program; Conduct Submunition Integration Activities
•	1857	Conduct Test Range and Target Operation, Maintenance and Improvement
Total	11094	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget			11133	35990
Appropriated Value				
Adjustments to Appropriated Value				
FY 1998 Pres Bud Request			0	11094

Change Summary Explanation: FY 1998/1999 funding adjustments to support Block IIA delay of one year to pay for higher Army priorities (-11133/-24896).

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition PROJECT D686

C. Other Program Funding Summary

Missile Procurement, Army	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete	Total Cost
CA 6110 ATACMS BLK IIA							9868	62542	459320	531730

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
DA IPR														X		
EMD Contract															X	

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition

PROJECT: D686

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Contractor Engr Support				7259
Development Test & Evaluation				1857
Program Management Spt				900
Program Management Personnel				1078
Total				11094

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
LMV	SS/CPFF								7259	118028	125287
In-House Support	PO	OCT							1078	11862	12940
Support and Management Organizations											
SETA & Program Mgmt Spt	SS/CPFF	OCT							900	5624	6524
Test and Evaluation Organizations											
Range Support	PO	OCT							654	25783	26437
Other Test Activities	PO	OCT							1203	11563	12766

Government Furnished Property: Not applicable.

Subtotal Product Development	8337	129890	138227
Subtotal Support and Management	900	5624	6524
Subtotal Test and Evaluation	1857	37346	39203
Total Project	11094	172860	183954

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition

PROJECT: D2NT

COST (*In Thousands*)	FY 1996 Actual	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
D2NT BAT Operational Test	284	5	0	273	3854	0	0	0	0	4416

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). The BAT submunition is an Acquisition Category (ACAT) I system with a dedicated Initial Operational Test and Evaluation in FY 1998 in support of a Low Rate Initial Production (LRIP) decision. Operational testing is conducted under conditions, as similar as possible, to those encountered in actual combat with typical user troops 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 1996 Accomplishments::

•	284	IOTE planning and preparation
Total	284	

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:

•	273	IOTE planning and preparation
Total	273	

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	291	5	223	1079
Appropriated Value	299	5		
Adjustments to Appropriated Value	-15			
FY 1998 Pres Bud Request	284	5	0	273

Change Summary Explanation: FY 1998/1999 funding adjustments to support ATACMS Block II/BAT IOTE schedule (-223/-806).

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604768A Brilliant Anti-Armor (BAT) Submunition PROJECT D2NT

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

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
Conduct IOTE Activities	X*	X*	X*		X*								X	X		

*Milestone completed

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604768A Brilliant Anti-Armor (BAT) Submunition

PROJECT: D2NT

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Operational Test and Evaluation	284	5	0	273
Total	284	5	0	273

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 1996	FY 1996	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						284	5	0	273	3854	4416
Government Furnished Property: Not applicable.											
Subtotal Product Development											
Subtotal Support and Management											
Subtotal Test and Evaluation						284	5	0	273	3854	4416
Total Project						284	5	0	273	3854	4416

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604770A Joint Surveillance/Target Attack Radar System

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	15302	9624	6940	5670	4121	13490	19188	19205	Continuing	Continuing
D202 Army Joint STARS (TIARA)	13613	9624	6940	5670	4121	13490	19188	19205	Continuing	Continuing
D2CT JSTARS Operational Test (TIARA)	1689	0	0	0	0	0	0	0	0	5040

Mission Description and Budget Item Justification: This is a Tactical Intelligence and Related Activities (TIARA) program. US Forces have an urgent need for a wide-area surveillance and target attack radar system capable of continuous coverage out to a depth in excess of 100km beyond their Forward Line of Troops. Commanders must have the capability to detect, locate, classify and track moving and stationary targets for situation assessment to avoid surprise and attack targets out to the range of existing and developing weapons. The Joint Surveillance and Target Attack Radar System (JSTARS) provides battle management and targeting of enemy units at critical times and places so commanders can employ their organic forces and firepower in support of deep, close and rear operations. 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 ground components of the JSTARS under this PE, project D202. In remaining years, the Army will continue to develop, and validate performance enhancing Pre-Planned Product Improvements (P3I). Also included in this PE is project D2CT with FY 96 funding for the Multi-Service Operational Test and Evaluation (MOTE). The projects in this program element 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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604770A Joint Surveillance/Target Attack Radar System

PROJECT: D202

COST (*In Thousands*)	FY 1996 Actual	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)	13613	9624	6940	5670	4121	13490	19188	19205	Continuing	Continuing

A. Mission Description and Justification: The Army will develop the ground components of the JSTARS under this PE/Project. The Ground Station Module (GSM) is being developed in a Block approach. Block I Ground Station Modules (GSM) utilize the same prime mission equipment and will be 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). A Block I Heavy GSM (HGSM) prototype was also assembled. This variant integrated the GSM prime mission equipment into a Command and Control Vehicle (C2V) (a Bradley variant). Also 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 Improvements (P3I) initiatives and provide significant expansion of the system performance parameters. Significant enhancements include: integration of Secondary Imagery Dissemination, extended range (SATCOM relay) capability, full on the move and manportable operations as well as integration/interface with other service/allied sensor systems.

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 September 1997 Operational Test. This test will support the Milestone III decision scheduled for May 1998. The contract also includes provisions for the design, development and test of various P3Is. Following P3I prove out, the modifications are folded into the production contract via fixed price contract revisions.

FY 1996 Accomplishments:

•	1834	Completed LGSM EMD Program
•	10559	Initiated Phase I CGS Design/System Enhancements
•	1220	Conducted CGS Phase I Critical Design Review (CDR)
Total	13613	

FY 1997 Planned Program:

•	5710	Complete Secondary Imagery Dissemination Integration
•	2106	Initiate Sensor Integration (P3I)
•	1590	IOT&E Support
•	218	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
Total	9624	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604770A Joint Surveillance/Target Attack Radar System
	PROJECT D202

FY 1998 Planned Program:

- 2904 Continue Additional Sensor Integration (P3I)
- 1771 Trainer/Training Enhancements
- 2265 IOT&E Support

Total 6940

FY 1999 Planned Program:

- 2814 Complete CGS Expanded Capability Development
- 2200 Provide Additional Simulators/Embedded Training Capability
- 656 Test CGS Expanded Performance Capabilities

Total 5670

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 Presidents Budget	25747	9857	7202	6068
Appropriated Value	26007	9624		
Adjustments to Appropriated Value	-12394			
FY 1998 Pres Bud Request	13613	9624	6940	5670

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
BA1080 Joint STARS (TIARA)	82376	85321	118873	89180	91196	102224	36146	18039	Cont	Cont
BS9724 Joint STARS Spares	3569	8770	6346	6487	6600	6687	7439	4747	Cont	Cont
NATO AGS C35	9500	0	13500	15105						
NATO AGS BA 1082	0	0	26153	32575						

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
CGS LRIP Award	X*															
Conduct CGS PDR		X*														
Complete LGSM EMD Program			X*													
Conduct CGS Phase I CDR			X*													
Start CGS Technical Test					X*											

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604770A Joint Surveillance/Target Attack Radar System

PROJECT: D202

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
First CGS LRIP Delivery						X										
Initial CGS Operator Training							X									
Conduct Final CGS Technical Test								X								
Complete CGS Operational Test								X								
Prepare CGS Operator Test Report										X						
Milestone III										X						
Develop Advanced Imagery Capability														X		
Complete Advanced P3I Technical Test															X	
Complete Advanced P3I Operational Assessment																X

*Milestone Completed

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

DATE: February 1997

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 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development	6059	3904	1611	2064
Software Development	3226	2084	1852	2079
Integrated Logistics Support	265	270	105	95
Developmental/Operational Test and Evaluation	650	1590	2265	525
Contractor Engineering Support	1649	801	625	455
Government Engineering Support	435	193	144	179
Program Management Support	455	177	170	136
Program Management Personnel	874	387	168	137
SBIR/STTR		218		
Total	13613	9624	6940	5670

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Motorola (96-C-S201)	SS/CPFF	Nov 95	10063	8339	0	1750	1848	1024	871	2746	8339
Motorola (96-C-S204)	C/FP	Dec 95	34048	34048	0	8117	4275	2955	3616	14975	34048
Cubic (93-C-0166)	SS/FPI	Apr 93	6439	6439	4833	946	642	0	0	0	6439
SBIR/STTR							218				
Support and Management Organizations											
CECOM	MIPR					435	193	144	179		951
Proj Management						1329	564	338	273		2504
Misc.	MIPR					294	144	109	101		648
Test and Evaluation Organizations											
Various	MIPR					650	1590	2265	525		5030

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604770A Joint Surveillance/Target Attack Radar System

PROJECT: D202

Government Furnished Property

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property										
Various	Reqn			600	92	140	105	105	Cont	Cont
Support and Management Property: N/A										
Test and Evaluation Property: N/A										
Subtotal Product Development				132137	10905	7133	4084	4592	Cont	Cont
Subtotal Support and Management					2058	901	591	553	Cont	Cont
Subtotal Test and Evaluation					650	1590	2265	525	Cont	Cont
Total Project				132137	13613	9624	6940	5670	Cont	Cont

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604770A Joint Surveillance/Target Attack Radar System

PROJECT: D2CT

COST (*In Thousands*)	FY 1996 Actual	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
D2CT JSTARS Operational Test (TIARA)	1689	0	0	0	0	0	0	0	0	5040

A. Mission Description and Justification: Project D2CT provides for the Army's costs associated with the Multi-Service Operational Test and Evaluation (MOTE). All MOTE activities were completed by 2Q96. This Joint Service Initial Operational Test and Evaluation (IOT&E) supports both the US Army and US Air Force for the Joint STARS Full Scale Production Decisions. (US Air Force in FY 96 and US Army in FY 98)

FY 1996 Accomplishments:

- 789 Conducted MOTE
- 900 Completed Test Analysis and Reports

Total 1689

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	1733	0	0	0
Appropriated Value	1750	0	0	0
Adjustments to Appropriated Value	-61	0	0	0
FY 1998 Pres Bud Request	1689			

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete	Total Cost
BA1080 Joint STARS Army TIARA Funding	80376	85428	118873	90134	92274	103439	36514	18154	Cont	Cont
BS9724	3569	8770	6346	6487	6600	6687	7439	4747	Cont	Cont

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604770A Joint Surveillance/Target Attack Radar System
	PROJECT D2CT

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
MOTE Pre Test Planning and Training																
MOTE		X*														
Prepare MOTE Report			X*													

*Denotes completed milestone

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604770A Joint Surveillance/Target Attack Radar System

PROJECT: D2CT

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Operational Test and Evaluation	1689	0	0	0
Total	1689	0	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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations: N/A											
Support and Management Organizations: N/A											
Test and Evaluation Organizations											
OPTEC	MIPR	Dec 94			3307	1689	0			0	4996
Government Furnished Property: Not applicable											
Subtotal Product Development											
Subtotal Support and Management											
Subtotal Test and Evaluation					3307	1689					4996
Total Project					3307	1689					4996

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604778A Positioning Systems Development (SPACE)

PROJECT: D168

COST (*In Thousands*)	FY 1996 Actual	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
D168 NAVSTAR Global Positioning System (GPS) Equipment	436	428	419	409	458	453	0	0	0	2603

A. Mission Description and Budget Item Justification: Project D168 provides for Army participation in the research and development phases of Army weapon systems requiring positioning/navigational 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 project in this program element supports 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 1996 Accomplishments:

•	163	Procured and tested items in the marketplace to remain current with NDI alternatives (to include embedding)
•	161	Advanced GPS receiver framework conceptualization (non-hardware work)to meet evolving user requirements.
•	112	Air receiver exploration for MAGR follow-on replacement
Total	436	

FY 1997 Planned Program:

•	111	Improve accuracy and time to fix studies for follow-on equipment requirements
•	150	Test program for NDI aviation GPS receiver (MAGR follow-on/replacement)
•	156	Improve survivability of GPS capability (renewed anti-jam/anti-spoof and other threats response)
•	11	Small Business Innovation Research/Small Business Technology Transfer(SBIR/STTR)
Total	428	

FY 1998 Planned Program:

•	120	Continue improving accuracy and time to fix studies
•	134	Continue survivability studies
•	165	Explore emerging capabilities based on follow-on satellite configuration options
Total	419	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604778A Positioning Systems Development (SPACE)
	PROJECT D168

FY 1999 Planned Program:

•	200	Continue exploration of emerging capabilities
•	109	Support miniaturization studies
•	100	Conduct studies on interfacing GPS with other systems
Total	409	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	448	437	436	424
Appropriated Value	452	428		
Adjustments to Appropriated Value	-16			
FY 1998 Pres Bud Request	436	428	419	409

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY2002	FY2003	To Compl	Total Cost
K47800, Other Procurement, Army, NAVSTAR GPS	49040	26255	6796	7018	6895	33332	33967	51991	40000	255295

D. Schedule Profile: Not applicable

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - Engineering and Manufacturing Development	0604778A Positioning Systems Development (SPACE)	D168

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Developmental Test and Evaluation	0	150	134	109
Government Engineering Support	273	156	165	200
Contractor Engineering Support	163	111	120	100
SBIR/STTR		11		
Total	436	428	419	409

B. Budget Acquisition History and Planning Information: Not applicable

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604780A Combined Arms Tactical Trainer (CATT)

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	56282	26110	2823	2866	7205	3054	18599	29641	0	288427
D571 Close Combat Tactical Trainer	56282	26110	2823	2866	7205	3054	0	0	0	240187
D582 Engineer CATT	0	0	0	0	0	0	18599	29641	0	48240

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 specific systems that comprise CATT include Close Combat Tactical Trainer (CCTT), Aviation Combined Arms Tactical Trainer (AVCATT), Engineer Combined Arms Tactical Trainer (ENCATT), Fire Support Combined Arms Tactical Trainer (FSCATT) and Air Defense Combined Arms Tactical Trainer (ADCATT). 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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604780A Combined Arms Tactical Trainer (CATT)

PROJECT: D571

COST (*In Thousands*)	FY 1996 Actual	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
D571 Close Combat Tactical Trainer	56282	26110	2823	2866	7205	3054	0	0	0	240187

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.

FY 1996 Accomplishments:

•	47655	Completed spiral build 7. Produced and delivered a fixed company team site (38 modules) and 2 mobile platoon sets (11 modules); performed software/hardware physical configuration audit; conducted Preproduction Qualification Test (PPQT) for both fixed and mobile systems and prepared for fixed and mobile Initial Operational Test and Evaluation (IOT&E).
•	6317	Maintained support services to the program office.
•	2310	Provided government program management, engineering, technical and contract support.
Total	56282	

FY 1997 Planned Program:

•	20750	Complete deliveries, complete semi-automated forces improvements, conduct and support development testing and IOT&E, correct deficiencies from testing, complete documentation and audit trail, and prepare for pre-planned product improvements.
•	2612	Maintain support services to the program office.
•	2110	Provide government program management, engineering, technical and contract support.
•	638	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
Total	26110	

FY 1998 Planned Program:

•	2823	Execute Engineering Change Proposals (ECPs) and minor software changes based on user experience and operational testing.
Total	2823	

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604780A Combined Arms Tactical Trainer (CATT)

PROJECT: D571

FY 1999 Planned Program:

•	2866	Continue ECPs and minor software changes based on user experience and operational testing.
Total	2866	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget Request	57742	26713	3033	3095
Appropriated Value	59475	26110		
Adjustments to Appropriated Value	-3193	0		
FY 1998 Pres Bud	56282	26110	2823	2866

Change Summary Explanation: FY 96 project funds decremented (-1460) for undistributed Congressional reductions and rescissions.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA3, Appropriation	29259	78342	92968	116141	34106	33546	0	0	0	423242
NA0170 SIMNET/CCTT										
Military Construction, A Appropriation	10500	11900	13300	7300	0	0			0	50500
Operation and Maintenance, A Appropriation	394	4801	6303	10929	10661	10190	10411	10636	Cont'd	Cont'd

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
Spiral Build 7		X*														
Quick Start Decision		X*														
PPQT Fixed System/Formal Qualification Test						X										
IOT&E Fixed System							X									
PPQT/IOT&E Mobile System							X									

* Completed Milestones

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604780A Combined Arms Tactical Trainer (CATT)

PROJECT: D571

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Contractor Development	34617	17004	0	0
Contractor Program Management/System Engineering	13038	3746	0	0
Program Office/Technical Support	2300	2110	250	250
Government Agency Support	3590	1039	216	106
Support Contracts	2737	1573	0	0
Engineering Changes/Software Changes	0	0	2357	2510
SBIR/STTR		638		
Total	56282	26110	2823	2866

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Loral FSC	C-CPAF/ T&M/FFP	Nov 92	195831	195831	112776	47655	20750	2357	2510	9783	195831
Support and Management Organizations											
NAWC-TSD	MIPR	Dec 92	12532	12532	7146	2300	2110	250	250	476	12532
RCI	T&M	Feb 93	3687	3687	3687	0	0	0	0	0	3687
CECOM	MIPR	Nov 93	7655	7655	3350	2490	1812	0	0	0	7652
MICOM	MIPR	Jan 94	1020	1020	1020	0	0	0	0	0	1020
Sherikon	T&M	Oct 94	4400	4400	1800	1800	800	0	0	0	4400
Miscellaneous	Various	Various	15065	15065	12068	2037		216	106	0	14427
SBIR/STTR							638				638

Test and Evaluation Organizations: None

Government Furnished Property: None

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604780A Combined Arms Tactical Trainer (CATT)
	PROJECT D571

	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	112776	47655	20750	2357	2510	9783	195831
Subtotal Support and Management	29071	8627	5360	466	356	476	44356
Subtotal Test and Evaluation							
Total Project	141847	56282	26110	2823	2866	10259	240187

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604801A Aviation - Engineering Development

PROJECT: DC45

COST (*In Thousands*)	FY 1996 Actual	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
DC45 Aircrew Integrated Systems (ACIS)	4885	5403	5109	6067	2076	2065	2172	2181	Continuing	Continuing

A. **Mission Description and Budget Item Justification:** **Project DC45** Aircrew Integrated Systems (ACIS) formerly Aviation Life Support Equipment (ALSE) - 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 and enhanced survivability of Army aircrews and passengers on the future integrated battlefield and during related training activities. 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. The project in this Program Element supports research efforts in the EMD phase of the Acquisition Strategy and is correctly placed in Budget Activity 5.

Acquisition Strategy: DC45 - 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 (P3I) 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 maximum of two competitive contractor teams will develop a functional analysis and breadboard mock-up of the Air Warrior ensemble during a Program Definition and Risk Reduction phase. Then, one team will be selected to develop the Air Warrior ensemble during a combined Program Definition and Risk Reduction (PDRR) and EMD phase.

FY 1996 Accomplishments:

•	970	Continued CABS EMD for AH-64 Apache and adapted CABS components for common application to other aircraft platforms,
•	2932	Initiated transition from Joint CABS Program Definition Risk Reduction (PDRR) to UH-60 CABS EMD program (including in-house effort)
•	718	Continued AIHS (Aircrew Integrated Helmet System) P^3I efforts in EMD
•	265	Initiated EMD for Advanced Laser Eye Protection (LEP) effort (Joint Service)
Total	4885	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604801A Aviation - Engineering Development
	PROJECT DC45

FY 1997 Planned Program:

•	3714	Continue EMD for UH-60 CABS
•	898	Continue AIHS P^3I efforts in EMD
•	670	Complete EMD for the Advanced LEP (Joint Service)
•	121	Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	5403	

FY 1998 Planned Program:

•	5109	Initiate Air Warrior EMD with combined PDRR effort
Total	5109	

FY 1999 Planned Program:

•	6067	Continue Air Warrior EMD with combined PDRR effort
Total	6067	

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
Previous President's Budget	5002	5518	7596	6910
Appropriated Value	5142	5403		
Adjustments to Appropriated Value	-257			
Current Budget Submit/President's Budget	4885	5403	5109	6067

Change Summary Explanation: Funding: FY98 reduction due to execution difficulties (-1700)
FY98/99 also reduced for efficiencies (FY98 -787/FY99 -843).

