UNCLASSIFIED

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

DESCRIPTIVE SUMMARIES OF THE

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RESEARCH, DEVELOPMENT, TEST AND EVALUATION
Army Appropriation, Budget Activities 6 and 7

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

"READINESS THROUGH MODERNIZATION"

VOLUME III

DTIC QUALITY INSPECTED 3

UNCLASSIFIED

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

VOLUME III
Budget Activities 6 and 7

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

DTIC QUALITY INSPECTED 3

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FY 1999 RDT&E, ARMY
PROGRAM ELEMENT DESCRIPTIVE SUMMARIES

INTRODUCTION AND EXPLANATION OF CONTENTS

1. General. This section has been prepared for the purpose of providing information concerning the Army Research, Development, Test and Evaluation program. The Descriptive Summaries are comprised of R-2 (Budget Item Justification Sheet) and R-3 (RDT&E Program Element/Project Cost Breakdown) Exhibits which provide narrative information on all RDT&E program elements and projects for the FY 1997, 1998 and 1999 time period.

2. Relationship of the FY 1999 Budget Submission to the FY 1998 Budget submitted to Congress. This paragraph provides a list of program elements restructured, transitioned, or established to provide specific program identification.

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

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

B. FY 1999 Developmental Transitions.

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

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

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

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

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

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

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

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

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

Department of the Army
FY 1999 RDT&E Program

Exhibit R-1

Summary

Date: Feb 1998

Thousands of Dollars

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

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Department of the Army
FY 1999 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test & Eval Army

Date: Feb 1998

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

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

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FY 1999 RDT&E Program

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

Department of the Army
FY 1999 RDT&E Program

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				Thousands of Dollars		
92	0604645A	ARMORED SYSTEMS MODERNIZATION (ASM)-ENG DEV	5	6,408	0	4,500
93	0604649A	ENGINEER MOBILITY EQUIPMENT DEVELOPMENT	5	44,225	50,585	63,069
94	0604710A	NIGHT VISION SYSTEMS - ENG DEV	5	33,970	35,052	21,311
95	0604713A	COMBAT FEEDING, CLOTHING, AND EQUIPMENT	5	73,404	60,053	62,218
96	0604715A	NON-SYSTEM TRAINING DEVICES - ENG DEV	5	46,142	82,965	64,035
97	0604716A	TERRAIN INFORMATION - ENG DEV	5	6,969	2,825	2,999
98	0604726A	INTEGRATED METEOROLOGICAL SUPPORT SYSTEM	5	0	1,887	1,790
99	0604739A	JTT/CIBS-M (TIARA)	5	4,588	4,360	4,447
100	0604741A	AIR DEFENSE C2I - ENG DEV	5	19,577	21,181	6,476
101	0604746A	AUTOMATIC TEST EQUIPMENT DEVELOPMENT	5	8,868	8,220	7,030
102	0604760A	DISTRIBUTIVE INTERACTIVE SIMULATIONS ENG DEV	5	17,618	20,249	2,766
103	0604766A	TAC EXPLOIT NAT CAP (TENCAP)-EMD (TIARA)	5	14,839	17,807	44,674
104	0604768A	BRILLIANT ANTI-ARMOR SUBMUNITION(BAT)	5	161,583	229,389	134,858
105	0604770A	JOINT SURVEILLANCE/TARGET ATTACK RADAR SYSTEM	5	9,406	6,726	5,503
106	0604778A	POSITIONING SYS DEVEL (SPACE)	5	417	407	379
107	0604780A	COMBINED ARMS TACTICAL TRAINER (CATT)	5	29,420	12,880	7,533
108	0604801A	AVIATION - ENG DEV	5	4,331	4,951	6,599
109	0604802A	WEAPONS AND MUNITIONS - ENG DEV	5	21,567	14,611	37,725
110	0604804A	LOGISTICS & ENGINEER EQUIPMENT - ENG DEV	5	19,061	27,174	26,002
111	0604805A	COMMAND, CONTROL, COMMUNICATIONS SYSTEMS - ED	5	13,315	10,710	16,404
112	0604807A	MEDICAL MATERIEL/MED BIO DEFENSE EQUIPMENT ED	5	4,570	4,345	5,338
113	0604808A	LANDMINE WARFARE/BARRIER - ENG DEV	5	9,342	13,818	46,905
114	0604814A	SENSE AND DESTROY ARMOR - ENG DEV	5	9,677	10,847	20,813
115	0604816A	LONGBOW	5	10,762	0	0
116	0604817A	COMBAT IDENTIFICATION	5	16,889	19,026	13,471
117	0604818A	ARMY TACTICAL COMM & CONT HARDWARE & SOFTWARE	5	35,495	19,184	32,929
118	0604820A	RADAR DEVELOPMENT	5	0	0	2,786
119	0604823A	FIREFINDER	5	2,430	2,484	19,822
120	0604824A	COSSI	5	0	0	33,600
121	0604854A	ARTILLERY SYSTEMS - ENGINEERING DEVELOPMENT	5	0	0	100
		Engineering and Manufacturing Development		1,145,529	1,162,405	1,269,124

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FY 1999 RDT&E Program

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

Department of the Army
FY 1999 RDT&E Program

Exhibit R-1

Appropriation: 2040 A Research Development Test & Eval Army

Date: Feb 1998

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

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0604256A Threat Simulator Development

PROJECT: D976

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D976 Army Threat Simulator Program	11146	16480	11935	14009	14309	16864	16856	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program finances the design, fabrication, integration and fielding of realistic mobile threat simulators in support of Army training and developmental/operational testing. It provides the capabilities required to create realistic simulated tactical environments essential to user training and weapon system testing. Each capability is pursued in concert with the others so as to avoid duplication while providing the proper mix of test resources needed to support both Army and Tri-Service testing requirements. The development of the XM17S will be initiated in FY 98. The XM17S simulator represents an advanced air defense system for testing of U.S. weapon systems. It is highly mobile and very effective against low altitude targets and supports all U.S. electronic countermeasures development and operational tests including tactics evaluation. This is the only proposed simulation of a multiple target tracking system with enhanced low-altitude performance. This system is a very high value battlefield target and the simulator will support targeting evaluation as well as threat testing. The Army Threat Simulator Program (ATSP) is a continuing program which finances development of realistic mobile threat simulators for Army test organizations. These battlefield simulators represent systems (e.g. missile systems; command, control and communications systems; electronic warfare systems; helicopters; etc.) that are used to portray a realistic threat environment during testing of U.S. weapon systems. Simulator development is responsive to Office of the Secretary of Defense and General Accounting Office concerns that the Army conduct operational testing in a realistic threat environment. Initially created to develop simulators of Soviet equipment, the changing world order has expanded the scope of this program to address rest of world (ROW) threats. Actual threat equipment is being acquired when appropriate in lieu of development. Total package fielding will still be required (i.e., instrumentation, operations and maintenance, manuals, new equipment training, etc.). Threat simulator development is accomplished under the auspices of the Project Manager for Instrumentation, Targets, and Threat Simulators (PM ITTS), and CROSSBOW, which is administered by the Director for Test, Systems Engineering and Evaluation, Office of the Secretary of Defense (OSD). These affiliations eliminate any duplication within the U.S. Army or Department of Defense (DoD). Includes research and development effort directed toward support of installations or operations required for general research and development use and therefore is appropriate to Budget Activity 6.

FY 1997 Accomplishments:

•	5843	Continued development of XM15A/S Air Defense System
•	1717	Completed development of the XM330ES Advanced/Electronic Combat Systems.
•	1050	Developed an Advanced/Land Combat System the low energy laser XMDEWS hardware simulator.
•	2536	Continued development of regimental elements of XMC3S for the Battle Management Network.
Total	11146	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0604256A Threat Simulator Development
	PROJECT: D976

FY 1998 Planned Program:

•	1292	Complete development of XM15A/S Air Defense System.
•	1657	Develop XM70A Surface-to-Air Missile System.
•	5734	Develop XM17S short-to-medium range SAM Air Defense System.
•	1657	Continue development of XMDEWS Advanced Land Combat System.
•	2794	Continue development of regimental elements of XMC3S for the Battle Management Network.
•	3000	Develop Distributed Compatible Interactive Simulation Radar
•	346	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	16480	

FY 1999 Planned Program:

•	7499	Continue development of XM17S Air Defense System.
•	2488	Continue development of XMDEWS Advanced Land Combat Systems.
•	1948	Continue development of regimental elements of XMC3S for the Battle Management Network.
Total	11935	

THREAT SIMULATOR Test Programs Supported: Aircraft Survivability Equipment (ASE) (ALQ-36) (APR-39) Special Electronics Missions Aircraft (SEMA) ASE Force Development Test and Evaluation (FDTE); Unmanned Aerial Vehicle (UAV) Short Range Initial Operational Test and Evaluation (IOTE); Block 11A Ground Station Module (GSM) IOTE; SEMA ASE (ALQ-136 Radar Jammer); AN/APRA (XE-2) Advanced Threat Radar Warning Receiver, SEMA; 155MM and Multiple Launch Rocket System (MLRS) - Sense And Destroy Armor (SADARM); Special Operations (Special mission aircraft for performance and survivability test); Forward Area Air Defense Command, Control and Intelligence (FAAD C2I) (Light) FDTE; MLRS SADARM IOTE; Guardrail Common Sensor; OH-58D Kiowa Scout Attack Helicopter; Patriot Product Improvement Program (PIP); MH-60K; Firefinder; RAH-66; UAV - Close Range; Longbow Apache; Forward Area Air Defense (FAAD) C3I; Army Tactical Missile System (ATACMS); AN/ALQ-136; Joint Surveillance Target Attack Radar Systems (JSTARS); XM1106 Smoke Generating System; SEMA/ASE; Suite of Integrated Infrared Countermeasures (SIIRCM), and Suite of Integrated Radio Frequency Countermeasures (SIRFCM).

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY1998/1999 President's Budget	11383	14004	11877
Appropriated Value	11627	17004	
Adjustments to Appropriated Value	-481	-524	
FY 1999 President's Budget	11146	16480	11935

Change Summary Explanation: Funding: FY1998 increase (+3000) is the result of Congressional plus-up.

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0604258A Target Systems Development

COST *(In Thousands)*	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	9661	11328	13127	12934	14178	16234	14927	Continuing	Continuing
D238 Aerial Targets	6395	6416	5595	5696	6278	6799	6609	Continuing	Continuing
D459 Ground Targets	3266	4912	7532	7238	7900	9435	8318	Continuing	Continuing

Mission Description and Budget Item Justification: This program funds aerial and ground target hardware and software target development, maintenance and upgrade. The overall objective is to allow validation of weapon system accuracy and reliability by developing aerial and ground targets essential for Test and Evaluation (T&E). These targets are economical and expendable, remote controlled or stationary, and often destroyed in use. The Army is the Tri-Service lead under Reliance for providing both rotary wing, mobile ground and assigned legacy targets for test and evaluation. The Army executes development of some Service-peculiar target requirements in support of quality assurance, lot acceptance and training; and continues development of Service-peculiar and previously begun target materiel to maintain continuity. Funding for this program includes research and development effort directed toward support of installations or operations required for general research and development use and therefore is appropriate to Budget Activity 6.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)								DATE February 1998	
BUDGET ACTIVITY 6 - Management and Support				PE NUMBER AND TITLE 0604258A Target Systems Development					PROJECT D238
COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D238 Aerial Targets	6395	6416	5595	5696	6278	6799	6609	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project D238 – Aerial Targets: Provides for development, acquisition, operation, storage, update, and maintenance of realistic surrogate or acquired threat high-performance, multi-spectral aerial targets that can fully stress the latest air defense and air-to-air weapons. Modern weapons require test, evaluation, and training using threat representative aerial targets to assess their effectiveness on the battlefield. This program encompasses a family of rotary and fixed-wing targets, full-scale, miniature and subscale targets, tactical ballistic targets, ancillary devices, and remote control systems. To stress systems under test, aerial targets must have flight characteristics, signatures, and other performance factors which emulate the modern threat. This tasking includes long-range planning to determine future target needs and development of coordinated requirement documents; the management of target research, development, test and evaluation process; execution of the validation process to ensure that surrogate targets adequately represent the threat; development and acquisition of surrogate and acquired targets; and continuing maintenance, storage, and development/enhancements/update engineering services of the developed and acquired threat targets to ensure availability for the Test and Evaluation (T&E) customer. The US Army is the Reliance lead for rotary wing targets and the Tri-Service lead for procurement and enhancement of the MQM-107 Fixed Wing Target.

FY 1997 Accomplishments:

•	2190	Continued development of HOKUM-X Rotary wing Target (Canadian Cooperative Program).
•	1095	Continued enhancement of the MQM-107 Target System, including updating of obsolete parts and improved engine performance.
•	1503	Continued development of Universal Drone Control System (UDCS), including integration into AH-1 helicopter.
•	717	Continued enhancement of the Target Tracking and Control System (TTCS), including conversion of data panels to graphic CRTs and development of multi-target capability.
•	570	Continued development, enhancement, maintenance, and storage for all RDT&E aerial targets, towed targets and ancillary devices.
•	320	Developed aerial virtual targets activities. Includes models of HOKUM-X and AH-1 variants.
Total	6395	

FY 1998 Planned Program:

•	2699	Continue development of HOKUM-X Rotary Wing (Canadian Cooperative Program).
•	951	Continue enhancement of the MQM-107 Target System, including updating of obsolete parts and improved airframe maneuverability.
•	1007	Complete development of Universal Drone Control System (UDCS).
•	583	Continue development of the Target Tracking and Control System (TTCS), including development of GPS target positioning system.
•	853	Continue development, enhancement, maintenance, and storage for all RDT&E aerial targets, towed targets and ancillary devices.
•	166	Continue development of aerial virtual targets, including models of HOKUM-X and AH-1 variants.
•	157	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	6416	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0604258A Target Systems Development
PROJECT D238	

FY 1999 Planned Program:

•	1018	Complete baseline configuration and initiate update for HOKUM-X Rotary Wing Target (Canadian Cooperative Program) to include integration of UDS Drone kits.
•	987	Continue enhancement of the MQM-107 Target system, including updating of obsolete parts to maintain producibility and supportability, and improved airframe maneuverability to meet the aerodynamic performance and payload capability needed by the Army, Tri-Service, and FMS customers.
•	536	Initiate integration of Universal Drone Control System (UDCS) into additional targets (e.g., UH-1 Target).
•	782	Continue enhancement of the Target Tracking and Control System (TTCS), including update of RMX operating system to more supportable system.
•	645	Continue development, enhancement, maintenance, and storage for all RDT&E aerial targets, towed targets and ancillary devices.
•	502	Continue development of aerial virtual targets, including models of MQM-107 and its variants.
•	14	Perform study for development of Future Aerial Targets, and Low Cost Control Systems.
•	1111	Develop UAV-S Target.
Total	5595	

AERIAL TARGETS Test Programs Supported: Forward Area Air Defense (FAAD) Missile (Stinger), Patriot, Medium Extended Air Defense System (MEADS), Non-Line-Of-sight (NLOS) enhanced Fiber Optic Guided Missile (EFOGM), Comanche, and under Reliance, helicopter targets for the Air force and Navy and technology programs which demand accurate threat representation in their aerial target.

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	6564	6620	5567
Appropriated Value	6706	6620	
Adjustments to Appropriated Value	-311	-204	
FY 1999 President's Budget	6395	6416	5595

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0604258A Target Systems Development / PROJECT: D459

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D459 Ground Targets	3266	4912	7532	7238	7900	9435	8318	Continuing	Continuing

A. **Mission Description and Budget Item Justification:** **Project D459 – Ground Targets:** This program funds Army efforts to support Test and Evaluation (T&E) of advanced weapon systems by developing surrogates and acquiring foreign equipment, and developing virtual target computer models of ground vehicle targets. These computer models are compatible with Distributed Interactive Simulation (DIS) and will be Higher Level Architecture (HLA) compliant. These products are required to adequately stress weapons systems undergoing test and evaluation. This tasking includes long-range planning to determine future target needs and development of coordinated requirement documents; the centralized management of the ground target research, development, test and evaluation process; execution of the validation process; acquisition of foreign equipment; and continuing maintenance, storage, and development/enhancement/update engineering services of the developed and acquired targets to ensure availability for test and evaluation customers. Project also manages use of current assets and operates centralized spare parts program. The US Army is the Tri-Service lead for providing ground targets for test and evaluation. The increase in FY 99 provides the ground target surrogate vehicles required to support Comanche and BAT testing in the FY00-FY02 timeframe. These up-to-date threat representative ground targets are acquired at a greatly reduced unit cost over buying the authentic Russian vehicles.

FY 1997 Accomplishments:

•	1632	Managed and provided oversight for Primary Operating Centers operation, storage, maintenance, configuration management and repair of Ground Targets assets including acquisition of new material and spare parts.
•	129	Continued validation, accreditation, and certification and configuration controls/studies of ground targets and development/execution of safety and environmental plans.
•	414	Continued development of virtual ground targets to support test and evaluation. Initiate development of a configuration control plan for the virtual target models which have been developed to date and for those to be developed. Target models will be utilized in Virtual Proving Ground activities and other weapon systems T&E and Modeling and Simulation (M&S) activities.
•	870	Completed the development and testing of initial BMP3-S prototype armored infantry vehicle.
•	221	Completed concept exploration of a Main Battle Tank Surrogate.
Total	3266	

FY 1998 Planned Program:

•	1911	Manage and provide oversight for Primary Operating Centers operation, storage, maintenance, configuration and repair of Ground Targets assets including acquisition of new material and spare parts.
•	139	Continue validation, accreditation, and certification and configuration controls/studies of ground targets and development/execution of safety and environmental plans.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0604258A Target Systems Development
PROJECT D459	

FY 1998 Planned Program: (continued)

•	1312	Continue development of virtual ground targets to support T&E. Develop two new virtual target models of a classified target and the BMP3-Surrogate target for use by developers and testers. Continue development and initiate implementation of configuration control plan for virtual targets. These target models will be utilized in Virtual Proving Ground activities and other weapon systems T&E and M&S activities.
•	851	Develop and prototype a Main Battle Tank Surrogate.
•	579	Complete development of second BMP-3S prototype.
•	120	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	4912	

FY 1999 Planned Program:

•	1748	Manage and provide oversight for Primary Operating Centers operation, storage, maintenance, configuration management of repair of Ground Targets assets including acquisition of new material and spare parts.
•	190	Continue validation, accreditation, and certification and configuration controls/studies of ground targets and development/execution of safety and environmental plans.
•	1854	Continue development of virtual ground targets to support test and evaluation. Implement configuration control and initiate validation efforts. Target models will be utilized in Virtual Proving Ground and other weapon systems T&E and M&S activities.
•	1265	Continue development and prototype of a Main Battle Tank surrogate.
•	2475	Complete testing of BMP3-S and fabricate and deploy, into the operational fleet, 10 BMP3-S Ground Target Surrogates to maintain up-to-date threat representative targets which are required to support Comanche and BAT T&E in the FY00 and FY-02 timeframe.
Total	7532	

GROUND TARGETS Test Programs Supported: Ground Targets efforts are investments which enable Department of Defense (DoD) customers to conduct appropriate developmental and operational testing, evaluation and training in the future. Weapon systems for which these developments are required include: Commanche, Longbow, Close Combat Anti-Armor Weapon System (CCAWS), Wide Area Munitions (WAM), Non-Line of Sight (NLOS) Enhanced Fiber Optic Guided Missile (EFOGM), Line-Of-Sight Antitank (LOSAT), Army Tactical Missile System (Army TACMS), Brilliant Anti-Armor Submunition (BAT), Unmanned Aerial Vehicle, (UAV-SR), Short Range Anti-Armor Weapon System (SRAW), Javelin, Sense and Destroy Armor (SADARM).

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	3352	5068	7496
Appropriated Value	3423	5068	
Adjustments to Appropriated Value	-157	-156	
FY 1999 President's Budget	3266	4912	7532

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0604759A Major Test and Evaluation Investment

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	39698	39200	40284	40265	41961	49348	55902	Continuing	Continuing
D983 Major Test & Evaluation - USAKA	2315	2355	7142	7086	4163	4145	4106	Continuing	Continuing
D984 Major Technical Test Instrumentation	30595	33450	30562	28365	30732	36009	42134	Continuing	Continuing
D986 Major User Test Instrumentation	6788	3395	2580	4814	7066	9194	9662	Continuing	Continuing

Mission Description and Budget Item Justification: This program funds development and acquisition of major developmental test instrumentation for the U. S. Army Test and Evaluation Command (TECOM) test activities including Major Ranges and Test Facility Bases (MRTFB): White Sands Missile Range (WSMR), NM; Yuma Proving Ground, (YPG), AZ; Aberdeen Test Center (ATC), MD; Dugway Proving Ground (DPG), UT; and US Army Kwajalein Atoll (USAKA), Marshall Islands (which is managed by the U.S. Army Space and Missile Defense Command). Program also funds development and acquisition of major field instrumentation for U. S. Army Operational Test and Evaluation Command (OPTEC) test organizations. Requirements for instrumentation are identified through a long range survey of project managers; Research, Development and Engineering Centers (RDECs); and Battle Laboratories developing future weapon systems and the test programs required for these systems. Army testing facilities are also surveyed to determine current testing capability shortfalls. This PE is appropriate to Budget Activity 6 because it includes research and development effort directed toward support of installations or operations required for general research and development use.

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0604759A Major Test and Evaluation Investment

PROJECT: D983

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D983 Major Test & Evaluation - USAKA	2315	2355	7142	7086	4163	4145	4106	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project D983 - Major Test and Evaluation (T&E) Investment - USAKA: This project funds the purchase of major Improvement and Modernization (I&M) equipment at the US Army Kwajalein Atoll/Kwajalein Missile Range (USAKA/KMR) in the Marshall Islands. USAKA/KMR is a national test range supporting Army, Ballistic Missile Defense Organization (BMDO), US Air Force, National Aeronautics and Space Administration (NASA), and other customers. Upgrades to telemetry, optics, command/control and other equipment are required to maintain USAKA as a national test range. FY 1999-2000 increase supports the KMR Modernization project - Remoting Roi Operations which is a concurrent, range-wide modernization effort to maximize the use of common, standardized Commercial Off-The-Shelf (COTS) technology to replace obsolete components; implement common hardware/software architectures and automation; and "remote" the operation of range sensors and instrumentation to the island of Kwajalein. This effort will upgrade range capabilities that are critical to the success of upcoming Theater Missile Defense (TMD) and National Missile Defense (NMD) test missions as well as reduce USAKA/KMR annual operating costs by $17M per year beginning in FY02. These savings are already reflected in USAKA PE 0605301A.

FY 1997 Accomplishments:

- 1754 Advanced Research Project Agency-Lincoln C-Band Observable Radar (ALCOR) Computer/Receiver Upgrade. The ALCOR computer/receiver upgrade is required to improve performance, increase system reliability and reduce maintenance costs.
- 561 Kwajalein Missile Range (KMR) Impact Scoring System: Completed KMR Impact Scoring System (KMISS), an underwater hydroacoustic system which replaces the unsupportable splash detection radars. This system will support the Air Force Minuteman III and Peacekeeper Operational Testing.

Total 2315

FY 1998 Planned Program:

- 2296 Kwajalein Missile Range (KMR) Modernization - Remoting Roi Operations. All radar signal processing and recording projects will be consolidated into a single common open architecture using general purpose COTS hardware to enable remote operations and maintenance by matrixed technicians. The Kiernan Reentry Measurement Site (KREMS) radars, the AN/FPQ-19 radar, and telemetry will be remoted to the Kwajalein Mission Control Center (KMCC) where automated remote operation will be performed. Transportable optics will be used to supplement current KMR optics. The KMR Range Safety Center will be consolidated into the KMCC.
- 59 Small Business Innovative Research/Small Business Technology Transfer Program.

Total 2355

FY 1999 Planned Program:

- 7142 Continue KMR Modernization – Remoting Roi Operations, which is critical to upcoming TMD/NMD test missions. Remoting Roi Operations will reduce USAKA/KMR operating costs by $17M per year.

Total 7142

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 EXHIBIT)	DATE February 1998
BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0604759A Major Test and Evaluation Investment PROJECT D983

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	2373	2430	2427
Appropriated Value	2423	2430	
Adjustments to Appropriated Value	-108	-75	
FY 1999 President's Budget	2315	2355	7142

Change Summary Explanation: Funding: FY99-Increase of (+4715) supports the Kwajalein cost reduction initiative, Remoting Operations.

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0604759A Major Test and Evaluation Investment

PROJECT: D984

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D984 Major Technical Test Instrumentation	30595	33450	30562	28365	30732	36009	42134	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project D984 - Major Technical Test Instrumentation: This project develops and acquires major test instrumentation to perform developmental testing of weapon systems at U. S. Army Test and Evaluation Command (TECOM) activities. Major instrumentation is defined as having one or more of the following attributes: joint-service requirements, multiple command use, high visibility, large dollar value, produces a new capability or requires intensive management during acquisition. The Test Support Network (TSN) will provide complete secure coverage of automated and integrated voice, data and video in a single transport system; provide advanced encryption capabilities and remote control for switching capabilities for test configuration and total network data arrangement control. The Land Combat Instrumentation (LCI) provides for upgrade and expansion for Aberdeen Test Center's (ATC) suite of instrumentation required for performance testing of combat and tactical vehicles, advanced armor concepts, and advanced munitions. The Fiber Optic Network (FON) provides ATC instrumented test areas with high-speed communication links to other test facilities and to central data processing/evaluation. The Frequency Surveillance System (FSS) will replace and provide remote capabilities to daily operations for surveillance of the radio frequency spectrum used at White Sands Missile Range (WSMR) in support of all Services and non-DoD agencies.. The Dynamic Infrared Scene Projector (DIRSP) will conduct performance testing of night vision sensors and Infrared (IR) imaging seekers, and will provide the capability to fully simulate and synthesize present and future battlefields with a mix of real and simulated objects at Redstone Technical Test Center (RTTC) centers. The Hardened Subminiature Telemetry and Sensor System (HSTSS) is developing, miniaturizing, and hardening an instrumentation/telemetry package that will provide continuous direct measurement of internal functioning and flight data for cannon-launched munitions, smart submunitions, and small missiles/rockets. The Range Digital Transmission System (RDTS) will improve test operations and will reduce test costs allowing for efficient data collection and remote operations at YPG.