C. Other Program Funding Summary	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, A BA 4 PE 0603801A Project DB45, ACIS - AD	9401	8913	2545	2460	0	0	2801	2817	Cont	Cont
Aircraft Procurement Army (APA) (ACIS) SSN AZ3110	7142	13280	12472	10003	8982	8920	23856	36827	Cont	Cont

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604801A Aviation - Engineering Development
	PROJECT DC45

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
AH-64 CABS																
Preliminary Design Review	X*															
Devel Verification Testing				X*												
UH-60 CABS																
Contract Award				X*												
Critical Design Review					X*											
Qualification Testing						X										
Development Test (DT)							X									
LRIP Decision								X								
AIHS P^3I																
Continue Head Tracker EMD	X*															
Conduct Demo on Static AH-64			X*													
Develop Breadboard Prototype				X*												
Continue Breadboard Prototype Dev					X*											
Airworthiness Test of Prototype						X										
Flight Test Breadboard on AH-64							X									
Advanced Laser Eye Protection (LEP)																
Initiate EMD Phase			X*													
Conceptual Design Review						X										
Preliminary Design Review							X									
Initiate Design Verification Testing								X								
Air Warrior																
Begin combined advanced development/EMD design testing										X						
Air Warrior Preliminary Design Review											X					
Air Warrior Critical Design Review												X				
Air Warrior prototype development initiated													X			
Air Warrior production component requirements evaluated														X		
Air Warrior prototype testing initiated															X	

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604801A Aviation - Engineering Development

PROJECT: DC45

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
Continue Air Warrior EMD/prototype development																X

*Denotes milestone completed

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604801A Aviation - Engineering Development

PROJECT: DC45

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Product Development Organizations	2536	3448	3746	4558
Support and Management Organizations	2109	1341	903	841
Test and Evaluation Organizations	240	493	460	668
SBIR/STTR	0	121	0	0
Total Project	4885	5403	5109	6067

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Perform Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
AH-64 CABS Simula - Phoenix, AZ	SS-CPFF	May 1994	2128	2128	1550	578					2128
UH-60 CABS Simula - Phoenix, AZ	SS-CPFF	May 1996	3994	3994		1734	2260				3994
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						3746	4558	Cont	Cont
Miscellaneous	SS/C-CPFF	thru FY 1996			9735	224					9959
SBIR/STTR							121				121

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604801A Aviation - Engineering Development

PROJECT: DC45

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Perform Activity EAC	Project Office EAC	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Support and Management Organizations											
Various Organizations	MIPR	Various			6474	2109	1341	903	841	Cont	Cont
Test and Evaluation Organizations											
Government Agencies	MIPR				2989	240	493	460	668	Cont	Cont
Subtotal Product Development					11285	2536	3569	3746	4558	Cont	Cont
Subtotal Support and Management					6474	2109	1341	903	841	Cont	Cont
Subtotal Test and Evaluation					2989	240	493	460	668	Cont	Cont
Total Project					20748	4885	5403	5109	6067	Cont	Cont

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	14845	23661	3577	24865	49143	45398	6979	11404	Continuing	Continuing
D134 Objective Individual Combat Weapon Engineering Development (OICW)	0	0	0	0	1777	1765	3744	4632	Continuing	Continuing
D284 Multipurpose Individual Munition	8172	13813	2922	18964	23212	11147	0	0	0	78230
D531 105mm Howitzer Ammunition Improvement	3432	5067	0	0	0	0	0	0	0	19838
D613 Mortar Systems	2768	0	0	0	10966	13225	0	0	0	46942
D695 XM982	0	0	655	5901	10729	16169	0	0	0	33454
D712 Non-Lethal Programs	0	3215	0	0	0	0	0	0	0	3215
DAS1 Small Arms Improvement	473	1566	0	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) combines base burn and rocket assisted technologies in an extended range 155mm artillery projectile. It will extend the range of the M198, M190A5, M190A6, 155mm Paladin and the Light Weight Howitzer to approximately 37 kilometers, with the Modular Artillery Charge System (MACS) in Crusader extending the range to 47 kilometers. 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. Projects within 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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D284

COST (*In Thousands*)	FY 1996 Actual	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
D284 Multipurpose Individual Munition	8172	13813	2922	18964	23212	11147	0	0	0	78230

A. Mission Description and Justification: Provides for an 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 Multiple 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 will replace the current AT4 system which was designed to defeat only light armor. 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 1996 Accomplishments:

•	1132	Preparation for Milestone II Decision
•	1003	Preparation of Model EMD contract (Alpha Acquisition)
•	2500	Awarded Phase I of EMD contract
•	610	Initiated warhead module design improvements
•	2057	Procured EMD Phase 1 missile hardware to support flight tests
•	270	Conducted survey missile test
•	340	Conducted wind tunnel test
•	260	Initiated simulation validation verification and analysis (VV&A)
Total	8172	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT D284

FY 1997 Planned Program:

•	1868	Continue Phase 1 EMD effort
•	750	Complete warhead module design improvements
•	3700	Initiate Phase 2 EMD contract
•	700	Complete simulation VV&A
•	1750	Conduct Phase 1 EMD flight tests and analysis
•	3000	Initiate procurement of missile hardware for pre-production test (PPT) flight tests
•	850	Initiate integrated logistics support (ILS), quality and environmental programs to support EMD
•	858	Finalize system level specification for preliminary design review (PDR)
•	337	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	13813	

FY 1998 Planned Program:

•	1216	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)
Total	2922	

FY 1999 Planned Program:

•	2806	Continue Phase 2 EMD effort
•	1722	Complete procurement of missile hardware for PPT flight tests
•	2700	Conduct PPT flight tests
•	620	Complete procurement of range support hardware for PPT flight tests
•	2320	Conduct grenade safe and arm (S&A) trade studies, analysis and tests
•	1520	Design and fabricate missiles for electromagnetic environmental effects (E3) analyses and tests
•	1720	Continue ILS, quality and environmental programs to support EMD
•	870	Prepare for critical design review (CDR)
•	4366	Initiate procurement of missile hardware for pre-production qualification testing (PPQT)
•	320	Conduct lethality analysis
Total	18964	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT D284

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	11973	14108	9353	17346
Appropriated Value	12309	13813		
Adjustments to Appropriated Value	-4137	0		
FY 1998 Pres Bud Request	8172	13813	2922	18964

Change Summary Explanation:

Funding: FY 96 - Project decremented for Army reprogramming to higher priority requirements.
FY 98 (-6431) reduction due to Army restructure of the MPIM/SRAW program to an incremental EMD.
FY 99 (+1618) increase due to Army restructure of the MPIM/SRAW program to an incremental EMD.

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 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Comp	Total Cost
PE 0603313A, Project D387	4907	625	0	0	0	0	0	0	0	5532
Missile Procurement, Army, SSN C09100 (Multi-Purpose Individual Munition)	0	0	0	0	0	5969	32195	27877	1051000	1117041

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
Preparation for Milestone II				X*												
Model EMD contract preparation				X*												
Award EMD Phase 1 contract				X*												
Complete telemetry missile flight tests									X							
Corporate/government Phase 1 reviews						X	X	X		X						
Award EMD Phase 2 contract											X					
Complete EUD tests												X				
Conduct PDR												X				
Complete PPT																X

X* Denotes completed effort

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D284

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Primary hardware development	4851	10549	0	14300
Program management support	2991	1827	2572	2578
SBIR/STTR	0	337	0	0
Developmental Test and Evaluation	330	1100	350	2086
Total	8172	13813	2922	18964

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 1996	FY 1996	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	0	4851	2149	0	0	0	7000
Lockheed-Martin (EMD phase 2)	SS/Cost sharing	Apr 98**	43100	43100	0	0	8400	0	14300	20400	43100
Support and Management Organizations											
PM CCAWS, RSA	PO				0	1150	813	1205	1237	3642	8047
MICOM, RSA, AL	PO				0	1483	776	659	794	3060	6772
Misc.	PO				0	358	238	708	547	3235	5086
SBIR/STTR							337				337
Test and Evaluation Organizations											
TECOM: APG	PO				0	330	1100	350	2086	3972	7838
Misc.	PO				0	0	0	0	0	50	50

**April 98 contract to be awarded using FY 1997 funds.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT D284

	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development		4851	10549		14300	20400	34700
Subtotal Support and Management		2991	2164	2572	2578	9937	15087
Subtotal Test and Evaluation		330	1100	350	2086	4022	6458
Total Project		8172	13813	2922	18964	34359	56245

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D531

COST (*In Thousands*)	FY 1996 Actual	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
D531 105mm Howitzer Ammunition Improvement	3432	5067	0	0	0	0	0	0	0	19838

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 1997 and will be sole sourced to the developer under fixed price contracts.

FY 1996 Accomplishments:

•	1688	Self destruct fuze contract
•	300	Projectile metal parts contract
•	1444	Engineering evaluation of performance
Total	3432	

FY 1997 Planned Program:

•	1700	Load, assembly and pack (LAP) of cartridge for development test and evaluation
•	1785	Conduct DT&E tests
•	1458	Test and evaluation management, engineering evaluation of performance
•	124	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	5067	

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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D531

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	3520	3076	0	0
Appropriated Value	3619	5067	0	0
Adjustments to Appropriated Value	-187	0		
FY 1998 Pres Bud Request	3432	5067	0	0

Change Summary Explanation: FY 97 (+1991) Congressional increase for continued development of the XM915/916 munition.

C. Other Program Funding Summary

	FY 1996	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	0	14172	0	0	0	0	0	0	0	14172

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 EMD testing						X										
Projectile metal parts contract			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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D531

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Program engineering and management support	1296	1458	0	0
SBIR/STTR	0	124		
Contract engineering support	1420	0	0	0
Test and evaluation support	716	3485	0	0
Total	3432	5067		

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
TACOM:ARDEC	ALLOT	Oct 92	5527	5527	4829	1296	1582	0	0	0	7707
Chamberlain: SAAP, Scranton	OPEN/CPIF	Sep 93	1100	1100	1244	270	0	0	0	0	1514
Amrom Corp.	OPEN/CPIF	Sep 93	590	590	858	0	0	0	0	0	858
KDI	OPEN/CPIF	Sep 93	3914	3914	4022	1150	0	0	0	0	5172
Olin	OPEN/FP	Sep 93	117	117	117	0	0	0	0	0	117
Norris Industries	OPEN/CPIF	Sep 93	371	371	371	0	0	0	0	0	371
Dayron Corp.	OPEN/CPIF	Sep 94	238	238	238	0	0	0	0	0	238
LSAAP	FP/ALLOT	Jul 94	1792	1792	988	0	1700	0	0	0	2688
Support and Management Organizations: None											
Test and Evaluation Organizations											
TECOM-YPG, AZ			3193	3193	663	716	1661	0	0	0	3040
SBIR/STTR							124				124
Subtotal Product Development					12667	2716	3282				
Subtotal Support and Management											
Subtotal Test and Evaluation					663	716	1785				
Total Project					13330	3432	5067				

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D613

COST (*In Thousands*)	FY 1996 Actual	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
D613 Mortar Systems	2768	0	0	0	10966	13225	0	0	0	46942

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 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. This project provides for the qualification of a full range training cartridge for the 120mm Battalion Mortar System. This cartridge provides a realistic training alternative at a lower cost than training with high explosive service ammunition. It also provides for the qualification of a mortar illumination round (conventional and infrared). Additional dollars were added in FY96 to fund Task Force XXI Advanced Warfighting Experiment on Mortar Fire Control. Starting in FY 2000, it provides for development of a digital Mortar Fire Control System (MFCS) which will reduce set up times by a factor of 8, while increasing accuracy. It will be compatible with the Advanced Field Artillery Tactical Data System (AFATDS) and fully integrate mortars into the fire support plan.

Acquisition Strategy: The full range training cartridge enters production with the developer as an option to the development contract in FY 96. Follow-on buys are competitive. The illumination round enters production in FY 97.

FY 1996 Accomplishments:

•	482	Program Manager in-house costs
•	332	Shell body producibility
•	1439	Task Force XXI demonstration support
•	116	Increment container process optimization
•	227	XM931 testing
•	48	Fin optimization/load, assembly and pack optimization
	124	XM930 test hardware fabrication
Total	2768	

FY 1997 Planned Program: Project not funded in FY 97

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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D613

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	1556	0	0	0
Appropriated Value	1600			
Adjustments to Appropriated Values	+1168			
FY 1998 Pres Bud Request	2768	0	0	0

Change Summary Explanation: Funding - FY 96 (+1168) increase to fund Task Force XXI Advanced Warfighting Experiment on Mortar Fire Control

C. Other Program Funding Summary

Procurement, Ammunition, Army:	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
SSN E25504, XM929	65812	34967	0	0	26266	26913	27793	24921	0	260039
SSN E25507, XM931	18244	50952	24432	32159	40124	41356	30154	21216	0	258637
SSN E25503, XM930	0	25975	0	0	0	0	0	0	0	32240
SSN E25501, XM934	0	0	29908	29888	22884	0	0	0	0	161042
Other Procurement, Army: K99200 (IMBC)	4827	6841	0	0	0	0	0	0	0	38649
Other Procurement, Army: K99300 (MFCS)	0	0	0	0	0	0	38003	38197	0	76860

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
Conduct DT/OT of the IMBC	X*															
Type classify (LP) the IMBC		X*														
Type Classify (standard) the IMBC						X										
Type classify XM930 Illumination round							X									
Type classify XM931 FRTC				X*												

*Completed milestone

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D613

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Product development	2059	0	0	0
Management /engineering support	482	0	0	0
Test and evaluation	227	0	0	0
Total	2768			

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Pocal industries, Moscow, PA	SS/CPIF	2Q95	3392	3392	3344	48		0	0	0	3392
Miltope: Hope Hull, AL	C/FP	1Q95	310	310	310	0	0	0	0	0	310
ARDEC	WR	2Q94	1124	1124	1124	1439	0	0	0	0	2563
MTA: Huntsville, AL	SS/FP	3Q94	351	351	351	0	0	0	0	0	351
Mitre: Tinton Falls, NJ	SS/FP	3Q94	78	78	78	0	0	0	0	0	78
ARDEC: M930	WR	3Q95	1252	1252	1252	0	0	0	0	0	1252
Pine Bluff Arsenal	WR	3Q95	576	576	576	124	0	0	0	0	700
Crane Army Depot	WR	3Q95	868	868	868	0	0	0	0	0	868
Diehl Gmbh: Ger	C/FP	3Q95	202	202	202	0	0	0	0	0	202
Martin Marietta	C/FP	3Q95	233	233	233	0	0	0	0	0	233
Chamberlain Mfg	SS/FP	3Q96	332	332	0	332	0	0	0	0	332
Ferrulmatic: NJ	C/FP	3Q95	560	560	560	0	0	0	0	0	560
ARMTEC Coacella,CA	SS/FP	3Q96	116	116	0	116	0	0	0	0	116

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D613

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
ARDEC: (IMBC)	WR	1Q95	1908	1908	1908	0	0	0	0		1908
ARDEC: (MFCS)	WR	1Q00	13156	13156	0	0	0	0	0	13156	13156
Support and Management Organizations											
PM Mortars	Allot	1Q94	1286	1286	804	482	0	0	0	0	1286
ARDEC	WR	1Q94	3100	3100	3100	0	0	0	0	0	3100
CECOM	WR	1Q94	76	76	76	0	0	0	0	0	76
Camber Corp., NJ	SS/FP	3Q94	413	413	413	0	0	0	0	0	413
SET: TN	SS/SP	3Q94	120	120	120	0	0	0	0	0	120
PM Mtrs: IMBC	Allot	1Q95	119	119	119	0	0	0	0	0	119
ARDEC	WR	1Q95	63	63	63	0	0	0	0	0	63
ACALA	WR	1Q95	135	135	135	0	0	0	0	0	135
ARDEC: M931	WR	3Q95	3041	3041	3041	0	0	0	0	0	3041
ARDEC: (MFCS)	WR	1Q00	6765	6765	0	0	0	0	0	6765	6765
Test and Evaluation Organizations											
TECOM, WSMR, NM	WR	2Q95	130	130	130	0	0	0	0	0	130
CSTA: APG	WR	2Q95	140	140	140	0	0	0	0	0	140
WSMR: IMBC	WR	2Q95	153	153	153	0	0	0	0	0	153
WSMR: (MFCS)	WR	1Q00	4270	4270	0	0	0	0	0	4270	4270
TEXCOM Fld Spt Acty, Ft. Hood	WR	4Q95	8	8	8	0	0	0	0	0	8
CSTA: APG (M931)	WR	4Q95	987	987	760	227	0	0	0	0	987
AMSAA: APG	WR	3Q95	75	75	75	0	0	0	0	0	75
WES: Vicksburg, MS	WR	4Q95	40	40	40	0	0	0	0	0	40

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT D613

Government Furnished Property: None

	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	10806	2059				13156	26021
Subtotal Support and Management	7871	482				6765	15118
Subtotal Test and Evaluation	1306	227				4270	5803
Total Project	19983	2768				24191	46942

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT D695

COST (*In Thousands*)	FY 1996 Actual	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
D695 XM982	0	0	655	5901	10729	16169	0	0	0	33454

A. Mission Description and Justification: The XM982 is an extended range Dual Purpose Improved Conventional Munition (DPICM) projectile which combines base burn and rocket assisted technologies in 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 Light Weight Howitzer to approximately 37 kilometers. The XM982 with the Modular Artillery Charge System (MACS) extends the Crusader range to 47 kilometers. Survivability is increased by allowing greater stand-off from threats and faster defeat of potential threats.

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. Production will be performed by the EMD contractor. The EMD contract will include unpriced options.

FY 1996 Accomplishments: Project not funded in FY 96

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program:

•	545	Government support for engineering: Integrated Product Team (IPT), contract solicitation, engineering support for development testing.
•	110	Program management: technical evaluation; program execution
Total	655	

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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D695

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	0	0	0
Appropriated Value	0	0		
Adjustments to Appropriated Value	0	0		
FY 1998 Pres Bud Request	0	0	655	5901

Change Summary Explanation: Funding: FY 1998: This program is a new start in EMD as it transitions from the technology base.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Procurement, Ammunition, Army, SSN E80100										
Proj, Arty, 155mm XM982	0	0	0	0	0	0	16753	24979	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
Milestone II										X						
Award initial EMD contract													X			
Milestone III: 4Q FY 2002																

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development
	PROJECT D695

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Contractor Engineering Support	0	0	0	4081
Government Engineering Support	0	0	545	1390
Program Management Support	0	0	110	110
Developmental Test and Evaluation	0	0	0	320
Total			655	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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
TBD	C/CPIF	1Q99	TBD	TBD	0	0	0		4081	16816	20897
Support and Management Organizations											
ARDEC-Picatinny								545	960	4002	5507
PM SADARM					0	0	0	110	110	390	610
Test and Evaluation Organizations											
TECOM					0	0	0	0	750	5690	6440

Government Furnished Property: None

Subtotal Product Development		4081	16816	20897
Subtotal Support and Management	655	1070	4392	6117
Subtotal Test and Evaluation		750	5690	6440
Total Project	655	5901	26898	33454

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D712

COST (*In Thousands*)	FY 1996 Actual	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
D712 Non-Lethal Programs	0	3215	0	0	0	0	0	0	0	3215

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 1996 Accomplishments: No FY 1996 program

FY 1997 Planned Program:

- 1985 Acoustics: Initiate integration of initial health hazard assessment into acoustic source design configuration and propagation measurement, for demonstration tests and potential weapon /platform applications
- 690 Kinetics: Initial validation test of health hazard (target) assessment model (HHTAM) for blunt impact munitions. Functional purchase description development for urgent release items. Safety test and evaluation of kinetic systems in support of dismounted battlespace battle lab's warfighting experiments
- 365 Entanglements: Conduct safety and performance testing of gun-fired 40mm ballistically deployed entanglement munition with integrated fuze
- 97 Vehicle stopper: Complete commercial off-the-shelf (COTS) electric discharge vehicle stopper performance evaluation
- 78 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs

Total 3215

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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D712

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	3284	1064	0
Appropriated Value	0	3215		
Adjustments to Appropriated Value	0	0		
FY 1998 Pres Bud Request	0	3215	0	0

Change summary explanation: Funding - FY 1998 (-1064) funds transferred to the Marine Corps, executive agent for non-lethal warfare. Marine Corps will continue the R&D effort.

C. Other Program Funding Summary: Not applicable.

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
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				

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: D712

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Product development	0	3137	0	0
SBIR/STTR		78		
Management and engineering support	0	0	0	0
Test and evaluation	0	0	0	0
Total		3215		

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
ARDEC: NJ	CPFF	2Q/3Q97	3040	3040	0	0	3040	0	0	0	3040
ARL: MD	NA	2Q97	175	175	0	0	175	0	0	0	175
Support and Management Organizations: None											
Test and Evaluation Organizations: None											
Government Furnished Property: Not applicable											
Subtotal Product Development							3215				3215
Subtotal Support and Management											
Subtotal Test and Evaluation											
Total Project							3215				3215

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: DAS1

COST (*In Thousands*)	FY 1996 Actual	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
DAS1 Small Arms Improvement	473	1566	0	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-7.62mm), 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 Quick Change Barrel (QCB) kit, mounting surfaces, and trigger safety. Improvements to the MK19-3 GMG include a universal mounting bracket that provides a common mounting interface for various fire control devices. The current rear sight lacks sufficient structural integrity to mount such devices, including night vision equipment. Funding is sufficient to complete development, testing, and modification of the MK19-3 Grenade Machine Gun technical data package (TDP) and type classification (TC) of the QCB.

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 a MK19-3 modification effort. Several non-developmental item (NDI) solutions exist for the caliber .50 QCB. The strategy will employ full and open competition, production qualification and operational testing leading to TC standard.

FY 1996 Planned Program:

•	101	Drafted performance specifications
•	50	Purchased commercial hardware
•	237	Performed validation testing
•	85	Finalized performance specifications
Total	473	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT DAS1

FY 1997 Planned Program:

•	86	Solicit competitive hardware
•	588	Conduct technical evaluation
•	157	Award hardware contract
•	362	Production qualification
•	185	Operational test
•	150	Type classification
•	38	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	1566	

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	486	0	0	0
Appropriated Value	500	1566		
Adjustments to Appropriated Value	-27	0		
FY 1998 Pres Bud Request	473	1566	0	0

Summary Change Explanation: Funding - FY 97 (+1566) Congressional increase to support MK 19 modifications.

C. Other Program Funding Summary: Not applicable.

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
Draft performance specifications		X*														
Purchase commercial hardware				X												
Perform validation tests							X									
Finalize performance specs (brackets)							X									
Solicit competitive hardware (QCB)						X										
Conduct technical evaluation (QCB)								X								

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604802A Weapons and Munitions - Engineering Development PROJECT DAS1

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
Award hardware contract (QCB)									X							
Production qualification test (QCB)										X						
Operational test (QCB)											X					
Type classification (QCB)												X				

* Milestone completed

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604802A Weapons and Munitions - Engineering Development

PROJECT: DAS1

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Other government support	423	1300	0	0
SBIR/STTR		38		
Program management support	50	228	0	0
Total	473	1566		

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
ARDEC	MIPR	2Q97	731	731	0	363	731	0	0	CONT	1094
Support and Management Organizations											
PM, Small Arms	MIPR	Multiple	228	228	0	50	198	0	0	CONT	248
ACALA	MIPR	3Q97	45	45	0	10	37	0	0	CONT	47
SBIR/STTR							38				38
Test and Evaluation Organizations											
Aberdeen Test Center	MIPR	3Q97	390	390	0	50	390	0	0	CONT	440
TEXCOM	MIPR	1Q98	100	100	0	0	100			CONT	100
Contractor	FFP	1Q98	72	72	0	0	72	0	0	CONT	72

Government Furnished Property: None

Subtotal Product Development	473	1566		2039
Subtotal Support and Management				
Subtotal Test and Evaluation				
Total Project	473	1566		2039

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	19132	19903	28039	26932	24393	16598	28730	31681	Continuing	Continuing
DH01 Combat Engineer Equipment Engineering Development	9901	9433	8566	7617	2621	1053	1551	11652	Continuing	Continuing
DH02 Bridge Site Mobility	0	0	0	0	0	0	5077	0	0	5100
DH14 Logistics Support Equipment Engineering Development	579	86	4829	100	105	102	103	101	Continuing	Continuing
DL39 General Support Equipment Engineering Development	1319	1641	2286	2589	2247	2187	4688	4238	Continuing	Continuing
DL41 Fuels and Equipment Engineering Development	1135	1011	1071	1081	1057	1052	1306	1314	Continuing	Continuing
DL42 Camouflage System Engineering Development	734	942	896	843	405	397	345	361	Continuing	Continuing
DL43 Engineering Development	0	0	0	1114	2802	2499	4335	2830	Continuing	Continuing
DL44 Distribution System, 105kW	0	0	0	0	0	0	805	0	0	800
D194 Engine Driven Generators Engineering Development	1423	2183	7534	9015	8184	5290	2244	1417	Continuing	Continuing
D279 Airdrop Equipment Engineering Development	1416	1414	1359	1354	1380	1371	4864	4701	Continuing	Continuing
D429 Rigid Wall Shelter Engineering Development	2296	3193	1498	1024	1159	1152	2157	2166	Continuing	Continuing
D461 Marine Oriented Logistics Equipment Engineering Development	329	0	0	2195	4433	1495	1255	2901	Continuing	Continuing

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY **5 - Engineering and Manufacturing Development**	PE NUMBER AND TITLE **0604804A Logistics & Engineer Equipment - Engineering Development**

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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DH01

COST (*In Thousands*)	FY 1996 Actual	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
DH01 Combat Engineer Equipment Engineering Development	9901	9433	8566	7617	2621	1053	1551	11652	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, and the Heavy Dry Support Bridge (HDSB). All bridging work is in support of the increased military load class (MLC) requirements for the Abrams tank. This project also provides for the non-developmental item (NDI) acquisition of the Deployable Universal Combat Earthmover (DEUCE) and market investigations of other engineer construction equipment.

Acquisition Strategy: CBT - Competitive RDTE followed by downselect for procurement. HDSB - Competitive RDTE followed by downselect for procurement. DEUCE - Competitive procurement of integrated NDI.

FY 1996 Accomplishments:

- 400 Conducted Source Selection for HDSB
- 280 Conducted Milestone II Review for HDSB
- 7446 Awarded two HDSB Engineering Manufacturing Development (EMD) contracts
- 190 Initiated IRB technical and configuration baseline
- 400 Conducted Milestone III for CBT
- 674 Completed preproduction qualification test for DEUCE
- 41 Conducted Milestone III IPR for DEUCE
- 72 Conducted market investigation for construction equipment
- 119 Developed armored DEUCE Cab
- 279 Completed Logistics Development for the DEUCE

Total 9901

FY 1997 Planned Program:

- 7539 Fabricate HDSB EMD prototypes
- 274 Prepare for Contractor Testing of HDSB EMD prototype
- 274 Prepare for award of IRB bays RDTE contract
- 1024 Initiate development and upgrade of IRB bays

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development
	PROJECT DH01

FY 1997 Planned Program: (continued)

•	92	Conduct market investigation for construction equipment
•	230	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program
Total	9433	

FY 1998 Planned Program:

•	6471	Continue fabrication of HDSB prototypes
•	541	Prepare for contractor testing of the HDSB
•	655	Contractor testing of Bridge prototypes for the HDSB
•	317	Fabricate IRB prototypes
•	215	Prepare for testing of IRB prototypes
•	367	Conduct market investigation for construction equipment
Total	8566	

FY 1999 Planned Program:

•	2094	Continue fabrication of HDSB Launcher prototypes
•	923	Continue contractor testing of Bridge prototypes for the HDSB
•	3206	Initiate pre-production qualification test for HDSB
•	1026	Test IRB prototypes
•	368	Conduct market investigation for construction equipment
Total	7617	

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	9425	9635	7737	4614
Appropriated Value	9691	9433		
Adjustment to Appropriated Value	+210			
FY 1998 Pres Bud Request	9901	9433	8566	7617

Change Summary Explanation:

Funding: FY 1998 funding was increased (+829k) due to expected higher HDSB fabrication costs.

FY 1999 funding was increased (+3003k) due to the requirement for a pre-production qualification test for the HDSB.

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DH01

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0603804.DG01, Combat Engineer Equipment, Advanced Development							940	1415	Cont	Cont
OPA3, G82400, Heavy Dry Support Bridge							944	1415	Cont	Cont
OPA3, M26800, Bridge, Float-Ribbon, Transporter	3709	4296	4200	4303	4315	4321	9239	9554	Cont	Cont
OPA3, M26600, Bridge, Float-Ribbon, Interior Bays					3143	3735	8332	12820	Cont	Cont
OPA3, M26700, Bridge, Float-Ribbon, Ramp Bays					1346	2124	2381	5069	Cont	Cont
OPA3, M06105, Deployable Universal Combat Earthmover	9522	7701	8885	9508	9342	7410	10317	9376	Cont	Cont
OPA3,GA1100, Line of Communications Bridge							5681	1796	Cont	Cont
OPA3, M27200 Float Bridge Propulsion							2083	4770	Cont	Cont
OPA3, GA1200 Bridge Site Mobility								4341	Cont	Cont
OPA3, Various Construction Equipment Items	21329	67249	24682	65422	71921	77645	67138	83148	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
Conduct PQT for DEUCE		X*														
Conduct Milestone III IPR for DEUCE				X*												
Conduct Milestone II Review for HDSB				X*												
Award HDSB EMD contract				X*												
Fabricate HDSB EMD Prototypes							X									
Conduct Milestone III Review for CBT									X*							
Release Request for Proposal for IRB Bays						X*										
Award IRB bays contract						X										
Upgrade IRB Prototypes							X									
Conduct PPQT for IRB												X				
Conduct Construction Equipment Market Investigation				X*				X				X				X

*Milestone completed

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DH01

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
DH01 DEUCE & Construction Equipment				
Program Management Support	41			
Integrated Logistics Support (ILS)	279			
Prototype Hardware Development	119			
Developmental and Operational Testing	666			
Construction Equip Market Investigations	72	92	368	366
Miscellaneous	8			
DH01 BRIDGING (HDSB, CBT & IRB)				
Primary Hardware Development	7000	8563	6786	2097
Developmental Test and Evaluation	210	50	728	4138
Program Management Support (three programs)	1506	498	638	864
Miscellaneous			46	152
SBIR/STTR		230		
Total	9901	9433	8566	7617

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Caterpillar, Inc.	FFP	Jul 95	2776	2776	2776	119					2895
Williams Fairley Eng Ltd/ Karlskronavarvet	C-CPFF	Aug 96	24684			7000	7539	7126	3019	Cont	24684
Contractor TBD	C-CPFF	Mar 97					1024	315		0	1339
TARDEC					2447	72	92	368	366	Cont	3345
Support and Management Organizations None											

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

DATE: February 1997

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Test and Evaluation Organizations											
TECOM	1095	Various			632	876	50	73	3216	Cont	4847
Miscellaneous											
TACOM	1095	Various			638	1834	498	684	1016	Cont	4670
SBIR/STTR							230				230
Subtotal Product Development					5223	7191	8655	7809	3385		32263
Subtotal Support and Management											
Subtotal Test and Evaluation					634	876	50	73	3216	Cont	Cont
Miscellaneous					638	1834	728	684	1016	Cont	Cont
Total Project					6493	9901	9433	8566	7617		41823

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DH14

COST (*In Thousands*)	FY 1996 Actual	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
DH14 Logistics Support Equipment Engineering Development	579	86	4829	100	105	102	103	101	Continuing	Continuing

A. Mission Description and Justification: Develops and transitions to procurement a series of Material Handling Equipment (MHE) items.

Acquisition Strategy: All Terrain Lifter Articulated System (ATLAS) - Competitive procurement of integrated NDI. Cargo Container Retriever (CCR) - Pre-Planned Product Improvements (P3I) to ATLAS. MHE - Competitive procurements for miscellaneous MHE.

FY 1996 Accomplishments:

- 350 Completed preproduction qualification testing of the ATLAS
- 150 Completed ATLAS logistics development
- 79 Conducted market investigations for MHE.

Total 579

FY 1997 Planned Program:

- 25 Conduct market investigations for the Container Cargo Retriever
- 25 Conduct market investigations for warehouse MHE
- 34 Conduct market investigations for other general MHE
- 2 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program

Total 86

FY 1998 Planned Program:

- 82 Conduct Market investigations for Light Weight Container Handling Equipment.
- 500 Provide engineering support for development of technical data package (TDP) for Rough Terrain Container Handler (RTCH).
- 1000 Provide test support for development of TDP for RTCH.
- 3000 Procure test hardware/software for development of TDP for RTCH.
- 50 Prepare for award of FY 99 production contract for Rough Terrain Container Crane (RTCC).
- 25 Conduct Milestone III IPR for RTCC.
- 172 Using best value approach, conduct paper downselect for RTCC.

Total 4829

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development
	PROJECT DH14

FY 1999 Planned Program:

- 30 Development of performance specifications for MHE.
- 30 Conduct market investigations for warehouse MHE.
- 40 Conduct market investigations for other general MHE.

Total 100

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	1324	88	88	88
Appropriated Value	1362	86		
Adjustments to Appropriated Value	-783			
FY 1998 Pres Bud Request	579	86	4829	100

Change Summary Explanation:

Funding: FY 1996 funding decreased (-713) due to changed Type Classification (TC) strategy for the ATLAS and funds were reprogrammed to other RDTE projects requiring additional RDTE funding and (-32) for undistributed Congressional reductions and rescissions.
FY 1998 funding was increased (+4741) to allow RDTE efforts for the RTCH and the RTCC.

C. Other Program Funding Summary	FY 1996	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	92	86	96	98	105	101	103	100	Cont	Cont
OPA3, M41800, All Terrain Lifting Articulating System	13640	15941	3554	10498	10505	10510	19930	23851	Cont	Cont
OPA3, MA8600, Items Less Than $2.0M (MHE)	27543	2664	1724	1715	1854	1843	1984	1988	Cont	Cont
OPA3, M41200, Forklift, DE, PT, RT, 50,000 lbs	10587			24396	35774	50181	16863	16894	Cont	Cont
OPA3, X00900, Rough Terrain Container Crane				13844	11433	8813				34090

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
Prototype delivery (ATLAS)		X*														
Production Qualification Test (PQT)		X*														
Initiated (ATLAS)																

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DH14

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
Type Classification Generic (ATLAS)				X*												
1st Production Quality call up (ATLAS)				X*												
Conduct Market Investigations for MHE				X*				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 Sole Source Evaluation Board												X				
Paper Downselect for RTCC																
Conduct Market Investigation for Light Weight 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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DH14

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Government Engineering and Other Support	100		300	
Primary Hardware Development			3000	
Developmental Test and Evaluation	350		1000	
Program Management Support	50		450	
Miscellaneous	79	84	79	100
SBIR/STTR		2		
Total	579	86	4829	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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
TRAC	CPFF	May 95	1541	1541	1541						1541
International RTCH Contractors TBD	CPFF	Dec 97						3000			3000
Support and Management Organizations: None											
Test and Evaluation Organizations: None											
Miscellaneous:											
TARDEC	MIPR	Various			1270	100	84	300	100	Cont	Cont
PM CE/MHE	PO	Various			388	129		450		Cont	Cont
TECOM	MIPR	Various			670	350		1000		Cont	Cont
SBIR/STTR							2				

Government Furnished Property : None

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DH14

	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	1541			3000		Cont	Cont
Subtotal Support and Management						Cont	Cont
Subtotal Test and Evaluation						Cont	Cont
Miscellaneous	2328	579	86	1829	100	Cont	Cont
Total Project	3869	579	86	4829	100	Cont	Cont

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DL39

COST (*In Thousands*)	FY 1996 Actual	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
DL39 General Support Equipment Engineering Development	1319	1641	2286	2589	2247	2187	4688	4238	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 1996 Accomplishments:

•	86	Conducted tests on 36K British Thermal Units per Hour (BTUH) Environmental Control Units (ECU) prototypes.
•	150	Conducted Milestone I/II in process review for 1500 gallons per hour (GPH) Reverse Osmosis Water Purification Unit (ROWPU).
•	279	Completed trade off analysis of subsystems for 1500 GPH ROWPU.
•	504	Designed and fabricated integrated Test Bed Unit.
•	300	Initiated contract package for design/fabrication of 1500 GPH ROWPU engineering and manufacturing development (EMD) prototypes.
Total	1319	

FY 1997 Planned Program:

•	164	Prepare data package for improved ECU procurement.
•	470	Perform technical feasibility testing of Integrated Test Bed Unit.
•	200	Update program management documentation for 1500 GPH ROWPU program.
•	768	Award contract for fabrication of EMD 1500 GPH ROWPU.
•	39	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program
Total	1641	

FY 1998 Planned Program:

•	1400	Design and fabricate EMD prototype 1500 GPH ROWPU.
•	435	Prepare production qualification test (PQT) and initial operational test and evaluation (IOTE) test plan for the 1500 GPH ROWPU.
•	451	Complete tests on 18K ECU prototype.
Total	2286	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development
	PROJECT DL39

FY 1999 Planned Program:

•	450	Complete fabrication of 1500 GPH ROWPU prototypes.
•	1200	Conduct PQT and IOT&E on the 1500 GPH ROWPU.
•	380	Update Program Management Documentation (PMD) for 1500 GPH ROWPU.
•	100	Develop purchase description for 18K ECU.
•	150	Develop purchase description for large diesel heaters (250K+ BTUH).
•	309	Complete testing of large heater prototypes.
Total	2589	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	1603	1677	2136	2356
Appropriated Value	1649	1641		
Adjustments to Appropriated Value	-330			
FY 1998 Pres Bud Request	1319	1641	2286	2589

Change Summary Explanation:

Funding: FY 1996 funding was decreased (-246) due to reprogramming to higher Army priority RDTE projects and (-38) for undistributed Congressional reductions and rescissions.

C. Other Program Funding Summary

	FY 1996	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	707	851	1689	1809	1980	2103	2424	2431	Cont	Cont
OPA 3, MF9300, Air Conditioners, Various Sizes	3083	1461	1468	4770	4637	4712	1438	1988	Cont	Cont
OPA 3, MA7600, Items Less Than $2.0M (Water Equipment)	2584	2968	2862	6464	9098	8505	5654	4391	Cont	Cont
OPA 3, R05100, Water Purifier Unit Reverse Osmosis 3000 GPH				28345	28490	33283	19554	10628	Cont	Cont
OPA 3, R05200, Water Purifier Unit Reverse Osmosis 1500 GPH								5963	Cont	Cont
OPA 3, M27400, Tactical Water Distribution System					5116	5073	4365	0	Cont	Cont

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development PROJECT DL39

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
Conduct tests on 36K British Thermal Units per Hour (BTUH) Environmental Control Units (ECU) prototypes				X*												
Conduct Milestone I/II In Process Review for 1500 GPH ROWPU		X*														
Complete trade-off analysis of subsystem for 1500 GPH ROWPU			X*													
Initiate contract package for design/ fabrication of 1500 GPH ROWPU EMD prototypes			X*													
Award 1500 GPH ROWPU EMD prototype contract							X									
Update Program Management Documentation								X								
Initiate design and fabrication of the prototype 1500 GPH ROWPU									X							
Prepare PQT and IOT&E test plans for 1500 GPH ROWPU											X					
Complete 18K ECU tests												X				
Complete fabrication of 1500 GPH ROWPU prototypes													X			
Conduct PQT and IOT&E for 1500 GPH ROWPU														X		
Update PMD 1500 GPH ROWPU																X
Develop 18K ECU purchase description															X	
Develop large diesel heater purchase description/complete tests															X	

*Milestone completed

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DL39

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Hardware Development	806	831	1325	1295
Operational Test and Evaluation				
Development Test and Evaluation	86	450	500	855
Government Engineering and Support	325	261	331	265
Government Program Support	50	60	100	103
Miscellaneous	52		30	71
SBIR/STTR		39		
Total	1319	1641	2286	2589

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 1996	FY 1996	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	In-House	Various			970	643	350	435	510	Cont	Cont
CECOM	In-House	Various				86	71	123	191	Cont	Cont
Radian	Task Order	Various			25		100			Cont	Cont
CRREL	MIPR	Various			75	20	20	10	25	Cont	Cont
Dugway PG	MIPR	Various			25	30	50		10	Cont	Cont
BRTRC	Task Order	Various			170	24	100	50	150	Cont	Cont
ARL	MIPR	Various			25	15	50	10	25	Cont	Cont
ATCOM	MIPR	Various			55	15	50	10	25	Cont	Cont
Vitro Inc.	Task Order	Various			83	36	50			Cont	Cont
NSF	MIPR	Jan 95			85					Cont	Cont
USBR	MIPR	Feb 95			30					Cont	Cont

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DL39

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
CECOM	MIPR	Various						100	100	Cont	Cont
CHIPPM	MIPR	Various			12	50		10	25	Cont	Cont
NFESC	MIPR	Various				400	200	250	250	Cont	Cont
TECOM	MIPR	Various					50	325	650	Cont	Cont
Dugway PG	MIPR						50		10		60
Contractor (TBD)	CPFF	Dec 96					461	800	400	Cont	Cont
Contractor (TBD)	CPFF	Various						163	208	Cont	Cont
MTMC	MIPR	Various							10	Cont	Cont
SBIR/STTR							39				Cont
Government Furnished Property - None											
Subtotal Product Development											
Subtotal Support and Management											
Subtotal Test and Evaluation											
Subtotal Miscellaneous					1555	1319	1641	2286	2589	Cont	Cont
Total Project					1555	1319	1641	2286	2589	Cont	Cont

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DL41

COST (In Thousands)	FY 1996 Actual	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
DL41 Fuels and Equipment Engineering Development	1135	1011	1071	1081	1057	1052	1306	1314	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 1996 Accomplishments:

•	495	Completed Phase II PPQT, logistics demonstration, and physical configuration audit for Lightweight Arctic Forward Area Refueling (LAFARE).
•	100	Conducted Milestone III - type classification for LAFARE.
•	430	Performed market investigation and tested improved Tactical Fuel Storage and Distribution System (TFSD) candidate items.
•	60	Prepared statement of work and specifications for design and testing of TFSD components.
•	50	Continued long term exposure testing of tank fabrics.
Total	1135	

FY 1997 Planned Program:

•	35	Award TFSD design contract.
•	667	Design and fabricate TFSD initial prototypes.
•	150	Initiate TFSD component testing.
•	85	Procure long lead items for petroleum quality analysis set (PQAS) EMD prototypes.
•	50	Continue long term exposure testing of tank fabrics.
•	24	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program
Total	1011	

FY 1998 Planned Program:

•	150	Prepare contract package for PQAS EMD contract.
•	70	Administer source selection process for PQAS.
•	230	Develop PQAS specification.
•	421	Continue fabrication, assembly and testing TFSD components.
•	200	Continue long term exposure and durability testing of tank fabrics.
Total	1071	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development
	PROJECT DL41

FY 1999 Planned Program:

- 1022 Award and administer PQAS EMD contract for design, fabrication and test system prototype.
- 59 Complete specification for TFSD components.