FY 1997 Accomplishments:

- 2530 Concluded the Army's portion of the GPS production contract for all Army test organizations.
- 223 Concluded enhancements to databases and data handling capabilities for system level ATCCS Technical Control Center (TCC) EPLRS, and SINCGARS technical test at EPG.
- 10435 Completed the 2nd segment and nearing completion of the 3rd segment of the Eastern Fiber Optic Backbone of Phase I of TSN. Continued installation of the Network Management System (NMS). Continued inside plant hardware site surveys for seven major nodes.
- 4875 Completed installation of PTA instrumentation, completed laser illuminator system, completed Barricade B2 and B3 range instrumentation, and completed development of vehicle on-board data acquisition and sensors for LCI at ATC. Started upgrade to Hi Velocity Range and Barricade C.
- 1498 Completed the instrumentation of the TW II Link, high-speed networking, and Ethernet hub. Completed Hi Velocity Range installation. Continued Secure the FON for classified data transmission at ATC.
- 4771 Awarded contract for FSS modernization project at WSMR. Purchased equipment for WSMR control center and Jess remote site.
- 4040 Continued development of the DIRSP project at RTTC, designing critical subsystems and conducting Preliminary Design Review (PDR) and Critical Design Review (CDR).
- 2085 Completed Test Capabilities and Benefits Analysis (TCBA), and system specification for HSTSS. Conducted Milestone I/II in-process review.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0604759A Major Test and Evaluation Investment / PROJECT: D984

FY 1997 Accomplishments continued:

•	138	Started developing the statement of work and system specification for Range Digital Transmission system.
Total	30595	

FY 1998 Planned Program:

•	10024	Complete installation and acceptance testing of the NMS and initiate the system integration and testing (software qualification) of the NMS which will support the Initial Operating Capability (IOC) for the WSMR TSN. Complete Phase I of the Eastern Fiber Optic Backbone. Complete inside plant hardware site surveys and install inside plant hardware for the four major nodes on the green ring.
•	2727	Continue Barricade C and Hi Velocity range instrumentation; continue installation of automotive communication network at Churchville test area, and start direct fire imager development for LCI at Aberdeen Test Center.
•	1404	Complete installation of fiber optic data link to Mainfront, Michaelsville, Fords Farm, AAS, and Poverty Island testing ranges for FON at ATC. Also complete securing the fiber optic network.
•	10608	Install, integrate, test and perform site acceptance of equipment for FSS at WSMR control center and Jess remote site. Purchase equipment for Holloman control center, Higbie remote site and Sacramento Peak remote site.
•	3570	Start fabrication of full up system, and start system integration for the DIRSP project at RTTC.
•	4258	Released request for proposal (RFP). Started source selection activities for Data Acquisition System, GPS/IMU Systems and Packaging Studies. Award multiple EMD contracts for HSTSS instrumentation for indirect/direct fire projectiles and small missiles/medium caliber munitions in support of Yuma Proving Ground (YPG) and the Army Research Lab (ARL). Release multiple RFPs and begin source selection activities for the EMD contract for HSTSS instrumentation .
•	50	Complete development of the statement of work and system specification for Range Digital Transmission System.
•	809	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	33450	

FY 1999 Planned Program:

•	14900	Complete Phase I to include inside plant hardware installation for the three major nodes on the pink ring, system integration and testing to support IOC and install breakout and feeder sites to support Phase II efforts of WSMR TSN.
•	250	Continue installation of Automotive Communication Network at Churchville test area at Aberdeen Test Center.
•	6874	Install, integrate, test and perform site acceptance of equipment for FSS at White Sands Missile Range Holloman control center, Higbie remote site and Sacramento Peak remote site for FSS. Purchase equipment for Ft Bliss and Kirtland remote sites.
•	3781	Complete DIRSP system integration and testing to meet IOC and field system to RTTC.
•	4147	Complete source section activities and award multiple EMD contracts for Data Acquisition System and GPS/IMU Systems in support of HSTSS instrumentation for indirect/direct fire projectiles and small missiles/medium caliber munitions.
•	610	Initiate installation of digital fiber optic cable to support Phase I of RDTS for the Yuma Cibola western test ranges.
Total	30562	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0604759A Major Test and Evaluation Investment
	PROJECT D984

B. Project Change Summary	FY1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	31504	34515	28412
Appropriated Value	32197	34515	
Adjustments to Appropriated Value	-1602	-1065	
FY 1999 President's Budget	30595	33450	30562

Change Summary Explanation: Funding: FY 1998 Adjustments to Appropriated Value reflect Undistributed Congressional Reductions of $1065K. FY 1999 increase (+2000) supports the final installation and acceptance of Phase I of the WSMR TSN effort; (+150) funds reprogrammed to fund higher priority requirements.

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0604759A Major Test and Evaluation Investment

PROJECT: D986

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D986 Major User Test Instrumentation	6788	3395	2580	4814	7066	9194	9662	Continuing	Continuing

A. **Mission Description and Budget Item Justification:** **Project D986 - Major User Test Instrumentation:** This project finances the development of major field instrumentation for Operational Testing (OT), Force Development Testing and Experimentation (FDTE), and Army Warfighting Experiments (AWE). Each initiative set forth in this program element is directly tied to tactical systems that support each of the five Army Modernization Objectives: Project & Sustain; Protect The Force; Win Information War; Conduct Precision Strikes; and Dominate The Maneuver Battle. Cornerstone is the Mobile Automated Instrumentation Suite (MAIS) that provides users a high fidelity, realistic, real-time capability to measure the performance of hardware and personnel under tactical conditions for large-scale operations (up to 1830 players). The MAIS will instrument combat systems in the operational forces to provide encrypted Real Time Casualty Assessment (RTCA) and Time, Space, and Positioning Information (TSPI) data. The MAIS system and its data are the tools that will enable objective assessments for new materiel acquisition, force structuring, doctrine and tactics modification, and, through the High Level Architecture (HLA) Protocol Data Unit (PDU) format provide data to validate the future DoD warfighting models and simulations, bridge the test analysis centers, and link multi-Service test and training exercises. The MAIS, a non-major system acquisition, achieved Milestone I/II in FY90. Current program (one control center and 131 player units) reaches IOC in FY97. One additional control center and 469 player units are programmed in Other Procurement, Army. Beginning in FY 97, enhancements to the MAIS program are Mobile Integrated Non-Intrusive Command, Control and Communications Instrumentation (MINI C3I). The MINI C3I system assesses the 21st Century's Armed Forces' ability to employ digital technology to obtain greater performance standards in lethality, survivability and tempo. It provides essential audio, video, and digital information required for credible testing of command, control, and communications systems. Beginning in FY98 a MAIS Pre-Planned Product Improvement (P3I) program will be initiated with instrumentation packages for the Longbow Apache helicopter, Comanche, Crusader, Bradley Stinger, Smart Weapons/Munitions, and Land Warrior weapons. MAIS P3I will provide insertion of enhancements to the RTCA algorithms; simulation of Opposing Force (OPFOR) weapons systems and player units for newly acquired weapons systems; and develop player units for the Comanche, Crusader, smart weapons, and antitank missile systems. These system enhancements are required as part of the basic program enabling the operational test community to effectively emulate current and future battlefield weapons in a high fidelity environment. The P3I program will develop and integrate additional weapon systems and capabilities to improve the fidelity and robustness of the MAIS system.

FY 1997 Accomplishments:

•	3028	Supported system Developmental and Operational Testing for MAIS.
•	1654	Executed MAIS product refurbishment and component obsolescence program .
•	850	Developed design alternatives for a MAIS interface to the AGES-II system implementation for the AH-64D Apache Longbow weapon system.
•	770	Designed and fabricated for MINI C3I a miniature Field Data Collectors (FDC) to support Army Force XXI design decisions and operational test and experiments.
•	486	Instrumented two additional mobile command and control vehicles for MINI C3I , each vehicle to include necessary instrumentation and hardware to collect digital, video and audio data to support the Command Post Exercise portion of the Division Army Warfighting Experiment supporting Force XXI.
Total	6788	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0604759A Major Test and Evaluation Investment / PROJECT: D986

FY 1998 Planned Program:

•	2977	Complete MAIS product refurbishment and component obsolescence. Design, develop, and implement the MAIS P3I program, specifically the Javelin Surrogate, Dismounted Troop miniaturization and the Digital M1A2 and M2A3 system interfaces, critical to conducting realistic weapon system operational testing and force development testing .
•	350	Expand the capability for MINI C3I to monitor and test Command and Control Vehicles from 4 to 8. Replace currently obsolete mass storage units.
•	68	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	3395	

FY 1999 Planned Program:

•	2580	Continue to execute the MAIS P3I program, specifically design and develop rotary wing player units for the Comanche, Bradley Stinger, Stinger weapons and enhance RTCA algorithms all in support of conducting realistic weapon system operational testing and force development testing.
Total	2580	

Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	6956	3504	2568
Appropriated Value	7105	3504	
Adjustments to Appropriated Value	-317	-109	
FY 1999 President's Budget	6788	3395	2580

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605103A Rand Arroyo Center		PROJECT D732

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D732 Arroyo Center Support	20550	16534	16718	16868	17017	17137	17194	Continuing	Continuing

A. Mission Description and Budget Item Justification: This program funds the RAND Arroyo Center, the Department of the Army's Federally Funded Research and Development Center (FFRDC) for studies and analysis, which has operated at RAND since FY 1985. The Arroyo Center draws its researchers from RAND's staff of approximately 600 professionals trained in a broad range of disciplines. About 90 percent of RAND's staff are located at the corporate headquarters in Santa Monica, California; the remainder are based at RAND's Washington D.C. office. The RAND Arroyo Center provides for continuing analytical research across a broad spectrum of issues and concerns, which are grouped in four major research areas: Strategy and Doctrine; Military Logistics; Manpower and Training; and Force Development and Technology. The RAND Arroyo Center research agenda is primarily focused on mid/long-term concerns. Results and analytical findings directly impact senior leadership deliberations on major issues. Arroyo Center research is sponsored by the Secretary of the Army, the Assistant Secretaries, the Chief of Staff and Vice Chief of the Army, the Deputy Chiefs of Staff of the Army, and most of the Army's major commands. The Arroyo Center is provided guidance from the Army through the Arroyo Center Policy Committee (ACPC), which is co-chaired by the Vice Chief of Staff of the Army and the Assistant Secretary of the Army (Research, Development, and Acquisition). The ACPC reviews, monitors, and approves the annual Arroyo Center research plan as well as all individual research projects. Each project requires General Officer (or SES equivalent) sponsorship and involvement on a continuing basis. RAND Arroyo provides the Army with a unique multidisciplinary capability for independent analysis. Although the Arroyo Center staff works with analysts in the Army's internal study program, the Arroyo Center is an independent organization that provides analysis for both the Army and the broader national security community. Work in this program element is consistent with the resource constrained Army Science and Technology Master Plan (ASTMP), the Army Modernization Plan, and Project Reliance. This program supports decisionmaking and resource allocation for general research and development and, since it is not allocated to a specific R&D mission, it is appropriately funded in Budget Activity 6.

FY 1997 Accomplishments:

- 766 Research addressing innovative ways to acquire affordable technologies.
- 4166 Research addressing development and modernization, including ways to develop enhanced battle command decisionmaking; what communication technologies are required for the digital battlefield for Force XXI and the Army After Next (AAN); how to improve the Army's ability to analyze, model, and simulate the effects of information operations; assessing the potential of current, planned, and future capabilities for joint Operations Other Than War (OOTW) and wartime urban operations to decide which technology-based initiatives should be supported; assessing the utility of advanced technology system concepts for improving light-force capability; and providing help in developing Army guidance that will lead to an improved level of joint interoperability.
- 3221 Research addressing Army planning, including providing a framework for thinking about how the Army should organize to facilitate future expansion; identifying investment and organizational development strategies to prepare for conflict with an Weapons of Mass Destruction (WMD) - armed adversary; measuring the effectiveness of an information-age Army; identifying strategies to maximize long-term effectiveness of forces deployed to various lesser conflicts; providing strategic analysis of the AAN winter war game; and determining the nature of sound intelligence support to long-range planning.

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FY 1997 Accomplishments: (continued)

- 1365 Research addressing manning the force, including identifying policies to manage personnel turbulence and minimize its detrimental effects on costs and readiness; developing and testing incentives to reduce reserve component personnel turbulence, thereby increasing unit readiness; and identifying and evaluating options for the Army to enhance efficiency in staffing and resourcing the ROTC program.
- 2760 Research addressing training the force, including examining ways to improve the efficiency and performance of the Total Army School System; designing and recommending new and more flexible techniques for providing and managing training resources in schools; designing and testing next systems of training CSS command and control, focusing on improved use of simulation and exercises; analyzing ways to strengthen and modernize the system for educating and developing noncommissioned officers to meet the demands of the 21st century Army; and enhancing training of heavy combat units by developing more effective ways to use simulations.
- 1189 Research addressing the security environment, including providing new metrics to better assess state power in the information age; applying previously developed model of ethnic conflict and state breakdown to real-world case studies; and producing a range of plausible unification scenarios for the Koreas, focusing on both the military operational and broader regional implications of each.
- 6125 Research addressing logistics initiatives, including helping the Army to develop and implement specific process improvements and institutionalize the capability to sustain continuous process improvement; improving CONUS and OCONUS order and ship processes; increasing responsiveness of the repair cycle process; improving the stockage determination process; improving the quality and usability of financial information needed for logistics decisionmaking; improving the deployment process for logistics capabilities; supporting Army efforts to field an integrated communications and information system for logistics to support both day-to-day operations and logistics command functions in garrison and in theater; and identify types of savings that can be accrued from implementing improvements to the logistics processes.
- 958 Research done by the Warfighting Analysis Integration Center (WAIC) addressing analysis support for the Quadrennial Defense Review and the National Defense Panel.

Total 20550

FY 1998 Planned Program:

- 1416 Research addressing the Army in national strategy, including identifying unique and significant Army contributions to the execution of future national military strategy; identifying the strength of the case for a stronger land-force emphasis in future U.S. engagement operations; conducting a parametric assessment of how costs affect Army expandability issues; and understanding the processes by which states translate sustained economic growth into military power.
- 1297 Research addressing improving the Army PPBE System, including developing and extending strategies for streamlining the processes; extending assumption-based planning; developing strategic concepts and planning processes to revitalize long-range strategic planning; developing new analytic tools to support the development of strategic resource alternatives; assessing the appropriateness of the current programming structure used by DoD; and providing and integrating operational and institutional guidance for the programming phase of Army PPBS.

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605103A Rand Arroyo Center
	PROJECT D732

FY 1998 Planned Program: (continued)

•	2948	Research addressing Force XXI and Army After Next, including assisting the senior Army leadership in informing and influencing thinking in the broader defense community on operational concepts and technological applications for future forces; assisting in the design of the AAN winter and summer wargames; examining potential tactical and technological counters to the rapid force projection initiative system-of-systems concept; providing assistance in developing Army guidance leading to an improved level of joint and NATO interoperability; and developing concepts to explore U.S. military capabilities to conduct joint OOTW and wartime operations on urban terrain.
•	1838	Research addressing the Army and its Title X responsibilities, including identifying near-term resourcing and management actions to sustain recruiting and reduce the force, and conducting a meta-analysis of existing and developing visions and strategic plans for logistics in 2005-2015 and beyond.
•	3568	Research addressing shaping and staffing the force, including designing and testing new systems of training CSS command and control, focusing on improved use of simulations and exercises; enhancing training of heavy combat units by developing more effective ways to use simulations; developing an objective, longitudinal system as a tool for assessing proficiency on collection and individual tasks performed at CTCs; strengthening and modernizing the system for developing and educating NCOs; testing and evaluating alternative ROTC staff programs; and maintaining training effectiveness and readiness of Army units in the face of varying levels of OPTEMPO and PERSTEMPO.
•	1449	Research addressing exploration of future force and technology alternatives, including maintaining science and technology capability necessary to meet AAN mission needs in period of reducing R&D funding; identify opportunities for exploiting information technologies by Army forces and reducing vulnerabilities to an adversary's use of information warfare; investigating current staff responsibilities for the management of the C2 Protect program; and improving the Army's ability to model, simulate, and analyze issues regarding the knowledge-based Army.
•	3604	Research addressing reshaping support functions and infrastructure, including adjustments to the Army's price and credit policies to support logistics initiatives; identifying types of savings that can be accrued from implementing improvements; improving the quality and usability of financial information needed for logistics decisionmaking; improving the Army's CONUS and OCONUS order and ship processes; sizing and configuring stocks at all echelons to meet operational requirements responsively with lowest dollar investment; developing and implementing specific process improvements to sustain continuous process improvement; and increasing effectiveness and efficiency of logistics deployment capabilities.
•	414	Small Business Research/Small Business Technology Transfer Programs
Total	16534	

FY 1999 Planned Program:

•	1468	Research on the Army in national strategy
•	1346	Research on improving the Army PPBES system
•	3057	Research on Force XXI and Army After Next
•	1906	Research on the Army and its Title X responsibilities
•	3700	Research on shaping and staffing the force
•	1503	Research on exploring of future force and technology alternatives
•	3738	Research on reshaping support functions and infrastructure
Total	16718	

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BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605103A Rand Arroyo Center	PROJECT: D732

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	21108	17576	18040
Appropriated Value	21763	17576	
Adjustments to Appropriated Value	-1213	-1042	
FY 1999 Budget Estimate Submit	20550	16534	16718

Change Summary Explanation: Funding: FY99 decrease (-1890) reprogrammed to higher priority requirements.

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605301A Army Kwajalein Atoll

PROJECT: D614

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D614 US Army Kwajalein Atoll	140078	120918	142710	142509	133693	130490	134329	Continuing	Continuing

A. Mission Description and Budget Item Justification: U.S. Army Kwajalein Atoll/Kwajalein Missile Range (USAKA/KMR) is a remote (located in the republic of the Marshall Islands), secure activity of the Major Range and Test Facility Base as constituted by DoD Directive 3200.11. Its function is to support test and evaluation of major Army and DoD missile systems, Army Space surveillance and object identification, and National Aeronautics and Space Administration (NASA) scientific and space programs. Programs supported include Army missile defense, Ballistic Missile Defense Organization (BMDO) demonstration/validation tests, Air Force Intercontinental Ballistic Missile (ICBM) development and operational tests, U.S. Space Surveillance Network, and NASA Space Transportation System (Shuttle) and orbital debris experiments. USAKA/KMR supports the Missile Defense Act of 1991 to put in place a Ground Based Defense System by 2006 or earliest date possible. The technical element of USAKA/KMR is the Kwajalein Missile Range which consists of a number of sophisticated, one-of-a-kind, radar, optical, telemetry, command/control/communications, and data reduction systems. These systems include the four unique radars of the Kiernan Reentry Measurement Site (KREMS); super Recording Automatic Digital Optical Tracker (RADOT) long range video-metric tracking systems, high density data recorders for high data-rate telemetry, and sonobuoy missile impact location system data analysis and reduction hardware and software. USAKA/KMR is contractor operated and is therefore totally dependent upon its associated support contractors. Program also provides funds for the contractors to accomplish installation operation and maintenance (O&M). The lean O&M funding for FY 1998 resulted in the delay of critical repair and replacement of facilities and equipment. The FY 1999-2000 funding increase provides for the minimum level of USAKA/KMR O&M as well as continuation of the KMR Modernization project - Remoting Roi Operations. The Remoting Roi Operations project is a concurrent, range-wide modernization effort to maximize the use of common, standardized Commercial Off-The-Shelf (COTS) technology to replace obsolete components; implement common hardware/software architectures and automation; and "remote" the operation of range sensors and instrumentation to the island of Kwajalein. This project will upgrade range capabilities that are critical to the success of upcoming Theater Missile Defense (TMD) and National Missile Defense (NMD) test missions as well as reduce USAKA/KMR annual operating costs by $17M per year beginning in FY02. These savings are already reflected in USAKA's funding for FY2001-2003. The Army, Air Force, Navy and BMDO have programs planned which have significant test and data gathering requirements at USAKA/KMR. Air Force programs require firing at full range with complete data collection during late mid course and terminal trajectory. BMDO programs require range sensors to collect technical data in support of National Missile and Theater Missile Defense programs being conducted at USAKA/KMR. These test data cannot be obtained except through the use of technical facilities available on and in the vicinity of USAKA/KMR. Data collection on objects in space remains significant because the Advanced Research Project Agency (ARPA) Long-Range Tracking and Instrumentation Radar (ALTAIR), located at USAKA/KMR, is one of only three sensors world-wide that has deep-space tracking capability. Programs supported include Air Force programs Peacekeeper, Minuteman III, and Delta; Army/BMDO's Strategic Target System (STARS), Multi-Service Launch System (MSLS), Midcourse Space Experiment (MSX), Missile Defense Critical Measurements Program, Theater High Altitude Air Defense (THAAD), Patriot, and ground-based radar; NASA's Space Transportation System (STS), Orbital Debris Measurement Program, Small Expendable Deployer System and Orbital Debris Radar Calibration Spheres, along with the Air Force Space and Missile Center's associated programs. Funding is in support of site installations or operations required for general research and development, not allocable to specific R&D missions. This type of activity is appropriately funded in Budget Activity 6.

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BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605301A Army Kwajalein Atoll / PROJECT: D614

FY 1997 Accomplishments:

•	7946	Provided management support (salaries, training, travel, SMDC matrix support, etc.).
•	9169	Accomplished maintenance and repair projects.
•	17291	Procured POL and MILSTRIP.
•	5009	Procured other mission operating supplies.
•	6180	Provided air and sea transportation (cargo to and from continental United States).
•	38892	Continued to support Army, BMDO, NASA, and Air Force developmental and operational missile testing. Continued integration of range technical support contract effort. Initiated KMR modernization program (Remoting ROI).
•	55591	Provided logistical support to self contained islands of USAKA.
Total	140078	

FY 1998 Planned Program:

•	8099	Provide management support (salaries, training, travel, SMDC matrix support, etc.).
•	1900	Accomplish maintenance and repair projects.
•	14907	Procure POL and MILSTRIP.
•	3300	Procure other mission operating supplies.
•	5879	Provide air and sea transportation (cargo to and from continental United States).
•	34563	Continue to support Army, BMDO, NASA, and Air Force developmental and operational missile testing. Continue integration of range technical support contract effort. Complete design phase of KMR modernization program (Remoting ROI) and begin fabrication and software coding.
•	49396	Provide logistical support to self contained islands of USAKA.
•	2874	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	120918	

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BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605301A Army Kwajalein Atoll / PROJECT: D614

FY 1999 Planned Program:

•	8095	Provide management support (salaries, training, travel, SMDC matrix support, etc.).
•	9929	Accomplish maintenance and repair projects.
•	17468	Procure POL and MILSTRIP.
•	5112	Procure other mission operating supplies.
•	6248	Provide air and sea transportation (cargo to and from continental United States).
•	39479	Continue to support Army, BMDO, NASA, and Air Force developmental and operational missile testing. Continue integration of range technical support contract effort. Continue fabrication and software coding for KMR modernization program in preparing for installation.
•	56379	Provide logistical support to self contained islands of USAKA.
Total	142710	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	143789	138769	142125
Appropriated Value	146864	124769	
Adjustments to Appropriated Value	-6786	-3851	
FY 1999 President's Budget	140078	120918	142710

Change Summary Explanation: Funding: FY 1998 decrease of (-17851); Congressional reduction (-14000) plus (-3851) for Undistributed Congressional reductions.

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605326A Concept Experimentation Program

PROJECT: D308

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D308 Concept Experimentation Program	0	0	17441	17580	17697	18465	18704	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project D308 - Concept Experimentation Program: This is not a new start. Starting in FY 1999 the funds were realigned from PE 0605712A, Project D985. The Concept Experimentation Program (CEP) is a key innovative tool which provides TRADOC battle labs and schools the ability to capitalize on emerging technologies, emerging warfighting concepts, and new materiel initiatives. Program growth reflects increased emphasis on Force XXI initiatives and accelerated acquisition methods. Funds are used to acquire, lease or fabricate equipment to conduct experiments to determine military utility or potential to satisfy Army Doctrine, Training, Leader Development, Organization, Materiel and Soldiers (DTLOMS) needs. TRADOC battle labs build on initiatives with greatest potential payoff. Program is also used as a first look at emerging technologies and emerging warfighting concepts that have the potential to support the Army's Force XXI design needs. As the Army moves toward Force XXI, the critical task of designing the force around information requires major investment in information-age capabilities. Constructive, virtual, and live simulations are used to examine warfighting concepts across DTLOMS domains. They cover all aspects of command and control, lethality, survivability, and tempo and are essential to technology insertion in future Army systems and force structure.

Additionally, this project will fund continued Force XXI experimentation in accordance with the Joint Venture Experiment Campaign Plan. This plan will serve as the blueprint for experimentation to fine tune the organization of the First Digitized Division and First Digitized Corps

FY 1997 Accomplishments: Program funded under PE 0605712A, Project D985.

FY 1998 Planned Program: Program funded under PE 0605712A, Project D985.

FY 1999 Planned Program: Concepts to be conducted in FY 99 will be nominated during the summer 1998. They will be evaluated by the TRADOC Concept Experimentation Program Schedule and Review Committee (CEPSARC) during Aug/Sep 1998. The FY 99 concept experiments will be approved in Sep/Oct 1998. Approval during the year of execution allows proponents (Battle Labs, Schools, TOE Units, etc.) to submit proposals for up to date ideas and technology for evaluation.

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	0	10541
Appropriated Value			
Adjustments to Appropriated Value			
FY 1999 President's Budget	0	0	17441

Change Summary Explanation: Funding: FY 1999 increase (+6900) reprogrammed to fund approved experimentation.

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605601A Army Test Ranges and Facilities

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	128036	118327	119553	119882	121679	121889	123255	Continuing	Continuing
DF30 Army Test Ranges & Facilities	0	116031	119553	119882	121679	121889	123255	Continuing	Continuing
DE90 Yuma Proving Ground	18086	0	0	0	0	0	0	0	0
DE91 Aberdeen Test Center	31042	0	0	0	0	0	0	0	0
DE93 White Sands Missile Range	64470	0	0	0	0	0	0	0	0
D618 Aviation Technical Test Center	9306	0	0	0	0	0	0	0	0
D630 TECOM Test Design and Evaluation	4024	0	0	0	0	0	0	0	0
D632 Redstone Technical Test Center	1108	0	0	0	0	0	0	0	0
D699 Non-Major Sys Test Design and Evaluation	0	2296	0	0	0	0	0	0	0

NOTE: Effective FY 1999, funding in Project D699, Non-major Systems Test Design & Evaluation, has been transferred to newly established PE 0605716A Army Evaluation Center under OPTEC to perform the Army's newly consolidated developmental and operational evaluation function.

Mission Description and Budget Item Justification: Sustains an objective test capability for technical testing and support to operational testing of DoD materiel, weapons and weapons systems from concept through production within the acquisition cycle at three Major Range and Test Facility Bases: Yuma Proving Ground, AZ; Aberdeen Test Center, Aberdeen Proving Ground, MD; and White Sands Missile Range, NM. This program also sustains an objective technical test capability at: Aviation Technical Test Center, Fort Rucker AL; Redstone Technical Test Center, Redstone Arsenal, AL; Electronic Proving Ground, Fort Huachuca, AZ; Cold Regions Test Center, Forts Greely and Wainwright, AK; Tropic Test Site, Panama; and a capability to provide for integrated test planning plus safety assessment/verification. Technical test capabilities at each test range have been uniquely established, are in place to support independent test and evaluation (T&E) requirements of funded weapons programs, and are required to assure technical performance, adherence to safety requirements, reliability, logistics supportability, and quality of materiel in development and in production. Program funding includes efforts toward leveraging technologies to include procurement of essential equipment, personnel training and facility modernization to support the warfighter's testing requirements. It also provides for leverage, integration and use of virtual and synthetic test tools/capabilities for reduction of test costs and program acquisition costs. Current testing capabilities are not duplicated within DoD and they represent baseline requirements to assure acceptable risk to the soldier as new technologies emerge into fielded weapons systems. As part of the DoD RELIANCE initiative, the Army (via This program) has committed at the highest senior service levels

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605601A Army Test Ranges and Facilities

to be the lead agency for ground vehicles, gun munitions, electric guns, and surface-to-air missiles. This initiative is currently supported by the services Vice Chiefs of Staff in their role as the T&E Board of Directors. This program finances indirect test operating costs not billable to test customers, replacement of test equipment and test facility modernization projects to maintain current testing capabilities and improvements to safety, environmental protection, efficiency of test operations, and technological advances. This program does not finance reimbursable costs directly identified to a user of these ranges. These direct costs are borne by materiel developers and project/product managers in accordance with DoD Directive 3200.11. T&E operations are required for general research and development; therefore, This program is appropriate for inclusion in Budget Activity 6.

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BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605601A Army Test Ranges and Facilities / PROJECT: DF30

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DF30 Army Test Ranges & Facilities	0	116031	119553	119882	121679	121889	123255	Continuing	Continuing

A. Mission Description and Justification: Sustains an objective test capability for technical testing and support to operational testing of DoD materiel, weapons and weapons systems from concept through production within the acquisition cycle at three Major Range and Test Facility Bases: Yuma Proving Ground, AZ; Aberdeen Test Center, Aberdeen Proving Ground, MD; and White Sands Missile Range, NM. This program also sustains an objective technical test capability at: Aviation Technical Test Center, Fort Rucker AL; Redstone Technical Test Center, Redstone Arsenal, AL; Electronic Proving Ground, Fort Huachuca, AZ; Cold Regions Test Center, Forts Greely and Wainwright, AK; Tropic Test Site, Panama; and a capability to provide for integrated test planning plus safety assessment/verification. Technical test capabilities at each test range have been uniquely established, are in place to support independent test and evaluation (T&E) requirements of funded weapons programs, and are required to assure technical performance, adherence to safety requirements, reliability, logistics supportability, and quality of materiel in development and in production. Program funding includes efforts toward leveraging technologies to include procurement of essential equipment, personnel training and facility modernization to support the warfighter's testing requirements. It also provides for leverage, integration and use of virtual and synthetic test tools/capabilities for reduction of test costs and program acquisition costs. Current testing capabilities are not duplicated within DoD and they represent baseline requirements to assure acceptable risk to the soldier as new technologies emerge into fielded weapons systems. As part of the DoD RELIANCE initiative, the Army (via this program) has committed at the highest senior service levels to be the lead agency for ground vehicles, gun munitions, electric guns, and surface-to-air missiles. This initiative is currently supported by the services Vice Chiefs of Staff in their role as the T&E Board of Directors. This program finances indirect test operating costs not billable to test customers, replacement of test equipment and test facility modernization projects to maintain current testing capabilities and improvements to safety, environmental protection, efficiency of test operations, and technological advances. This program does not finance reimbursable costs directly identified to a user of these ranges. These direct costs are borne by materiel developers and project/product managers in accordance with DoD Directive 3200.11. T&E operations are required for general research and development; therefore, This program is appropriate for inclusion in Budget Activity 6.

FY 1997 Accomplishments: See projects funded under DE90, DE91, DE93, D618, D632 and that portion of D630 which provided for command-wide integrated test planning and safety assessment/verification.

FY 1998 Planned Program:

- 112681 Command-wide integrated test planning, safety assessment/verification and test operations (previously funded under DE90, DE91, DE93, D618, D630, and D632). Involvement in over 760 Integrated Product Team efforts and issuance of over 350 safety releases and over 100 safety confirmations is projected on both major and non-major acquisition programs/experiments. Some of the major systems to be tested include: Wide Area Mine (HORNET) at Yuma Proving Ground (YPG), Naval Ship Structures at Aberdeen Test Center (ATC), Artillery Systems Dem/Val (CRUSADER) at YPG, LONGBOW HELLFIRE at Redstone Technical Test Center (RTTC), COMANCHE Helicopter subsystems at YPG and Aviation Technical Test

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BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605601A Army Test Ranges and Facilities / PROJECT: DF30

FY 1998 Planned Program: (continued)

Center (ATTC), JAVELIN BLOCK II at RTTC, Light/Medium Tactical Vehicles (4X4) at ATC, Army Tactical Missile System (ATACMS) Block II at White Sands Missile Range (WSMR), Theater Missile Defense (TMD) and Theater High Altitude Area Defense (THAAD) at WSMR, Brilliant Anti-Armor Terminally Guided Submunition (BAT) at WSMR and RTTC, Multiple Launch Rocket System (MLRS) and Launcher at WSMR and RTTC, Improved Target Acquisition System/TOW missile at RTTC, Enhanced Fiber Optic Guided Missile (EFOG-M) at RTTC and WSMR, Aircraft Survivability Equipment at ATTC, Heavy Assault Bridge at ATC, Airborne Avionics at ATTC, Forward Area Air Defense Ground Based Sensor at WSMR, Air Reconnaissance Low at ATTC and WSMR, EH-60 QUICKFIX at WSMR, M915A2 Line Haul Truck at ATC, M1 Breacher at ATC, Advanced Field Artillery Tactical Data System (AFATDS) at YPG, Land Warrior at ATC and YPG, Advanced Tank Armaments at ATC, Close Combat Tactical Trainer at ATC, Ground Combat Identification at YPG, and Heavy Utility Truck at ATC. Program accomplishes 62% of projected executable workload with no range modernization.

- 440 Airborne Engineering Evaluation Support Activity (AEESA), Fort Monmouth, NJ
- 2910 Small Business Innovative Research/Small Business Technology Transfer Programs

Total 116031

FY 1999 Planned Program:

- 119063 Command-wide integrated test planning, safety assessment/verification and test operations (previously funded under DE90, DE91, DE93, D618, D630, and D632). Involvement in over 680 Integrated Product Team efforts and issuance of over 315 safety releases and over 90 safety confirmations is projected on both major and non-major acquisition programs/experiments. Some of the major systems to be tested include: High Mobility Multi Purpose Wheeled Vehicle Prototype at Aberdeen Test Center (ATC), Close Combat Tactical Trainer (CCTT) at ATC and White Sands Missile Range (WSMR), Naval Ship Structures at ATC, Artillery Systems Dem/Val (CRUSADER) at Yuma Proving Ground (YPG), LONGBOW HELLFIRE at Redstone Technical Test Center (RTTC), COMANCHE Helicopter subsystems at YPG and Aviation Technical Test Center (ATTC), JAVELIN BLOCK II at RTTC, Medium and Light/Medium Tactical Vehicles (4X4) at ATC, Army Tactical Missile System (ATACMS) Block II at WSMR, Theater Missile Defense (TMD) and Theater High Altitude Area Defense (THAAD) at WSMR, Mine Neutralization at YPG, Brilliant Anti-Armor Terminally Guided Submunition (BAT) at WSMR and RTTC, Multiple Launch Rocket System (MLRS) and Launcher at WSMR and RTTC, Improved Recovery Vehicle at ATC, Improved Target Acquisition System/TOW missile at RTTC, Follow-on to TOW at RTTC, SMART-T at WSMR, Enhanced Fiber Optic Guided Missile (EFOG-M) at RTTC and WSMR, Aircraft Survivability Equipment at ATTC, Heavy Assault Bridge at ATC, Airborne Avionics at ATTC, Forward Area Air Defense Ground Based Sensor at WSMR, Improved Cargo Helicopter at ATTC, EH-60 QUICKFIX at WSMR, 2-1/2 Ton, 5 Ton, HMMWV Extended Service Life Program at ATC, M1 Breacher at ATC, Advanced Field Artillery Tactical Data System (AFATDS) at YPG, Multi-Purpose Individual Munition at ATC and RTTC, Land Warrior at ATC and YPG, and 10 Ton Recovery Truck (8X8) at ATC. Program accomplishes 62% of projected executable workload with no range modernization.
- 490 Airborne Engineering Evaluation Support Activity (AEESA)

Total 119553

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BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605601A Army Test Ranges and Facilities / PROJECT: DF30

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	119728	126953
Appropriated Value		119728	
Adjustments to Appropriated Value		-3697	
FY 1999 President's Budget	0	116031	119553

Change Summary Explanation:

Funding: This is a new project combining the prior individual projects for TECOM test centers (excluding Dugway Proving Ground) and the TECOM HQ integrated test planning and safety assessment/verification functions.

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605601A Army Test Ranges and Facilities

PROJECT: DE90

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DE90 Yuma Proving Ground	18086	0	0	0	0	0	0	0	0

A. Mission Description and Justification: **Project DE90 Yuma Proving Ground:** Yuma Proving Ground (YPG), AZ is DoD's primary artillery, air delivery and desert test range. Vast tracts of varied desert terrain provide testers with conditions found in the Middle East and other desert areas. YPG's mission is to plan, conduct, analyze, and report the results of research, development and other tests of aircraft armament, long-range cannon artillery, air delivery, and mobility systems. Major facilities include an artillery firing range; Army's only air-to-ground aircraft armament range with precision real-time instrumentation; the Army's only weapons accuracy range with actual targets for testing direct fire aircraft and weapons; an instrumented air delivery test area; and desert and dust mobility test areas. YPG is designated as the DoD primary test site for electromagnetic/electrothermal gun systems under Project Reliance. Under Reliance, YPG is also designated as the primary site for the conduct of indirect fire gun munitions and a specialty site for land vehicle testing. YPG manages all extreme natural environment testing (desert, cold weather, and tropic) with off site physical locations (tropic testing in Panama and cold weather testing in Alaska). Cold Regions Test Center (CRTC), Fort Greely, AK is the only cold region environmental test center within DoD. This program includes support of development and production acceptance testing to determine the performance of extreme cold weather specific equipment, the effects of extreme cold weather, wind, and snow on the performance of weapons systems and materiel in full operation, and the man/materiel interface. It also provides, within mission area, for leverage, integration and use of virtual and synthetic test tools/capabilities for reduction of test costs and program acquisition costs.

FY 1997 Accomplishments:

•	18086	Key systems tested were: KIOWA Warrior (OH-58D), Wide Area Mine (HORNET), CRUSADER Advanced Field Artillery System, USMC Light Armored Vehicle, BRADLEY Fighting Vehicle System, Improved Extreme Cold Weather Boot, M1A2 ABRAMS Tank, and the German SP2000 Howitzer.
Total	18086	

FY 1998 and FY 1999 Planned Program: Project consolidated into project DF30 effective FY 1998.

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	17054	0	0
Appropriated Value	17418		
Adjustments to Appropriated Value	+668		
FY 1999 President's Budget	18086	0	0

Change Summary Explanation: Funding: Project consolidated into project DF30 effective FY 1998.

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DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605601A Army Test Ranges and Facilities

PROJECT: DE91

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DE91 Aberdeen Test Center	31042	0	0	0	0	0	0	0	0

A. Mission Description and Justification: Project DE91 Aberdeen Test Center: Aberdeen Test Center (ATC), formerly known as Combat Systems Test Activity, Aberdeen Proving Ground, MD is DOD's designated lead agency for land vehicle testing and Congressionally mandated live fire testing. Under Project Reliance, ATC is designated as primary test site for land vehicle and direct fire gun munitions testing. ATC is responsible for conducting research, development tests of weapons and weapon systems; munitions and components; survey and target acquisition equipment; combat, special, and general purpose vehicles and ancillary automotive equipment; combat engineer equipment; and troop support and individual equipment. ATC is the DoD tester for vulnerability/lethality of Army systems. Major facilities include the Munson automotive test courses, firing ranges addressing a wide variety of firing capabilities, cross-country automotive test sites, a unique robotics vehicle test facility, moving target projection facility, live fire evasive target facility, armor/anti-armor depleted uranium containment facility (Super Box), the elevated rail threat launch facility, underwater test facility for the conduct of tests for surface and subsurface ship structures (Navy support), and a number of special test laboratories. It also provides, within mission area, for leverage, integration and use of virtual and synthetic test tools/capabilities for reduction of test costs and program acquisition costs.

FY 1997 Accomplishments:

•	31042	Some of the systems tested were: BRADLEY Fighting Vehicle System, M1A1 and M1A2 ABRAMS Tank, Navy Ship Structures, M839 120mm Tank Round, M917 Dump Truck, USMC Advanced Amphibious Assault Vehicle, M88 Improved Recovery Vehicle (HERCULES), and the Heavy Assault Bridge. Institutional funds were also used to modernize test facilities and equipment to maintain current test capabilities and improve the safety, environmental, efficiency, and technological aspects of test operations.
Total	31042	

FY 1998 and FY 1999 Planned Program: Project consolidated into project DF30 effective FY 1998.

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	34436	0	0
Appropriated Value	35172		
Adjustments to Appropriated Value	-4130		
FY 1999 President's Budget	31042	0	0

Change Summary Explanation: Funding: FY 1997 (-3394) to align resources within PE 0605601A in accordance with workload. This project consolidated into project DF30 effective FY 1998.

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DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605601A Army Test Ranges and Facilities

PROJECT: DE93

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DE93 White Sands Missile Range	64470	0	0	0	0	0	0	0	0

A. Mission Description and Justification: **Project DE93 White Sands Missile Range:** White Sands Missile Range (WSMR), NM, is the largest, multi-purpose, overland test range within DoD. This project provides for testing of ballistic and guided missiles, air defense systems, and artillery missile systems for all services. It is the DoD designated primary test facility for overland surface-to-air and surface-to-surface missile testing and nuclear effects under Project Reliance. Launch complexes are integrated into a modern, real-time data collection and data reduction processing system. Facilities include optical and calibration laboratories, inertial guidance test facilities, full spectrum nuclear effects facilities (i.e., radiation, thermal, blast, electromagnetic pulse), temperature, shock, vibration, and electromagnetic effects, and a fully landlocked/secure test missile flight facility. WSMR facilities and services are extensively utilized by the Tri-Services, National Aeronautics and Space Administration, and other government agencies and includes support to the High Energy Laser Systems Test Facility located at WSMR. The Electronic Proving Ground (EPG) is consolidated under WSMR. EPG, Fort Huachuca, AZ, is unique within DoD because of the electromagnetically "clean" environment, extensive real estate, low annual rainfall, and special facilities required to perform development tests for communications, command and control, optical/electro-optical, signal intelligence, and electronic warfare equipment and systems. EPG operates an electro-magnetic environment test facility, an unmanned aerial vehicle test facility, antenna pattern measurement facility, electro-magnetic interference (EMI)/electro-magnetic compatibility (EMC)/TEMPEST test facility, communication test facility, outdoor compact antenna range, high frequency test facility, stress loading facility, and an electro-optical systems test facility. It also provides, within mission area, for leverage, integration and use of virtual and synthetic test tools/capabilities for reduction of test and program costs.

FY 1997 Accomplishments:

•	64470	Some of the key systems tested were: PATRIOT Missile System, Theater High Altitude Area Defense (THAAD), support of Army Warfighting Experiments, Army Tactical Command and Control System (ATCCS), Army Tactical Missile System, Integrated Meteorological System, Global Positioning System, Multiple Launch Rocket System, Theater Missile Defense, and Brilliant Anti-Armor Submunition (BAT).
Total	64470	

FY 1998 and FY 1999 Planned Program: Project consolidated into project DF30 effective FY 1998.

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BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605601A Army Test Ranges and Facilities / PROJECT: DE93

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	59945	0	0
Appropriated Value	61233		
Adjustments to Appropriated Value	+3237		
FY 1999 President's Budget	64470	0	0

Change Summary Explanation: Funding: Project consolidated into project DF30 effective FY 1998.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605601A Army Test Ranges and Facilities / PROJECT: D618

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D618 Aviation Technical Test Center	9306	0	0	0	0	0	0	0	0

A. Mission Description and Justification: Project D618 Aviation Technical Test Center: Aviation Technical Test Center (ATTC), Fort Rucker, AL provides a capability for research, development, production, verification, and materiel change testing of Army aircraft, Aircrew systems/subsystems, and various items of related ground support equipment. Fleet Aircraft Sustainment Testing (FAST) is also conducted to provide continuous reliability/supportability data on new and modified aircraft systems/subsystems. ATTC operates DoD's only helicopter icing spray capability and low speed, fixed wing cloud physics instrumented aircraft which provide for qualification of helicopters for flight under icing conditions. Also funds the Airborne Engineering Evaluation Support Activity (AEESA) at CECOM which includes night vision research, aircraft modeling, flight support, modification of airframes and installation of night vision systems. It also provides, within mission area, for leverage, integration and use of virtual and synthetic test tools/capabilities for reduction of test and program acquisition costs.

FY 1997 Accomplishments:

•	8787	Some of the key systems tested were: KIOWA Warrior (OH-58D), UH-1H Utility Helicopter, UH-60 BLACKHAWK, COMANCHE, CH-47D CHINOOK, AH-64 APACHE, and the Long Range Biological Standoff Detection System.
•	519	Airborne Engineering Evaluation Support Activity (AEESA), Fort Monmouth, NJ
Total	9306	

FY 1998 and FY 1999 Planned Program: Project consolidated into project DF30 effective FY 1998.

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	12557	0	0
Appropriated Value	12826		
Adjustments to Appropriated Value	-3520		
FY 1999 President's Budget	9306	0	0

Change Summary Explanation: Funding: FY 1997 decrease of (–3251) reprogrammed based on acceleration of the relocation of the Airworthiness Qualification Directorate from Edwards AFB, CA to Fort Rucker, AL in FY 1996, and to realign resources within PE 0605601A in accordance with workload. This project consolidated into project DF30 effective FY 1998.

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605601A Army Test Ranges and Facilities

PROJECT: D630

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D630 TECOM Test Design and Evaluation	4024	0	0	0	0	0	0	0	0

A. Mission Description and Justification: Project D630 TECOM Test Design and Evaluation: This project provides for independent assessment of over 300 non-major systems. It encompasses design of developmental and initial production assessment plans, test design, and subsequent independent analysis and assessment reports in support of all acquisition milestones to include recommendations for type classification and materiel release of non-major systems. Includes some 125-150 independent assessment plans and reports annually in the areas of munitions, weapons, electronics, communications, electronic warfare training devices, automotive and engineering equipment, bridging, clothing and individual equipment, chemical detection alarms, and chemical protective equipment. It also provides for TECOM HQ safety assessment/verification, and for test integration functions in support of the Army's integrated T&E process.

FY 1997 Accomplishments:

- 1782 TECOM HQ integrated test planning and safety assessment/verification function including participation in 713 Integrated Product Teams and the issuance of 331 safety releases and 96 safety confirmations.
- 2242 Army Evaluation Center/OPTEC. Continued test design and assessment program, addressing new developments, production, and materiel changes. Systems included:
  - Aviation Combined Arms Tactical Trainer
  - Army Key Management System
  - Tactical Standoff Biological Detector
  - Deployable Universal Combat Earthmover
  - Air Warrior
  - Airborne Standoff Minefield Detection System
  - Close Combat Tactical Trainer
  - Land Warrior
  - SHORTSTOP

  Air Traffic Navigation and Communication System
  Mobile Automated Instrumentation Suite
  Joint Service Lightweight Integrated Suit Technology (JSLIST)
  Containerized Kitchen
  Remote Activation Munitions System
  Handheld Mine Detection System
  Selectable Lightweight Attack Munition
  Multiple Integrated Laser Engagement System - 2000
  IEW Common Sensor

Total 4024

FY 1998 and FY 1999 Planned Program: Effective FY 1998, project funds are realigned into project DF30 for integrated test planning and safety assessment/verification within TECOM and into project D699 for consolidation of Army's materiel evaluation mission within OPTEC.

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
6 - Management and Support	0605601A Army Test Ranges and Facilities	D630

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	4685	0	0
Appropriated Value	4785		
Adjustments to Appropriated Value	-761		
FY 1999 President's Budget	4024	0	0

Change Summary Explanation: Funding: FY 1997 decrease of (–661) reprogrammed to fund higher priorities. Effective FY 1998, project funds are realigned into project DF30 for integrated test planning and safety assessment/verification within TECOM and into project D699 for consolidation of Army's materiel evaluation mission within OPTEC.

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605601A Army Test Ranges and Facilities

PROJECT: D632

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D632 Redstone Technical Test Center	1108	0	0	0	0	0	0	0	0

A. **Mission Description and Justification: Project D632 Redstone Technical Test Center:** Redstone Technical Test Center (RTTC), Redstone Arsenal, AL provides technical test expertise, facilities and capabilities for conduct of research, development, production and post-production testing of missiles, rockets, and low energy/precision guidance lasers. RTTC conducts system level tests on small rockets and missiles, and component/subsystem tests for all categories of Army rockets, guided missiles, and associated equipment. RTTC is the Army lightning tester for hazardous/explosive materials. Major capabilities include a) extensive component/subsystem test facilities, b) ranges for flight testing small missiles and evaluating warhead effects, c) rocket motor static test stands, and d) facilities for climatic, vibration, shock, and electromagnetic environmental effects testing. RTTC is the Product Assurance tester for the Army's Missile Command for repair parts testing and evaluating missile stockpile reliability at storage sites around the world. Through stockpile reliability testing, missile shelf life extension has resulted in cost avoidance greater than $7.9 billion. It also provides, within mission area, for leverage, integration and use of virtual and synthetic test tools/capabilities for reduction of test and program acquisition costs.

FY 1997 Accomplishments:

•	1108	Some of the key systems tested were: JAVELIN, Missile Repair Parts, TOW/Improved BRADLEY Acquisition System, TOW/Improved Target Acquisition System, USAF MAVERICK Missile, STINGER Missile, HELLFIRE Missile, and Brilliant Anti-armor Submunition (BAT).
Total	1108	

FY 1998 and FY 1999 Planned Program: Project consolidated into project DF30 effective FY 1998.

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	1545	0	0
Appropriated Value	1578		
Adjustments to Appropriated Value	-470		
FY 1999 President's Budget	1108	0	0

Change Summary Explanation: Funding: FY 1997 decrease of (–437) reprogrammed to fund higher priorities This project consolidated into project DF30 effective FY 1998.

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605601A Army Test Ranges and Facilities

PROJECT: D699

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D699 Non-Major Sys Test Design and Evaluation	0	2296	0	0	0	0	0	0	0

A. Mission Description and Justification: Project D699, Non-Major Systems Test Design and Evaluation: This is not a new start. FY 1998 funding was realigned from the U.S. Army Test and Evaluation Command (TECOM) (Project D630) to the U.S. Army Operational Test and Evaluation Command (OPTEC) as part of the Army's consolidation of the materiel evaluation mission. Starting in FY 1999 funding for Project D699 has been transferred to PE 0605716A Army Evaluation Center established under US Army Operational Test and Evaluation Command (OPTEC) to perform the Army's consolidated developmental and operational evaluation function. Project D699 provides for independent evaluation of all Army non-major systems. This project supports integrated Army evaluation for decision makers at milestone reviews, includes the development of test design, evaluation plans, and subsequent independent evaluations of all acquisition milestones to include recommendations for type classification and materiel release of non-major systems. Evaluation results will be incorporated into a single Army evaluation and presented at all acquisition milestones.

FY 1997 Accomplishments: Project funded under Project D630 in FY 1997.