Total 1081

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	1187	1033	1155	1177
Appropriated Value	1220	1011		
Adjustments to Appropriated Value	-85			
FY 1998 Pres Bud Request	1135	1011	1071	1081

C. Other Program Funding Summary

	FY 1996	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	864	872	859	824	899	892	944	946	Cont	Cont
OPA 3, MA7400, Items Less Than $2.0M (POL)	4554	6442	6275	5914	6991	6883	7981	7886	Cont	Cont
OPA 3, M60300 Fuel System Supply Point				559	1923	2170	3806	5355	Cont	Cont
OPA 3, R21800 Forward Area Refuel System, Aviation				2743	2340	2371	3877	3884	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 Phase II PPQT and logistic demonstration for LAFARE		X*														
Complete market investigation of TFSD components		X*														
Complete physical configuration audit of LAFARE TDP			X*													
Conduct Milestone III IPR for LAFARE				X*												
Award TFSD competitive design contract							X									

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DL41

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
Procure long lead items for PQAS EMD prototypes							X									
Prepare contract package for PQAS EMD											X					
Administer source selection process												X				
Develop PQAS specification											X					
Award PQAS EMD contract														X		
Complete TFSD component specifications														X		

*Milestone completed

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DL41

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Hardware Development	613	421	301	751
Test and Evaluation	103	46	230	80
Government Engineering and Support	346	470	450	160
Government Program Support	73	50	90	90
SBIR/STTR		24		
Total	1135	1011	1071	1081

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations -TARDEC											
Support and Management Organizations - ARL, Navy, ATCOM											
Test and Evaluation Organizations - TECOM, TEXCOM											
Miscellaneous:											
TARDEC	In-House	Various			242	298	500	450	311	Cont	Cont
Contractors	Various	Various			2566	529	437	446	720	Cont	Cont
TECOM	MIPR	9702			24	113	40	50	30	Cont	Cont
TEXCOM	MIPR	9402			20	10	10			Cont	Cont
ARL	MIPR	9602				25		25	20	Cont	Cont
Navy	MIPR	9701				160		100		Cont	Cont
SBIR/STTR							24				Cont
Government Furnished Property - None											
Subtotal Miscellaneous					2852	1135	1011	1071	1081	Cont	Cont
Total Project					1428	1135	1011	1071	1081	Cont	Cont

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DL42

COST (*In Thousands*)	FY 1996 Actual	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
DL42 Camouflage System Engineering Development	734	942	896	843	405	397	345	361	Continuing	Continuing

A. **Mission Description and Justification:** Project DL42, which was restructured in FY 96 from DH01, 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 1996 Accomplishments:

•	734	Conducted production prove-out testing for desert Ultralightweight Camouflage Screening System (ULCANS).
Total	734	

FY 1997 Planned Program:

•	539	Develop desert ULCANS.
•	380	Develop urban ULCANS for Military Operations in Urban Terrain (MOUT) Advanced Concept Technology Demonstration (ACTD).
•	23	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program
Total	942	

FY 1998 Planned Program:

•	534	Continue development of ULCANS.
•	250	Demonstrate urban ULCANS for MOUT ACTD.
•	112	Incorporate desert ULCANS
Total	896	

FY 1999 Planned Program:

•	400	Develop hyperspectral signature enhancements in ULCANS.
•	329	Develop multispectral camouflage system (MSCS) - mobile equipment.
•	114	Incorporate arctic and urban ULCANS.
Total	843	

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DL42

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	1255	962	962	959
Appropriated Value	1290	942		
Adjustments to Appropriated Value	-556			
FY 1998 Pres Bud Request	734	942	896	843

Change Summary Explanation:

Funding: FY 1996 funding reduction (-493) was reprogrammed to higher Army priority RDTE projects and (-28) to pay undistributed Congressional reductions and rescissions. Reduction in FY 1998 (-66) and FY 1999 (-116) funding was also realigned to higher Army priority RDTE projects (-130).

Schedule: Delayed ULCANS program by three quarters.

C. Other Program Funding Summary

	FY 1996	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 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Desert ULCANS P3I Milestone Decision Review (MDR)											X					
Arctic ULCANS P3I MDR															X	
Urban ULCANS P3I MDR																X

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DL42

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Government Engineering Support	294	379	400	400
Contractor Engineering Support	150	340	284	229
Developmental Test and Evaluation	250	150	150	150
Travel	40	30	30	30
Miscellaneous		20	32	34
SBIR/STTR		23		
Total	734	942	896	843

B. Budget Acquisition History and Planning Information: None

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DL43

COST (*In Thousands*)	FY 1996 Actual	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
DL43 Engineering Development	0	0	0	1114	2802	2499	4335	2830	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 1996 Accomplishments: Project not funded in FY 96

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program:

- 400 Develop performance specifications for multiple Engineer Support Equipment (ESE).
- 500 Conduct market investigation for multiple ESE items.
- 214 Conduct market investigation testing for multiple ESE items.

Total 1114

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	0	0	0
Appropriated Value				
Adjustments to Appropriated Value				
FY 1998 Pres Bud Request	0	0	0	1114

Change Summary Explanation: Project is a new start in FY 1999 and was therefore increased (+1114).

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

DATE: February 1997

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 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA 3, M15800, Truck, Firefighting, Multipurpose				2137	4354	4485	4707	3244	Cont	Cont
OPA 3, M56400, Generator Set, DE, 750kW							3187	3287	Cont	Cont
OPA 3, M59100, Distribution System, 150kW							2990	3084	Cont	Cont
OPA 3, M72100, Floodlight Set, Electric, Trailer Mounted				1994	1993	1993	4045	4212	Cont	Cont
OPA 3, MA8050, Items Less than $2.0M (CSS Equipment)	4620	1152	1180	3891	3039	4336	13516	13288	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
Conduct market investigation															X	
Conduct pre-production testing															X	
Develop performance specifications																X

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: DL43

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Developmental Test and Evaluation				200
Performance Specification Development				400
Market Investigations				514
Total				1114

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 1996	FY 1996	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							914	Cont	Cont
TECOM	MIPR	Various							200	Cont	Cont
Subtotal Product Development											
Subtotal Support and Management											
Subtotal Test and Evaluation											
Subtotal Miscellaneous									1114	Cont	Cont
Total Project									1114	Cont	Cont

Government Furnished Property: None

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D194

COST (*In Thousands*)	FY 1996 Actual	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
D194 Engine Driven Generators Engineering Development	1423	2183	7534	9015	8184	5290	2244	1417	Continuing	Continuing

A. **Mission Description and 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 and reduced thermal signatures.

Acquisition Strategy: Develop and transition to competitive procurement all items in this project.

FY 1996 Accomplishments:

•	261	Began fabrication of 5kW 28 Volt Direct Current (VDC) Auxiliary Power Unit (APU) Pre-Production Qualification Test (PPQT) models.
•	245	Began testing of 5kW 28VDC APU PPQT models.
•	267	Completed fabrication of 5kW 28VDC APU PPQT models.
•	650	Awarded competitive contracts for design and prototype development of 3kW Tactical Quiet Generator (TQG).
Total	1423	

FY 1997 Planned Program:

•	130	Complete testing of 5kW 28VDC APU PPQT models.
•	129	Complete preparation of formal program review of 5kW 28VDC APU.
•	1568	Continue development of 3kW TQG sets.
•	311	Evaluate designs for lightweight 3kW TQG sets from competitive contract.
•	45	Small Business Innovation Research/Small business Technology Transfer (SBIR/STTR) Program
Total	2183	

FY 1998 Planned Program:

•	2400	Continue hardware development for 3kW TQG
•	2100	Test and evaluation for the 3kW TQG
•	759	Develop logistics data for the 3kW TQG
•	1900	Initiate hardware development for Prime Power System (PPS)
•	375	Initiate 100 & 200kW Utility Set Program
Total	7534	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development PROJECT D194

FY 1999 Planned Program:

•	400	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	9015	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	812	2230	269	286
Appropriated Value	833	2183		
Adjustments to Appropriated Value	+590			
FY 1998 Pres Bud Request	1423	2183	7534	9015

Change Summary Explanation:

Funding: FY 1996 funding was increased (+611) to allow acceleration of the 3kW TQG.
FY 1998 (+7265)/FY 1999 (+8729) increase to allow RDTE on 3kW TQG, PPS and 100 & 200kW Utility Set Program.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDT&E;PE0603804A/DG11	216	213	214	1371	1020	743	616	570	Cont	Cont
OPA,BA3;Generators & Assoc Equip (MA9800)	13482	29980	7706	74952	101113	90717	43990	41452	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
Begin fabrication of 5kW 28VDC APU PQT models	X*															
Begin testing of 5kW 28VDC APU PQT models				X*												
Complete fabrication of 5kW 28VDC PQT models			X*													
Complete testing of 5kW 28VDC APU PQT models						X										

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D194

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 preparation of formal program review of 5kW 28VDC APU							X									
Begin development of 3kW (TQG)		X*														
Award competitive contracts for design and prototype development of 3kW sets (Phase I)				X*												
Evaluate competitive designs for lightweight 3kW generator sets (Phase I)								X								
Continue hardware development and complete Phase I, downselect to one contractor, and initiate Phase II hardware delivery, testing and logistics data									X							
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 downselect 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		

* Milestone completed

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D194

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development	1008	1478	3700	5400
Test and Evaluation	182	130	2100	1900
Government Engineering & Support	70	430	1100	1200
Program Management	75	60	565	515
Miscellaneous	88	40	69	
SBIR/STTR		45		
Total	1423	2183	7534	9015

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Contractors Various	CPFF	9406				1008	1448	4500	6600	Cont	13556
Support and Management Organizations None											
Test and Evaluation Organizations											
Miscellaneous:											
CECOM	In-House	Various	NA	NA		215	510	1734	1715	Cont	4174
TECOM	MIPR	Various				200	180	1300	700	Cont	2380
SBIR/STTR							45				45

Government Furnished Property None

Subtotal Product Development	1008	1448	4500	6600		13556
Subtotal Support and Management						
Subtotal Test and Evaluation	415	735	3034	2415		6599
Total Project	1423	2183	7534	9015		20155

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D279

COST (*In Thousands*)	FY 1996 Actual	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
D279 Airdrop Equipment Engineering Development	1416	1414	1359	1354	1380	1371	4864	4701	Continuing	Continuing

A. Mission Description and Justification: Develop and transition to procurement cargo and personnel parachutes, airdrop containers and associated equipment. Air delivery equipment will improve safety and facilitate airborne cargo insertions into non-permissive environments.

Acquisition Strategy: Developments transition to competitive procurement.

FY 1996 Accomplishments:

•	343	Type classified 60,000 pound airdrop system (single and linked platform).
•	300	Completed the Army airdrop capability effort directly supporting the USAF C17 program ensuring a fully operational airborne capability and improving airborne soldier safety.
•	773	Conducted technical/operational tests of the Guided Parafoil Air Drop System - Light (GPADS-L) as part of the Warfighting Rapid Acquisition Program (WRAP).
Total	1416	

FY 1997 Planned Program:

•	300	Fabricate test items and conduct technical testing of prototype Advanced Research Parachute System (ARPS) to improve the safety and lethality of Force XXI Airborne assault operations.
•	1079	Acquire and evaluate prototype systems for 500 foot, medium weight (20,000 lbs) Air Drop System providing improved accuracy and significantly reduced vulnerability for Army combat equipment and USAF delivery aircraft, during airborne assault operations.
•	35	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program
Total	1414	

FY 1998 Planned Program:

•	1200	Conduct component development for ARPS. Begin developmental testing for ARPS.
•	159	Initiate combined Technical Test/User Test for 500 foot Low Velocity Aerial Delivery System (LVADS) - Medium.
Total	1359	

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D279

FY 1999 Planned Program:

- 600 Complete development testing for ARPS.
- 500 Complete test and evaluation and type classify 500 foot LVADS - Medium.
- 254 Initiate program for Advanced Parafoil Aerial Delivery System (APADS)/GPADS - Medium.

Total 1354

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	1452	1444	1452	1452
Appropriated Value	1493	1414		
Adjustments to Appropriated Value	-77			
FY 1998 Pres Bud Request	1416	1414	1359	1354

C. Other Program Funding Summary

	FY 1996	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	1116	1414	1359	1353	1336	1503	4864	4700	Cont	Cont
OPA 3, R10901, Low Velocity Airdrop Delivery System (LVADS)					1586	1090				2676
OPA 3, R10903 Enhanced Container Delivery System (ECDS)					5252					
OPA 3, R10904 Advanced Tactical Parachute Delivery System (ATPDS)						14874				

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
Support USAF to Defense Acquisition Board	X*															
(DAB) Decision on C-17 Aircraft																
Type Classify 60K airdrop system		X*														
GPADS-L TT and CT			X*													
Award ARPS TOA and design contract							X									

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D279

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
Acquire and evaluate systems for 20K Airdrop System								X								
Start ARPS development test											X					
Complete ARPS development test															X	
Type Classify 500 foot LVADS (Medium)																X

*Milestone completed

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D279

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development	936	924	149	741
Program Management Support	185	155	210	163
Test and Evaluation	295	300	1000	450
SBIR/STTR		35		
Total	1416	1414	1359	1354

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
SSCOM	In-House				16947	936	924	159	754	Cont	19720
Metric Systems	TBD	TBD								Cont	
MICOM	MIPR									Cont	
DA Staff											
Def Eval Spt Acty											
Army Nat'l Guard											
Support and Management Organizations											
SSCOM					2390	185	155	200	150	Cont	3080
Test and Evaluation Organizations											
SSCOM	In-House				6023	295	300	1000	450	Cont	8068
Ft. Bragg	MIPR										
TECOM/YPG											
SBIR/STTR							35				35

Government Furnished Property: None

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D279

	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	16947	936	924	159	754		19720
Subtotal Support and Management	2390	185	155	200	150		3080
Subtotal Test and Evaluation	6023	295	335	1000	450		8103
Total Project	25360	1416	1414	1359	1354		30903

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D429

COST (*In Thousands*)	FY 1996 Actual	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
D429 Rigid Wall Shelter Engineering Development	2296	3193	1498	1024	1159	1152	.2157	2166	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 1996 Accomplishments:

•	826	Type classified version 3 of the SICPS shelter.
•	548	Tested new technology components [engine, generator, Environmental Control Unit (ECU), regenerative Chemical Biological (CB) filters] for objective SICPS; lighter weight, quieter, less maintenance.
•	269	Fabricated International Standards Organization (ISO) P3I components.
•	653	Fabricated Upgraded Lightweight Multipurpose Shelter (LMS) prototypes.
Total	2296	

FY 1997 Planned Program:

•	490	Conduct Technical Testing of ISO P3I Components.
•	570	Conduct testing of LMS upgrade.
•	915	Conduct testing of new technology SICPS components.
•	1140	Complete design and begin fabrication of large SICPS P3I components (on-board power and collective protection).
•	78	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program
Total	3193	

FY 1998 Planned Program:

•	306	Complete development of ISO Component P3I.
•	306	Complete development of LMS upgrade.
•	451	Develop new component technology for SICPS P3I Shelter.
•	435	Develop concept design of the Ballistically Hardened Shelter (BHS).
Total	1498	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development
	PROJECT D429

FY 1999 Planned Program:

- 600 Award design and fabrication contract for the BHS.
- 424 Conduct front end analysis on Camouflage, Concealment and Detection (CCD) Shelter.

Total 1024

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	2791	3261	2386	1093
Appropriated Value	2870	3193		
Adjustments to Appropriated Value	-574			
FY 1998 Pres Bud Request	2296	3193	1498	1024

Change Summary Explanation: Funding: FY 1996 funding was decreased (-495) for undistributed Congressional and reductions and rescissions.
FY 1998 funding decrease (-888) necessary to realign to ATCCS program to reduce fielding delays.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0603804.D428, Rigid Wall Shelter Engineering Development	2464	3868	2431	870	983	977	1970	1977	Cont	Cont

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604804A Logistics & Engineer Equipment - Engineering Development PROJECT D429

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
Milestone III for non-expandable Electro-Magnetic Interference (EMI) ISO shelter		X*														
TT of ISO EMI P3I components								X								
Milestone III version 3 SICPS Rigid Wall Shelter			X*													
TT LMS Upgrade								X								
Complete ISO EMI P3I											X					
Complete LMS Upgrade											X					
Develop SICPS P3I technology												X				
Develop BHS Concept												X				
Award BHS prototype contract														X		
Conduct CCD FEA															X	

*Milestone completed

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D429

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development	960	1423	761	519
Program Management Support	490	812	369	252
Test and Evaluation	846	880	368	253
SBIR/STTR		78		
Total	2296	3193	1498	1024

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
SSCOM	In- House				12660	960	1423	761	519	Cont	16323
DEEPCO	Various	Various									
(Also Radian,	GTS.)										
Ft. Belvoir	MIPR										
(Also TEXCOM,	ATCOM,	USA Med,	ARL,	Army Nat'l	Guard.)						
Support and Management Organizations											
SSCOM					5551	490	812	369	252	Cont	7474
Test and Evaluation Organizations											
TECOM					8279	846	880	368	253	Cont	10626
SBIR/STTR							78				78

Government Furnished Property: None

Subtotal Product Development	12660	960	1423	761	519	16323
Subtotal Support and Management	5551	490	812	369	252	7474
Subtotal Test and Evaluation	8279	846	958	368	253	10704
Total Project	26490	2296	3193	1498	1024	34501

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D461

COST (*In Thousands*)	FY 1996 Actual	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
D461 Marine Oriented Logistics Equipment Engineering Development	329	0	0	2195	4433	1495	1255	2901	Continuing	Continuing

A. Mission Description and Justification: This project provides engineering development of Army watercraft systems. Efforts for the Pusher Tug and Floating Crane will provide the engineering development necessary to meet the operational requirements for these craft. The FY 96 effort completed the Lighter Amphibian Resupply Cargo -60 (LARC-LX) phase, began a prototype for Communication, Electronic, and Navigation (CEN) suite, and completed anchor mooring and safety enhancements for the Causeway. FY 99 efforts will include full scale prototyping for the Containerized Maintenance Facility (CMF); full scale development of the Rapidly Installed Breakwater (RIB); and initiate development of the Harbor Master Communication Center (HMCC).

Acquisition Strategy: Floating Crane -- Competitive procurement to performance specification. Pusher Tug -- Competitive procurement to performance specification

FY 1996 Accomplishments:

•	45	Developed optimum "pusher knee" configuration for the pusher tug.
•	45	Developed the design and storage of camel for interface between floating crane and cargo ships.
•	58	Completed mooring, anchor, and safety enhancements for Causeway.
•	136	Began prototype effort of Communications, Electronics, and Navigation suite for watercraft.
•	45	Completed test and evaluation of LARC-LX prototype.
Total	329	

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program:

•	812	Full scale development of the Containerized Maintenance Facility (CMF).
•	1309	Full scale development of the Rapidly Installed Breakwater (RIB).
•	74	Initiate development of the Harbor Master Communication Center (HMCC).
Total	2195	

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D461

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	339	0	0	2366
Appropriated Value	348			
Adjustments to Appropriated Value	-19			
FY 1998 Pres Bud Request	329	0	0	2195

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, 0603804A, D526, Marine Oriented Logistics, Davanced Development				330	1210	0	1351	703	Cont	Cont
OPA 3, M32400, Floating Crane, 100-250 Ton		14317	14073	14009	13986	13893				70278
OPA 3, M44500, Pusher Tug, Small	3652	6877	6782	4000			5000	4000	Cont	Cont
OPA 3, M32500, Rapidly Installed Breakwater					1589					1589
OPA 3, M11300, Containerized Maintenance Facility			0	978	997	997				2972

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
Pusher Tug contract award			X*													
Pusher Tug material release								X								
Floating Crane Milestone I/III					X*											
Floating Crane contract award							X									
Rapidly Installed Breakwater Prototype														X		
Containerized Maintenance Facility contract award														X		
Initiate Development of the Harbor Master Communication Center															X	

*Milestone completed

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604804A Logistics & Engineer Equipment - Engineering Development

PROJECT: D461

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Contractor Engineering Support (includes test & evaluation)	299			2112
Program Management Support	30			83
Total	329			2195

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
International Consultants, Inc.	SS-FP				1967	299			2112	Cont	Cont
Support and Management Organizations											
ATCOM					58	30			83	Cont	171
Test and Evaluation Organizations: None											
Government Furnished Property: None											
Subtotal Product Development					1967	299			2112	Cont	Cont
Subtotal Support and Management					58	30			83	Cont	Cont
Subtotal Test and Evaluation											
Total Project					2025	329			2195	Cont	Cont

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	16740	9556	11052	16395	16423	15890	15768	15629	Continuing	Continuing
D097 C3I Interoperability Network Activity	4090	1660	4178	4274	3180	3195	3090	3210	Continuing	Continuing
D098 Tactical Radio Accessories	185	542	508	506	0	0	0	0	0	4734
D282 SINCGARS-V Engineering Development	7189	6883	0	0	0	0	0	0	0	19897
D485 C4I Interoperability Standardization and Certification	1892	471	3205	5078	5419	4786	4550	4405	Continuing	Continuing
D488 Tactical Net Radio Communications	3384	0	0	0	0	0	0	0	Continuing	Continuing
D589 Army Systems Engineering & Warfighting Technical Support	0	0	3161	6537	7824	7909	8128	8014	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), interoperability evaluation of Army command, control, communications and intelligence (C3I) systems and equipment, and the supporting interoperability facilities. 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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

PROJECT: D097

COST (*In Thousands*)	FY 1996 Actual	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
D097 C3I Interoperability Network Activity	4090	1660	4178	4274	3180	3195	3090	3210	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project D097 - C3I Interoperability Network Activity: CECOM has been designated the System Engineer and Army Interoperability Certifier for the Army's Force XXI Battlefield Digitization. CECOM as a material developer, directly supports the PEOs/PMs in the Development and Acquisition of Command, Control, Communications, Computer and Intelligence/Electronic Warfare (C4I/EW) systems. CECOM also has the life-cycle software engineering mission to sustain hundreds of these systems when fielded. The Digital Integrated Lab (DIL) was established to significantly improve the Army's ability to ensure interoperability on the digital battlefield. The Army Interoperability Network (AIN) provides a wide area communications backbone to electronically link geographically dispersed C4I elements whether "stand alone" or embedded within a weapons platform, and has been endorsed by senior OSD and DA officials. The AIN suite of distributed communication sites and services provides the communications network necessary to electronically connect remote C4I/EW systems, labs/testbeds, field sites, developer facilities and Battle Labs. The DIL/AIN rapidly replicates existing and evolving tactical battlefield environments to enable and facilitate comprehensive evaluations of new prototypes, evolutionary system developments, new technologies, commercial products and systems interoperability. It is a virtual lab that integrates the Army's many programs and products, horizontally. The DIL remote external connections are provided for, primarily, by the AIN. The project also includes the development and evolutionary upgrades of protocol test tools to assure the capability to assess interoperability and compliance with the Army's Technical Architecture's Variable Message Format (VMF) and MIL-STD-188-220A standards suites. In addition it provides the capabilities to develop, test and maintain interoperability and support a continuous life-cycle interoperability development and evaluation process. Overall, this facilitates the software development process and allows interoperability to be built into the C4I/EW systems, by supporting affordable continuous sustainment and modernization of Army C4I/EW systems for the warfighter and Force XXI.