FY 1998 Planned Program:

- 2239 Funds 35 civilian authorizations required to continue test design and evaluation programs, addressing new developments, production, and materiel changes. Programmed items include:
  - Non-Lethal Ammo Family
  - TRAILBLAZER
  - Air Warrior
  - Modular Body Armor
  - Joint Biological Detector
  - Close Combat Tactical Trainer
  - Ground Based Common Sensor - Light
  - Suite of Integrated Radio Frequency Countermeasures
  - Sorbent Decontamination System
  - Mounted Warrior
  - Armored Security Vehicle
  - Counter Proliferation Long Range Biological Standoff Detector
  - Force Battle Command Brigade and Below
- 57 Small Business Innovative Research/Small Business Technology Transfer Programs

Total 2296

FY 1999 Planned Program: Project consolidated into the newly established PE 0605716A Army Evaluation Center under OPTEC.

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BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605601A Army Test Ranges and Facilities / PROJECT: D699

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	2389	1966
Appropriated Value		2389	
Adjustments to Appropriated Value		-93	
FY 1999 President's Budget	0	2296	0

Change Summary Explanation: Funding: FY 1999 Funds (-1966) transferred to PE 0605716A Army Evaluation Center under OPTEC.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605602A Army Test Technology and Sustaining Instrumentation PROJECT D628

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D628 Test Technology & Sustaining Instrumentation	20761	32160	33439	35758	37991	39899	41824	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project D628 - Test Technology & Sustaining Instrumentation: Test technology provides critical front-end efforts for development of new test methodologies, test standards, advanced test technology concepts for long range requirements, future test capabilities, and advanced instrumentation prototypes for US Army Test and Evaluation Command (TECOM) which includes: Yuma Proving Ground (YPG), AZ; Aberdeen Test Center (ATC), MD; Dugway Proving Ground (DPG), UT; White Sands Missile Range (WSMR), NM; Redstone Technical Test Center (RTTC), AL; and Aviation Technical Test Center (ATTC), AL. Within this element, a major initiative called Virtual Proving Ground (VPG) is directed towards integrating Modeling & Simulation and internetting technologies into the Test and Evaluation process to support acquisition streamlining and to address significant downsizing and budget reductions. Sustaining instrumentation maintains existing technical testing capabilities at TECOM test facilities by replacing unreliable, uneconomical and irreparable instrumentation, as well as incremental upgrades of instrumentation and software, to assure adequate test data for acquisition milestone decisions for projects such as Patriot Advanced Capability Phase 3 (PAC 3), M1A2 Main Battle Tank, Joint Service Lightweight Integrated Suit Technology (JSLIST), Crusader, Theater High Altitude Area Defense (THAAD), Comanche and Javelin. Increase beginning in FY 1998 funds critical instrumentation shortfalls and fully implements the TECOM VPG. This innovative Acquisition Streamlining Initiative in testing will significantly improve the ability of the Army to provide early influence on system design, reduce test costs, extend the envelope of information to reduce risk and reduce acquisition costs. This initiative is critical to achieving long term efficiencies not only within the T&E mission to offset funding and manpower reductions but also within the acquisition process at large. Test instrumentation and equipment affected by the Year 2000 (Y2K) phenomena will be modified/replaced to maintain data integrity and test site safety as the millennium changes. Includes research and development effort directed toward support of installations or operations required for general research and development use and therefore is appropriate to Budget Activity 6.

FY 1997 Accomplishments:

- 1436 Provided quick reaction capability to respond to failed instrumentation and replacement needs, provided support for technical committees forging future instrumentation technology developments and maintained/improved existing capability by replacement and limited upgrades of worn out, obsolete or unserviceable equipment/instrumentation at Army technical test ranges (such as replacement of cameras using film with video data instrumentation and digital cameras). Developed prototype instrumentation (design initiation of IR Simulation Test Acceptance Facility) and performed advanced concept studies for development of new technologies (corrosion study of Tropic Test Sites). Continued to develop Test Operations Procedures (TOPs) and International Test Operations Procedures (ITOPs) to ensure quality and consistency of test results throughout Army and for international cooperative applications.

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605602A Army Test Technology and Sustaining Instrumentation PROJECT D628

FY 1997 Accomplishments: (continued)

- 8767 Continued support of TECOM Virtual Proving Ground (VPG):
  - Aberdeen Test Center (ATC): Continued to develop databases, detailed models and system interfaces to link VPG tools with legacy systems. Continued to develop Distributed Simulation Architecture and test procedures needed to link high fidelity system models with synthetic test stimuli and virtual instrumentation to conduct simulation testing of automotive and combat vehicles.
  - Aviation Technical Test Center (ATTC): Began integration of aircraft, terrain and targeting models in support of aviation survivability testing. Initiated development of a totally virtual test range to integrate various system models with threat models.
  - Dugway Proving Ground (DPG): Continued development of software to be used for chemical biological/aerosol testing. Developed a multimedia communications network system and a VPG training program for the command.
  - Redstone Technical Test Center (RTTC): Continued to acquire the capability to support virtual component/subsystem tests for small missile systems with open loop and closed loop non-destructive testing of imaging IR/MMW Seekers and all-up-round missiles. Continue developing ground truth databases. Completed networking of ground truth databases and the capability to replicate flight dynamic motion environments.
  - White Sands Missile Range (WSMR): Developed Virtual test capabilities for Command, Control, Communications, Computers and Intelligence (C4I) systems and continued development of virtual mission planning & real-time data analysis capability. Completed software development for modeling large scale C4I deployments in electromagnetic environments.
  - Yuma Proving Ground (YPG): Developed digital database (mapping and clutter characteristics) and graphics capability for system applications.
  - HQ TECOM: Continued VPG design and integration.
- 377 ATTC: Continued replacement of Rotary-wing Flight Test Cockpit Indicators (sensors and switches which measure liquid pressure, gas pressure, temperature, voltages, acceleration, vibration and flow rates) and initiated the acquisition of low dynamics Global Positioning System (GPS) equipment for programs such as Comanche and Special Ops aircraft.

1210 ATC: Continued acquisition of high-speed data analysis and processing equipment. Initiated support for the Land Warrior Test Suite to measure soldier impact/interface of equipment and capability. Began acquisition of range and system safety instrumentation.

- 856 DPG: Continued replacement of chemical/biological laboratory analysis instrumentation to sustain the Nuclear, Biological, Chemical (NBC) Defense mission.
- 1382 WSMR: Continued to modify the Command Destruct system for remote control capability IAW personnel downsizing and safety assurance initiatives. Initiated development of an upgrade to the laser tracking capability and began acquisition of Real Time Data Processing capability.

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605602A Army Test Technology and Sustaining Instrumentation PROJECT D628

FY 1997 Accomplishments: (continued)

- 1180 YPG: Continued to upgrade data acquisition, processing and display capabilities for air-to-ground and ground-to-ground armaments testing to include a mobile mission control system.
- 1175 RTTC: Continued development of the vibro-acoustic flight capability to produce dynamically accurate missile flights necessary to reduce the number of costly missile test flights. Acquired fiber optics cables for data transfer and communications. Replaced solid state power amplifiers used in physical environments testing. Completed the fabrication of the Thermal Ablative Test Stand used to characterize materials in advanced missile systems.
- 4378 HQ TECOM: Provided technical support costs to include salaries and benefits, travel, training and developmental assignments for Directorate for Technical Mission personnel, who manage requirements development, project prioritization, and execution of investment accounts for Small Business Innovative Research, Production Base Support, Army Test Technology and Sustaining Instrumentation, Major Test and Evaluation Investment, and the Central Test and Evaluation Investment Program, totaling $80-$100M/yr. Management and support costs also provide direct interface to the T&E Executive Agent, managing needs and solutions calls for T&E Reliance oversight, and supporting the Army TERIB co-chair and the Army principal on the T&E Board of Operating Directors. Provided administrative support for Local Area Network and TECNET, contracts, patents, Symposia and Conferences, exhibits and printing. Continued funding support to the Joint Program Office (JPO) for Test and Evaluation under the tri-service Executive Agent for Test and Evaluation.

Total 20761

FY 1998 Planned Program:

- 905 Provide quick reaction capability to respond to failed instrumentation and replacement needs, provide support for technical committees forging future instrumentation technology developments and maintain/improve existing capability by replacement and limited upgrade of worn out, obsolete or unserviceable equipment/instrumentation at Army technical test ranges (such as a Portable Data Acquisition and reduction System). Develop prototype instrumentation (equipment used in the elimination of refrigerants) and perform advanced concept studies for development of new technologies. Continue to develop Test Operations Procedures (TOPs) and International Test Operations Procedures (ITOPs) to ensure quality and consistency of test results throughout Army and for international cooperative applications.
- 16027 Continue support of TECOM Virtual Proving Ground (VPG):

  ATC: Continue to develop databases, detailed models and system interfaces to include a reconfigurable man-in-the-loop testing capability of ground vehicle systems. Continue development of the Distributed Simulation Architecture and test procedures needed to link high fidelity system models with synthetic test stimuli and virtual instrumentation to conduct simulation testing of automotive and combat vehicles. Begin funding the cooperative Technology Program Annexes (TPA) with the Army Research Lab in developing capabilities and implementation of VPG. Attain a High Level Architecture (HLA) Federation with RTTC and ATTC in development of VPG models and simulation enhancements. Support the VISION; Test and Training XXI Initiative.

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605602A Army Test Technology and Sustaining Instrumentation PROJECT D628

FY 1998 Planned Program: (continued)

ATTC: Continue development of a totally virtual test range to integrate various system models with threat models to include integration of the Comanche aircraft model with ground truth telemetry data to perform virtual flight visualization testing.

DPG: Continue the development of software to be used in support of chemical biological/aerosol testing. Perform Verification, Validation and Accreditation (VV&A) of the Atmospheric Effects Module (4DWX) software model.

RTTC: Continue to acquire the capability to support virtual component/subsystem tests for small missile systems with open loop and closed loop non-destructive testing of imaging IR/MMW Seekers, and all-up-round missiles. Continue development of ground truth databases, procure a Dynamic 3-Dimensional IR Scene Generation System for the Electro-Optical Sensor Flight Evaluation Laboratory (EOSFEL) which will provide the capability to accept 3-D Virtual Range databases, also procure and install fiber optic interface equipment. Provide support to Project Constellation, a distributed virtual test capability across multiple TECOM test centers (WSMR, EPG, EPG/Ft Lewis, ATTC and RTTC) using standard architectures, networks, and validation/accreditation procedures.

WSMR: Continue development of virtual reality mission planning/playback for large missile systems. Continue to acquire real-time data analyses workstations to replace non-maintainable obsolete mainframe computers. Continue development of C4I and EW testing capabilities which replaces expensive airborne jammers with simulators which inject actual threat waveforms into the test items and will significantly reduce test costs, test time, and provides test repeatability (controlled test parameters). Develop test range and laboratory fiber-optic interconnectivity, and virtual test capability. Develop DIS and HLA interfaces between test control centers and VPG models. Develop an Airblast Survivability Model for Comanche and an Electromagnetic Model for Breacher (minefield clearing system on M1 chassis).

YPG: Continue development of digital mapping and clutter characteristics. Initiate development of terrain and ground truth databases. Develop aviation fire control and line of sight models. Develop requirements for integrated air delivery modeling and simulation.

HQ TECOM: Continue VPG design and integration.

- 819 ATTC: Continued replacement of Rotary-wing Flight Test Cockpit Indicators. Acquire wireless rotor measurement equipment, data management hardware and software needed to streamline acquisition and data reduction time, test analysis workstations, and interfaces. Develop software to integrate GPS equipment with a ground control station.
- 2201 ATC: Continue development of test site integration which consists of network communications between test site instrumentation and a centralized workstation for test control, monitoring and real-time data analysis and review. Continue to acquire high-speed analysis and processing equipment. Continue to acquire range and system safety instrumentation. Initiate development of a combined Developmental Test (DT)/Operational Test (OT) vehicle instrumentation package. Initiate development of vehicle endurance/performance test data analyzers.
- 398 DPG: Acquire agent hood ventilation system filters and chemical/biological laboratory analysis instrumentation for the Combined Chemical Test Facility to sustain the Nuclear, Biological, Chemical (NBC) Defense mission. Acquire fiber optic network equipment to interconnect the large-scale test grid for outdoor bio-testing.

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605602A Army Test Technology and Sustaining Instrumentation PROJECT D628

FY 1998 Planned Program: (continued)

•	3448	WSMR: Complete modification of the Command Destruct system for remote control capability IAW personnel downsizing and safety assurance initiatives. Continue upgrade of a single station laser tracker. Initiate development of an instrumentation platform to remotely collect, analyze, transmit and log C4I message traffic. Initiate development of high-resolution video system to support optical tracking. Initiate upgrade to the Drone Formation Control System to control the QF-4 target drone.
•	1096	YPG: Acquire mobile, portable, and base station trunked land radio units. Initiate development of a scoring sensor suite for turreted gun systems on rotary wing aircraft (small caliber munitions from .50 caliber to 30mm) and a gun pointing vector instrumentation package.
•	1325	RTTC: Continue development of a vibro-acoustic flight capability to produce dynamically accurate missile flights necessary to reduce the number of costly missile test flights. Upgrade the laser tracker hardware and software to provide accurate and reliable Time Space Position Information (TSPI) data. Complete the acquisition of solid state power amplifiers, and begin acquiring electromagnetic radiation equipment that are used in physical environments testing.
•	5168	HQ TECOM: Provide technical support costs to include salaries and benefits, travel, training and developmental assignments for Directorate for Technical Mission personnel, who manage requirements development, project prioritization, and execution of investment accounts for Small Business Innovative Research, Production Base Support, Army Test Technology and Sustaining Instrumentation, Major Test and Evaluation Investment, and the Central Test and Evaluation Investment Program, totaling $80-$100M/yr. Management and support costs also provide direct interface to the T&E Executive Agent, managing needs and solutions calls for T&E Reliance oversight, and supporting the Army TERIB co-chair and the Army principal on the T&E Board of Operating Directors. Provide administrative support for Local Area Network and TECNET, contracts, patents, Symposia and Conferences, exhibits and printing. Continue funding support to the Joint Program Office (JPO) for Test and Evaluation under the tri-service Test and Evaluation Executive Agent for Test and Evaluation. FY98 budget of $32160K accomplishes 28% of the documented and prioritized requirements.
•	773	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	32160	

FY 1999 Planned Program:

•	885	Provide quick reaction capability to respond to failed instrumentation and replacement needs, provide support for technical committees forging future instrumentation technology developments, and maintain/improve existing capability by replacement and limited upgrade of worn out, obsolete or unserviceable equipment/instrumentation at Army technical test ranges. Develop prototype instrumentation and perform advanced concept studies for development of new technologies. Continue to develop Test Operations Procedures (TOPs) and International Test Operations Procedures (ITOPs) to ensure quality and consistency of test results throughout Army and for international cooperative applications.

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605602A Army Test Technology and Sustaining Instrumentation PROJECT D628

FY 1999 Planned Program: (continued)

- 15682 Continue support of TECOM Virtual Proving Ground (VPG):

ATC: Continue in the development of databases, detailed models and system interfaces to include a reconfigurable man-in-the-loop testing capability of ground vehicle systems. Continue in the development of the Distributed Simulation Architecture and test procedures needed to link high fidelity system models with synthetic test stimuli and virtual instrumentation to conduct simulation testing of automotive and combat vehicles. Continue funding the cooperative Technology Program Annexes (TPA) with the Army Research Lab in developing capabilities and implementation of VPG. Continue to support the VISION; Test and Training XXI Initiative.

ATTC: Continue development of a totally virtual test range to integrate various system models with threat models to include integration of the Comanche aircraft model with ground truth telemetry data to perform virtual flight visualization testing.

DPG: Continue the development of software to be used in support of chemical biological/aerosol testing. Perform VV&A of the chemical biological/aerosol models.

RTTC: Complete acquisition of virtual component/subsystem test capability for small missile systems with open loop and closed loop non-destructive testing of imaging IR/MMW Seekers, and all-up-round missiles. Complete development of ground truth databases, and complete the acquisition of the Dynamic 3-Dimensional IR Scene Generation System for the Electro-Optical Sensor Flight Evaluation Laboratory (EOSFEL) which will provide the capability to accept 3-D Virtual Range databases, continue to procure and install fiber optic interface equipment. Continue to provide support to Project Constellation, a distributed virtual test capability across multiple TECOM test centers (WSMR, EPG, EPG/Ft Lewis, ATTC and RTTC) using standard architectures, networks, and validation/accreditation procedures. Develop an electromagnetic model to measure the susceptability parameters of various anti-tank and Non-line-of-sight missiles.

WSMR: Continue development of virtual reality mission planning/playback for large missile systems. Continue to acquire real-time data analyses workstations to replace non-maintainable obsolete mainframe computers. Continue development of C4I and EW testing capabilities which replaces expensive airborne jammers with simulators which inject actual threat waveforms into the test items and will significantly reduce test costs, test time, and provides test repeatability (controlled test parameters). Continue to develop test range and laboratory fiber-optic interconnectivity, and virtual test capability. Continue to develop DIS and HLA interfaces between test control centers and VPG models. Complete development of the Airblast Survivability Model for Comanche. Develop terrain and ground truth databases.

YPG: Continue development of terrain and ground truth databases. Continue development of digital mapping and clutter characteristics, aviation fire control and line of sight models.

HQ TECOM: Continue VPG design and integration.

- 440 ATTC: Continue to develop software to integrate GPS hardware with the ground control station. Continue to acquire test analysis workstations and wireless rotor measurement system. Acquire high volume/density airborne data recorders.

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FY 1999 Planned Program: (continued)

•	2557	ATC: Continue development of test site integration which consists of network communications between test site instrumentation and a centralized workstation for test control, monitoring and real-time data analysis and review. Continue to acquire high-speed analysis/processing equipment and range and system safety instrumentation. Continue development of a combined DT/OT vehicle instrumentation package. Continue development of vehicle endurance/performance test data analyzers.
•	698	DPG: Continue to acquire chemical/biological laboratory analysis instrumentation for the Combined Chemical Test Facility to sustain the Nuclear, Biological, Chemical (NBC) Defense mission. Acquire equipment to detect pathogens, toxins and chemical agents to support field testing. Acquire digital cameras and recorders to provide photonic metric measurements for Chem/Bio, Smoke/Obscurant and Illumination testing.
•	3475	WSMR: Acquire real-time data processing and analysis hardware/software. Continue development of high-resolution video system to support optical tracking. Complete upgrade of a single station laser tracker. Complete development of an instrumentation platform to remotely collect, analyze, transmit and log C4I message traffic. Continue upgrade of the Drone Formation Control System to control the QF-4 target drone.
•	1375	YPG: Continue to acquire mobile, portable, and base station trunked land radio units. Continue development of a scoring sensor suite for turreted gun systems on rotary wing aircraft (small caliber munitions from .50 caliber to 30mm) and a gun pointing vector instrumentation package. Acquire equipment (high-speed video cameras and workstations) to develop an advanced target acquisition system to collect trajectory data for multiple air and ground targets.
•	1550	RTTC: Complete development of a vibro-acoustic flight capability to produce dynamically accurate missile flights necessary to reduce the number of costly missile test flights. Continue upgrade of laser tracker hardware and software to provide accurate and reliable TSPI data. Continue to acquire electromagnetic radiation equipment, which are used in physical environments testing. Acquire workstations to digitize high bandwidth flight test data.
•	6777	HQ TECOM: Provide technical support costs to include salaries and benefits, travel, training and developmental assignments for Directorate for Technical Mission personnel, who manage requirements development, project prioritization, and execution of investment accounts for Small Business Innovative Research, Production Base Support, Army Test Technology and Sustaining Instrumentation, Major Test and Evaluation Investment, and the Central Test and Evaluation Investment Program, totaling $80-$100M/yr. Management and support costs also provide direct interface to the T&E Executive Agent, managing needs and solutions calls for T&E Reliance oversight, and supporting the Army TERIB co-chair and the Army principal on the T&E Board of Operating Directors. Provide administrative support for Local Area Network and TECNET, contracts, patents, Symposia and Conferences, exhibits and printing. Continue funding support to the Joint Program Office (JPO) for Test and Evaluation under the tri-service Executive Agent for Test and Evaluation. FY99 budget of $33439K accomplishes 27% of the documented and prioritized requirements.
Total	33439	

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605602A Army Test Technology and Sustaining Instrumentation PROJECT D628

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	21944	33184	33276
Appropriated Value	22413	33184	
Adjustments to Appropriated Value	-1652	-1024	
FY 1999 President's Budget	20761	32160	33439

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605604A Survivability/Lethality Analysis

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	29362	31308	30498	16363	18744	19467	20256	Continuing	Continuing
D670 Emerging Technology Systems	4568	5115	5759	2583	3055	3171	3298	Continuing	Continuing
D671 Air Defense/Missile Defense Systems	5443	5742	5779	3220	3643	3785	3940	Continuing	Continuing
D672 Aviation Systems	3507	3220	3174	1877	2027	2104	2188	Continuing	Continuing
D675 Force XXI and C4I/IEW Systems	4709	4362	4033	2227	2625	2728	2841	Continuing	Continuing
D677 Ground Combat Systems	5007	5030	5403	2920	3376	3510	3656	Continuing	Continuing
D678 Munitions Systems	5365	5440	5615	3115	3569	3706	3855	Continuing	Continuing
D679 Soldier Systems	763	800	735	421	449	463	478	Continuing	Continuing
D734 Survivability Evaluation	0	1599	0	0	0	0	0	Continuing	Continuing

NOTE: Starting in FY 1999 funding for Project D734 Survivability Evaluation has been transferred to newly established PE 0605716A Army Evaluation Center under US Army Operational Test and Evaluation Command (OPTEC) to perform the Army's newly consolidated developmental and operational evaluation function in support of the materiel acquisition process.

Mission Description and Budget Item Justification: This Program Element (PE) funds activities and functions to conduct objective and integrated survivability and lethality analyses (SLA) for all major and designated non-major Army systems. The analyses quantify the effects of electronic warfare (EW), ballistic, nuclear, chemical, and biological battlefield threats and meteorological conditions on Army individual soldiers and systems. This PE also funds vulnerability assessments of digitized systems for Force XXI.

The work is accomplished through threat research, theoretical and engineering analyses, signature measurements, modeling, simulations, laboratory experiments, and field investigations. Activities in progress include assessment of the effects of smokes and obscurants, passive countermeasures, tactics, lasers, high-power microwave, electro-optical/radio frequency (EO/RF) jammers, electromagnetic environment effects (E3), information warfare (IW), decoys, conventional ballistics and nuclear/biological/chemical (NBC) effects on Army soldiers and systems. The PE work efforts provide U.S. Army decision makers, materiel and combat developers, system users, and independent evaluators critical soldier and system survivability analyses that quantify the soldier/system's survivability effectiveness in battlefield threat environments. Recommendations are provided to the materiel and combat developers on how to mitigate soldier/system deficiencies and enhance their survivability.

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605604A Survivability/Lethality Analysis

This PE funds civilian salaries, travel, development and maintenance of equipment and facilities, general management, administrative and contractor support required for program execution. The U.S. Army Research Laboratory (ARL) Survivability/Lethality Analysis Directorate (SLAD) conducts this effort. Effective in FY 1998, all ARL Survivability/Lethality Analysis Directorate (SLAD) evaluation functions in support of survivability/lethality testing will be financed through Project D734 under the direction of OPTEC. This PE supports Headquarters, Department of the Army (HQDA), Program Executive Offices (PEOs), Program Managers (PMs), and independent evaluators with EW, chemical, biological, nuclear, and ballistic expertise to conduct special studies, support Test Integration Working Groups (TIWG) and program reviews, review acquisition documentation, provide government testers with technical support, and support milestone decision reviews; and is appropriately funded in Budget Activity 6.

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DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605604A Survivability/Lethality Analysis

PROJECT: D670

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D670 Emerging Technology Systems	4568	5115	5759	2583	3055	3171	3298	Continuing	Continuing

A. **Mission Description and Justification:** **Project D670 - Emerging Technology Systems:** This project performs integrated survivability/lethality analyses for the category of systems which include Horizontal Technology Integration systems, Advanced Technology Demonstration initiatives, and proposed survivability enhancements to weapon platforms. Survivability deficiencies are identified, and recommendations are made to Program Executive Officers and Program Managers (PEOs/PMs) to provide hardening fixes early in program development. Work is accomplished through threat research, theoretical & engineering analyses, laboratory experiments, models, simulations, and field investigations. This effort also supports HQDA, independent evaluators, and PEOs/PMs with technical expertise in electronic warfare (EW), ballistics, chemical/biological contamination & decontamination, and meteorology to conduct special studies and to support Test Integration Working Groups (TIWGs), weapon system program reviews, acquisition documentation reviews, and Government testers. This project also provides oversight of the Army's Electromagnetic Environmental Effects (E3) Program. Horizontal Technology Integration systems include 2nd Generation FLIR (2nd GEN FLIR), Battlefield Combat Identification System (BCIS), Global Positioning System (GPS), and Enhanced Position Location Reporting System (EPLRS). Advanced Technology Demonstration initiatives include Battlefield Combat Identification (BCID), Composite Armored Vehicle (CAV), Target Acquisition, Hit Avoidance, Direct Fire Lethality, and Future Scout & Cavalry System (FCSC). Proposed survivability enhancements to weapon platforms include advanced armament technologies, defensive aide suites (DAS), missile countermeasure devices (MCD), emerging propellant technologies, advanced propulsion systems, advanced electronics, and improved spall liners in combat vehicles.

FY 1997 Accomplishments:

- 2306 Conducted EW vulnerability assessments to support integrated survivability and lethality analyses of emerging technology systems and horizontal technology applications. Developed necessary test beds to conduct laboratory and field investigations, and prepare interim survivability analysis reports. Supported the Army's E3 program.
- 1382 Conducted ballistic effects investigations, developed system description models, performed damage simulations, and collected experimental data to support integrated survivability and lethality analysis reports.
- 880 Conducted engineering investigations addressing nuclear hardening and survivability, chemical and biological warfare contamination and decontamination, and dirty battlefield conditions to support integrated survivability/lethality analyses of emerging technology systems and horizontal technology applications. Developed necessary test beds to conduct laboratory and field investigations, and prepared interim survivability analysis reports.