Acquisition Strategy: The efforts funded in this project are non-system specific, therefore no acquisition strategy is provided.

FY 1996 Accomplishments:

•	115	Sustained AIN Hub sites and communications
•	1207	Provided 5000+ test days of AIN support to DIL, PEOs, PMs, PDSS, etc., to achieve sustained C4I system/software Army/Joint interoperability
•	1315	Provided remote external digitization connections and telecommunications services for the DIL
•	827	Force XXI DIL Interoperability Certifications for C4I/EW systems for field use and Battlelab evaluations and experimentation
•	126	Essential AIN modernization to meet requirements
•	225	AIN remote site sustainment upgrades, capital equipment improvements
•	275	DIL test equipment, surrogate hardware, capital improvements to support Force XXI
Total	4090	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development PROJECT D097

FY 1997 Planned Program:

•	123	Sustain AIN Hub sites and communications
•	1076	Provide 5000+ test days of AIN support to DIL, PEOs, PMs, PDSS, etc., to achieve sustained C4I system/software Army/Joint interoperability
•	120	Essential AIN modernization to meet requirements
•	301	AIN remote site sustainment upgrades, capital equipment improvements
•	40	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
Total	1660	

FY 1998 Planned Program:

•	1700	Provide remote external digitization connections and telecommunications services for the DIL
•	281	VMF Test Tool development, to support development, fielding and DIL certification of C4I systems
•	238	188-220 Test Tool development , to support development, fielding and DIL certification of C4I systems
•	1959	Provide AIN nationwide network sustainment and test support for 7500 test-days to achieve C4I/EW systems/software Army/Joint interoperability.
Total	4178	

FY 1999 Planned Program:

•	1719	Provide remote external digitization connections and telecommunications services for the DIL
•	281	Complete VMF Test Tool development and provide evolutionary upgrades as standards evolve
•	238	Complete 188-220 Test Tool development and provide evolutionary upgrades as standards evolve
•	2036	Provide AIN nationwide netword sustainment and test support for 9000 test-days to achieve C4I/EW systems/software Army/Joint interoperability
Total	4274	

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY1997 Presidents Budget	1734	1715	1704	1684
Appropriated Value	1751	1660		
Adjustments to Appropriated Value	2339			
FY 1998 Pres Bud Request	4090	1660	4178	4274

Change Summary Explanation:

Funding: FY96/FY98/FY99 - Funds reprogrammed to support Force XXI digitization efforts (FY 96 +2339, FY 98 +2474, FY 99 +2590)

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - Engineering and Manufacturing Development	0604805A Command, Control, Communications Systems - Engineering Development	D097

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Contractual Engineering Support	1807	1075	1535	1629
Government Engineering Support	350	350	414	424
Development Test and Evaluation	300	150		
Telecommunications Services	1315		1261	1261
Spare parts, upgrades test equipment	275		439	439
Product Development			529	521
Training	10	10		
Travel	33	35		
SBIR/STTR		40		
Total	4090	1660	4178	4274

B. Budget Acquisition History and Planning Information: Not applicable

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development PROJECT D098

COST (*In Thousands*)	FY 1996 Actual	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
D098 Tactical Radio Accessories	185	542	508	506	0	0	0	0	0	4734

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 envisioned by the C4I for the Warrior Concept. 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 product contract award in FY98.

FY 1996 Accomplishments:

•	185	Supported Air Force Development efforts on CSEL program
Total	185	

FY 1997 Planned Program:

•	529	Support Air Force Development efforts on CSEL program
•	13	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
Total	542	

FY 1998 Planned Program:

•	508	Support Air Force Development efforts on CSEL program
Total	508	

FY 1999 Planned Program:

•	506	Support Air Force Development efforts on CSEL program
Total	506	

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

PROJECT: D098

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY1997 President's Budget	189	569	531	529
Appropriated Value	191	542		
Adjustments to Appropriated Value	-6			
FY1998 Pres Bud Request	185	542	508	506

C. Other Program Funding Summary

	FY 1996	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)			5677	14019	19164	7383	7396	7424	14624	75687

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
CSEL Program, Milestone I		X*														
CSEL Program Milestone III									X							

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

DATE: February 1997

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 1996	FY 1997	FY 1998	FY 1999
Support Air Force Development efforts on CSEL program	185	529	508	506
SBIR/STTR		13		
Total	185	542	508	506

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations: None											
Support and Management Organizations											
SBIR/STTR							13				13
Spt to Air Force on CSEL			4721	4721	2993	185	529	508	506	0	4721
Test and Evaluation Organizations: None											

Government Furnished Property: None

Subtotal Product Development						
Subtotal Support and Management	2993	185	542	508	506	4734
Subtotal Test and Evaluation						
Total Project	2993	185	542	508	506	4734

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

PROJECT: D282

COST (*In Thousands*)	FY 1996 Actual	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
D282 SINCGARS-V Engineering Development	7189	6883	0	0	0	0	0	0	0	19897

A. **Mission Description and Budget Item Justification:** **Project D282 - SINCGARS-V Engineering Development:** This program provides 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 Alternate Configuration 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 Alternate Configuration Receiver-Transmitter and associated items development design products may be used by competitive producers as a part of the anticipated FY 97 production competition of the SINCGARS radio.

FY 1996 Accomplishments:

•	8	Airborne BCIS Demonstration
•	2775	Initiated development effort for ITT SIP Alternate Configuration Radio
•	2730	Initiated development effort for GD SIP Alternate Configuration Radio
•	76	Program Management Support
•	100	Handheld SINCGARS Radio
•	1500	TF XXI Support
Total	7189	

FY 1997 Planned Program:

•	3225	Complete development effort for ITT SIP Alternate Configuration Radio
•	3225	Complete development effort for GD SIP Alternate Configuration Radio
•	265	Complete design verification testing/demonstrations for both ITT and GD Alternate Configuration Radio
•	168	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
Total	6883	

FY 1998 Planned Program: Project not funded in FY 98

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

PROJECT: D282

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY1997 President's Budget	7191	7031	0	0
Appropriated Value	7264	6883		
Adjustments to Appropriated Value	-75			
FY1998 Pres Bud Request	7189	6883	0	0

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Army, OPA2 SSN:B00500	331082	293989	280925	13507	13892	0	0	0	Cont	Cont
Army, OPA2 SSN:J30500	12366	12102	9239	0	0	0	0	0	Cont	Cont
Army, OPA2, SSN:Z16800	13705	13539	0	0	0	0	0	0		

D. Schedule Profile

	FY 1996				FY 1997				FY 1998				FY 1998			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Award Alternate Configuration	X*															
Development Contracts																
ECP Cut In to Airborne Production			X*													
Exercise Alternate Configuration Dev Contr Opt					X*											

* Milestone completed

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

DATE: February 1997

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 1996	FY 1997	FY 1998	FY 1999
Contractor Engineering	6424	6450		
Development Test & Evaluation	765	265		
SBIR/STTR		168		
Total	7189	6883		

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
SBIR/STTR							168				168
ITT Ft. Wayne, IN	SS/CPFF	Oct 94	3829	3829	3821	8	0			0	3829
GD Tallassee, FL	SS/CPFF	Dec 94	6300	6300	300	2775	3225			0	6300
ITT Ft. Wayne ,IN	SS/CPFF	Jan 95	7455	7455	1500	2730	3225			0	7455
Support and Management Organizations:											
Misc.	TBD	Dec 94	1115	1115	204	911	0			0	1115
Test and Evaluation Organizations											
EPG, MD	MIPR	Jan 96	1030	1030	0	765	265			0	1030

Government Furnished Property: None

Subtotal Product Development	5621	5513	6618		17752
Subtotal Support and Management	204	911			1115
Subtotal Test and Evaluation		765	265		1030
Total Project	5825	7189	6883		19897

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

PROJECT: D485

COST (*In Thousands*)	FY 1996 Actual	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
D485 C4I Interoperability Standardization and Certification	1892	471	3205	5078	5419	4786	4550	4405	Continuing	Continuing

A. Mission Description and Budget Item Justification C4I Interoperability Standardization and Certification: The Army Enterprise Strategy, DOD 4630.5, DODI 4630.8, C4I for the Warrior, and CJSCI 6212.01, mandate the establishment and sustainment of interoperability between Army C4I systems, and within the Army and Joint/Allied C4I communities. This includes operation of the Army board to synergize and integrate the Army's interoperability certification testing and analysis, and configuration management functions. Provide the Army focal point for the review, staffing, coordination and development of Army positions for the interface interoperability standards and specifications. Direct the integration of the Army systems' requirements and operational concepts documents with the joint standards and interface documents. Included is the Army's participation in Joint/Allied and intra-Army interoperability certification testing and the Army's representation in the Joint/Allied Configuration Management Process. This project also includes the development, configuration management of two key elements of the Army/Joint Technical Architectures - Variable Message Format and MIL-STD-188-220A standards suites, that are required for successful Force XXI and Joint Exercises. The Digital Integrated Lab (DIL) has been adopted by the Army leadership for Force XXI to evaluate system's interoperability and identify interoperability issues early on in system design to provide the material developer with opportunities to modify and adjust the system without major programmatic impacts. The DIL performs protocol conformance, interoperability and certification testing for the Army's Force XXI battlefield digitization effort; it tests equipment and identifies interoperability issues, develops interoperability assessments, certification recommendations, and test reports. The DIL facilitates engineered solutions by replicating digital battlefield environments to support Advanced Technology Demonstrations, Advanced Warfighting Experiments, and realistic evaluation of new tactics, doctrine and operational concepts. It is the fundamental component for systems engineering and integration to optimize the evolution of architectures and systems for the digital battlefield.

Acquisition Strategy: The efforts funded within this project are non-system specific, therefore no Acquisition Strategy is provided.

FY 1996 Accomplishments:

•	434	Represented Army in 12 Army/Joint configuration control boards
•	50	Maintained Army Five Year Master Test Schedule
•	300	Army participation in 11 Joint Certification Tests of 25 systems
•	200	Represented Army in 6 Joint Analysis Review Panels for 25 systems
•	626	Developed/deployed VMF Test Tool Build-1 (initial capability)
•	282	Developed/deployed 188-220 Tester Build -0.1 (initial Monitor/Decode)
Total	1892	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development PROJECT D485

FY 1997 Planned Program:

•	409	Represent Army in 12 Army/Joint configuration control boards
•	50	Maintain Army Five Year Master Test Schedule
•	12	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
Total	471	

FY 1998 Planned Program:

•	1572	Force XXI DIL Interoperability Certifications for C4I/EW systems for field use and Battlelab evaluations and experimentation
•	1077	Army Force XXI and Joint VMF Standards Development, improvement, test and analysis
•	556	Army Force XXI and Joint 188-220A Standards Development, improvement, test and analysis
Total	3205	

FY 1999 Planned Program:

•	1755	Force XXI DIL Interoperability Certifications for C4I/EW systems for field use and Battlelab evaluations and experimentation
•	826	Army Force XXI and Joint VMF Standards Development, improvement, test and analysis
•	556	Army Force XXI and Joint 188-220A Standards Development, improvement, test and analysis
•	1078	TADIL & USMTF standards Army/Joint CM process
•	863	TADIL & USMTF Joint Certification Testing
Total	5078	

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY1997 Presidents Budget	484	481	481	480
Appropriated Value	489	471		
Adjustments to Appropriated Value	1403			
FY 1998 Pres Bud Request	1892	471	3205	5078

Change Summary Explanation:

Funding: FY1996/FY1998/FY1999 - Funding reprogrammed to support Force XXI and Joint /Allied Digitization Exercises (FY 96 +1403, FY 98 +2724, FY 99 +4598)

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - Engineering and Manufacturing Development	0604805A Command, Control, Communications Systems - Engineering Development	D485

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Government Engineering Support	170	459	1054	1923
Contractor Engineering Support	1652		2151	3155
Telecommunications Services	70			
SBIR/STTR		12		
Total	1892	471	3205	5078

B. Budget Acquisition History and Planning Information: Not applicable

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

PROJECT: D488

COST (*In Thousands*)	FY 1996 Actual	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
D488 Tactical Net Radio Communications	3384	0	0	0	0	0	0	0	Continuing	Continuing

A. Mission Description and Budget Item Justification : Tactical Net Radio Communications: Develops 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. Performs procedural interoperability testing and provides the Army's gateway to interoperability test network for certification of Army C3I systems. Develops Wireless Network Access (WNA) to provide communications interface to CHS host computers and transmission security for tactical operations. Provide for executive agent and requirements for test and evaluation of the Joint Task Force Communications Planning and Management System.

The Frequency Hopping Multiplexer (FH MUX) preproduction hardware fabrication was finalized in FY 96 with emphasis on models and qualification testing. In support of Task Force XXI (TF XXI) analyses will be performed to mitigate co-site interference amongst various radios and frequency allocations assigned. Support will focus on communication systems engineering of tactical radios to mitigate platform interference and provide for maximum communication ranges. The CECOM Mobile Test Van will be upgraded to provide for integration of evolving technologies. Efforts to establish an EMI/EMC co-site testbed and audio technology facility will be initiated. Applications for antenna technology will focus on developing wideband HF and VHF antennas which are structurally embedded in the airborne or ground mobile platform. Future Data Radio [FDR/Near-Term Digital Radio (NTDR)] will be added into the Digital Integrated Lab (DIL) network, for demonstration and experimentation purposes.

Acquisition Strategy: The acquisition strategy for the FH MUX is to award a sole source contract for up to 50 FH MUX Pre-Production Qualification Test (PPQT) model units to Xetron Corporation, Cincinnati, OH, the current developer of the FH MUX. This contract was an essential preparatory phase to the planned full rate production contract awarded in 3QFY96 and provided substantial reduction in production risk.

FY 1996 Accomplishments

•	552	FH MUX Preproduction Hardware Fabrication
•	648	Program Management, design review, test & evaluation, data support for Pre-production Qualification Testing (PPQT) for the FHMUX
•	420	Developed application of land and airborne structurally embedded antennas
•	704	Integration of FDR to NTDR into DIL
•	100	Initiated audio lab upgrade
•	370	Initiated Co-site EMI/EMC testbed
•	100	Mobile test van upgrades & equipment integration
•	220	Tactical Radio integration support to TF XXI
•	200	Frequency allocation & co-site analysis support to Task Force XXI
•	70	Enhanced testing of interference cancellation technologies at EPG
Total	3384	

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

PROJECT: D488

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY1997 Presidents Budget	3465			
Appropriated Value	3501			
Adjustments to Appropriated Value	-117			
FY 1998 Pres Bud Request	3384			

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA2, SSN BA1205	24028	35699	0	0	0	0	0	0	0	59727

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
FHMUX Production Award			X*													
Delivery FHMUX PPQ Units							X									
FHMUX Production Award (OPTION)						X										
Delivery FHMUX Units										X						

* Milestone has been completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development PROJECT D488

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Contractor Engineering Support	1150			
Development Test and Evaluation	617			
Government Engineering Support	1596			
Miscellaneous	21			
Total	3384			

B. Budget Acquisition History and Planning Information: Not applicable

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development PROJECT D589

COST (*In Thousands*)	FY 1996 Actual	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
D589 Army Systems Engineering & Warfighting Technical Support	0	0	3161	6537	7824	7909	8128	8014	Continuing	Continuing

A. Mission Description and Budget Item Justification: Army Systems Engineering & Warfighting Technical Support: This project provides essential, multi-disciplined, highly technical, non-parochial, Army-level expertise in both System Engineering and Technical Architecture (TA) matters as directed by the Army Acquisition Executive (AAE) and Vice Chief of Staff of the Army (VCSA). The Army Technical Architecture (ATA) provides the 'building code" foundation for designing, building, fielding, and supporting interoperable systems in an expedient and cost-effective manner. The Army System Engineer's (ASE's) work efforts associated with the development and implementation of the ATA under this project are critical path elements to achieve the Army's Force XXI digitization mission, provide the ability to fight and win on tomorrow's battlefield, and assure compatibility with both Joint and Coalition Warfighters. It provides for integration of emerging technologies to support the next generation of digitization across all battlefield operating systems for the 21st century. It provides essential technical expertise and planning for integration of new technologies (ATDs, ACTDs, other services and commercial) and documentation to achieve the technical evolution to a joint interoperable architecture and to achieve rapid acquisition for fielding to Force XXI. Provides analysis and hands-on support to the warrior, by supporting development of the operational architecture and implementing new C4I Warrior information technologies.

Acquisition Strategy: The efforts funded in the project are non-system specific, therefore no acquisition strategy is provided.

FY 1996 Accomplishments: Project not funded in FY 96

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program:

•	1200	Conduct major design evaluations of Army systems for ATA Interoperability Compliance
•	1212	Ensure ATA Interoperability Implementation through IPT/Contract actions and assess the ATA compatibility of Army Science and Technology Programs
•	432	Maintain existing ATA Information Technology Standards
•	317	Technically influence the development and implementation of the Joint Command, Control, Communications and Computer Intelligence TA
Total	3161	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604805A Command, Control, Communications Systems - Engineering Development PROJECT D589

FY 1999 Planned Program:

•	1978	Expand major ATA Compliance design evaluations to encompass both interoperability and standardization (SW Reuse)
•	1291	Extend coverage of IPTs/Contract Actions participation to all critical Army systems to ensure ATA Implementation
•	505	Assess ATA compatibility of all major Army S&T Programs
•	573	Investigate the maturity of emerging, complex, multi-discipline information technology standards for inclusion in the ATA
•	401	Assess suite of ATA interoperability protocols selected by the Weapons and M&S communities
•	391	Assess System ATA Implementation Schedules for Army Interoperability Synchronization
•	495	Technically influence the extension of the Joint Technical Architecture (JTA) to non-C4I systems
•	389	Technically influence commercial and international standards forums
•	514	Provide integration of new technologies for emerging systems into joint interoperable Force XXI architecture in support of Battlefield Operating Systems for the 21st century.
Total	6537	

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY1997 Presidents Budget	0	0	0	0
Appropriated Value	0			
Adjustments to Appropriated Value	0			
FY 1998 Pres Bud Request	0	0	3161	6537

Change Summary Explanation:

Funding: FY98/FY99 Increase as a result of priority associated with support for Army Technical Architecture (FY 98 +3161, FY 99 +6537)

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604805A Command, Control, Communications Systems - Engineering Development

PROJECT: D589

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Government Engineering	0	0	1931	2414
Contractual Engineering	0	0	930	3271
Technical Studies/Technology Evaluations	0	0	0	542
Training	0	0	90	20
Travel	0	0	210	290
Total			3161	6537

B. Budget Acquisition History and Planning Information Not applicable

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604807A Medical Materiel - Engineering Development

COST (*In Thousands*)		FY 1996 Actual	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
	Total Program Element (PE) Cost	4644	4693	4483	5408	6509	6369	7875	8544	Continuing	Continuing
D812	Military Human Immunodeficiency Virus (HIV) Vaccine and Drug-Engineering Development	189	189	0	306	1454	1375	1815	1774	Continuing	Continuing
D832	Combat Medical Materiel-Engineering Development	1508	1659	2346	2420	2363	2329	3307	3477	Continuing	Continuing
D834	Soldier System Protection-Engineering Development	854	865	931	941	925	915	1159	1950	Continuing	Continuing
D849	Infectious Disease Drug and Vaccine-Engineering Development	2093	1980	1206	1741	1767	1750	1594	1343	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 which provides protection against physiological, psychological or environmental factors which 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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604807A Medical Materiel - Engineering Development

PROJECT: D812

COST (*In Thousands*)	FY 1996 Actual	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
D812 Military Human Immunodeficiency Virus (HIV) Vaccine and Drug-Engineering Development	189	189	0	306	1454	1375	1815	1774	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 1996 Accomplishments:

•	95	Characterized cohorts for a Phase III test of a vaccine to prevent infection with HIV.
•	94	Conducted Phase I trials to evaluate vaccine products for transitioning to Phase III.
Total	189	

FY 1997 Planned Program:

•	92	Develop and prepare cohorts for a Phase III test of a vaccine to prevent infection with HIV.
•	93	Conduct additional Phase I trials and begin Phase II trials and selected products to evaluate vaccine products for transitioning to Phase III.
•	4	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
Total	189	

FY 1998 Planned Program: Project not funded in FY 98.

FY 1999 Planned Program:

•	106	Develop cohorts for Phase III trial.
•	200	Conduct Phase II trial necessary for transition of HIV vaccines to Phase III trials.
Total	306	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604807A Medical Materiel - Engineering Development PROJECT D812

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	193	193	288	288
Appropriated Value	199	189		
Adjustments to Appropriated Value	-10			
FY 1998 Pres Bud Request	189	189	0	306

Change Summary Explanation: Funding: FY 1998: Funds reprogrammed (-288) to higher priority requirements.

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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604807A Medical Materiel - Engineering Development

PROJECT: D812

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Test & Evaluation	189	189	0	306
Product Development	0	0	0	0
Project Management	0	0	0	0
Total	189	189	0	306

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations: None											
Support and Management Organizations											
USAMMDA						0	0	0	0	0	
Contracts						0	0	0	0	0	
Test and Evaluation Organizations											
Army Laboratories						0	0	0	0	0	
Contracts						0	0	0	0	0	
H.M. Jackson Foundation	C/Coop Agreement	Apr 93	125000	125000	38042	189	189	0	306	Cont	38726

Government Furnished Property: None.

Subtotal Product Development											
Subtotal Support and Management											
Subtotal Test and Evaluation					38042	189	189		306		38726
Total Project					38042	189	189		306		38726

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604807A Medical Materiel - Engineering Development

PROJECT: D832

COST (*In Thousands*)	FY 1996 Actual	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
D832 Combat Medical Materiel-Engineering Development	1508	1659	2346	2420	2363	2329	3307	3477	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 1996 Accomplishments:

•	117	Reviewed commercial progress of Hypertonic Saline Dextrane with FDA.
•	775	Fabricated armored ambulance prototype and prepared specifications.
•	283	Supported the engineering development and user evaluation of telemedicine hardware and concepts for the treatment of combat casualties.
•	333	Conducted technical and user evaluations of the intraosseous infusion device.
Total	1508	

FY 1997 Planned Program:

•	83	Transition Hypertonic Saline Dextran to procurement.
•	286	Conduct technical and user evaluations of Engineering Design Model of armored treatment vehicle.
•	1250	Support the engineering development and user evaluations of telemedicine hardware and concepts for the treatment of combat casualties.
•	40	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
Total	1659	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - Engineering and Manufacturing Development	0604807A Medical Materiel - Engineering Development	D832

FY 1998 Planned Program:

- 464 Continue development and technical testing of the portable field oxygen concentrator.
- 200 Patient Movement Item Testing at Military Laboratories.
- 763 ATTV medical integration costs onto C2V platform, IOT&E.
- 275 NDI User Testing of Medical Equipment.
- 350 AZTEC Advanced Technology Demonstration Quantico and Fort Bragg.
- 294 Limited User Assessment Testing LSTAT.

Total 2346

FY 1999 Planned Program:

- 222 Complete development; secure air worthiness certification of the portable field oxygen concentrator.
- 910 Conduct user testing and integration of the Armored Treatment Vehicle.
- 812 Conduct operational testing and begin Low Rate Initial Production of MEDITAG.
- 476 Begin IOT& E testing LSTAT.

Total 2420

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	1546	1695	1736	1852
Appropriated Value	1590	1659		
Adjustments to Appropriated Value	-82			
FY 1998 Pres Bud Request	1508	1659	2346	2420

Change Summary Explanation:

Funding: FY98: Funds reprogrammed (610) into this project for the ATV.
FY99: Funds reprogrammed (568) into this project for the ATV.

C. Other Program Funding Summary: Not Applicable.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY **5 - Engineering and Manufacturing Development**	PE NUMBER AND TITLE **0604807A Medical Materiel - Engineering Development**
	PROJECT **D832**

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

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Field Medical Oxygen Generation and Distribution System MLST 3																
Intraosseous Infusion Device MLST 3							X									
Hypertonic Saline Dextran MLST 3						X										
Field Anesthesia Machine MLST 1							X									
MLST 2																X
Life Support Trauma and Transport System																
MLST 2												X				
MLST 3															X	
Armored Transport and Treatment Vehicle																
MLST 1/2					X											
MLST 3																X

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604807A Medical Materiel - Engineering Development

PROJECT: D832

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Test and Evaluation	615	1334	607	626
Product Development	690	61	1407	1064
Program Management	203	264	332	730
Total	1508	1659	2346	2420

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Contracts						690	61	1407	1062	Cont	3220
Support and Management Organizations											
USAMMDA						94	176	291	227	Cont	788
Contracts						109	88	41	505	Cont	743
Test and Evaluation Organizations											
Army Laboratories						615	1334	607	626	Cont	3182

Government Furnished Property: None

Subtotal Product Development	690	61	1407	1062	3220
Subtotal Support and Management	203	264	332	732	1531
Subtotal Test and Evaluation	615	1334	607	626	3182
Total Project	1508	1659	2346	2420	7933

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604807A Medical Materiel - Engineering Development

PROJECT: D834

COST (*In Thousands*)	FY 1996 Actual	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
D834 Soldier System Protection-Engineering Development	854	865	931	941	925	915	1159	1950	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 non-battle 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 1996 Accomplishments:

•	854	Supported the engineering development and user evaluation of telemedicine hardware and concepts for soldier protection.
Total	854	

FY 1997 Planned Program:

•	844	Support the engineering development and user evaluation of telemedicine hardware and concepts for soldier protection.
•	21	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
Total	865	

FY 1998 Planned Program:

•	931	Conduct trials to evaluate safety and efficacy of performance enhancing drugs.
Total	931	

FY 1999 Planned Program:

•	941	Complete safety and efficacy trials of performance enhancing drugs; prepare regulatory filings.
Total	941	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604807A Medical Materiel - Engineering Development PROJECT D834

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	876	884	919	927
Appropriated Value	901	865		
Adjustments to Appropriated Value	-47			
FY 1998 Pres Bud Request	854	865	931	941

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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604807A Medical Materiel - Engineering Development

PROJECT: D834

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Test & Evaluation	0	44	897	711
Product Development	834	817	0	0
Project Management	20	4	34	230
Total	854	865	931	941

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Contracts						834	817	0	0	Cont	1651
Support and Management Organizations											
USAMMDA						20	4	34	51	Cont	109
Contracts						0	0	0	179		179
Test and Evaluation Organizations:											
Army Labs						0	44	897	711	Cont	1652
Government Furnished Property: None											
Subtotal Product Development						834	817				1651
Subtotal Support and Management						20	4	34	230		288
Subtotal Test and Evaluation							44	897	711		1652
Total Project						854	865	931	941		3591

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604807A Medical Materiel - Engineering Development

PROJECT: D849

COST (*In Thousands*)	FY 1996 Actual	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
D849 Infectious Disease Drug and Vaccine-Engineering Development	2093	1980	1206	1741	1767	1750	1594	1343	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 FDA licensure. Work performed in laboratories and among troop populations is directed to prevention, diagnosis, and treatment of viral, bacterial and parasitic diseases, so as 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 1996 Accomplishments:

- 440 Completed Phase III trials for the whole cell cholera vaccine.
- 592 Initiated field trials of Enterotoxigenic *E. coli* whole cell live vaccine.
- 911 Conducted safety and efficacy tests of the antimalarial drug Azithromycin.
- 150 Completed contingency protocol for vaccination of troops in Bosnia with tick-borne encephalitis (TBE).

Total 2093

FY 1997 Planned Program:

- 283 Prepare License Application for Argentine Hemorrhagic Fever Vaccine.
- 947 Complete safety and efficacy testing of antimalarial drug Azithromycin.
- 273 Conduct Phase II efficacy study for *Campylobactor* vaccine.
- 281 Continue efficacy trial on ETEC vaccine.
- 147 Initiate Phase I safety study for TBE vaccine.
- 49 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.

Total 1980

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604807A Medical Materiel - Engineering Development PROJECT D849

FY 1998 Planned Program:

•	359	Continue trials required to accumulate data to support FDA regulatory filings for *Campylobacter*, ETEC and tick-borne encephalitis vaccines.
•	250	Continue extended Phase II trials for *Shigella flexneri* 602.
•	150	Prepare New Drug Application (NDA) for antimalarial drug Azithromycin.
•	447	Continue field trials to evaluate efficacy of antimalarial drugs WR238605 and Halofantrine.
Total	1206	

FY 1999 Planned Program:

•	423	Complete expanded field trials proving the efficacy of *Campylobacter*, ETEC and vaccinia-vectored Hantaan M-S vaccines.
•	30	Support manufacturer's FDA regulatory filing for licensure of tick-borne encephalitis vaccine.
•	661	Conduct expanded field trials to prove efficacy of *Shigella flexneri* 602, detoxified LPS-OMP meningitis group B, multivalent Dengue vaccines and a *Leishmania* skin test antigen.
•	116	Field antimalarial drug Azithromycin.
•	511	Conduct full scale expanded field trials to evaluate efficacy of antimalarial drugs WR238605 and Halofantrine.
Total	1741	

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	1993	2022	2053	2031
Appropriated Value	2048	1980		
Adjustments to Appropriated Value	45			
FY 1998 Pres Bud Request	2093	1980	1206	1741

Change Summary Explanation:

Funding: FY 1998: Funds reprogrammed (-847) to higher priority programs.
FY 1999: Funds reprogrammed (-290) to higher priority programs.

C. **Other Program Funding Summary:** Not Applicable.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604807A Medical Materiel - Engineering Development PROJECT D849

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

	FY 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
ETEC MLST 3															X	
TBE MLST 3																X
Azithromycin MLST 3													X			
Argentine Hemorrhagic Fever Vaccine MS3										X						

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604807A Medical Materiel - Engineering Development

PROJECT: D849

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Test & Evaluation	1701	1442	911	433
Product Development	55	0	0	0
Project Management	337	538	295	1308
Total	2093	1980	1206	1741

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 1996	FY 1996	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	374	195	310	Cont	1159
Contracts						57	164	100	123	Cont	444
Test and Evaluation Organizations											
Army Laboratories						442	313	215	318	Cont	1288
Walter Reed Army Inst of Research						1069	509	296	480	Cont	2354
Contracts						0	0	0	0	Cont	
Navy Laboratories						190	620	400	510	Cont	1720
Government Furnished Property: None											
Subtotal Product Development						55					55
Subtotal Support and Management						337	538	295	433		1603
Subtotal Test and Evaluation						1701	1442	911	1308		5362
Total Project						2093	1980	1206	1741		7020

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

DATE: February 1997

BUDGET ACTIVITY: **5 - Engineering and Manufacturing Development**

PE NUMBER AND TITLE: **0604808A Landmine Warfare/Barrier - Engineering Development**

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	6802	7556	22605	44133	41782	27530	25691	35593	Continuing	Continuing
D016 Mine Systems Engineering Development	4968	5384	0	0	0	11255	11960	21786	Continuing	Continuing
D415 Mine Neutralization/Detection	1834	2172	22605	44133	41782	16275	13731	13807	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) and improved sensors that increase countermeasure resistance of Volcano mines which can be dispensed rapidly from helicopters, ground dispensers, artillery systems and tactical aircraft. 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.

NOTE: For FY1999 and FY2000, **Project D016** should be ZERO as reflected above and **Project D415** should be increased by $3.6M in FY1999 and by $4.0M in FY2000 as reflected above. These increases were inadvertently placed in the wrong project, but do not impact the PE total. The Army database will be corrected at the next opportunity.

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604808A Landmine Warfare/Barrier - Engineering Development

PROJECT: D016

COST (*In Thousands*)	FY 1996 Actual	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
D016 Mine Systems Engineering Development	4968	5384	0	0	0	11255	11960	21786	Continuing	Continuing

A. **Mission Description and Justification:** Provides for engineering and manufacturing development of scatterable mines and new smart munitions.

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.

FY 1996 Accomplishments:

•	660	Completed Preliminary System Safety Design
•	1000	Conducted C2 System Design effort
•	1808	Completed Communication Network Preliminary Design
•	1500	Conducted Application Specific Integrated Circuit (ASIC)Design
Total	4968	

FY 1997 Planned Program:

•	1950	Receiver/Transmitter critical circuit design
•	784	Complete ASIC design
•	910	Build brassboard Receiver/Transmitter
•	1609	Control Station Interface electronics design
•	131	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	5384	

FY 1998 Planned Program: Program not funded

FY 1999 Planned Program: Program not funded

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604808A Landmine Warfare/Barrier - Engineering Development

PROJECT: D016

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 199
FY 1997 President's Budget	5096	5499	0	0
Appropriated Value	5392	5384		
Adjustment to appropriated value	-424			
FY 1998 Pres Bud request	4968	5384	0	0

C. Other Program Funding Summary

	FY 1996	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			3767	4258	4241					12270

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 WAM C2 Circuit Design								X								
Complete WAM System Network Control Electronics Design				X*												
Complete Radio Brassboard Design						X										
Integrate, assemble and test complete software development								X								
Qualify WAM C2 Prototype								X								

*Milestone Complete

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604808A Landmine Warfare/Barrier - Engineering Development
	PROJECT D016

A. Project Cost Breakdown	FY 1996	FY 1997	FY 1998	FY 1999
Hardware Development	4098	4328		
Test & Evaluation	270	275		
Government Engineering & Support	450	475		
Government Program Support	150	175		
SBIR/STTR		131		
Total	4968	5384		

B. Budget Acquisition History and Planning Information Not Applicable

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604808A Landmine Warfare/Barrier - Engineering Development

PROJECT: D415

COST (*In Thousands*)	FY 1996 Actual	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
D415 Mine Neutralization/Detection	1834	2172	22605	44133	41782	16275	13731	13807	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 Minefield Detection System (HSTAMIDS), and Interim Vehicle Mounted Mine Detector (IVMMD). 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 and IVMMD - Sole source production contract awarded to competitively competed development contractor; ESMB - Competitively competed development contract followed by competitively competed production contract.

FY 1996 Accomplishments:

- 1147 Awarded Contract and Procured Test Hardware for Interim IVMMD.
- 687 Conducted Test and Evaluation for IVMMD.

Total 1834

FY 1997 Planned Program:

- 100 Conduct Milestone II Review for ASTAMIDS.
- 1569 Conduct Source Selection and Initiate Engineering Development Design for ASTAMIDS.
- 450 Conduct Milestone II review for IVMMD
- 53 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs

Total 2172

FY 1998 Planned Program:

- 1300 Conduct Milestone II review, prepare solicitation, source selection, and award EMD contract for ESMB.
- 2100 Build hardware and conduct contractor testing for ESMB.
- 5332 Initiate engineering, development, design for ESMB.
- 11132 Complete ASTAMIDS EMD design.
- 2641 Initiate ASTAMIDS system fabrication/integration.
- 100 Initiate IOT&E and PQT planning for ASTAMIDS.

Total 22605

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604808A Landmine Warfare/Barrier - Engineering Development PROJECT D415

FY 1999 Planned Program:

•	8662	Continue ESMB engineering, development, and design.
•	8000	Build ESMB hardware and conduct contractor testing.
•	350	Conduct ESMB configuration design review (CDR).
•	18200	Complete ASTAMIDS fabrication/integration of test hardware.
•	800	Complete PQT, and IOT&E for ASTAMIDS
•	7315	Conduct HSTAMIDS source selection and initiate EMD.
•	806	Procure HSTAMIDS long lead test hardware.
Total	44133	

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 97 President's Budget	1881	14232	22866	36637
Appropriated Value	1990	2172		
Adjustments to Appropriated Value	-156			
FY 98 Pres Bud Request	1834	2172	22605	44133

Change Summary Explanation:

Funding: FY 97 transfer of $12M by direction of Congress to 0603619A D606 to continue DEM/VAL, conduct evaluation of alternative technologies and delay start of EMD for ASTAMIDS.

FY99 increase of $3.9M in accordance with restructured EMD phase for ASTAMIDS and $3.6M to accelerate HSTAMIDS.

Schedule: Milestone II IPR for ASTAMIDS delayed until 4Q97. Milestone III for ASTAMIDS rescheduled for 4Q00.

C. Other Program Funding Summary	FY 1996	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	35768	27860	15115	6956	6368	17564	8600	9800	Cont	Cont
OPA 3, A Appropriation										
M80101, IVMMD			6400	4333	3992					14725
S11500, ASTAMIDS						11144	12003	12059	Cont	Cont
M80300, ESMB						3413	7413	7417	Cont	Cont

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604808A Landmine Warfare/Barrier - Engineering Development

PROJECT: D415

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
Award Contract and Procure Test Hardware for IVMMD		X*														
Conduct Test and Evaluation for IVMMD				X*												
Conduct Milestone III Review IVMMD							X									
Conduct Milestone II Review for ASTAMIDS								X								
Conduct Source Selection and Initiate Engineering Development Design for ASTAMIDS								X								
Complete ASTAMIDS EMD Design												X				
Conduct Milestone II for ESMB									X							
Conduct ESMB Design Review																X
Conduct Milestone II for HSTAMIDS												X				
Award HSTAMIDS EMD Contract													X			

*Milestone Complete

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604808A Landmine Warfare/Barrier - Engineering Development

PROJECT: D415

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development	1097	1119	16305	36933
Test and Evaluation	190		1600	1420
Government Engineering and Support	447	800	4300	5080
Government Program Management	100	200	400	700
SBIR/STTR		53		
Total	1834	2172	22605	44133

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
TBD	TBD	TBD					1119	16305	36933	Cont	54357
Misc.	Various	Various				1097				0	1097
SBIR/STTR							53				53
Support and Management Organizations											
NVESD/CECOM		Various				547	800	3500	4100	Cont	8947
Misc.		Various					200	1200	1680	Cont	3080
Test and Evaluation Organizations											
TECOM		Various				190		1600	1420	Cont	3210
Misc.		Various									

Government Furnished Property: None

Subtotal Product Development	1097	1172	16305	36933	55507
Subtotal Support and Management	547	1000	4700	5780	12027
Subtotal Test and Evaluation	190		1600	1420	3210
Total Project	1834	2172	22605	44133	70744

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604814A Sense and Destroy Armor Munition - Engineering Development

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	15764	9934	22372	20813	12873	1960	0	0	0	1004761
D2ST SADARM Operational Test	0	300	5494	0	0	0	0	0	0	5794
D644 Generic SADARM Engineering Development	15764	9634	16878	20813	12873	1960	0	0	0	998967

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 begins 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 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 1997

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 1996 Actual	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
D2ST SADARM Operational Test	0	300	5494	0	0	0	0	0	0	5794

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 is restructured from SSN E66300, Projectile, Artillery, 155mm SADARM, M898, Procurement Ammunition, Army, and is not a new start.

FY 1996 Accomplishments : Project not funded in FY 96

FY 1997 Planned Program:

•	293	Planning and preparation for test during the 3QFY98 IOTE
•	7	Small Business Innovation Research (SBIR) Program
Total	300	

FY 1998 Planned Program:

•	5494	IOTE 3QFY98
Total	5494	

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	309	5575	0
Appropriated Value		300		
Adjustments to Appropriated Value				
FY 1998 Pres Bud Request	0	300	5494	0

C. Other Program Funding Summary: None

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
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 1996				FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Initiate preparation for 3Q FY 1998 IOTE					X											
IOTE											X					

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
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 1996	FY 1997	FY 1998	FY 1999
Operational Test and Evaluation	0	293	5494	0
SBIR		7		
Total		300	5494	

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 1996	FY 1996	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	0	293	5494	0	0	5787
SBIR							7				7
Government Furnished Property: None											
Subtotal Product Development											
Subtotal Support and Management											
Subtotal Test and Evaluation							300	5494			5794
Total Project							300	5494			5794

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

DATE: February 1997

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 1996 Actual	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
D644 Generic SADARM Engineering Development	15764	9634	16878	20813	12873	1960	0	0	0	998967

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 have continued this relationship into production. The Engineering and Manufacturing Development contract with Aerojet has been completed. Starting in FY 1997, a contract will be awarded 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.

Production: A four-year low rate production (LRP) program was initiated in FY 1995. Two contract awards are planned, each with subsequent annual options.