Total 4568

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BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605604A Survivability/Lethality Analysis — PROJECT: D670

FY 1998 Planned Program:

•	2512	Perform integrated EW survivability and lethality investigations and analyses of emerging technology systems, including performance predictions of hit avoidance concepts (laser/missile warning receivers, decoys, obscurants) & the effect of obscured atmosphere on the propagation of missile plume signatures for defensive aided suites, and recommendations for Electronic Counter Counter Measure (ECCM) enhancements. Support the Army's E3 program, and provide E3 shielding implications for composite materials for a ground system in development.
•	1370	Perform ballistic effects investigations and survivability/lethality analyses of emerging technology systems, including the residual aerodynamic & structural properties of damaged composite rotary blades, the residual performance of novel vehicle drive trains & electro-optical components, blast effects of select mines, and vulnerabilities with Army's air fleet's transition to JP-8 fuel.
•	1105	Provide engineering-based predictions of chemical and biological warfare contamination & decontamination and dirty battlefield conditions to support integrated survivability/lethality analyses of emerging technology systems and horizontal technology applications. Complete model to predict chemical infiltration hazards to crew & equipment inside a combat vehicle, and predict the effects of chemical agents & decontaminates on materials to obviate the need for testing all new candidate materials.
•	128	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	5115	

FY 1999 Planned Program:

•	3047	Conduct EW vulnerability investigations and analyses to support integrated survivability and lethality analyses of advanced 2nd and 3rd generation emerging technology and horizontal technology applications. Prepare interim survivability analysis reports
•	1463	Perform ballistic effects investigations and survivability/lethality analyses of candidate emerging technologies most influential on future system designs, including advanced armors (such as active protection systems), advanced armaments (such as electric armaments and electro thermal chemical), advanced propellants, and advanced vehicle propulsion. Prepare interim survivability analysis reports.
•	1249	Conduct vulnerability analysis of Army's digitized battlefield systems to radio frequency (RF) weapons. Identify possible countermeasure to threat RF weapons. Support the Army E3 program, and expand E3 predictive capabilities for other composite materials.
Total	5759	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	4776	5278	4759
Appropriated Value	4879	5278	
Adjustments to Appropriated Value	-311	-163	
FY 1999 President's Budget	4568	5115	5759

Change Summary Explanation: Funding - FY 99 Funds (+1000) - funding provides support for vulnerability analysis of digitized force against Radio Frequency Weapons.

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DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605604A Survivability/Lethality Analysis

PROJECT: D671

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D671 Air Defense/Missile Defense Systems	5443	5742	5779	3220	3643	3785	3940	Continuing	Continuing

A. **Mission Description and Justification:** **Project D671 - Air Defense/Missile Defense Systems:** Provides the survivability/lethality analysis of U.S. Army air defense and missile defense systems to the full spectrum of battlefield threats and recommends fixes to improve their battlefield survivability. The results are used by each Project Manager (PM) and the Program Executive Officer (PEO) to direct weapon system development efforts and structure product improvement programs; by the independent evaluator when they provide system evaluations in support of milestone decisions; by the user to develop survivability/lethality requirements, doctrine and tactics; and by decision makers in formulating program/production decisions. Anti-Radiation Missile (ARM) Counter-Arm efforts assess threat technologies against, THAAD and National Missile Defense (NMD), PATRIOT, Medium Extended Air Defense System (MEADS), and FAAD-C21 ground based sensors. Also funds salaries, travel, equipment/facilities, and management/administrative support needed to execute the program.

FY 1997 Accomplishments:

•	3025	Conducted electronic warfare vulnerability assessments for PATRIOT, Stinger, Sentinel, LINEBACKER, THAAD and National Missile Defense (NMD) in development, undergoing P3I, or have been recently fielded.
•	755	Conducted chemical, biological, nuclear, and atmospheric effects survivability analysis for U.S. Army air defense and missile defense systems.
•	864	Conducted ballistic survivability/lethality analysis for U.S. Army air defense and missile defense systems.
•	250	Provided integrated survivability/lethality analyses to support scheduled air defense/missile defense program decision milestones in FY 97.
•	549	Supported Consolidated Army Evaluation Function.
Total	5443	

FY 1998 Planned Program:

•	3507	Conduct electronic warfare vulnerability/survivability analysis and assessment of U.S. Army air defense and missile defense systems that are in development, undergoing P3I, or have been recently fielded to include PATRIOT, MEADS, Stinger, GBS, LINEBACKER, THAAD, and NMD.
•	761	Conduct chemical, biological, nuclear, and atmospheric effects survivability analysis for U.S. Army air defense and missile defense systems.
•	955	Conduct ballistic survivability/lethality analysis for U.S. Army air defense and missile defense systems.
•	375	Provide integrated survivability/lethality analyses to support scheduled air defense/missile defense program decision milestones in FY 98.
•	144	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	5742	

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605604A Survivability/Lethality Analysis
	PROJECT D671

FY 1999 Planned Program:

•	3629	Conduct electronic warfare vulnerability assessments for developmental U.S. Army air defense and missile defense systems, pre-planned product improvements of current systems, and recently fielded systems. Provide interim susceptibility reports. Recommend ECCM enhancements.
•	900	Conduct chemical, biological, nuclear, and atmospheric effects survivability analysis for U.S. Army air defense and missile defense systems.
•	950	Conduct ballistic survivability/lethality analysis for U.S. Army air defense and missile defense systems.
•	300	Provide integrated survivability/lethality analyses to support scheduled air defense/missile defense program decision milestones in FY 99.
Total	5779	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	5687	5950	5779
Appropriated Value	5818	5950	
Adjustments to Appropriated Value	-375	-208	
FY 1999 President's Budget	5443	5742	5779

Change Summary Explanation: Funding: FY1998 funds decreased (-208) for undistributed Congressional reductions.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE February 1998
BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605604A Survivability/Lethality Analysis	PROJECT D672

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D672 Aviation Systems	3507	3220	3174	1877	2027	2104	2188	Continuing	Continuing

A. Mission Description and Justification: Project D672 - Aviation Systems: Project investigates the Survivability/Lethality/Vulnerability (SLV) of Army aviation systems to the full spectrum of battlefield threats. Aircraft SLV deficiencies are identified and hardening recommendations identified as appropriate. SLV analysis directly supports major decision milestone reviews, acquisition documentation, test and evaluation master plans, and cost/operational effectiveness analyses.

FY 1997 Accomplishments:

•	1894	Conducted electronic warfare (EW) and countermeasures vulnerability assessment AH-64D Longbow Apache, OH-58D Kiowa Warrior, MH-60K & MH-47E Special Operations Aircraft (SOA) which are in development, undergoing P3I, or have been recently fielded. Conducted assessment of RAH-66 Comanche to projected EW threats.
•	510	Completed ballistic survivability/lethality analysis for Longbow Apache and SOA.
•	555	Conducted chemical, biological, nuclear, and atmospheric effects survivability analysis for Comanche, MH-60K, SOA, and Kiowa Warrior.
•	548	Supported Consolidated Army Evaluation Function with Live Fire strategy formulation.
Total	3507	

FY 1998 Planned Program:

•	1776	Perform electronic warfare vulnerability analysis and assessment of U.S. Army aviation systems and aviation support equipment to include: AH-64D Longbow Apache; RAH-66 Comanche; Suite of Integrated RF Countermeasures; Suite of Integrated IR Countermeasures.
•	690	Complete ballistic survivability/lethality analysis of UH-60Q Ambulance and Comanche. Conduct ballistic vulnerability analysis of Improved Cargo Helicopter (ICH)
•	673	Conduct the chemical, biological, nuclear, and atmospheric effects survivability analysis for Comanche and Longbow Apache.
•	81	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	3220	

FY 1999 Planned Program:

•	1695	Continue electronic warfare vulnerability assessment for aviation systems and aviation support equipment that are in development, undergoing P3I, or have been recently fielded, including AH-64D Longbow Apache, RAH-66 Comanche, CH-47D Chinook, Suite of Integrated RF Countermeasures, and Suite of Integrated IR Countermeasures. Provide susceptibility reports. Provide electronic counter-countermeasures recommendations.
•	798	Conduct the ballistic survivability/lethality analysis for Comanche and ICH.
•	681	Complete chemical, biological, nuclear, and atmospheric effects survivability analysis for Comanche and aviation support systems.
Total	3174	

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605604A Survivability/Lethality Analysis PROJECT D672

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	3660	3323	3174
Appropriated Value	3739	3323	
Adjustments to Appropriated Value	-232	-103	
FY 1999 President's Budget	3507	3220	3174

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605604A Survivability/Lethality Analysis — PROJECT: D675

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D675 Force XXI and C4I/IEW Systems	4709	4362	4033	2227	2625	2728	2841	Continuing	Continuing

A. **Mission Description and Justification: Project D675 – Force XXI & C4I/IEW Systems:** Supports survivability analysis, information warfare, and information operations of Army communications, electronic equipment and Digitized Force against the full spectrum of friendly and enemy threats. Provides field threat environment support for Electronic Warfare Vulnerability Analysis (EWVA). Analyzes vulnerabilities of foreign threat weapons and command, control, communications, computers and intelligence (C4I) and Intelligence Electronic Warfare (IEW) systems to U.S. Army EW systems. Provides threat weapon electronic design data to countermeasure developers and technical capability information to the intelligence community. Supports Army initiatives in vulnerability reduction of C4I/IEW systems against the full spectrum of battlefield threats, including information warfare. Provides analysis for understanding potential vulnerabilities of digitized Force XXI developmental systems. Supports Army Warfighting Experiments and associated Information Operations Vulnerability Assessments for Force XXI Architecture.

FY 1997 Accomplishments:

- 1421 Conducted integrated electronic, ballistic, and chemical/biological/nuclear/atmospheric effects survivability analysis for U.S. Army command and control systems. This effort supported the Advanced Field Artillery Tactical Data System, Common Hardware and Software, Maneuver Control System, FAAD-C2I, Standard Integrated Command Post Shelter, All Source Analysis System, Combat Service Support Control System and Force Battle Command Brigade and Below (FBCB2) (Applique).
- 1330 Conducted integrated electronic, ballistic, and chemical/biological/nuclear/atmospheric effects survivability analysis for U.S. Army communications systems on SINCGARS, EPLRSGPS, Mobile Subscriber Equipment, Single Channel Anti-jam Man Portable radio, Secure Mobile Anti-jam Reliable Tactical Terminal, Next Tactical Data Radio, and Enhance Manpack UHF Terminal.
- 1433 Conducted integrated electronic, ballistic, and chemical/biological/nuclear/atmospheric effects survivability analysis for U.S. Army IEW systems -- BCIS, Joint Surveillance Target Attack Radar System/Ground Station Module, improved FLIR, and enhanced Firefinder radar.
- 113 Provided integrated survivability/lethality analyses to support OPTEC for scheduled C4I/IEW systems program decision milestones in FY 97.
- 412 Supported Consolidated Army Evaluation Function.

Total 4709

FY 1998 Planned Program:

- 1915 Conduct integrated electronic, ballistic, and chemical/biological/nuclear/atmospheric effects survivability analysis for U.S. Army command and control systems. Conduct information operations vulnerability analysis. This effort supports the Advanced Field Artillery Tactical Data System, Common Hardware and Software, Maneuver Control System, FAAD-C2I, Standard Integrated Command Post Shelter, All Source Analysis System, Combat Service Support Control System and FBCB2 (Applique).

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BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605604A Survivability/Lethality Analysis — PROJECT: D675

FY 1998 Planned Program (continued)

•	1400	Conduct integrated electronic, ballistic, and chemical/biological/nuclear/atmospheric effects survivability analysis for U.S. Army communications systems such as SINCGARS, EPLRS, GPS, Mobile Subscriber Equipment, Single Channel Anti-jam Man Portable radio, Secure Mobile Anti-jam Reliable Tactical Terminal, and the Next Tactical Data Radio.
•	738	Conduct integrated electronic, ballistic, and chemical/biological/nuclear/atmospheric effects survivability analysis for U.S. Army IEW systems such as the BCIS, Joint Surveillance Target Attack Radar System/Ground Station Module and 2nd Generation FLIR enhanced Firefinder radar.
•	200	Provide integrated survivability/lethality analyses to support scheduled C4I/IEW systems program decision milestones in FY 98.
•	109	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	4362	

FY 1999 Planned Program:

•	1705	Conduct integrated electronic, ballistic, and chemical/biological/nuclear/atmospheric effects survivability analysis for U.S. Army command and control systems. Conduct information operations vulnerability analysis. This effort supports the Advanced Field Artillery Tactical Data System, Common Hardware and Software, Maneuver Control System, FAAD-C2I, Standard Integrated Command Post Shelter, All Source Analysis System, Combat Service Support Control System, and FBCB2 (Applique).
•	1405	Conduct integrated electronic, ballistic, and chemical/biological/nuclear/atmospheric effects survivability analysis for U.S. Army communications systems such as Mobile Subscriber Equipment, Single Channel Anti-jam Man Portable radio, Secure Mobile Anti-jam Reliable Tactical Terminal, and the Next Tactical Data Radio.
•	776	Conduct integrated electronic, ballistic, and chemical/biological/nuclear/atmospheric effects survivability analysis for U.S. Army IEW systems such as the BCIS, Joint Surveillance Target Attack Radar System/Ground Station Module, and enhanced Firefinder radar.
•	147	Provide integrated survivability/lethality analyses to support scheduled C4I/IEW systems program decision milestones in FY 99.
Total	4033	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	4921	4501	4033
Appropriated Value	5027	4501	
Adjustments to Appropriated Value	-313	-139	
FY 1999 President's Budget	4714	4362	4033

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE February 1998
BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605604A Survivability/Lethality Analysis	PROJECT D677

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D677 Ground Combat Systems	5007	5030	5403	2920	3376	3510	3656	Continuing	Continuing

A. **Mission Description and Justification:** **Project D677 - Ground Combat Systems:** Project investigates the survivability and vulnerability of Army ground combat systems to the full spectrum of battlefield threats. Analysis will support weapon requirements, test and evaluation master plans, cost/operational effectiveness analysis, and major milestone decisions.

FY 1997 Accomplishments:

•	1073	Conducted the electronic warfare vulnerability assessment for Crusader, Bradley A3, Command and Control Vehicle, ABRAMS M1A2, Breacher, Heavy Assault Bridge.
•	1747	Conducted the ballistic survivability/lethality analysis for U.S. Army ground combat systems; supported Future Scout Calvary System decision reviews.
•	1202	Conducted the chemical, biological, nuclear, and atmospheric effects survivability analysis for U.S. Army ground combat systems.
•	209	SLAD2000 pilot program. Developed methodology for support of integrated analyses – Defense Aided Suite Program.
•	227	Supported susceptibility analyses of survivability suite components for ground combat systems.
•	549	Supported Consolidated Army Evaluation Function.
Total	5007	

FY 1998 Planned Program:

•	1234	Conduct integrated electronic warfare vulnerability analysis and assessment of U.S. Army ground combat systems – Future Scout Cavalry System, Crusader, Bradley A3, Command and Control Vehicle, ABRAMS M1A2, Breacher. Provide interim susceptibility reports. Recommend EW survivability enhancements.
•	2072	Conduct the ballistic survivability/lethality analysis for U.S. Army ground combat systems.
•	1340	Conduct the chemical, biological, nuclear, and atmospheric effects survivability analysis for U.S. Army ground combat systems.
•	258	Provide integrated survivability/lethality analyses to support scheduled ground combat systems program decision milestones in FY 98.
•	126	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	5030	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 EXHIBIT)	DATE February 1998
BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605604A Survivability/Lethality Analysis — PROJECT: D677

FY 1999 Planned Program:

•	1410	Conduct the electronic warfare vulnerability assessment for U.S. Army ground combat systems such as Crusader, Bradley A3, Command and Control Vehicle, ABRAMS 2000, Breacher.
•	2318	Conduct the ballistic survivability/lethality analysis for U.S. Army ground combat systems.
•	1405	Conduct the chemical, biological, nuclear, and atmospheric effects survivability analysis for U.S. Army ground combat systems.
•	270	Provide integrated survivability/lethality analyses to support scheduled ground combat systems program decision milestones in FY 99.
Total	5403	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	5225	5190	5403
Appropriated Value	5337	5190	
Adjustments to Appropriated Value	-330	-160	
FY 1999 President's Budget	5007	5030	5403

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE: February 1998
BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605604A Survivability/Lethality Analysis		PROJECT: D678

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D678 Munitions Systems	5365	5440	5615	3115	3569	3706	3855	Continuing	Continuing

A. Mission Description and Justification: Project D678 - Munitions Systems: This project funds the investigation of the lethality/vulnerability of Army fire support smart weapons (smart and conventional) to the full spectrum of battlefield threats. The analysis is integrated across all battlefield threats, i.e., conventional ballistic, electronic warfare, directed energy, nuclear weapons effects, and nuclear and chemical/biological contamination effects. This work is accomplished through theoretical and engineering analyses, signature measurements, modeling, simulations, laboratory experiments, and field investigations.

FY 1997 Accomplishments:

•	2253	Conducted integrated electronic warfare vulnerability assessment for advanced developmental U.S. Army conventional and smart munitions systems such as BAT, Hellfire Longbow Missile, Wide Area Mine, and Javelin and any associated pre-planned product improvement programs. Conducted electronic warfare vulnerability assessments of BAT P3I, STAFF, Enhanced Fiber Optic Guided Missile (EFOG-M), Follow on to Tube launched Optically tracked Wired guided munition (FOT TOW), and Multiple Launch Smart Tactical Rocket (MSTAR).
•	930	Conducted the ballistic survivability/lethality analysis for U.S. Army munitions systems.
•	813	Conducted the chemical, biological, nuclear, and atmospheric effects survivability analysis for U.S. Army munitions systems.
•	820	Provided integrated survivability/lethality analyses to support scheduled munitions systems program decision milestones in FY 97.
•	549	Supported Consolidated Army Evaluation Function.
Total	5365	

FY 1998 Planned Program:

•	2569	Conduct the electronic warfare vulnerability assessment for developmental U.S. Army munitions systems and any associated P3I. Conduct electronic warfare countermeasure analysis/support for U.S. Army munitions to include FOT TOW, MSTAR, Precision Guided Mortar Munition (PGMM), and EFOG-M.
•	1114	Conduct the ballistic survivability/lethality analysis for U.S. Army munitions systems.
•	1220	Conduct the chemical, biological, nuclear, and atmospheric effects survivability analysis for U.S. Army munitions systems.
•	400	Provide integrated survivability/lethality analyses to support scheduled munitions systems program decision milestones in FY 98.
•	137	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	5440	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 EXHIBIT)	DATE February 1998
BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605604A Survivability/Lethality Analysis
	PROJECT D678

FY 1999 Planned Program:

•	2642	Conduct the electronic warfare vulnerability assessment for U.S. Army munitions systems such as Army Tactical Missile System (ATACMS) with smart payloads such as BAT and BAT P3I, Hellfire-Longbow Missile, STAFF, Wide Area Mine (WAM)/WAM PIP, Javelin, EFOG-M, FOT TOW, Sense and Destroy Armor (SADARM) P3I, and MSTAR.
•	1324	Conduct the ballistic survivability/lethality analysis for U.S. Army munitions systems.
•	1249	Conduct the chemical, biological, nuclear, and atmospheric effects survivability analysis for U.S. Army munitions systems.
•	400	Provide integrated survivability/lethality analyses to support scheduled munitions systems program decision milestones in FY 99.
Total	5615	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	5609	5613	5615
Appropriated Value	5729	5613	
Adjustments to Appropriated Value	-364	-173	
FY 1999 President's Budget	5365	5440	5615

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605604A Survivability/Lethality Analysis — PROJECT: D679

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D679 Soldier Systems	763	800	735	421	449	463	478	Continuing	Continuing

A. **Mission Description and Justification: Project D679 - Soldier Systems:** Supports individual-soldier related programs and material to maximize survivability and functionality under severe combat environments of chemical-biological warfare, nuclear, electronic and information warfare, countermeasures, directed energy and ballistics. Provides for technical investigations and analyses into the survivability of soldiers in various combat environments with many types of equipment. Provides administration of the MANPRINT Soldier Survivability (SSv) Domain. Broad areas addressed by SSv are: Fratricide reduction; soldier detectability reduction; attack prevention if detected; damage prevention; medical injury reduction; the reduction of mental and physical fatigue. The survivability of soldier systems is investigated and reported to milestone decision reviews.

FY 1997 Accomplishments:

•	392	Conducted integrated electronic, ballistic, and chemical/biological/nuclear/atmospheric effects survivability analysis for the U.S. Army Land Warrior System (Computer and Communication System, Weapon System, Protective Clothing and Individual Equipment, Chem/Bio Mask, and Integrated Headgear), Force XXI Land Warrior ACTD components and the Air Warrior System.
•	85	Coordinated preparation and direct execution of MANPRINT Soldier Survivability Assessments and Reports.
•	47	Sustained international soldier activities (NATO); provide chem/bio/physiology expertise for operations other than war and less-than-lethal efforts.
•	102	Provided integrated survivability/lethality analyses to support scheduled soldier systems program decision milestones in FY 97.
•	137	Supported Consolidated Army Evaluation Function through development of Survivability Criteria, Measure of Effectiveness, measures of Performance, and Data Elements.
Total	763	

FY 1998 Planned Program:

•	494	Conduct integrated electronic, ballistic, and chemical/biological/nuclear/atmospheric effects survivability analysis for the U.S. Army Land Warrior and Air Warrior Systems (Computer and Communication System, Weapon System, Protective Clothing and Individual Equipment, Chem/Bio Mask, and Integrated Headgear), Force XXI Land Warrior ACTD components, the Mounted Warrior System and Military Operations in Urban Terrain ACTD.
•	184	Coordinate preparation and direct execution of MANPRINT Soldier Survivability Assessments and Reports.
•	27	Sustainment of international soldier activities (NATO); provide chem/bio/physiology expertise for operations other than war and less-than-lethal efforts.
•	75	Provide integrated survivability/lethality analyses to support scheduled soldier systems program decision milestones in FY 98.
•	20	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	800	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 EXHIBIT)	DATE February 1998
BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605604A Survivability/Lethality Analysis — PROJECT: D679

FY 1999 Planned Program:

•	422	Conduct integrated electronic, ballistic, and chemical/biological/nuclear/atmospheric effects survivability analysis for the U.S. Army Land Warrior and Air Warrior Systems (Computer and Communication System, Weapon System, Protective Clothing and Individual Equipment, Chem/Bio Mask, and Integrated Headgear), Force XXI Land Warrior ACTD components, the Mounted Warrior System and Military Operations in Urban Terrain ACTD.
•	166	Coordinate preparation and direct execution of MANPRINT Soldier Survivability Assessments and Reports.
•	47	Sustainment of international soldier activities (NATO); provide chem/bio/physiology expertise for operations other than war and less-than-lethal efforts
•	100	Provide integrated survivability/lethality analyses to support scheduled soldier systems program decision milestones in FY 99.
Total	735	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	797	825	735
Appropriated Value	814	825	
Adjustments to Appropriated Value	-51	-25	
FY 1999 President's Budget	763	800	735

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605604A Survivability/Lethality Analysis

PROJECT: D734

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D734 Survivability Evaluation	0	1599	0	0	0	0	0	Continuing	Continuing

A. Mission Description and Justification: Project D734 - Survivability Evaluation: Effective in FY 1998, all U.S. Army Research Laboratory (ARL) Survivability/Lethality Analysis Directorate (SLAD) evaluation functions in support of survivability/lethality testing will be financed through Project D734 under the direction of the U.S. Army Operational Test and Evaluation Command (OPTEC). Starting in FY 1999 funding for Project D734 has been transferred to PE 0605716A Army Evaluation Center established under OPTEC to perform the Army's consolidated developmental and operational evaluation function. FY 1998 funding provides for evaluation of soldier and materiel system survivability into an integrated Army evaluation supporting decision-makers at milestone reviews. It includes the planning and coordination of developmental tests, experiments, and subsequent evaluation of results to determine system survivability in battlefield threat environments. Evaluators will develop the strategy and incorporate SLAD efforts to ensure that electronic warfare (EW), information warfare (IW), conventional ballistics, nuclear, chemical, biological, electromagnetic environmental effects (E3), atmospheric/obscuration and meteorological effects on soldier/system survivability are properly addressed. Evaluation results will be incorporated into a single Army evaluation and presented at all acquisition milestones.

FY 1997 Accomplishments: Project funded by SLAD under other projects in this PE.

FY 1998 Planned Program:

•	1559	Conduct integrated survivability evaluations for Army weapon systems and Automated Information Systems for major milestone decisions, materiel changes, and materiel releases in support of the Army Acquisition Executive and force development. Develop the evaluation strategy, design technical and operational tests and evaluate the test results to address the survivability and lethality factors pertinent to the decision process such as: soldier survivability, performance in countermeasures, system survivability. As the Army lead for Live Fire Test and Evaluation, plan and execute the Army Live Fire Test and Evaluation program for required developmental systems. Specific efforts include: conduct evaluations of Crusader, Armored Scout Vehicle (ASV), Army Tactical Missile System Block II (ATACMS Blk II), Hellfire, Longbow, Army TACMS Block II/BAT P3I (BAT P3I), FOT TOW, and Wide Area Munition (WAM) Milestone III results; prepare System Evaluation Plans for Multiple Launch Rocket System (MLRS A1), Bradley Fire Support Team (BFIST), Breacher, Bradley Fighting Vehicle System, Command and Control System (C2V), Command, Control, Communication, and Computer Systems (C4I), Suite of Integrated RF Countermeasures (SIRFCM), and Search and Destroy Armor (SADARM). Efforts include costs for 18 civilian authorizations.
•	40	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	1599	

FY 1999 Planned Program: Project consolidated under newly established PE 0605716A Army Evaluation Center under OPTEC.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605604A Survivability/Lethality Analysis PROJECT D734

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	1650	1180
Appropriated Value	0	1650	
Adjustments to Appropriated Value	0	-51	
FY 1999 President's Budget	0	1599	0

Change Summary Explanation: Funding : FY 99 Funds (-1180) transferred to PE 0605716A Army Evaluation Center.