FY 1996 Accomplishments:

•	1900	Conducted 155mm performance testing
•	8350	Producibility efforts/testing
•	5514	Transited to production efforts
Total	15764	

FY 1997 Planned Program:

•	640	Hardware in-the-loop support
•	1750	Initial/design planning for combined effects warhead
•	4000	Trade studies and test for electronics sensor/software
•	850	Test hardware
•	2167	Government support and development of initial test criteria/schedules/plans
•	227	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	9634	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604814A Sense and Destroy Armor Munition - Engineering Development
	PROJECT D644

FY 1998 Planned Program:

•	600	Hardware in-the-loop support
•	2050	Design of the combined effects warhead
•	9200	Electronic sensor software development
•	1650	Test hardware
•	3378	Government support to development
Total	16878	

FY 1999 Planned Program:

•	750	Hardware in-the-loop support
•	3400	Design of the combined effects warhead
•	8800	Electronic sensor software development
•	4000	Test hardware
•	3863	Government support to development
Total	20813	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget Request	16164	9840	17000	21000
Appropriated Value	16617	9634		
Adjustments to Appropriated Value	-853			
FY 1998 Pres Bud Request	15764	9634	16878	20813

C. Other Program Funding Summary

	FY 1996	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	41103	93671	67909	77572	84335	83724	89597	99699	1738558	2383992
LRIP Quantities	150	600	507							

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604814A Sense and Destroy Armor Munition - Engineering Development

PROJECT: D644

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
Final verification tests		X*														
Award option to first LRP contract			X*													
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: 3Q 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 1997

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 1996	FY 1997	FY 1998	FY 1999
Contractor Engineering Support	11572	7240	13500	16950
Government Engineering Support	1630	1767	2799	2702
Program Management Support	635	250	250	250
Developmental Test and Evaluation	1927	150	329	911
SBIR/STTR		227		
Total	15764	9634	16878	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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Prod Improv:- Aerojet- Azusa, CA	SS/CPAF	FEB 97	TBD	TBD	0	0	6600	12900	16200	11200	46900
Aerojet-Azusa, CA	C/CPIF	SEP 86	436202	442460	424630	11572				0	436202
ARDEC-Picatinny					59403	1065	640	600	750	800	63258
Alliant Tech Sys Hopkins, MN	C/CPIF	SEP 86	TBD	188714	188038	0	0	0	0	0	188038
Loral Vought Sys Dallas, TX	SS/CPIF	SEP 88	TBD	90535	90535	0	0	0	0	0	90535
Miscellaneous	Multiple	Multiple			7645	0	0	0	0	0	7645
Support and Management Organizations											
Prod Improv: ARDEC PM SADARM							250	250	250	0 350	1100
Picatinny Arsenal					12245	1630	1767	2699	2202	2116	22659

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

DATE: February 1997

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
PMO-MLRS, Huntsville, AL					16266					0	16266
Miscellaneous					8368	500				0	8868
SBIR/STTR							227				227
Test and Evaluation Organizations											
YPG, Yuma, AZ					20352	765	40	329	911	367	22764
WSMR New Mexico					26487					0	26487
Miscellaneous					67076	232	110	100	500	0	68018
Government Furnished Property: None											
Subtotal Product Development					770251	12637	7240	13500	16950	12000	832578
Subtotal Support and Management					36879	2130	2244	2949	2452	2466	49120
Subtotal Test and Evaluation					113915	997	150	429	1411	367	117269
Total Project					921045	15764	9634	16878	20813	14833	998967

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604816A Longbow

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	21969	10644	0	0	0	0	0	0	0	575057
DC31 Longbow - Apache	8782	4895	0	0	0	0	0	0	0	556121
DC87 Longbow - Apache TESS	13187	5749	0	0	0	0	0	0	0	18936

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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604816A Longbow

PROJECT: DC31

COST (*In Thousands*)	FY 1996 Actual	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
DC31 Longbow - Apache	8782	4895	0	0	0	0	0	0	0	556121

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.

Acquisition Strategy: The acquisition strategy involves a sole source contract during the Engineering and Manufacturing Development phase leading to a production contract in FY 96.

FY 1996 Accomplishments:

•	6416	McDonnell Douglas Helicopter Systems (MDHS) Prime Contract
•	1236	Longbow Limited Liability Corporation Contract Blade Position Indicator System (BPIS)
•	492	In-house support
•	638	Optical Relay Tube (ORT) Handgrip Modification
Total	8782	

FY 1997 Planned Program:

•	4775	Second Generation FLIR (Forward Looking Infrared)
•	120	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	4895	

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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604816A Longbow

PROJECT: DC31

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	9008	0	0	0
Appropriated Value	9261	4895		
Adjustments to Appropriated Value	-479			
FY 1998 BES/Pres Bud Request	8782	4895	0	0

Change Summary Explanation: Funding: FY97 (+4895) Congressional increase for 2nd Generation FLIR.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Aircraft Procurement, Army (AA6607)*	346162	320739	417680	500071	556814	576846	571865	595512	2234325	6195739

*Includes procurement funding for TESS (shown in Project DC87) and for spares and advanced procurement.

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
Line Replaceable Units Qualification	X*															
Environmental Control System Redesign	X*															
Optical Relay Tube (ORT) Handgrip Mod				X*												
Second Generation FLIR on contract							X									
Integration/Flight Testing FLIR											X					
Blade Position Indicator System			X*													

*Denotes completed activity.

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604816A Longbow

PROJECT: DC31

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Contractor Engineering and Development	8290	4000		
Government In-House Program Management	492			
Other Government Support	0	775		
Process Action Team Support (PATS) Contractor Program Support	0			
SBIR/STTR		120		
Total	8782	4895		

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
McDonnell Douglas Helicopter Systems (Airframe Modifications)	CPIF	Aug 89		459566	453150	6416				0	459566
Lockheed Martin ORT Handgrip Modifications	Basic Ordering Agreement			3889	3251	638				0	3889
Longbow Limited Liability Corp BPIS				1236		1236				0	1236
Lockheed Martin Second Generation FLIR	Basic Ordering Agreement			4000			4000			0	4000
Support and Management Organizations											
Govt. Prog. Mgmt.	Varies	Quarterly			75026	492				0	75518

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604816A Longbow

PROJECT: DC31

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
PATS Contractors	Varies	Quarterly			6903					0	6903
SBIR/STTR							120			0	120
Test and Evaluation Organizations											
Test Activities	Varies	Quarterly			4114					0	4114
FLIR Testing	Aviation Tech Test Center (Ft. Rucker)						775			0	775
Government Furnished Property	Not applicable										
Subtotal Product Development					456401	8290	4000				468691
Subtotal Support and Management					81929	492	120				82541
Subtotal Test and Evaluation					4114		775				4889
Total Project					542444	8782	4895				556121

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604816A Longbow

PROJECT: DC87

COST (*In Thousands*)	FY 1996 Actual	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
DC87 Longbow - Apache TESS	13187	5749	0	0	0	0	0	0	0	18936

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 1996 Accomplishments:

•	7164	Development, fabrication, and integration of the TESS "A" kit and "B" kit
•	3084	Development, fabrication, and integration to upgrade Combat Training Centers (CTCs)
•	1989	Continued development of the Longbow Crew Trainer
•	950	Fire Control Radar Engineering Support
Total	13187	

FY 1997 Planned Program:

•	4608	Complete integration of the TESS "A" and "B" kits
•	1000	Complete integration of the CTC interface
•	141	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	5749	

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	13937	5872	0	0
Appropriated Value	14329	5749		
Adjustments to Appropriated Value	-1142			
FY 1998 BES/Pres Bud Request	13187	5749	0	0

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604816A Longbow
	PROJECT DC87

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Longbow Apache TESS (AA6607)*	0	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.

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
Initiated TESS "A" & "B" kits development, fabrication and integration			X*													
Continue TESS "A" & "B" kits integration						X										
Longbow Crew Trainer	X*															
Complete TESS "A" & "B" kits integration											X					

*Denotes completed activity.

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604816A Longbow

PROJECT: DC87

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Contractor Engineering and Development	11198	5608		
Longbow Crew Trainer Development	1989	0		
SBIR/STTR		141		
Total	13187	5749		

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
McDonnell Douglas Helicopter System					0	7903	3626		0	0	11529
Lockheed Martin Electro Optics Systems						2728					2728
Intercostal Electronics						907					907
Support and Management Organizations:											
STRICOM					0	343				0	343
CECOM					0	356	500			0	856
Longbow Limited Liability Corp.					0	950	400			0	1350
In House Support					0	0	668			0	668
SBIR/STTR							141			0	141
Test and Evaluation Organizations:											
Test Activities	Varies	Quarterly			0	0	414			0	414

Government Furnished Property Not applicable

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604816A Longbow PROJECT DC87

	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	0	11538	3626				
Subtotal Support and Management	0	1649	1709				
Subtotal Test and Evaluation	0	0	414				
Total Project	0	13187	5749				

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604817A Combat Identification - Engineering & Manufacturing Development

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	23669	16411	19784	13379	9957	9912	10430	10472	Continuing	Continuing
D482 Combat Identification EMD	23669	13575	14773	7867	6956	6916	7439	7481	Continuing	Continuing
D901 All Service Combat ID Evaluation Team	0	2836	3003	3006	3001	2996	2991	2991	Continuing	Continuing
D902 Dismounted Soldier CID	0	0	2008	2506	0	0	0	0	0	4497

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 Element (PE) is directed toward the design and development of distinct technology devices to help minimize this battlefield deficiency. The projects within this PE are in the Engineering and Manufacturing Development (EMD) phase and the PE 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. Project D902 is a new start.

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604817A Combat Identification - Engineering & Manufacturing Development

PROJECT: D482

COST (*In Thousands*)	FY 1996 Actual	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
D482 Combat Identification EMD	23669	13575	14773	7867	6956	6916	7439	7481	Continuing	Continuing

A. Mission Description and Justification: The Battlefield Combat Identification System (BCIS) is the lead Army horizontal technology initiative using the "A kit" (platform specific) and "B kit" (common to all platforms) philosophy. The program takes advantage of acquisition streamlining and directs industry to use commercial parts and practices to shorten acquisition timelines and to reduce cost. The purpose of BCIS is to reduce fratricide, a problem made increasingly difficult for gunners as we participate in coalition warfare where partners operate weapon systems formerly associated with adversaries. BCIS is a millimeter wave (mmW), ground-ground (G-G), point-of-engagement system which provides through-the-sight, day/night, all weather positive identification of BCIS equipped U.S., Allied and coalition platforms. Shooters query potential targets at ranges that can extend beyond 5 km. Friendly platforms targeted by friendly shooters generate automatic electronic responses in less than one second. BCIS is resistant to electronic countermeasures, active exploitation and deception. BCIS will be demonstrated during the Army Digitization Exercise, Task Force XXI. It will be used by combat, combat support, and combat services support units.

Acquisition Strategy: A competitive, cost plus award fee contract, for 45 EMD units and option quantities, was awarded Aug 93. Additional quantities have been procured for participation in TF XXI AWE and the Combat ID International Demonstration. This contract has been modified to include producibility engineering efforts that will lead to the Low Cost Design for the BCIS.

FY 1996 Accomplishments:

•	673	Completed technical and user testing.
•	14375	Completed hardware build for platform integration, and training/maintenance for TF XXI.
•	3812	Initiated producibility engineering design efforts.
•	3000	All Service Combat Identification Evaluation Team (ASCIET) Support.
•	1809	Completed hardware build for International Demonstration.
Total	23669	

FY 1997 Planned Program:

•	3359	Provide technical, integration, training and maintenance support for TF XXI experiment.
•	2225	Complete producibility engineering design effort.
•	5171	Initiate fabrication, assembly and test of Low Cost Producibility models.
•	2500	Develop/update system software for Low Rate Initial Production models.
•	320	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	13575	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604817A Combat Identification - Engineering & Manufacturing Development PROJECT D482

FY 1998 Planned Program:

•	450	Continue logistic support for BCIS leave behind systems.
•	1470	Complete fabrication and assembly of Low Cost Producibility models.
•	530	Conduct Interoperability Testing.
•	12323	Initiate fabrication, assembly and test LRIP systems for IOTE.
Total	14773	

FY 1999 Planned Program:

•	550	Continue logistic support for BCIS leave behind systems.
•	3578	Complete fabrication, assembly and test of IOTE hardware.
•	3000	Conduct government PPQT and IOTE.
•	739	Conduct MS III efforts and initiate request for proposal preparation.
Total	7867	

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget Request	21853	13886	9730	9752
Appropriated Value	22074	13575		
Adjustments to Appropriated Value	1595			
FY 1998 Pres Bud Request	23669	13575	14773	7867

Change Summary Explanation:

Funding: Funding provided for additional BCIS units to support International Demonstration (FY 96 +1595) and IOT&E (FY 98 +5043).

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 1996	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	3291	3604	3532	3552	3438	3584	3671	3769	continues	continues
RDTE A, Budget Activity 3, PE 0603772A Proj D281 Ground Combat ID Demo	6624	6897	3362	0	0	0	0	0	0	31454

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604817A Combat Identification - Engineering & Manufacturing Development

PROJECT: D482

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
Completed technical and user testing	X*															
Completed hardware build for platform integ, maint/training for TF XXI			X*													
Initiate producibility engrg design effort			X*													
Complete hardware build for Int'l Demo				X*												
Provide tech, integ, tng/maint for TF XXI					X											
Develop software including French wave-form and appliqué/DDL interface					X											
Complete producibility engrg design effort						X										
Initiate fab, assy, test of LRIP models (35)						X										
Complete fab/assy of LRIP models (35)									X							
Continue TF XXI hardware support									X							
Conduct Interoperability Test										X						
Initiate fab, assy/test of IOTE hardware										X						
Complete fab, assy/test of IOTE hardware													X			
Conduct Platform Compatibility Demo														X		
Conduct PPQT/IOTE														X		
Conduct MS III efforts and initiate RFP prep																X

* Denotes Milestones completed

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604817A Combat Identification - Engineering & Manufacturing Development

PROJECT: D482

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development	14302	10027	12376	4090
Platform Integration	2060		1212	
System Engineering/Program Management Support				
Government	1280	1264	478	389
Contractor	1454	1014	310	139
Program Management Personnel	900	950	397	249
Development Test and Evaluation	673			1250
Operational Test and Evaluation				1750
ASCIET	3000			
SBIR/STTR		320		
Total	23669	13575	14773	7867

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
TRW	C/CPAF	12 Aug 93	69807	69807	29012	14302	10027	12376	4090		69807
GDLS	SS/CPFF	29 Apr 94	8715	8715	6655	1560		500			8715
Misc.	MIPR				3102	500		712			4314
Support and Management Organizations											
Proj Management	Multiple				7579	2354	1964	707	388		12992
CECOM	MIPR				5276	1280	1264	478	389		8687
Test and Evaluation Organizations											
TECOM	MIPR				1850				1250		3100
TEXCOM	MIPR	15 Oct 95				673			1750		2423
ASCIET	MIPR	2Q 96			973	3000					3973
SBIR/STTR							320				320

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1997
BUDGET ACTIVITY **5 - Engineering and Manufacturing Development**	PE NUMBER AND TITLE **0604817A Combat Identification - Engineering & Manufacturing Development**
	PROJECT **D482**

Government Furnished Property: Not Applicable

	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	38769	16362	10027	13588	4090		82836
Subtotal Support and Management	12855	3634	3228	1185	777		21679
Subtotal Test and Evaluation	2823	3673	320		3000		9816
Total Project	54447	23669	13575	14773	7867		114331

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604817A Combat Identification - Engineering & Manufacturing Development

PROJECT: D901

COST (*In Thousands*)	FY 1996 Actual	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
D901 All Service Combat ID Evaluation Team	0	2836	3003	3006	3001	2996	2991	2991	Continuing	Continuing

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 funded through Project D482. Restructuring was required because ASCIET is an independent effort from the BCIS EMD work.

Acquisition Strategy: Not applicable

FY 1996 Accomplishments: Funded through PE 0604817A

FY 1997 Planned Program:

•	43	Demonstrate situational awareness to BCIS through digital data link reporting to include friend indication, GPS location, unit ID, SINCGARS call sign/frequency.
•	1482	Demonstrate A-G target identification capability for rotary wing (OH-58D) platforms via SINGARS SIP(+) radio and embedded GPS interface (EGI).
•	818	Demonstrate direct target ID capability for both fixed wing (AV-8B) and rotary wing (AH-64).
•	424	Demonstrate automated "nine line" message generation utilizing Automatic Target Hand-off System (ATHS) II data link to locate and identify targets for fixed wing aircraft.
•	69	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
Total	2836	

FY 1998 Planned Program:

•	750	Assess joint C3I interoperability.
•	750	Assess surface-air and air-air CI capabilities in joint environment.
•	1503	Evaluate surface-air, air-ground, ground-ground CI systems.
Total	3003	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604817A Combat Identification - Engineering & Manufacturing Development PROJECT D901

FY 1999 Planned Program:

- 1506 Evaluate surface-air emerging technologies.
- 750 Continue assessing surface-air and air-ground capabilities in joint environment.
- 750 Continue joint C3I interoperability.

Total 3006

B. Project Change Summary:	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	2897	0	0
Appropriated Value		2836		
Adjustments to Appropriated Value				
FY 1998 Pres Bud Request		2836	3003	3006

Change Summary Explanation: Funding: FY98/FY99 - Funding provided to continue Army participation in ASCIET

C. Other Program Funding Summary: None

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
Conduct field test and demonstrations							X	X								
Assess joint C3I interoperability									X							
Assess surface-air, air-ground capabil.									X							
Evaluate surface-air, air-ground, ground-ground CI systems											X					
Evaluate surface-air emerging tech													X			
Continue evaluating surface-air, air-ground, ground-ground													X			
Continue joint C3I operability														X		

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604817A Combat Identification - Engineering & Manufacturing Development

PROJECT: D901

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
ASCIET		2767	3003	3006
SBIR/STTR		69		
Total		2836	3003	3006

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 1996	FY 1996	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						2767	3003	3006	12000	20776
SBIR/STTR							69				69
Government Furnished Property: Not Applicable											
Subtotal Product Development											
Subtotal Support and Management											
Subtotal Test and Evaluation							2836	3003	3006	12000	20845
Total Project							2836	3003	3006	12000	20845

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604817A Combat Identification - Engineering & Manufacturing Development

PROJECT: D902

COST (*In Thousands*)	FY 1996 Actual	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
D902 Dismounted Soldier CID	0	0	2008	2506	0	0	0	0	0	4497

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 light for aiming the soldier's weapon at night when using Night Vision Goggles. The system will provide range of at least two 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 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 Joint Service Operational Requirements Document for use by Army, Marine and Special Operations applications. This is not a new start, efforts were previously funded under PE 0602120A project AH15, Ground Combat Identification Technology.

Acquisition Strategy: A competitive, cost plus contract for delivery and testing of approximately 150 units for IOTE.

FY 1996 Accomplishments: Project not funded in FY 96

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program:

•	509	Conduct best value proposal evaluation/Milestone II activities.
•	250	Conduct MS II Decision Review activities.
•	1249	Initiate Hardware/Software engineering design effort
Total	2008	

FY 1999 Planned Program:

•	1000	Complete hardware engineering design effort.
•	650	Complete special tooling/peculiar support equipment development.
•	856	Continue software engineering development/design effort.
Total	2506	

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604817A Combat Identification - Engineering & Manufacturing Development

PROJECT: D902

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget			0	0
Appropriated Value				
Adjustments to Appropriated Value				
FY 1998 Pres Bud Request			2008	2506

Change Summary Explanation: Funding: FY98/FY99 funding provided to begin E&MD

C. Other Program Funding Summary

	FY 1996	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	3291	3604	3532	3552	3438	3584	3671	3769		
OPA2,BA0515 Combat I D Aiming Light					9980	11748	14620	14536		

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
Contract Award										X						
Conduct MS II										X						
Initiate hdw/sftw eng design											X					
Complete hdw design													X			
Complete spec tools/spt equipment design													X			
Continue software design effort													X			

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604817A Combat Identification - Engineering & Manufacturing Development

PROJECT: D902

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Primary Hardware Development			1839	2298
System Engineering/Program Management Support				
Government			79	108
Contractor			0	
Program Management Personnel			90	100
Total			2008	2506

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organization											
TBS	CPAF	3Q98	TBD	TBD				1848	2306	0	4154
Support and Management Organizations											
CECOM	MIPR				0	0	0	160	200	0	360

Test and Evaluation Organizations: None

Government Furnished Property: Not Applicable

Subtotal Product Development			1848	2306
Subtotal Support and Management			160	200
Subtotal Test and Evaluation				
Total Project			2008	2506

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604818A Army Tactical Command and Control Hardware & Software

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	27231	15780	20022	18697	19717	19709	21910	22267	Continuing	Continuing
DC34 Army Tactical C2 Systems (ATTCS) Engineering	19638	8159	7951	7790	8381	8349	8742	8978	Continuing	Continuing
D323 Common Hardware Software (CHS)	7593	7621	12071	10907	11336	11360	13168	13289	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. The Common Hardware Software (CHS) project provides common hardware and software to customers to meet their developmental and fielding needs. 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 1997

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 1996 Actual	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
DC34 Army Tactical C2 Systems (ATTCS) Engineering	19638	8159	7951	7790	8381	8349	8742	8978	Continuing	Continuing

A. **Mission Description and 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 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 automated, a significant management, systems engineering and integration effort is required.

Acquisition Strategy: This project provides the technical and programmatic disciplines required for systems engineering and integration, experimentation, acquisition management, testing, Ada software development, interoperability, fielding, and sustainment to assure an interoperable, affordable ATCCS. The Program Executive Officer Command, Control and Communications Systems (PEO C3S) has planned an evolutionary approach to fielding the ATCCS as soon as possible.

FY 1996 Accomplishments:

•	1560	Performed functional analysis and updated command post analysis to support ABCS and Army Warfighter Experiments (AWE)
•	867	Extended the ABCS data architecture and standardization program to additional functional areas
•	542	Continued the technology insertion program, e.g., advanced communication protocols, advanced networking, tactical decision aids, and distributed databases
•	6779	ABCS/Task Force XXI interoperability engineering and system level engineering support
•	487	Incorporated technology for Brigade and Below Command and Control (B2C2) applications into embedded applications
•	1842	Conducted/supported system configuration developmental/operational demonstrations in preparation for the MCS Limited User Test (LUT) and other BFA Operational Tests (OTs)
•	4322	Division XXI TOCs
•	3239	Division XXI system integration and interoperability
Total	19638	

FY 1997 Planned Program:

•	500	Perform functional analysis and update command post analysis to support ABCS and AWE
•	900	Implement the ABCS data architecture and standardization program in all Battlefield Functional Areas (BFAs) to facilitate Army Technical Architecture (ATA) compliance

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604818A Army Tactical Command and Control Hardware & Software PROJECT DC34

FY 1997 Planned Program: (continued)

•	1245	Continue ABCS/AWE system level training and logistics development
•	3415	ABCS/AWE interoperability engineering and system level engineering support
•	1400	Conduct/support system configuration developmental/operational demonstrations in conjunction with MCS IOT&E and other BFA OTs
•	500	Develop the ABCS security architecture to support Division 2000
•	199	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
Total	8159	

FY 1998 Planned Program:

•	300	Perform functional analysis and update command post analysis to support ABCS and AWE
•	1250	Continue ABCS/AWE system level training and logistics development
•	3651	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 developmental/operational demonstrations in conjunction with BFA OTs and AWEs
•	500	Develop and Implement the ABCS security architecture
•	800	Implement the ABCS data architecture and standardization program to all Battlefield Functional Areas to facilitate ATA compliance
Total	7951	

FY 1999 Planned Program:

•	300	Perform functional analysis and update command post analysis to support ABCS
•	1200	Continue the ABCS system level training and logistics development
•	3540	ABCS interoperability engineering and system level eng support/perform dependency analyses and verification and validation of all BFA fielded software, including common and unique applications
•	1450	Conduct and support system configuration developmental/operational demonstrations in conjunction with BFA OTs
•	800	Implement the ABCS data architecture and standardization program for all BFAs to facilitate ATA compliance
•	500	Develop and Implement ABCS security architecture
Total	7790	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604818A Army Tactical Command and Control Hardware & Software
	PROJECT DC34

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	10408	8645	8579	8460
Appropriated Value	10513	8159		
Adjustments to Appropriated Value	9125			
FY 1998 Pres Bud Request	19638	8159	7951	7790

Change Summary Explanation:

Funding: FY 96 increased (+6389) to support the Division XXI requirements for Systems Engineering, Integration, and Interoperability (+2736) and hardware for the Tactical Operations Centers (TOCs).

C. Other Program Funding Summary: Not Applicable

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
Finalize Objective ATCCS specification			X*													
ATCCS System Confidence Demo-6				X*												
ATCCS V1 Operational Test & Evaluation					X*											
Participate in Task Force XXI AWE						X										
ATCCS System Confidence Demo-7								X								
Participate in Division XXI AWE									X							
ATCCS Log Maint Demo											X					
ATCCS System Confidence Demo-8												X				
ATCCS Log Maint Demo															X	
ATCCS System Confidence Demo-9																X

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

DATE: February 1997

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 1996	FY 1997	FY 1998	FY 1999
System Engineering and Integration Support	19638	7960	7951	7790
SBIR/STTR		199		
Total	19638	8159	7951	7790

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
TRW	PWD					2492	967				3459
CSC	PWD					2632					2632
CSC	PWD					4864	4669	5763	5764	Cont	21060
GTE	PWD					3683					3683
MITRE	MIPR					2925	336	350	350	Cont	3961
Misc. Contracts	PWD					2229	1264	1200	1050	Cont	5743
Matrix-CECOM	MIPR					813	724	638	626	Cont	2801
SBIR/STTR							199				199
Support and Management Organizations: None											
Test and Evaluation Organizations: None											
Government Furnished Property: None											
Subtotal Product Development						19638	8159	7951	7790		43538
Subtotal Support and Management											
Subtotal Test and Evaluation											
Total Project						19638	8159	7951	7790		43538

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

DATE: February 1997

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 1996 Actual	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
D323 Common Hardware Software (CHS)	7593	7621	12071	10907	11336	11360	13168	13289	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 1996 Accomplishments:

•	2589	Continued management of the acquisition and delivery of CHS equipment (LCU/CHS-1/CHS-2) in support of customer requirements
•	3639	Continued execution of common hardware and common software reuse programs
•	905	Continued testing CHS-2 equipment (User Confidence Test, Reliability, First Article Test). Manage total testing program in support of customer requirements
•	460	Continued exploring state of the art technology insertion in support of ABCS
Total	7593	

FY 1997 Planned Program:

•	2655	Continue management of the acquisition and delivery of CHS equipment (LCU/CHS-2) in support of customer requirements
•	3704	Continue execution of common hardware, software technology and command post programs
•	467	Continue supporting customers testing efforts with CHS equipment
•	650	Continue exploring state of the art technology insertion in support of ABCS
•	145	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)
Total	7621	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604818A Army Tactical Command and Control Hardware & Software PROJECT D323

FY 1998 Planned Program:

•	2651	Continue management of the acquisition and delivery of CHS equipment (LCU/CHS-2) in support of customer requirements
•	3697	Continue execution of common hardware, software technology and software reuse programs
•	469	Continue supporting customers testing efforts with CHS equipment
•	695	Continue the exploration of state of the art technology insertion in support of ABCS programs
•	4559	Develop, integrate and upgrade Army Common Operating Environment (COE) products, technology insertion and Command Control Vehicle (C2V) interoperability upgrade and testing
Total	12071	

FY 1999 Planned Program:

•	2599	Continue management of the acquisition and delivery of CHS-2 equipment in support of customer requirements
•	3499	Continue execution of common hardware, software technology and software reuse programs
•	450	Continue supporting customers testing efforts with CHS equipment
•	695	Continue exploring state of the art technology insertion in support of ABCS programs
•	3664	Continue developing, integrating and upgrading Army COE products, technology insertion and C2V interoperability upgrade and testing
Total	10907	

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	7755	7784	7730	7627
Appropriated Value	7833	7621		
Adjustments to Appropriated Value	-240			
FY 1998 Pres Bud Request	7593	7621	12071	10907

Change Summary Explanation:

Funding: FY 98/FY99: Funds realigned to this project to support development of Common Operating Environment (COE) software essential to implement the Army Technical Architecture (ATA) Migration plans and digitization efforts (FY 98 +4341, FY 99 +3280)

C. Other Program Funding Summary: Not Applicable

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604818A Army Tactical Command and Control Hardware & Software PROJECT D323

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
CHS-2 Production Delivery V-2/V3 Start		X*														
Last LCU orders processed							X									
Last CHS-1 orders processed								X								
CHS-2 Technology Insertion (continuous)									X	X	X	X	X	X	X	X

*Milestone Complete

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

DATE: February 1997

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 1996	FY 1997	FY 1998	FY 1999
Program Management Personnel	4595	4626	4870	4805
Contract Engineering Support	2998	2850	7201	6102
SBIR/STTR		145		
Total	7593	7621	12071	10907

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Matrix-CECOM						1287	1248	1314	1297	Cont	5146
Misc. Contracts						2998	2750	7201	6102	Cont	19051
SBIR/STTR							145				145
Support and Management Organizations											
In-House (CHS)						3308	3478	3556	3508	Cont	13850
Test and Evaluation Organizations											
None											
Subtotal Product Development						4285	4143	8515	7399		24342
Subtotal Support and Management						3308	3478	3556	3508		13850
Subtotal Test and Evaluation											
Total Project						7593	7621	12071	10907		38192

Government Furnished Property: None

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604820A Radar Development

PROJECT: DE10

COST (*In Thousands*)	FY 1996 Actual	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
DE10 FAAD Ground Based Sensor	500	0	0	0	6064	9535	9229	0	0	25328

A. Mission Description and Budget Item Justification: The Forward Area Air Defense Ground Based Sensor (FAAD GBS), 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 FAAD GBS 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 FAAD GBS contributes to the digital battlefield by automatically detecting, classifying, identifying, and reporting targets [cruise missiles, and unmanned aerial vehicles (UAV's), rotary wing and fixed wing aircraft]. Targets can be hovering to fast moving, as well as, from nap of the earth to the maximum engagement altitude of FAAD weapons. Very accurate and quick reacting, FAAD GBS acquires targets sufficiently forward of the Forward Line of Troops to improve FAAD weapon reaction time and allow engagement at optimum ranges. The FAAD GBS integrated IFF reduces the potential for fratricide of Army Aviation and Air Force aircraft. Highly mobile and reliable, the FAAD GBS Anti-Radiation Missile and Electronic Countermeasures resistant performance support Army Corps and Divisional Air Defense operations across the full spectrum of conflict. This project is related to an engineering and manufacturing development program and is therefore correctly placed in BA 5.

Acquisition Strategy: The FAAD GBS pre-production contract was awarded on a competitive best value basis with options for Low Rate Initial Production and Full Rate Production.

FY 1996 Accomplishments:

•	500	Completed reliability testing
Total	500	

FY 1997 Planned Program: Project not funded in FY 97

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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604820A Radar Development

PROJECT: DE10

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	0	0	0
Appropriated Value	0			
Adjustments to Appropriated Value	500			
FY 1998 Pres Bud Request	500	0	0	0

Change Summary Explanation: Funding: FY 96 - Funding reprogrammed from 0604270A.DL18 to support reliability testing (+500)

C. Other Program Funding Summary

	FY 1996	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)	61882	68783	41014	40071	34283	51545	16688	34206	28111	386245
Spares (SSN BS 9732)	2324	3610	5258	5382						16574

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
Award 1st FSP Option		X*														
Participate in Task Force XXI				X	X	X										
Conduct Production Verification Test					X	X										
Award 2nd FSP Option						X										
FUE Production							X									
Award 3rd FSP Option										X						
Award 4th FSP Option														X		

*Milestone Completed

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604820A Radar Development

PROJECT: DE10

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Test Support	500			
Total	500			

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
Hughes Aircraft Company	C/FFP	Feb 92	56836	56836	56836					17128	73964
MICOM	MIPR				18704						18704
Other/Misc.	MIPR				5270						5270
Support and Management Organizations											
MICOM	MIPR				20125					1919	22044
Other/Misc.	MIPR				1707						1707
Test and Evaluation Organizations											
OPTEC	MIPR				24180						24180
Other/Misc.	MIPR				7703						7703
TECOM	MIPR				1133	500				5781	7414
Subtotal Product Development					80810					17128	97938
Subtotal Support and Management					21832					1919	23751
Subtotal Test and Evaluation					33016	500				5781	39297
Total Project					135658	500				24828	160986

Government Furnished Property: None

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604823A Firefinder

PROJECT: DL85

COST (*In Thousands*)	FY 1996 Actual	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
DL85 Firefinder Pre-Planned Product Improvement	0	2496	2564	12022	23248	24000	5788	0	0	70118

A. Mission Description and Budget Item Justification: The Firefinder Pre-Planned Product Improvement (P3I) program will upgrade the AN/TPQ-37 Artillery Locating Radar by replacing the Antenna Transceiver Group (ATG). This upgrade 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) Pre-Planned Product Improvement (P3I) was approved 25 Sep 96. This upgrade 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 P3I will also 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 also leverage off the AN/TPQ-36(V)8 Electronics Upgrade program by using the same modern shelter and radar signal processor. The Firefinder P3I will be integrated into the targeting structure by interfacing with the Advanced Field Artillery Tactical Data System (AFATDS). A new PE/Project beginning in FY 97 was established for this Materiel Change (MC). This MC will be in the Engineering and Manufacturing Development phase of the acquisition cycle and is therefore correctly placed in Budget Activity 5.

Acquisition Strategy: A replacement for the Antenna Transceiver Group will be developed as an upgrade to the AN/TPQ-37 on a competitive basis.

FY 1996 Accomplishments: Project not funded in FY96.

FY 1997 Planned Program:

•	700	Award multiple study contracts for evaluation of program risks and cost/performance trade-offs
•	378	Prepare program and cost documentation to support a Milestone II decision
•	476	Prepare and release draft solicitation for industry comment
•	159	Finalize and issue solicitation to award an EMD contract in FY 98
•	285	Conduct Integrated Process Team (IPT) with industry to finalize system specification
•	437	Prepare Analysis of Alternatives (AOA) and Threat Analysis
•	61	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	2496	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604823A Firefinder
	PROJECT DL85

FY 1998 Planned Program:

•	384	Conduct Source Selection Evaluation Board (SSEB)
•	1956	Award EMD contract and initiate hardware/software design of new ATG
•	224	Conduct hardware Preliminary Design Review (PDR)
Total	2564	

FY 1999 Planned Program:

•	1790	Complete hardware design
•	287	Conduct Critical Design Review (CDR)
•	8922	Begin prototype fabrication
•	1023	Integrate the AN/TPQ-36(V)8 Electronics Shelter with new ATG
Total	12022	

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	551	2839	13234
Appropriated Value	0	2496		
Adjustments to Appropriated Value	0			
FY 1998/Pres Bud Request	0	2496	2564	12022

C. Other Program Funding Summary

	FY 1996	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						67455	97084	129312	458000	751851

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
Conduct IPTs					X											
Award BAA contracts						X										
Prepare Analysis of Alternatives (AOA)						X										
Prepare and release draft solicitation							X									
Finalize and issue solicitation for EMD FY98 award								X								
Complete documentation for Milestone II								X								
Obtain Milestone II Approval								X								

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604823A Firefinder

PROJECT: DL85

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
Conduct SSEB									X							
Award EMD Contract										X						
Begin prototype fabrication													X			
Integrate AN/TPQ-36(V)8 Shelter														X		

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604823A Firefinder

PROJECT: DL85

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Specification/Technical Parameters Development		1422		
Primary Hardware Development			1796	11057
System Engineering				
Government		663	168	369
Contractor		150	80	156
Source Selection Evaluation Board			384	
Program Management Personnel		200	136	440
SBIR/STTR		61		
Total		2496	2564	12022

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
TBD	C/CPIF	Mar 98		57080				1796	11057	44227	57080
Misc.	BAA/FFP	Jan 97		700			700				700
CECOM	MIPR						722				722
SSEB	MIPR			384				384	0		384
Support and Management Organizations											
Misc.	MIPR						150	216	596	2643	3605
CECOM	MIPR						863	168	369	1620	3020
SBIR/STTR							61				61
Test and Evaluation Organizations											
White Sands	MIPR									2113	2113
Yuma	MIPR									1410	1410
Misc.	MIPR									1273	1273

Government Furnished Property: Not Applicable

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604823A Firefinder

PROJECT: DL85

	Total Prior to FY 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development			1422	2180	11057	44227	58886
Subtotal Support and Management			1074	384	965	4263	6686
Subtotal Test and Evaluation						4796	4796
Total Project			2496	2564	12022	53286	70368

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604854A Artillery Systems - Engineering Development

COST (*In Thousands*)	FY 1996 Actual	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
Total Program Element (PE) Cost	0	2937	0	897	313993	437444	434029	206133	Continuing	Continuing
D503 Crusader - ED	0	0	0	0	311211	434690	433920	202648	Continuing	Continuing
D509 ATCAS	0	2937	0	398	1626	2647	0	0	0	7608
D2KT Crusader Operational Test	0	0	0	499	1156	107	109	3485	Continuing	Continuing

Mission Description and Budget Item Justification: This new program element supports the engineering and manufacturing development efforts for the Crusader-ED program and Advanced Field Artillery System Operational Test. This element also supports the Advanced Towed Cannon Artillery System (ATCAS). 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 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604854A Artillery Systems - Engineering Development

PROJECT: D509

COST (*In Thousands*)	FY 1996 Actual	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
D509 ATCAS	0	2937	0	398	1626	2647	0	0	0	7608

A. Mission Description and Justification: Advanced Towed Cannon Artillery System (ATCAS) will provide the replacement for the M198 155mm Howitzer and achieve significant strategic and tactical mobility improvements. This is a joint program with the Marine Corps as the lead service funding the development of the basic howitzer. The Army will fund the research and development of the product improvements to include: Inertial Navigation System, Electric Drives for Automated Elevation and Deflection Control, a Semi-Automated Loader, Laser Ignition System and Digital Direct Fire Sight.

Acquisition Strategy: To develop and integrate the product improvements on the USMC-developed howitzer. Development will be primarily by subcontract, while integration is expected to be done by the howitzer prime contractor. The development of the digital fire control will leverage the demonstration hardware developed as part of the Rapid Force Projection Initiative (RFPI) program and software developed by PM Paladin.

FY 1996 Accomplishments: Project not funded in FY 96

FY 1997 Planned Program:

•	1000	Perform P3I integration efforts on to the LW155 EMD Howitzer
•	400	Continue engineering efforts to incorporate the laser ignition system in the towed platform
•	915	Create LW towed howitzer and P3I component simulations to reduce technical risk and evaluate engineering change proposals
•	550	Conduct a 52Caliber trade-off study to determine cost, weight, reliability tradeoffs if a 52cal cannon assembly were applied to the LW155 Howitzer
•	72	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	2937	

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program:

•	398	Initiate integrated Early User Test /Engineering Development
Total	398	

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604854A Artillery Systems - Engineering Development

PROJECT: D509

B. Project Change Summary

	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	0	0	412
Appropriated Value		2937		
Adjustments to Appropriated Value				
FY 1998 President's Budget Request	0	2937	0	398

Change Summary Explanation: Funding: FY 1997(+2937) Congressional increase to support the joint of LW155 Howitzer Program.

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE, Marine Corps, PE 060635, C2112	14,392	13,269	35,303	33,915	8,624					71,558
Procurement Marine Corps, BLIN 218500				7,590	106,359	148,435	142,081	142,034	198,578	745,077
Procurement, Army WTCV, SSN G01700								4631	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
P3I Integration Efforts on the LW155							X									
Perform Laser Ignition Integration						X										
Initiate/Develop Component Simulations						X										
Conduct Trade off Study							X									
Initiate Evaluation of Automated FC													X			

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604854A Artillery Systems - Engineering Development

PROJECT: D509

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Government Engineering Support		1,365		298
Contractor Engineering Support		1,400		
Program Management Support		100		100
SBIR/STTR		72		
Total		2937		398

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 1996	FY 1996	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations											
ARDEC-Picatinny	1095	Feb 97	TBD		0		885		298	773	1956
Benet Labs	1095	Feb 97	TBD		0		550				550
Contractor -TBD	SS/CPIF	Mar 97	TBD		0		1330			3,400	4730
SBIR/STTR							72				72
Support and Management Organizations											
PM-JLW		Feb 97	TBD		0		100		100	100	300
Test and Evaluation Organizations: None											
Government Furnished Property: None											
Subtotal Product Development							2837		298	4173	7308
Subtotal Support and Management							100		100	100	300
Subtotal Test and Evaluation											
Total Project							2937		398	4273	7608

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604854A Artillery Systems - Engineering Development

PROJECT: D2KT

COST (*In Thousands*)	FY 1996 Actual	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
D2KT Crusader Operational Test	0	0	0	499	1156	107	109	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 accomplished initially at section level (howitzer crew) and progress to battery and battalion levels to determine overall mission effectiveness and force structure suitability.

Acquisition Strategy: Not applicable

FY 1996 Accomplishments: Project not funded in FY 96

FY 1997 Planned Program: Project not funded in FY 97

FY 1998 Planned Program: Project not funded in FY 98

FY 1999 Planned Program:

•	499	Initiate integrated Early User Test/Engineering Development Tests.
Total	499	

B. Project Change Summary	FY 1996	FY 1997	FY 1998	FY 1999
FY 1997 President's Budget	0	0	0	499
Appropriated Value				
Adjustments to Appropriated Value				
FY 1998 President's Budget Request	0	0	0	499

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1997
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604854A Artillery Systems - Engineering Development PROJECT D2KT

C. Other Program Funding Summary

	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
RDTE A, Budget Activity 4,										
PE 0603645, Project D409 AFAS	135724									546347
PE 0603645, Project DB88 FARV	45923									127370
PE 0603854, Project D505 Crusader - AD		235795	322291	293920	47102					899108
RDTE A, Budget Activity 5,									Cont	Cont
PE 0604854, Project D503 Crusader - EMD					311211	434690	433920	202648		

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
Initiate combined Early Developmental Testing/Early User Testing															X	

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

DATE: February 1997

BUDGET ACTIVITY: 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE: 0604854A Artillery Systems - Engineering Development

PROJECT: D2KT

A. Project Cost Breakdown

	FY 1996	FY 1997	FY 1998	FY 1999
Product Development				
Support and Management				
Test and Evaluation				499
Total				499

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 1996	FY 1996	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									499	Cont	Cont

Government Furnished Property: None

Subtotal Product Development											
Subtotal Support and Management											
Subtotal Test and Evaluation									499	Cont	Cont
Total Project									499	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 20310-1100
1	OSD, ATTN: DOT&E, Pentagon, Room 3E318, Washington, DC 20310
11	ASD(C3I), Pentagon, Room 3E209, Washington, DC 20310
1	ASD(ISA), Pentagon, Room 4B938, Washington, DC 20310
1	ASD(LA), Pentagon, Room 3D918, Washington, DC 20310
1	USD(P&R), Room 3C980, Washington, DC 20310-4000
1	ASD(PA&E)/GPP/LFD, Pentagon, Room 2B256, Washington, DC 20310
1	ASD (PA&E), Pentagon, Room 2E313, Washington, DC 20310
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*	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

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APPENDIX A

RDT&E CONGRESSIONAL DESCRIPTIVE SUMMARIES MAILING LIST

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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

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APPENDIX A

RDT&E CONGRESSIONAL DESCRIPTIVE SUMMARIES MAILING LIST

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*	Commander, US Army Intelligence and Security Command, ATTN: IARM-PB, Fort Belvoir, VA 22060-5370
*	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

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*	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
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*	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
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*	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
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*	Commander, US Army Research Office, ATTN: SLCRO-AO (Security Officer), P.O. Box 12211, Research Triangle Park, NC 27709
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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
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