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605605A DOD High Energy Laser System Test Facility (HELSTF)

PROJECT: DE97

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DE97 DoD High Energy Laser Systems Test Facility (HELSTF)	29227	28965	15022	15086	15150	15192	15281	Continuing	Continuing

A. Mission Description and Budget Item Justification - Project DE97 DoD High Energy Laser Systems Test Facility (HELSTF): The HELSTF provides a broad based high energy laser (HEL) RDTE capability at White Sands Missile Range, NM in support of Tri-Service HEL research and development and damage, vulnerability, and lethality laser testing. The HELSTF's laser development support capabilities include a certified laser test range, a fully integrated laser support facility, an extensive array of fully instrumented test sites and the Sea Lite Beam Director (SLBD). This multiple use facility supports testing of laser effects for targets ranging from scaled laboratory up through full scale flying target tests. Test facility support operations are required for general research and development; therefore, this PE is appropriate for inclusion in Budget Activity 6.

FY 1997 Accomplishments:

•	23509	Performed required site operations and maintenance activities to maintain laser system testing infrastructure in support of NAUTILUS, Air Force Airborne Laser Program and other Space-based Laser programs.
•	5718	Initiated the Solid State Laser Demonstration Program.
Total	29227	

FY 1998 Planned Program:

•	14147	Perform Operation and Maintenance and base operations support functions in support of the Army, Department of Defense and other agencies conducting high energy laser systems concept development studies and test and evaluation on candidate high energy laser weapons systems (Tactical High Energy Laser, Free Electron Laser, Air Force Airborne Laser, and other space-based laser programs).
•	9461	Conduct field testing of the THEL Advanced Concept Technology Demonstrator.
•	4668	Continue the Solid State Laser Demonstration Program. Complete single module device & beam distortion correction. Manufacture & Integrate the 3 module device. Complete testing of Army Pointer Tracker (APT) Backup Primary Mirror. Perform dynamic target tracking with APT.
•	689	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	28965	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605605A DOD High Energy Laser System Test Facility (HELSTF)
	PROJECT DE97

FY 1999 Planned Program:

- 9976 Perform Operation and Maintenance and base operations support functions in support of the Army, Department of Defense and other agencies conducting high energy laser systems concept development studies and test and evaluation on candidate high energy laser weapons systems (Tactical High Energy Laser, Free Electron Laser, Air Force Airborne Laser, and other space-based laser programs).
- 5046 Operations, maintenance and upgrades on organic high energy lasers and associated optical trains. Support ballistic missile defense signature data collection efforts.

Total 15022

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	29974	14952	14976
Appropriated Value	30667	29952	
Adjustments to Appropriated Value	-1440	-987	
FY 1999 President's Budget	29227	28965	15022

Change Summary Explanation: Funding: FY 1998 increase (+13973); due to a (+15000) Congressional increase and (-987) undistributed Congressional reductions.

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605606A Aircraft Certification

PROJECT: D092

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D092 Aircraft Certification	2415	2828	2924	2935	2976	3209	3293	Continuing	Continuing

A. Mission Description and Budget Item Justification Performs all engineering functions essential for certifying the airworthiness of assigned Army aircraft. Performs safety-of-flight investigations/assessments and issues messages to the field. Manages/executes the Army's Aeronautical Design Standards (ADS) Program; ADS is a continuously evolving process incorporating revisions for each change to the standard design of an aircraft system. Manages airworthiness approval of new vendor qualification/testing on fielded aircraft and materiel changes for all assigned Army aircraft systems. Provides airworthiness-engineering support to the Army Aviation Program Executive Office and the Army Aviation and Missile Command Program/Project/Product Manager requirements for major development/modification and any future system/subsystems. Manages the test and evaluation process to support the airworthiness qualification of developmental and fielded aircraft systems. This project funds activities required for general research and development on support of aircraft qualification. Since these activities are not allocable to specific R&D missions, this project is appropriately funded in Budget Activity 6.

Acquisition Strategy: Not Applicable

FY 1997 Accomplishments:

- 342 Executed technical and airworthiness qualification mission for PEO Aviation force modernization aircraft systems.
- 596 Conducted safety-of-flight investigations/assessments to include PEO Aviation force modernization aircraft systems.
- 143 Executed the Army Aeronautical Design Standards Program.
- 880 Provided continuing engineering support for technology upgrades to PEO Aviation force modernization aircraft systems.
- 454 Provided test management capability for PEO Aviation Program/Project/product managers.

Total 2415

FY 1998 Planned Program:

- 746 Manage/execute technical and airworthiness qualification mission for PEO Aviation force modernization aircraft systems.
- 574 Continue to ensure safety-of-flight investigations/assessments to include PEO Aviation force modernization aircraft systems.
- 149 Manage/execute the Army Aeronautical Design Standards Program.
- 864 Provide continuing engineering support for technology upgrades to PEO Aviation force modernization aircraft systems.
- 424 Continue to provide test management capability for PEO Aviation program/project/product managers.
- 71 Small Business Innovative Research/Small Business Technology Transfer Programs.

Total 2828

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605606A Aircraft Certification / PROJECT: D092

FY 1999 Planned Program:

•	789	Manage/execute technical and airworthiness qualification mission for PEO Aviation force modernization aircraft systems.
•	623	Continue to ensure safety-of-flight investigations/assessments to include PEO Aviation force modernization aircraft systems.
•	150	Manage/execute the Army Aeronautical Design Standards Program.
•	914	Provide continuing engineering support for technology upgrades to PEO Aviation force modernization aircraft systems.
•	448	Continue to provide test management capability for PEO Aviation program/project/product managers.
Total	2924	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	2840	2919	2924
Appropriated Value	2905	2919	
Adjustments to Appropriated Value	-490	-91	
FY 1999 President's Budget	2415	2828	2924

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605702A Meteorological Support to Research, Development, Testing & Evaluation Activities

PROJECT: D128

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D128 Meteorological Support to TECOM Activities	6278	6235	6691	6712	6911	7085	7270	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project D128 - Meteorological Support to Test and Evaluation Command (TECOM) Activities: Provides standard and specialized weather forecasts and data for test reports to satisfy Army/DoD RDT&E-unique test requirements for modern weaponry, i.e., (1) Unique atmospheric analysis sampling to include atmospheric transmittance, extinction, optical scintillation, infrared temperature, aerosol/smoke cloud dispersion characteristics, ballistic meteorological measurements, snow characterization and crystal structure; (2) Unique consultation forecasting to include prediction of sound propagation for ballistic tests, specialized prediction of light level and target to background predictions for electro-optical testing and ballistic meteorology; (3) Advisory and warning products such as go-no-go advisories for ballistic and atmospheric probe missiles, smoke obscurant tests, hazard predictions for chemical agent munitions disposal, simulated nuclear blasts, and weather warnings for range/test safety. Provides technical support to Army Program Executive Officers (PEOs), Project Managers (PMs) and the Army test ranges. Develops methodologies and acquires instrumentation/systems that allow meteorological teams to support current and future Army/DoD RDTE requirements. This PE finances indirect meteorological support operating costs not billable to customers and replacement/upgrade of meteorological instrumentation. Direct costs for meteorological support services are not funded by this PE, but are borne by the customer (i.e. materiel developers and project/product managers). Includes research and development efforts directed towards support of installations or operations required for general research and development use; therefore, is appropriate to Budget Activity 6.

FY 1997 Accomplishments:

- 2952 Provided weather forecasts, severe weather/advisories, staff meteorological services, and atmospheric measurements in support of all Army/DoD tests and projects at 11 Army test sites/ranges and as safari to off range test sites.
- 2330 Modernized operational equipment to meet customer requirements for meteorological support.
  - Completed Phase III (last) upgrade of Surface Automated Meteorological System (SAMS) to increase data transmission rates, and data reduction and analysis.
  - Electro-optical (EO) Instrumentation: Completed and fielded Small Portable Transmissometer Systems (SPOT) which measure IR, Near IR and Visible spectrum over 2Km. path length.
  - Sustainment of mobile systems.
  - Completed validation and fielding of atmospheric profilers.
  - Completed phase I, initial proof-of-concept, for Major Range and Test Facility Base (MRTFB) "4D" (x,y,z, time) Weather System (4DWX), a real-time, four dimensional integration of meteorological data from multiple and various sensor types to include EO and phenomena affecting weapons into a system that displays in a scale compatible with test needs for forecasts, go-no-go decisions, and allows for the replay of test conditions for forensic analyses of why a test may have failed.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605702A Meteorological Support to Research, Development, Testing & Evaluation Activities
	PROJECT D128

FY 1997 Accomplishments: (continued)

- 996 Provided program management for meteorological support to RDTE and technical review/assistance to ranges and meteorological teams.
  - Weather forecast support systems/data.
  - Installed 3 National Weather Service "Next Generation Doppler Weather Radar" (NEXRAD) Principal User Processors (PUPS) at Redstone Technical Test Center (RTTC), White Sands Missile Range (WSMR), and Aberdeen Test Center (ATC).

Total 6278

FY 1998 Planned Program:

- 2920 Provide indirect costs for generating weather forecasts, severe weather warnings/advisories, staff meteorological services, and atmospheric measurements in support of all Army/DoD tests and projects at 10 Army test sites/ranges and as safari to off range test sites. (Ft. Hunter Liggett closed)
- 2279 Modernize operational equipment to meet customer requirements for meteorological support.
  - Sustainment of mobile systems.
  - GPS upgrades to upper air systems.
  - Install and evaluate auto-now casting (automated and precise forecasting of weather conditions starting "now" and continuing for 1 hour into the future) at WSMR.
  - Install MRTFB "4DWX" weather system at Dugway Proving Ground (DPG).
- 1036 Provide program management for meteorological support to RDTE and technical review/assistance to ranges and meteorological teams.
  - Weather forecast support systems/data: Evaluate initial meteorological data sets for environmental modules to virtual testing.
  - Purchase and evaluate Commercial Off The Shelf (COTS) millimeterwave (MMW) instrumentation to determine the most effective and reliable equipment.
  - Evaluate MRTFB "4DWX" weather system at DPG. Initial installation of "4DWX" at ATC.

Total 6235 Fully funds indirect meteorological support operating costs and 66% of meteorological instrumentation requirements.

FY 1999 Planned Program:

- 3037 Provide weather forecast, severe weather/advisories, staff meteorological services, and atmospheric measurements in support of all Army/DoD tests and projects at 10 Army test sites/ranges and as safari to off range test sites.
- 2577 Modernize operational equipment to meet customer requirements for meteorological support.
  - Electro-optical Instrumentation: purchase COTS MMW instrumentation in order to support testing of systems using MMW guidance sensors.
  - Sustainment of mobile systems and atmospheric profilers.
  - Integrate meteorological instrumentation into MRTFB "4DWX" Weather System at DPG.
  - Install MRTFB "4DWX" weather system at RTTC, complete ATC installation.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605702A Meteorological Support to Research, Development, Testing & Evaluation Activities
	PROJECT D128

FY 1999 Planned Program: (continued)

•	1077	Provide program management for meteorological support to RDTE and technical review/assistance to ranges and meteorological teams. - Weather forecast support systems/data: Improve/provide data sets for environmental modules to virtual testing. - Evaluate MRTFB "4DWX" at RTTC.
Total	6691	Fully funds indirect meteorological support operating costs and 66% of meteorological instrumentation requirements.

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	6348	6434	6658
Appropriated Value	6484	6434	
Adjustments to Appropriated Value	-206	-199	
FY 1999 President's Budget	6278	6235	6691

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605706A Materiel Systems Analysis

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	14006	27755	9711	9736	11155	11481	11827	Continuing	Continuing
D026 Test Design and Evaluation	4161	0	0	0	0	0	0	Continuing	Continuing
M541 Materiel Systems Analysis	9845	8715	9711	9736	11155	11481	11827	Continuing	Continuing
M542 Major Systems Test, Design and Evaluation	0	19040	0	0	0	0	0	Continuing	Continuing

NOTE: Starting in FY 1999 funding for Project M542 Major Systems Test, Design and Evaluation has been transferred to newly established PE 0605716A Army Evaluation Center (AEC) under the US Army Operational Test and Evaluation Command (OPTEC) to perform the Army's consolidated developmental and operational evaluation function in support of the materiel acquisition process.

Mission Description and Budget Item Justification: The U.S. Army Materiel Systems Analysis Activity (AMSAA), as the Army's center for materiel systems analysis, provides the technical capability for the conduct of materiel systems analysis in support of Army decision makers throughout the materiel acquisition process. AMSAA responds with analyses required by the decision makers of the Army and the Department of Defense (DoD), the Program Executive Officers/Program Managers (PEO/PM), the Army's Independent Evaluator (Operational Test and Evaluation Command), and the Army analytical community. These projects fund efforts in support of operations required for general research and development and, since they are not allocable to specific research and development missions, are appropriately funded in Budget Activity 6.

In accomplishing its Materiel Systems Analysis Mission, AMSAA analyzes the performance and combat effectiveness of conceptual, developmental, and existing systems. AMSAA conducts and supports systems analyses, such as: analyses of alternatives (AoAs), system cost/performance tradeoffs, early technology tradeoffs, weapons mix analyses, requirements analyses, technology insertion, and technology base analyses. These analyses are used by the Army Materiel Command (AMC) and Department of Army (DA) decision makers in deciding acquisition, procurement, and logistic decisions to provide quality equipment and procedures into the hands of the soldiers. AMSAA provides Army-wide support in the development of methodologies, models, simulations, and databases for use in its and other Army agencies' analyses. AMSAA supports the Army modeling and simulation (M&S) community by providing item level performance methodology/data, and standardized algorithms. AMSAA is the Army's designated source of item level performance data and, as such, develops, maintains, and provides a diverse range of data for its and other Army and DoD agencies' analyses. AMSAA is the Army's executive agent for its verification, validation, and accreditation program and for the Research, Development and Acquisition (RDA) domain as part of the Army's M&S Management Structure. AMSAA also develops reliability, availability, and maintainability (RAM) methodologies for use in its and other Army agencies' analyses.

FY 1998 funding in Project M542 supports the Army's independent technical evaluation role transferred from AMSAA to the Evaluation Analysis Center (EAC) under the U.S. Army Operational Test and Evaluation Command (OPTEC) as part of the Army consolidation of materiel evaluation. In the role of the independent technical evaluator, EAC provides the technical input to the single System Evaluation Report (SER) for Army acquisition programs. EAC provides technical evaluations for major milestone decisions, materiel changes, and materiel releases in support of the Army Acquisition Executive. EAC designs technical, developmental, and production tests to

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605706A Materiel Systems Analysis

address factors pertinent to the decision process, such as: technical maturity, technical risk, technical system performance, producibility, supportability, etc. EAC conducts technical assessments for milestone acquisition evaluations of system tests (e.g. performance, reliability, availability, and maintainability assessments). EAC has a lead role in the planning and execution of the Army Live Fire Tests through its test design and evaluation responsibilities. The Operational Evaluation Command (OEC) under OPTEC transferred from the Operations and Maintenance, Army (OMA) appropriation into Project M542 in FY 1998. OEC plans and conducts independent operational evaluations to determine and report the effectiveness and suitability of Army systems in support of the OPTEC test and evaluation role in Army acquisition and force development. OEC is responsible for operational T&E and Continuous Evaluation of assigned Major Defense Acquisition Programs (MDAP), Major Automated Information Systems Review Council (MAISRC) programs, and In-Process Reviews (IPR).

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BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605706A Materiel Systems Analysis

PROJECT: D026

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D026 Test Design and Evaluation	4161	0	0	0	0	0	0	Continuing	Continuing

A. Mission Description and Justification: In FY1997, this project funded the U.S. Army Operational Test and Evaluation Command (OPTEC), Evaluation Analysis Center (EAC) mission of technical test design and evaluation. Provides for the Army's technical evaluation of developmental systems and tests for all major Army acquisition programs. Provides technical evaluations for major milestone decisions, materiel changes, and materiel releases in support of the Army Acquisition Executive (AAE). Designs technical, developmental, and production tests to address factors pertinent to the decision process, such as: technical maturity, technical risk, technical system performance, producibility, supportability, etc. Conducts performance and technical assessments for milestone acquisition evaluations of system tests (e.g. risk assessments and reliability, availability and maintainability assessments). Has lead role in the planning and execution of the Army live fire tests through its test design and evaluation responsibilities. This project funds the salaries of civilian employees assigned to the test design and evaluation mission. This project does not finance test facilities, test instrumentation or test equipment.

FY 1997 Accomplishments:

- 4161 Provided evaluations for systems that are either in development phase or undergoing major materiel change/technology insertion. System evaluations supported program milestone decision reviews during FY 97. Evaluations in support of AAE decisions/DA IPRs include: Javelin, Army Tactical Missile System – Blocks IA and II (ATACMS), Extended Range Multiple Launch Rocket System (ER-MLRS), Enhanced Position Location and Reporting System (EPLRS), and the Wide Area Munitions (WAM) System. Developed System Evaluation Plans (SEPs) for tests to be conducted in FY 98 through FY 02. This effort included test design and evaluation planning for systems projected to undergo live fire testing in FY98-99. Early planning and analysis assured the early identification of requirements for long lead procurement of experimental/prototype equipment or test instrumentation and the integration of developmental and operational evaluations to support accelerated acquisition. Effort included costs for 60 civilian authorizations.

Total 4161

FY 1998 Planned Program: The AMSAA Test Design and Evaluation (TD&E) mission was transferred to the U.S. Army Operational Test and Evaluation Command (OPTEC) (Project M542) in the FY1998/1998 President's Budget Submission.

FY 1999 Planned Program: The AMSAA Test Design and Evaluation (TD&E) mission was transferred to the Army Operational Test and Evaluation Command (OPTEC) (Project M542) in the FY1998/1999 President's Budget Submission. All evaluation funding in FY 1999 and outyears has been consolidated under the newly established PE 0605716A Army Evaluation Center under OPTEC.

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605706A Materiel Systems Analysis PROJECT D026

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	4169	0	0
Appropriated Value	4258		
Adjustments to Appropriated Value	-97		
FY 1999 President's Budget	4161	0	0

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605706A Materiel Systems Analysis		PROJECT M541

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M541 Materiel Systems Analysis	9845	8715	9711	9736	11155	11481	11827	Continuing	Continuing

A. Mission Description and Justification: Project M541 funds the Army Materiel Systems Analysis Activity's (AMSAA) primary mission of materiel systems analysis. AMSAA analyzes the performance and combat effectiveness of conceptual, developmental, and existing systems to conduct and support systems analyses, such as: analysis of alternatives (AoAs), system cost/performance tradeoffs, early technology tradeoffs, weapons mix analyses, requirements analyses, technology insertion, and technology base analyses. AMSAA provides Army-wide support in the development of methodologies, models, simulations, and databases for use in its and other Army agencies' analyses. AMSAA supports the Army modeling and simulation (M&S) community by providing item level performance methodology/data and standardized algorithms that help ensure the credibility of Army M&S. AMSAA is the Army's designated source of item level performance data and, as such, develops, maintains, and provides a diverse range of data for its and other Army and DoD agencies' analyses. AMSAA is the Army's executive agent for its verification, validation, and accreditation program and for the Research, Development and Acquisition (RDA) domain as part of the Army's M&S Management Structure. AMSAA also develops reliability, availability, and maintainability methodologies for use in its and other Army agencies' analyses. This project funds the salaries of civilian employees assigned to the materiel system analysis mission.

FY 1997 Accomplishments:

- 472 Developed and certified system performance data for U.S. and foreign systems to be used to support Army and Joint AoAs, force structure studies and theater level studies. Examples of programs where decisions were influenced: Future Scout Cavalry Systems CPEA, Brilliant Anti-Tank (BAT) Pre-Planned Product Improvement (P3I), Joint Anti-Armor Requirements Review, and Firefinder P3I. Effort included costs for 7 civilian authorizations.
- 7215 Provided analyses of performance and combat effectiveness of materiel systems and tech base programs in support of HQDA, AMC, Program Executive Offices (PEOs)/Program Managers (PMs) and Research & Development (R&D) Centers. Included are performance analyses, analyses of alternatives, risk assessments, and reliability, availability, and maintainability assessments for HQDA and OPTEC in support of milestone acquisition decisions. Provided performance data and analytic support for Distributed Interactive Simulation (DIS) projects, and AWE supporting Force XXI. Examples of programs where decisions were influenced: Starstreak, BAT P3I, ATACMS BLK 1A, Longbow Hellfire, M829E3, and Future Combat System. Effort included costs for 101 civilian authorizations.
- 1248 Developed, modified, and maintained item level methodology used as tools to conduct systems analysis. Examples of such models were: Target Acquisition Model, Ground Wars System Model, Physics of Failure Model, GENESIS Model, ARTQWIK Model and SAMSITE Model. Developed methodologies to characterize the performance and combat effectiveness of new technologies in force-on-force analyses. Performed validation and accreditation of item level performance models and methodologies which were developed in-house. Effort included costs for 17 civilian authorizations.

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BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605706A Materiel Systems Analysis / PROJECT: M541

FY 1997 Accomplishments: (continued)

- 910 Evaluation Analysis Center (EAC) conducted evaluations of materiel systems in support of the Army Acquisition Executive. Included were performance analyses, reliability, availability, and maintainability assessments for HQDA in support of milestone acquisition decisions. Specific efforts included preparation of System Evaluation Plans (SEPs) for Army TACMS Block II/BAT (BAT-P3I), Firefinder II, Army Tactical Missile System Block 1A (ATACMS BLK 1A), Longbow, Hellfire, Starstreak, M829E3, and system evaluations or materiel releases for the Force XXI Starstreak, Sentinel, Stinger Block I, and Linebacker. Effort included costs for 8 civilian authorizations.

Total 9845

FY 1998 Planned Program:

- 449 Develop and certify system performance data for U.S. and foreign systems to be used to support Army and Joint AoAs, force structure studies and theater level studies. Examples of programs where decisions will be influenced: Grizzly, Deep Battle Sensors, and Follow-On-To-TOW (FOTT). Effort includes costs for 6 civilian authorizations.
- 7084 Analyze the performance and combat effectiveness of materiel systems and tech base programs in support of HQDA, AMC, PEOs/ PMs and R&D Centers. Included are conduct of and support to: cost and operational effectiveness analyses, analyses of alternatives, system cost/performance tradeoffs, early technology tradeoffs, weapons mix analyses, requirements analyses, technology insertion, and technology base analyses. Examples of programs where decisions will be influenced: Grizzly, Soldier as a System, ATACMS Extended Range Missile, MRLS Extended Range Missile, SADARM, XM982 and XM795 Missile. Effort includes costs for 98 civilian authorizations.
- 1182 Develop, modify, and maintain item level methodology used as tools to conduct systems analysis. Examples of such models are: Crusader Performance Model, Virtual Proving Ground (VPG) Model, Close Combat Tactical Trainer (CCTT) Model, ACQUIRE-X Model, Cost As An Independent Variable Methodology. Develop methodologies to characterize the performance and combat effectiveness of new technologies in force-on-force analyses. Perform validation and accreditation of item level performance models and methodologies which will be developed in-house. Effort includes costs for 16 civilian authorizations.

Total 8715

FY 1999 Planned Program:

- 530 Develop and certify system performance data for U.S. and foreign systems to be used to support Army and Joint A0As, force structure studies and theater level studies. Examples of programs where decisions will be influenced: Crusader and Near Term Digital Radio (NTDR). Effort includes costs for 7 civilian authorizations.
- 7907 Analyze the performance and combat effectiveness of materiel systems and tech base programs in support of HQDA, AMC, PEOs/ PMs and R&D Centers. Included are conduct of and support to: AoAs, system cost/performance tradeoffs, early technology tradeoffs, weapons mix analyses, requirements analyses, technology insertion, and technology base analyses. Examples of programs where decisions will be influenced: Crusader and NTDR. Effort includes costs for 102 civilian authorizations.

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BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605706A Materiel Systems Analysis / PROJECT: M541

FY 1999 Planned Program: (continued)

- 1274 Develop, modify, and maintain item level methodology used as tools to conduct systems analysis. Examples of such models are WARSIM and VPG Model. Develop methodologies to characterize the performance and combat effectiveness of new technologies in force-on-force analyses. Perform validation and accreditation of item level performance models and methodologies which will be developed in-house. Effort includes costs for 16 civilian authorizations.

Total 9711

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	9957	8993	8664
Appropriated Value	10170	8993	
Adjustments to Appropriated Value	-325	-278	
FY 1999 President's Budget	9845	8715	9711

Change Summary Explanation: Funding: FY 1999 Funds (+1047) – Funding increase for additional C4I (Command, Control, Communications, Computers and Intelligence) and weapon performance analyses to support DA decision makers and PMs, broader application of Cost As an Independent Variable methodology and more comprehensive Horizontal Technology Integration and Science and Technology tradeoff analyses, and civilian pay raise adjustment.

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BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605706A Materiel Systems Analysis / PROJECT: M542

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M542 Major Systems Test, Design and Evaluation	0	19040	0	0	0	0	0	Continuing	Continuing

A. Mission Description and Justification This is not a new start. Funds were realigned from Project D026 and M541 in support of the Army consolidation of the materiel evaluation function under the U.S. Army Operational Test and Evaluation Command (OPTEC). Also reflects the realignment of the Operational Evaluation Command (OEC) previously funded in the Operations and Maintenance, Army (OMA) appropriation. Starting in FY 1999 this funding will be transferred to a newly established PE 0605716A Army Evaluation Center. This realignment will complete the consolidation of Army Evaluation. In FY 1998 Project M542 funds the OPTEC mission of evaluation and test design. OPTEC is the Army's technical and operational evaluator of developmental systems and tests for all Army acquisition programs. This mission is shared by the Evaluation Analysis Center (EAC) and OEC, both subordinate commands to OPTEC. OPTEC provides integrated technical and operational evaluations and continuous evaluation of assigned Major Defense Acquisition Programs (MDAPs), Major Automated Information Systems Review Council (MAISRC), and In-Process Review (IPR) programs for major milestone decisions, materiel changes, and materiel releases in support of the Army Acquisition Executive and force development. OPTEC develops the evaluation strategy, designs technical and operational tests, and evaluates the test results to address the effectiveness, suitability, and survivability factors pertinent to the decision process, such as: Critical Operational Issues and Criteria (COIC), system performance, soldier survivability, performance in countermeasures, survivability, reliability, supportability, etc. OPTEC has a lead role in the planning and execution of the Army live fire tests through its evaluation and test design responsibilities. This project funds the salaries of civilian employees assigned to the evaluation and test design missions. This project does not finance test facility operations, test instrumentation or test equipment.

FY 1997 Accomplishments: Project funded under Projects D026 and M541.

FY 1998 Planned Program:

- 18563 Prepare integrated System Evaluation Plans (SEPs) and conduct integrated technical and operational evaluations and continuous evaluations of all Army weapon systems. Provide test designs and evaluations for weapon systems throughout the entire research and development of a system or those undergoing major materiel change. System evaluations will support program milestone decision reviews during FY 98. Develop test design and evaluation plans for tests to be conducted in FY 99 through FY 03. These efforts include evaluation and test design planning for systems projected to undergo live fire testing in FY 99-00. Early planning and analysis assures early identification of requirements for long lead procurement of experimental/prototype equipment or test instrumentation and integration of developmental and operational evaluations to support accelerated acquisition and technology transition programs. Major efforts include: Army Tactical Missile System Block II (ATACMS Blk II), Bradley Fighting Vehicle System (BFVS), Extended Range – Multiple Launch Rocket System (ER-MLRS), Bradley Fire Support Team (BFIST), Command and Control Vehicle(C2V), Wide Area Munition (WAM) system, Army TACMS Block II/BAT (BAT-P3I), Search and Destroy Armor (SADARM), Advanced Field Artillery Tactical Data System (AFATDS), All Source Analysis System (ASAS), Battlefield Combat Identification System (BCIS), Close Combat Tactical Trainer (CCTT), Crusader, Forward Area Air Defense (FAAD-C2I), Joint Stars, Joint Tactical Information Distribution System

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605706A Materiel Systems Analysis PROJECT M542

FY 1998 Planned Program: (continued)

(JTIDS), Comanche, Long Bow Apache, Suite of Integrated Infrared Countermeasures (SIIRCM), Secure, Mobile, Anti-jam, Reliable, Tactical Terminal (SMART-T), and Tactical Unmanned Aerial Vehicle – Tactical Computer System (UAV-TCS). Effort includes funding and spaces for 166 civilians transferred from the following: Project D026 – 60, Project M541 – 8, and OEC (OMA) – 98.

•	477	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	19040	

FY 1999 Planned Program: Project Consolidated under PE 0605716A Army Evaluation Center under OPTEC.

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	20714	20011
Appropriated Value	0	20714	
Adjustments to Appropriated Value	0	-1674	
FY 1999 President's Budget	0	19040	0

Change Summary Explanation: Funding: FY 1999 Funds (-20011) transferred to PE 0605716A Army Evaluation Center under OPTEC.

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605709A Exploitation of Foreign Items

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	6962	7523	4031	3918	3794	4119	4041	Continuing	Continuing
D650 Exploitation of Foreign Items	3108	3239	0	0	0	0	0	0	6347
DC28 Acquisition/Exploitation of Threat Items	3854	4284	4031	3918	3794	4119	4041	Continuing	Continuing

Mission Description and Budget Item Justification: This is a continuing project for acquisition and exploitation of foreign materiel to support force and materiel development, scientific and technical intelligence needs, operations and training. Primary program objectives are to reduce research and development times for U.S. systems by analyzing innovations and technology in foreign materiel, and to make research and development more efficient by reducing uncertainties concerning potential advanced technology threats to U.S. systems. The program also serves to develop counter measures and to support operational commanders with items for training the force. This program enables the Army to conserve research and development funds and man-hours, enhance and improve U.S. designs, and provide realistic testing and training. These projects fund foreign materiel acquisitions and exploitations in support of the U.S. Army testing, training and intelligence programs required for general research and development and, since they are not allocable to specific R&D missions, are appropriately funded in Budget Activity 6.

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BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605709A Exploitation of Foreign Items — PROJECT: D650

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D650 Exploitation of Foreign Items	3108	3239	0	0	0	0	0	0	6347

A. Mission Description and Justification: Project D650 - Exploitation/Evaluation of Foreign Items: This project affords the Army's research and development (R&D) community an opportunity to acquire and exploit/evaluate worldwide leading edge technologies. This exploitation/evaluation of foreign technological capabilities is required in order to prevent technological surprise, eliminate or compress the R&D time cycle, contribute to R&D cost avoidance, enhance U.S. system and program designs, and to explore non-developmental items.

FY 1997 Accomplishments:

•	1300	Continued on-going project evaluations and exploitations identified prior to FY 97.
•	1100	New start FY 97 acquisitions of 23 projects.
•	708	New start FY 97 evaluations and exploitations of foreign materiel and/or technologies.
Total	3108	

FY 1998 Planned Program:

•	1300	Continue on-going project evaluations and exploitations identified prior to FY 98.
•	1100	Plan new start FY 98 acquisitions of 24 projects.
•	761	Plan new start FY98 evaluations and exploitations of foreign materiel and /or technologies.
•	78	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	3239	

FY 1999 Planned Program: Project not funded in FY 99.

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	3235	3342	0
Appropriated Value	3304	3342	
Adjustments to Appropriated Value	-196	-103	
FY 1999 President's Budget	3108	3239	0

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605709A Exploitation of Foreign Items		PROJECT DC28

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC28 Acquisition/Exploitation of Threat Items	3854	4284	4031	3918	3794	4119	4041	Continuing	Continuing

A. Mission Description and Justification: Project DC28 - Acquisition/Exploitation of Threat Items: This is a continuing project for acquisition and exploitation of foreign materiel constituting potential advanced technology threats to U.S. systems. The primary aim of this project is to maximize the efficiency of research and development for force and materiel development by reducing the uncertainties concerning these threats. The project also answers general scientific and technical intelligence requirements, aids in the development of countermeasures to threat materiel and threat technology, and provides materiel for realistic testing and training. Acquisitions and exploitations are executed according to an Army Foreign Materiel Review Board and with the approval of the Army Deputy Chief of Staff for Intelligence (DCSINT).

FY 1997 Accomplishments:

•	450	Acquired threat systems identified and prioritized in the FY 97 Army Foreign Materiel Program (FMP) Five Year Plan.
•	2404	Initiated, continued or completed exploitation projects on ground systems of Army interest identified in the FY 97 Army FMP Exploitation Plan.
•	1000	Initiated, continued or completed exploitation projects on missile systems of Army interest identified in the FY 97 Army FMP Exploitation Plan.
Total	3854	

FY 1998 Planned Program:

•	600	Acquire threat systems identified and prioritized in the FY 98 Army Foreign Materiel Program (FMP) Five Year Plan.
•	2577	Initiate, continue or complete exploitation projects on ground systems of Army interest identified in the FY 98 Army FMP Exploitation Plan.
•	1000	Initiate, continue or complete exploitation projects on missile systems of Army interest identified in the FY 98 Army FMP Exploitation Plan.
	107	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	4284	

FY 1999 Planned Program:

•	900	Acquire threat systems identified and prioritized in the FY 99 Army Foreign Materiel Program (FMP) Five Year Plan.
•	2131	Initiate, continue, or complete exploitation projects on ground systems of Army interest identified in the FY 99 Army FMP Exploitation Plan.
•	1000	Initiate, continue, or complete exploitation projects on missile systems of Army interest identified in the FY 99 Army FMP Exploitation Plan.
Total	4031	

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BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605709A Exploitation of Foreign Items	PROJECT: DC28

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	3958	4420	4349
Appropriated Value	4043	4420	
Adjustments to Appropriated Value	-189	-136	
FY 1999 President's Budget	3854	4284	4031

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DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605712A Support of Operational Testing

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	44900	76807	66320	64156	57651	64956	66097	Continuing	Continuing
DV02 Test Directorates	14486	34912	41004	42613	36914	43961	44627	Continuing	Continuing
D001 OPTEC IOTE	15726	20608	20486	15803	14990	14887	15348	Continuing	Continuing
D985 Concepts Evaluation of Materiel	10498	16222	0	0	0	0	0	Continuing	Continuing
D987 OPTEC Instrumentation Sustainment & Development	4190	5065	4830	5740	5747	6108	6122	Continuing	Continuing

NOTE: Project D985 Concepts Evaluation of Materiel transfers to PE 0605326, Project D308 in FY1999.

Mission Description and Budget Item Justification: This program finances the operational testing of developmental materiel systems. Its efforts are directed toward the support of operations required for use in general research and development (R&D). **Project DV02** provides for the recurring costs of operating the test activities of the U.S. Army Operational Test and Evaluation Command (OPTEC). Increase starting in FY 1998 reflects restructure directed by OSD of manpower and funds for the Test and Evaluation Coordination Offices (TECO's), Operational Threat Support Activity (OTSA), Test and Evaluation Support Activity and test support funds previously programmed and budgeted in the Operations and Maintenance, Army (OMA) appropriation. The FY 1999 increase completes the transfer of manpower and funds for OTSA from the OMA appropriation. **Project D001** provides for direct operational and joint test costs incurred by OPTEC. Excludes funding for Acquisition Category I (ACAT I) major weapons systems which are programmed within the PE funding development for each system. Funding increase beginning in FY 1998 is necessary to execute ACAT II-IV, Automated Information Systems (AIS), and joint test workload scheduled for FY 1998-1999. **Project D985** enables U.S. Army Training and Doctrine Command (TRADOC) battle labs and schools to evaluate emerging technologies and other equipment to help define Army mission needs and operational requirements. Projects selected for funding are relatively low cost conceptual evaluations, with high potential for warfighting return on investment. Program provides direct support to battle lab minor Advanced Warfighter Experiments (AWEs). Program is also a first look at emerging technologies that have the potential to support the Army's Force XXI design needs. **Project D987** provides for development and acquisition of non-major and sustaining instrumentation necessary to attain and maintain the data collection and analysis capability to conduct credible and robust operational tests as demanded by the DoD and Congress. It provides for replacement and improvements of existing obsolete inventory and for the development of new technologies to keep abreast of new weapon advancements. The projects in PE 0605712A fund operational testing and concept evaluation of materiel in support of the Army and DoD general research and development. Since they are not allocable to specific R&D missions, they are appropriately funded in Budget Activity 6.

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605712A Support of Operational Testing PROJECT DV02

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DV02 Test Directorates	14486	34912	41004	42613	36914	43961	44627	Continuing	Continuing

A. Mission Description and Justification: Project DV02 - Test Directorates: This project finances recurring costs, including civilian pay, support contracts, temporary duty, supplies and equipment of subordinate elements of the Test and Experimentation Command (TEXCOM): Airborne and Special Operations Test Directorate, Fort Bragg, NC; Air Defense Test Directorate, Fort Bliss, TX; Fire Support Test Directorate, Fort Sill, OK; and the Intelligence and Electronic Warfare Test Directorate, Fort Huachuca, AZ and test directorates located at Fort Hood, TX (Aviation; Close Combat; Engineer/Combat Support; Command, Control, and Communications-Information Mission Area; Advanced Concepts). The primary mission of these test directorates is to conduct operational testing of developmental materiel and force development test and experimentation (FDTE). Increase starting in FY 1998 reflects transfer of manpower and funds directed by OSD for the Test and Evaluation Coordination Offices (TECO's), Operational Threat Support Activity (OTSA), Test and Evaluation Support Activity and test support from the OMA appropriation. Increase in FY 1999 completes the transfer of manpower and funds for OTSA from the OMA appropriation.

FY 1997 Accomplishments:

- 3777 Operational costs including 72 civilian authorizations at Fort Hood, TX Test Directorate
- 2444 Operational costs including 28 civilian authorizations at Fort Sill, OK Test Directorate
- 3036 Operational costs including 35 civilian authorizations at Fort Huachuca, AZ Test Directorate
- 2369 Operational costs including 40 civilian authorizations at Fort Bragg, NC Test Directorate
- 2860 Operational costs including 38 civilian authorizations at Fort Bliss, TX Test Directorate

Total 14486

FY 1998 Planned Program:

- 16112 Operational costs including 175 civilian authorizations at Fort Hood, TX Test Directorate (includes Test and Evaluation Support Activity)
- 2318 Operational costs including 28 civilian authorizations at Fort Sill, OK Test Directorate
- 2995 Operational costs including 35 civilian authorizations at Fort Huachuca, AZ Test Directorate
- 2387 Operational costs including 40 civilian authorizations at Fort Bragg, NC Test Directorate
- 3017 Operational costs including 38 civilian authorizations at Fort Bliss, TX Test Directorate
- 6073 Operational costs including 9 civilian authorizations at Operational Threat Support Activity, Fort Bliss, TX
- 1443 Operational costs including 18 civilian authorizations at Test and Evaluation Coordination Offices

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	PROJECT DV02

FY1998 Planned Program: (continued)

•	567	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	34912	

FY 1999 Planned Program:

•	16890	Operational costs including 161 civilian authorizations at Fort Hood, TX Test Directorate (includes Test and Evaluation Support Activity)
•	2488	Operational costs including 28 civilian authorizations at Fort Sill, OK Test Directorate
•	3162	Operational costs including 34 civilian authorizations at Fort Huachuca, AZ Test Directorate
•	2453	Operational costs including 40 civilian authorizations at Fort Bragg, NC Test Directorate
•	3171	Operational costs including 37 civilian authorizations at Fort Bliss, TX Test Directorate
•	11283	Operational costs including 18 civilian authorizations at Operational Threat Support Activity, Fort Bliss, TX
•	1557	Operational costs including 18 civilian authorizations at Test and Evaluation Coordination Offices
Total	41004	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	14631	37207	32453
Appropriated Value	14944	37207	
Adjustments to Appropriated Value	-458	-2295	
FY 1999 President's Budget	14486	34912	41004

Change Summary Explanation:
Funding: FY 1999 increase (+8551) – Increase funding reflects the reprogramming of manpower and funds previously programmed and budgeted in the OMA appropriation for the Operational Threat Support Activity (+8,351) and civilian pay raise adjustment (+200).

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BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605712A Support of Operational Testing / PROJECT: D001

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D001 OPTEC IOTE	15726	20608	20486	15803	14990	14887	15348	Continuing	Continuing

A. <u>Mission Description and Justification:</u> **Project D001 - OPTEC IOTE:** This project finances the direct costs of planning and conducting operational testing on major and non-major materiel systems (ACAT II-IV), including Multi-Service systems (all ACATs) and Joint tests (JT). It funds those costs directly attributable to conducting an early user test and evaluation (EUTE), a limited user test (LUT), a technical test (TT), or an initial operational test and evaluation (IOTE) on major and non-major materiel systems. Test funding for ACAT I systems is programmed with the PE funding development of each system. 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, suitability, and survivability of the system. Funding increase beginning in FY 1998 is necessary to execute ACAT II-IV, Automated Information Systems (AIS), and joint test workload scheduled for FY 1998-1999.

FY 1997 Accomplishments:

- 85 SSP (IOTE) - Strategic Sealift Program
- 7 IRV (IOTE) - Improved Recovery Vehicle
- 144 EPLRS (IOTE) - Enhanced Position Location Reporting System
- 186 TWS (IOTE) - Thermal Weapon Sight
- 949 ISYSCON (IOTE) - Integrated System Control
- 429 GBCS LIGHT IOT&E (IOTE) - Ground Based Common Sensor Light
- 4157 BIDS P3I (IOTE) - Biological Integrated Detection System Pre-Planned Product Improvement
- 855 PKG 11 (IOTE) – AFATDS - Field Artillery Tactical Data System
- 153 ITAS (IOTE) – Improved Target Acquisition System
- 25 LW (IOTE) - Land Warrior
- 42 SOFTACS / STAR-T (IOTE) - Special Operations Forces Tactical Assured Connectivity System/SHF Tri-Band
- 128 RSCCE (IOTE) - Replacement Satellite Configuration Control Element
- 335 UH-60Q (IOTE) - Utility Helicopter 60Q
- 408 BFIST #2 (LUT) - Bradley Fire Support Team
- 351 BFIST (XM7) #1 (LUT) - Bradley Fire Support Team (XM7)
- 49 CCTT (TT) - Close Combat Tactical Trainer
- 775 CCTT (IOTE) - Close Combat Tactical Trainer

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BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605712A Support of Operational Testing / PROJECT: D001

FY1997 Accomplishments: (continued)

•	2059	CCTT (LUT) - Close Combat Tactical Trainer
•	18	IFCS ESIT (LUT) - Improved Fire Control System Extended System Integration Test
•	300	ARL-M (LUT) - Airborne Reconnaissance Low – Multifunction
•	10	SSP II (IOTE) - Strategic Sealift Program
•	42	SIRFC (IOTE) - Suite of Integrated Radio Frequency Countermeasures
•	220	FBCB2 (IOTE) - Force Battle Command Brigade and Below
•	307	TYQ-69, CCS (FMSS) (IOTE) - AN/TYQ-69 Communication Control Set
•	12	ACPM XM45 (IOTE) - Aircrew Protective Mask
•	1021	MICAD (IOTE) – Multipurpose Integrated Chemical Agent Alarm
•	182	AIRTERM/KY-100 (IOTE) - Advanced Narrowband Digital Voice Terminal
•	567	AKMS (IOTE) - Automated Key Management System
•	21	ATNAVICS (IOTE) - Air Traffic Navigation, Integration and Coordination System
•	7	CABS UH-60 (IOTE) - Cockpit Airbag System (UH-60)
•	13	NBCRS (LUT) - Nuclear Biological and Chemical Reconnaissance System
•	9	CBPS (IOTE) – Chemically and Biologically Protected Shelter
•	4	MDS-PS-HPW (IOTE) - Modular Decontamination System
•	11	JTT (IOTE) - Joint Tactical Terminal
•	667	M270A1 (IOTE) - Multiple Launch Rocket System
•	3	ER-MLRS (IOTE) - Extended Range-Multiple Launch Rocket System
•	12	CK (IOTE) – Containerized Kitchen
•	9	CP LR-BSDS (IOTE) - Counterproliferation Long Range Biological Standoff Detection System
•	7	FF P3I (IOTE) - Firefinder AN/TPQ-37 (Block II) Pre-Planned Product Improvement
•	531	ASTAMIDS/JT-UAV (EUTE) - Airborne Standoff Minefield Detection System, Joint Unmanned Air Vehicle
•	26	ASTAMIDS/UAV (IOTE) - Airborne Standoff Minefield Detection System, Unmanned Air Vehicle
•	2	BFIST (XM7) (IOTE) - Bradley Fire Support Team
•	488	SEPS (IOTE) – SHORTSTOP Electronic Protection System
•	100	ASV (DT/OT) - Armored Security Vehicle
Total	15726	

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	PROJECT: D001

FY 1998 Planned Program:

•	500	ASCIET 97 Joint Test (JT) - All Services Combat Identification Evaluation Team
•	23	TYQ-69, CCS (IOTE) – AN/TYQ-69 Communication Control Set
•	304	AMPS (IOTE) – Aviation Mission Planning System
•	3746	FBCB2 (LUT) – Force Battle Command Brigade and Below
•	2621	LW (IOTE) - (Land Warrior)
•	4647	SSP (IOTE) – Strategic Sealift Program
•	2563	ISYSCON (IOTE) - Integrated System Control
•	149	JWF (JT) - Joint Warfighter
•	1870	JCSAR JT&E (JT) – Joint Combat Search and Rescue
•	650	JSEAD LIVEX 98 (JT) – Joint Suppression of Enemy Air Defense
•	20	JADS ETE PH II (JT) – Joint Advanced Disputed Simulation Phase II
•	55	JECSIM (JT) – Joint Electronic Combat Test Using Simulation
•	10	MACS (IOTE) – Modular Artillery Charge System
•	2934	CCTT (IOTE) – Close Combat Tactical Trainer
•	516	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	20608	

FY 1999 Planned Program:

•	2	AMPS (IOTE) – Aviation Mission Planning System
•	40	FBCB2 (LUT) – Force Battle Command Brigade and Below
•	5166	LW (IOTE) – Land Warrior
•	10	SSP (IOTE) – Strategic Sealift Program
•	10	JADS JT&E II (JT) - Joint Advanced Disputed Simulation Phase II
•	13	ATNAVICS (DT/OT) - Air Traffic Navigation, Integration and Coordination System
•	3	GLPS (DT/OT) – Gun Laying and Positioning System
•	291	MACS Live Fire (IOTE) - Modular Artillery Charge System
•	349	SIRFC (EUTE) - Suite Integrated Radio Frequency Countermeasures
•	3084	SIRFC (DT/OT) - Suite Integrated Radio Frequency Countermeasures
•	1053	AFATDS PKG 11 (IOTE) – Advanced Field Artillery Tactical Data System Package 11

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605712A Support of Operational Testing
	PROJECT D001

FY 1999 Planned Program (continued):

•	1007	JTT (IOTE) – Joint Tactical Terminal
•	932	HAB (IOTE) - Heavy Assault Bridge
•	355	CSEL (IOTE) – Combat Survivor Evader Locator Excursion
•	541	A2C2S (IOTE) – Army Airborne Command and Control System
•	1400	JWF (JT) – Joint Warfighter
•	980	JCSAR JT&E (RF 98-1) (JT) – Joint Combat Search and Rescue JT&E (Red Flag 98-1)
•	160	JADS ETE PH IV (JT) - Joint Advanced Disputed Simulation Phase IV
•	646	JSEAD LIVEX 98 (JT) – Joint Suppression of Enemy Air Defense
•	150	JECSIM (JT) – Joint Electronic Combat Test Using Simulation
•	20	JADS JT&E III (JT) - Joint Advanced Disputed Simulation Phase II
•	4274	FBCB2 (IOTE) – Force Battle Command Brigade and Below
Total	20486	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	20355	22501	20743
Appropriated Value	21021	22501	
Adjustments to Appropriated Value	-5295	-1893	
FY 1999 President's Budget	15726	20608	20486

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605712A Support of Operational Testing

PROJECT: D985

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D985 Concepts Evaluation of Materiel	10498	16222	0	0	0	0	0	Continuing	Continuing

A. Mission Description and Justification: Project D985 - Concepts Evaluation of Materiel: The Concepts Experimentation Program (CEP) is a key innovative tool which provides TRADOC battle labs and schools the ability to capitalize on emerging technologies, emerging warfighting concepts, and new materiel initiatives. Program growth reflects increased emphasis on Force XXI initiatives and accelerated acquisition methods. Funds are used to acquire, lease or fabricate equipment to conduct experiments to determine military utility or potential to satisfy Army Doctrine, Training, Leader Development, Organization, Materiel and Soldiers (DTLOMS) needs. TRADOC battle labs build on initiatives with greatest potential payoff. Program is also used as a first look at emerging technologies and emerging warfighting concepts that have the potential to support the Army's Force XXI design needs. As the Army moves toward Force XXI, the critical task of designing the force around information requires major investment in information-age capabilities. Constructive, virtual, and live simulations are used to examine warfighting concepts across DTLOMS domains. They cover all aspects of command and control, lethality, survivability, and tempo and are essential to technology insertion in future Army systems and force structure. Beginning in FY1999 funding transferred to PE 065326, Project D308 Battle Lab Experimentation.

FY 1997 Accomplishments:

- 115 MATTRACKS
- 130 Encapsulating Foam for Cover and Assault Lane Breacher
- 97 Skid Steer
- 41 Light Assault Treadway Bridge
- 70 Assault Breach Marking System
- 5 Removable Ripper Tooth for the Combat Earthmover
- 160 Seismic Detection in Military Operations
- 60 Field Deployable Soil Probe for Military Prediction
- 80 Modernized Cold Weather Road Construction Technology
- 99 Ground Penetrating Radar-Soil Freeze or Surface Thaw
- 50 Programmable Digital Radio (PDR) Aircraft Certification
- 150 Programmable Digital Radio (PDR) Demonstration
- 100 Simulations-Protect the Force/EADSIM
- 78 Telepathy Battle Command
- 100 Modular Causeway System (MCS) Sea State 3 Upgrade

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605712A Support of Operational Testing
	PROJECT D985

FY 1997 Accomplishments: (continued)

- 100 Multi-Variant Analysis Tool
- 25 Rapid Runway Repair
- 392 Battle Damage Assessment (BDA) Variant to BAT
- 199 Deep Integrated Battlefield Architecture for ATACMS IB
- 300 Common Launcher
- 300 Beyond Visual Range Identification (BVRID)
- 275 Automation and Simulation Technology in Classroom
- 298 Light Digital TOC - Phase I
- 150 Dismounted Soldier Power Initiative
- 186 Dismounted Combat Identification Phase IV
- 147 Multipurpose Mission Platform
- 173 Counterdrug
- 171 Dismounted Image Transmission
- 237 Non-Lethal Technology
- 165 Soldier Physiological Monitoring
- 150 Lightweight Minefield and Obstacle Breacher
- 235 Military Operations in Urban Terrain (MOUT)
- 127 Countersniper
- 65 Controlled Penetration Ammunition Study
- 88 Network Management and Troubleshooting for Tactical Internet
- 60 Multipurpose Sensor & Security Mission Platform
- 49 Modular Crowd Control Munition
- 45 Situational Awareness Technology in MOUT
- 40 Vehicle Immobilization System
- 38 Driver Viewer Enhancement/Battlefield Viewing System
- 55 MARC-EPW Integration with Force XXI Appliqué
- 126 MODSAF Logistics Concepts Simulation
- 100 Detection Signature Application Technology (DSAT)
- 62 Armored Treatment and Transport Vehicle

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605712A Support of Operational Testing
	PROJECT: D985

FY 1997 Accomplishments: (continued)

•	132	Digital Diagnostics and Prognostics (DDAP)
•	10	Lifetime Oil Filter
•	200	HEMITT Load Handling System (LHS) Employment
•	73	Disease Vectors
•	74	Personal Protection for Force XXI-a Force Multiplier
•	70	Forward Repair System-Heavy (FRS-H)
•	295	PLS-E Integrated TWV Movement Tracking
•	150	Artificial Intelligence Communications Maintenance System
•	471	Combat Synthetic Test and Training Assessment Range
•	220	Division/Brigade Trainer - Surrogate Common Ground Station
•	288	Interactive Large Screen Display Prototype Testing
•	298	Active Dialogue on the Move: Applications
•	20	Laser Radar Targeting Systems (LATARS)
•	139	All Radiation Anti-Missile System (ARAMS)
•	97	Dynamic Reconnaissance and Surveillance
•	200	Dynamic Intelligence Preparation
•	207	Voice Digitization
•	202	Light Explosive Ordnance
•	235	Raptor Robotics
•	45	Handheld Mine Detector
•	175	AN/TPQ-36
•	30	Buddystart De-Ice Kit
•	45	Change Couple Device
•	35	Telemedicine
•	644	Division XXI AWE Support. Development and evaluation of digital training products. Simulation, experimentation and analytical support.
•	450	Army Experiment IV (AE4)
Total	10498	

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BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605712A Support of Operational Testing / PROJECT: D985

FY 1998 Planned Program:

- 150 Voice-Data Repeater
- 8 Digital Aircraft Weighing Scale
- 248 Manned and Unmanned Aerial Platform Operations on the Digital Battlefield
- 57 Aviation Ground Recovery System
- 77 Tele-Operation of the M1 Panther
- 60 Mobile Hornet
- 178 Teleops – D7G for Obstacle Clearing
- 51 Engineer C4I
- 110 Range Estimation with Seismic Sensors for Early Detection
- 194 Smart Bridge
- 254 Nonlethal Alternatives for Anti-personnel Landmines
- 306 Operational Concept & Demo of the C2 Tactical Trainer (C2TT)
- 295 Crusader Operations on the Digitized Battlefield
- 148 Training FS Skills with Infoscope Tech vs. GUARD FIST
- 198 Enhanced Fire Support Simulations
- 123 SOF Digital Fire Support Connectivity
- 83 Voice Recognition Technology for AFATDS
- 90 3 Dimensional Night Vision Goggles (3D NVG)
- 192 Data Display Integration Technology Evaluation
- 136 Dismounted Combat Identification Phase V
- 74 Small, Hands Free, Squad Radio for Restricted or Urban Terrain
- 310 Signal Support for Force XXI TOC
- 213 Warfighter Information Network Support for the CSS C4I
- 140 Battlefield Video Teleconferencing (BVTC)
- 95 Information Protection (Intrusion/Detection)
- 270 Next Generation Semi-Autonomous Recon Operations in the Digital Battlefield
- 294 Multi-Agent Fire Control System
- 140 Mounted Warrior Capability Assessment
- 85 Future Scout and Cavalry System Sensor Suite Configuration

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605712A Support of Operational Testing
	PROJECT: D985

FY 1998 Planned Program (continued):

•	88	Pen Based Law Enforcement Systems (PBLES)
•	85	Dynamically Distributed Overlays (DDO)
•	300	Joint Collaborative Target System (JCTS)
•	80	Automated Intelligence Preparation of the Battlefield / Automated DS
•	105	USMC C3I Interoperability
•	205	Automated Commander's Critical Information Requirements (AUTO CCIR)
•	300	Small Lightweight Intercept Device (SLID)
•	100	All Radiation Anti-Missile System
•	300	SWORD Radar
•	291	Course of Action War Gaming Tool
•	233	Prototype ABCS Simulation Interface Support
•	240	Tactical Class I Automation
•	535	ICS3 Maintenance Model Embedded Training
•	200	Forward Repair System – Heavy
•	240	Movement Tracking System + Radio Frequency ID + ICS3 (MRI-E)
•	240	Wartime Usage of C/E Rechargeable Batteries
•	170	Deployment Information Support System (DISS)
•	136	Vehicle Integrated Mobile Electrical Power Source
•	200	ASL Mobility
•	515	Battle Lab Experimentation
•	6673	Continue Division XXI AWE Support. Experimentation to examine Division level digital connectivity to validate digital training products. Simulation and analysis to validate DTLOMS insights that will fuel Army investments in FY 99-FY 06.
•	407	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	16222	

FY 1999 Planned Program: Funding transferred to newly established PE 0605326, Project D308.

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BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605712A Support of Operational Testing / PROJECT: D985

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	10324	16739	10541
Appropriated Value	10545	16739	
Adjustments to appropriated Value	-47	-517	
FY 1999 President's Budget	10498	16222	0

Change Summary Explanation: Funding: FY1999 Funds: Funding transferred to newly established PE 0605326, Project D308 Battle Lab Experimentation.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605712A Support of Operational Testing / PROJECT: D987

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D987 OPTEC Instrumentation Sustainment & Development	4190	5065	4830	5740	5747	6108	6122	Continuing	Continuing

A. Mission Description and Justification: Project D987 - OPTEC Instrumentation Sustainment & Development: This project provides for the technical upgrade and maintainability of essential instrumentation to achieve cost effective data collection, telemetry, and processing capability for support of robust and credible operational tests as required by the DoD and Congress. Increased sophistication of new weapon and communication and control systems demand the need to capture test data at greater rates and increased volumes and then to reduce the information rapidly to only those essential to effectively evaluate the test. As digitization of the battlefield continues, this effort allows OPTEC to modernize and develop its non-major instrumentation allowing it to be less intrusive, more reliable and more robust in terms of integrating combat simulation capability into operational tests. The goal is to expand measurement and test control capability while still reducing future test costs. The Mobile Automated Instrumentation Suite (MAIS) will serve as a platform for integrating new instrumentation capability in support of Real-Time Casualty Assessment (RTCA) which measures simulated attrition of forces during simulated battlefield engagements. This project supports multiple efforts associated with MAIS and separate, independent initiatives that lead to improved command and control, increased mobility, and expanded remote data collection at various tactical sites with transmit capability to central receiving, control, and evaluation stations at various test directorates. These directorates are located at Fort Hood, TX; Fort Bliss, TX; Fort Huachuca, AZ; Fort Sill, OK; and Fort Bragg, NC.

FY 1997 Accomplishments:

- 103 Video Telemetry and Recording System (VTRS) (Technical Insertion – Performance Increase)
- 400 Multimedia Data Transfer (Technical Insertion – Performance Increase)
- 700 Mobile Automated Instrumentation Suite / Field Data Collector Interface (Technical Insertion – Performance Increase)
- 200 Fiberoptic Range Network (Technical Insertion – Performance Increase)
- 369 Mobile TEXCOM Experimentation Center /Mobile Automated Instrumentation Suite Merger (Technical Insertion – Performance Increase)
- 330 Automated Intelligence / Electronic Warfare Test System First Generation Upgrade (Technical Insertion – Performance Increase)
- 7 Hi-Speed Telemetry System (Quick Reaction in Support of Critical Operational Test)
- 111 Data Collection Vehicles (Quick Reaction in Support of Critical Operational Test)
- 193 Telemetry System Upgrade (Product Improvement)
- 84 Simulation Testing Operations Rehearsal Model (Technical Insertion – Performance Increase)
- 134 Improved Field Data Collector Test (Quick Reaction in Support of Critical Operational Test)
- 325 Data Management Environment Modem (Technical Insertion – Performance Increase)
- 350 Mobile Automated Instrumentation Suite Land Warrior Dismounted Troop (Technical Insertion – Performance Increase)
- 21 Traveling Wave Tube Amplifier Repair (Product Improvement)

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605712A Support of Operational Testing
	PROJECT D987

FY 1997 Accomplishments: (continued)

•	851	Surface-to-Air (SA)-15 (Technical Insertion – Performance Increase)
•	12	Diagnostic/Simulation System (Quick Reaction in Support of Critical Operational Test)
Total	4190	

FY 1998 Planned Program:

•	276	Video Telemetry and Recording System (Technical Insertion – Performance Increase)
•	400	Multimedia Data Transfer System (Technical Insertion – Performance Increase)
•	835	Automated Intelligence / Electronic Warfare Test System First Generation Upgrade (Technical Insertion – Performance Increase)
•	176	High-Speed Telemetry System (Quick Reaction in Support of Critical Operational Test)
•	300	Radio Frequency Monitoring System (Technical Insertion – Performance Increase)
•	765	Telemetry System Upgrade (Product Improvement)
•	150	Command Audio / Visual Upgrade (Product Improvement)
•	350	Laser System Upgrade (Product Improvement)
•	500	Image System Upgrade (Product Improvement)
•	325	Mobile TEXCOM Experimentation Center Mobile Automated Instrumentation Suite Merger (Technical Insertion – Performance Increase)
•	198	Test View and Visualization (Technical Insertion – Performance Increase)
•	350	Improved Field Data Collector Enhancements (Product Improvement)
•	100	Improved Field Data Collector / Advanced Field Artillery Tactical Data System Interface (Quick Reaction in Support of Critical Operational Test)
•	100	Carbon Dioxide Laser (Technical Insertion – Performance Increase)
•	113	Bus Upgrade (Product Improvement)
•	127	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	5065	

FY 1999 Planned Program:

•	250	Multimedia Data Transfer System (Technical Insertion – Performance Increase)
•	171	Airborne Position Location System (Technical Insertion – Performance Increase)
•	100	Automated Intelligence / Electronic Warfare Test System (Product Improvement)
•	260	Fiber Optics Range Net (Technical Insertion – Performance Increase)
•	150	Radio Frequency Monitoring System (Technical Insertion – Performance Increase)
•	1250	Improved Field Data Collector Enhancements (Product Improvement)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605712A Support of Operational Testing
	PROJECT: D987

FY 1999 Planned Program: (continued)

- 325 Vehicle Performance Measuring System (Technical Insertion – Performance Increase)
- 500 Image Documentation System (Technical Insertion – Performance Increase)
- 350 Command Audio/Visual Upgrade (Product Improvement)
- 80 Mobile Automated Instrumentation Suite Stand Alone Work Station (Technical Insertion – Performance Increase)
- 588 Carbon Dioxide Laser (Technical Insertion – Performance Increase)
- 101 Electro-Optics Facility (Technical Insertion – Performance Increase)
- 125 High Speed Video (Technical Insertion – Performance Increase)
- 250 Airdrop Inclinometer (Product Improvement)
- 330 Video Telemetry System Modifications (Product Improvement)

Total 4830

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	4304	5225	5212
Appropriated Value	4396	5225	
Adjustments to Appropriated Value	-206	-160	
FY 1999 President's Budget	4190	5065	4830

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605716A Army Evaluation Center; PROJECT: D302

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D302 Army Evaluation Center	0	0	25526	23992	25745	26303	26877	Continuing	Continuing

A. Mission Description and Budget Item Justification This is not a new start. Funds were realigned from PE 0605601A Project D699, PE 0605604A Project D734, and PE 0605706A, Project M542 in support of the Army consolidation of the materiel evaluation function under the U.S. Army Operational Test and Evaluation Command (OPTEC). Also reflects the realignment of the OPTEC Operational Evaluation Command (OEC) previously funded in the Operations and Maintenance, Army (OMA) appropriation. These realignments complete the consolidation of Army Evaluation. Project D302 funds the Army Evaluation Command (AEC) mission of evaluation and test design. AEC is the Army's technical and operational evaluator of developmental systems and tests for all Army acquisition programs. AEC provides integrated technical and operational evaluations and continuous evaluation of assigned Major Defense Acquisition Programs (MDAP), Major Automated Information Systems Review Council (MAISRC), and In-Process Review (IPR) programs for major milestone decisions, materiel changes, and materiel releases in support of the Army Acquisition Executive and force development. AEC develops the evaluation strategy, designs technical and operational tests, and evaluates the test results to address the effectiveness, suitability, and survivability factors pertinent to the decision process, such as: Critical Operational Issues & Criteria (COIC), system performance, soldier survivability, performance in countermeasures, system survivability, reliability, supportability, etc. AEC has a lead role in the planning and execution of the Army live fire tests through its evaluation and test design responsibilities. This project funds the salaries of civilian employees assigned to the evaluation and test design missions. This project does not finance test facility operations, test instrumentation or test equipment.

FY 1997 Accomplishments: Funded in PE 0605601A Project D630, PE 0605604A (funded by SLAD under various projects), PE 0605706A Projects D026 and M541, and PE 0121015 (OMA).

FY 1998 Planned Program: Funded in PE 0605601A Project D699, PE 0605604A Project D734, and PE 0605706A Project M542.

FY 1999 Planned Program:

- 25526 Provide integrated technical and operational evaluations and continuous evaluation of assigned Major Defense Acquisition Programs (MDAPs), Major Automated Information Systems Review Council (MAISRC), and In-Process Review (IPR) programs for major milestone decisions, materiel changes, and materiel releases in support of the Army Acquisition Executive and force development. Develop the evaluation strategy, design technical and operational tests and evaluate the test results to address the Effectiveness, Suitability, and Survivability factors pertinent to the decision process such as: Critical Operational Issues and Criteria (COIC), system performance, soldier survivability, performance in countermeasures, system survivability, reliability, availability, maintainability, supportability, etc. As the Army lead for Live Fire Test and Evaluation, plan and execute the Army Live Fire Test and Evaluation program for required developmental systems. Prepare integrated System Evaluation Plans and conduct integrated technical and operational evaluations for all Army weapon systems. Major efforts include: Forward Area Air Defense (FAAD-C21), Suite of Integrated Infrared

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605716A Army Evaluation Center	PROJECT D302

FY 1999 Planned Program: (continued)

Countermeasures (SIIRCM), Advanced Field Artillery Tactical Data System (AFATDS), Crusader, Army TACMS Block II/BAT (BAT-P3I), Land Warrior, Heavy Assault Bridge (HAB), All Source Analysis System (ASAS), Battlefield Combat Identification System (BCIS), Bradley Fighting Vehicle System (BFVS-A3), Command and Control Vehicle (C2V), Extended Range – Multiple Launch Rocket System (ER-MLRS), M1A2 Abrams System Enhancement Program (M1A2-SEP), MH-47E Aircraft, Comanche, Tactical Unmanned Aerial Vehicle (TUAV), Force Battle Command Brigade and Below (FBCB2), Warfighters' Simulation 2000 (WARSIM 2000), Joint Stars Command Ground Station (JSTARS CGS) and Suite of Integrated Radio Frequency Countermeasures (SIRFC). Effort includes costs for 171 civilian authorizations.

Total 25526

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY1998/1999 President's Budget	0	0	0
Appropriated Value	0	0	
Adjustments to Appropriated Value			
FY1999 President's Budget	0	0	25526

Change Summary Explanation:

Funding: FY1999 Funds (+25526) - Increase of 23157 reflects the realignment from PE 0605601A Project D699 Non-Major Systems Test Design and Evaluation (1966), PE 0605604A Project D734 Survivability Evaluation (1180), and PE 0605706A Project M542 Major Systems Test, Design and Evaluation (20011) into this newly established PE. These realignments complete the consolidation of Army Evaluation under OPTEC. Increase of 2369 reflects AEC's involvement early on during system development, enabling early feedback to materiel developers and reducing overall acquisition costs and timelines caused by problems discovered after significant costs have been sunk into system design.

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BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605801A Programwide Activities

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	58310	79626	64588	69868	69318	75073	75514	Continuing	Continuing
M881 RDTE Command/Center/General	56160	55160	51331	48278	49718	53133	54778	Continuing	Continuing
MM75 Federal Workforce Restructure	2150	24466	12093	20444	18489	20848	19684	Continuing	Continuing
MM76 Armament Group Support	0	0	1164	1146	1111	1092	1052	Continuing	Continuing

Mission Description and Budget Item Justification: This program funds the continued operation of non-Army Management Headquarters Activities (AMHA) management and administrative functions at U.S. Army Research, Development and Standardization Groups overseas, Army Research, Development, Test, and Evaluation (RDTE) commands, centers and activities required to accomplish overall assigned general research and development missions and international research and development not directly related to specific research and development projects. Project M881 reflects a glide path in response to Army infrastructure drawdown initiatives. The Standardization Groups play an integral role in the U.S. Army efforts for international cooperative research & development and interoperability and fulfill international memorandum of understanding requirements (especially the American, British, Canadian and Australia mission). Includes research and development effort directed toward support of installations or operations required for general research and development use and therefore is appropriate to Budget Activity 6.

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605801A Programwide Activities	PROJECT M881

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M881 RDTE Command/Center/General	56160	55160	51331	48278	49718	53133	54778	Continuing	Continuing

A. <u>Mission Description and Justification:</u> **Project M881 RDTE Command/Center/General Administrative Support:** Supports the non-AMHA management and administrative functions at the following Army RDTE commands, centers and activities: U.S. Army Research Institute for the Behavioral and Social Sciences, Alexandria, VA; U.S. Army Armament Research, Development and Engineering (RDE) Center, Picatinny Arsenal, NJ; U.S. Army Research Laboratory, Adelphi, MD; U.S. Army Aviation and Missile RDE Center, Redstone Arsenal, AL; U.S. Army Tank-Automotive RDE Center, Warren, MI; U. S. Army Chemical Biological Defense Command, Aberdeen Proving Ground, MD; U.S. Army Communications-Electronics Command RDE Center, Ft. Monmouth, NJ; U.S. Army Test and Evaluation Command, Aberdeen Proving Ground, MD; and provides funding for salaries, administrative support other than that provided by Department of State agreements to include rent, utilities, guards, and travel for five international RDTE Standardization Groups located in Australia, Canada, France, Germany, and United Kingdom. This project also provides continued operations of contracting and acquisition management and related administrative functions performed by the Army Medical Research Acquisition Activity (USAMRAA) in support of the Army Medical Research and Materiel Command (USAMRMC) RDT&E programs and its tenant organizations at Ft. Detrick, MD, including medical materiel procurement contracts for the U.S. Army Medical Materiel Agency and the Office of the Surgeon General, Army. The project also provides funding for the headquarters activities at the USAMRMC, Ft. Detrick, Maryland to (1) develop medical RDTE program policy and guidance; (2) perform long range planning, programming and budgeting; (3) provide the management of resources; and (4) conduct program performance review and evaluation for the RDTE appropriation.

FY 1997 Accomplishments:

- 45136 Provided continued operation of management and administrative functions at a level consistent with mission requirements and support needs at Army non-AMHA RDTE commands, centers and activities.
- 3895 Continued operation of five Standardization Groups in support of international R&D and rationalization, standardization and interoperability missions. Funded salaries, travel and contracts for non-Department of State administrative support.
- 7129 Continued to provide acquisition management functions in support of USAMRMC RDT&E programs and its tenant organizations, Ft. Detrick, MD, including medical materiel procurement contracts, and procurement of biological defense vaccines. Funds the operation of the USAMRMC HQ activities which administers the medical research, development, and acquisition program to sustain military technology superiority.

Total 56160

FY 1998 Planned Program:

- 44036 Provide continued operation of management and administrative functions at a level consistent with mission requirements and support needs at Army non-AMHA RDTE commands, centers and activities.
- 3763 Continue operation of five Standardization Groups in support of international R&D and rationalization, standardization and interoperability missions. Funds salaries, travel and contracts for non-Department of State administrative support.

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BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605801A Programwide Activities / PROJECT: M881

FY 1998 Planned Program: (continued)

•	7197	Continue to provide acquisition management functions in support of USAMRMC RDT&E programs and its tenant organizations, Ft. Detrick, MD, including medical materiel procurement contracts, and procurement of biological defense vaccines. Fund the operation of the USAMRMC HQ activities which administers the medical research, development, and acquisition program to sustain military technology superiority.
•	164	Small Business Innovation Research /Small Business Technology Transfer (SBIR/STTR) Programs.
Total	55160	

FY 1999 Planned Program:

•	40249	Provide continued operation of management and administrative functions at a level consistent with mission requirements and support needs at Army non-AMHA RDTE commands, centers and activities.
•	3682	Continue operation of five Standardization Groups in support of international R&D and rationalization, standardization and interoperability missions. Funds pay of people, travel and contracts for non-Department of State administrative support.
•	7400	Continue to provide acquisition management functions in support of USAMRMC RDT&E programs and its tenant organizations, Ft. Detrick, MD, including medical materiel procurement contracts, and procurement of biological defense vaccines. Fund the operation of the USAMRMC HQ activities which administers the medical research, development, and acquisition program to sustain military technology superiority.
Total	51331	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	56980	56964	55896
Appropriated Value	58305	56964	
Adjustments to Appropriated Value	-2057	-1804	
FY 1999 President's Budget	56160	55160	51331

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DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605801A Programwide Activities

PROJECT: MM75

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
MM75 Federal Workforce Restructure	2150	24466	12093	20444	18489	20848	19684	Continuing	Continuing

A. Mission Description and Justification: **Project MM75 Federal Workforce Restructure.** Requirements were defined by the Federal Workforce Restructuring Act of 1994. Funds are to be used to offset the expenses of Voluntary Early Retirement Authority/Voluntary Separation Incentive Pay (VERA/VSIP), the $80 per capita tax to be remitted to the Treasury (Civil Service Retirement and Disability Fund) for on-board personnel as of 31 March and the 9% tax on the final basic pay of each employee who retired under VERA/VSIP to be remitted to the Civil Service Retirement and Disability Fund (CSRDF). Distribution will be made in the year of execution.

FY 1997 Accomplishments:

•	2150	Funded the 9% CSRDF tax for VSIP and $80 per capita tax for on-board personnel.
Total	2150	

FY 1998 Planned Program:

•	24466	Funds the transition costs associated with workforce reductions (VERA/VSIP, lump sum leave) and required OPM taxes.
Total	24466	

FY 1999 Planned Program:

•	12093	Funds the transition costs associated with workforce reductions (VERA/VSIP, lump sum leave) and required OPM taxes.
Total	12093	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY1998/1999 President's Budget	2787	29244	29708
Appropriated Value	2787	25244	
Adjustments to Appropriated Value	-772	-778	
FY1999 President's Budget	2150	24466	12093

Change Summary Explanation:

Funding: FY1998 funds (-4000) is a Congressional reduction.
FY1999 decrease (-17615) funds reprogrammed for higher priority requirements.

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BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605801A Programwide Activities

PROJECT: MM76

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
MM76 Armament Group Support	0	0	1164	1146	1111	1092	1052	Continuing	Continuing

A. Mission Description and Budget Item Justification: This is not a new start. The goal of this program is to expand worldwide allied standardization and interoperability through cooperative research and development (R&D) and technology sharing. This program partially funds the travel costs and administrative support (studies, analysis, interpretation, equipment, etc.) required to participate in international fora, such as the North Atlantic Treaty Organization (NATO) Army Armaments Group (NAAG), and to pursue new cooperative R&D initiatives and international cooperative agreements such as memoranda of understanding. This program also includes: the United States' share of costs of the NATO Civil Budget, Chapter IX, which funds the NATO Industrial Advisory Group (NIAG) and the Special Fund for Cooperative Planning; partially funds the Four Power Senior National Representatives Army [SNR (A)], the American, British, Canadian, Australian (ABCA) Standardization Program, the Technical Cooperative Program, bilateral staff talks, and Army armaments working groups with many nations. This project supports general research and development activities and since it is not allocable to specific R&D missions is appropriately funded in Budget Activity 6.

FY 1997 Accomplishments: Program was funded in PE 0605802A, Project M798.

FY 1998 Planned Program: Project was not funded in FY1998.

FY 1999 Planned Program:

•	414	Fund domestic and international travel linked to scientific and technological exchanges having military application and mutual benefits to the United States and its Allies.
•	750	Fund the United States' share of the NATO Civil Budget , Chapter IX (Defense Support Programs).
Total	1164	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	0	0
Appropriated Value	0	0	
Adjustments to Appropriated Value			
FY 1999 President's Budget	0	0	1164

Change Summary Explanation: Funding: FY 1999 funds (+1164) realigned from other projects to PE0605801A, Project M76.

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BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605802A International Cooperative Research and Development

PROJECT: M798

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M798 International Cooperative Research and Development-Army Research Institute	1494	0	0	0	0	0	0	Continuing	Continuing

A. Mission Description and Budget Item Justification: The goal of this program is to expand worldwide allied standardization and interoperability through cooperative research and development (R&D) and technology sharing. This program partially funds the travel costs and administrative support (studies, analysis, interpretation, equipment, etc.) required to participate in international fora, such as the North Atlantic Treaty Organization (NATO) Army Armaments Group (NAAG), and to pursue new cooperative R&D initiatives and international cooperative agreements such as memoranda of understanding. This program also includes: the United States' share of costs of the NATO Industrial Advisory Group (NIAG) and the Special Fund for Cooperative Planning; partially funds the Four Power Senior National Representatives Army [SNR (A)], the American, British, Canadian, Australian (ABCA) Standardization Program, the Technical Cooperative Program, bilateral staff talks, and Army armaments working groups with many nations. This project supports general research and development activities and since it is not allocable to specific R&D missions is appropriately funded in Budget Activity 6.

FY 1997 Accomplishments:

•	644	Funded domestic and international travel linked to scientific and technological exchanges having military application and mutual benefits to the United States and its Allies.
•	850	Funded the United States' share of the NIAG and Special Fund for cooperative planning budget.
Total	1494	

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

FY 1999 Planned Program: Program funded in PE 0605801A, Project M76.

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	1534	1581	1581
Appropriated Value	1566	0	0
Adjustments to Appropriated Value	-72		
FY 1999 President's Budget	1494	0	0

Change Summary Explanation: Funding: FY 99 reduction of (-1581) realigned to newly established Project M76, in PE 0605801A.

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BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605803A Technical Information Activities

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	16465	14673	16251	16189	16634	16734	16979	Continuing	Continuing
DC16 Field Assistance in Science and Technology	2477	2694	2734	2793	2848	2923	2999	Continuing	Continuing
DC18 Board on Army Science and Technology	937	589	702	690	693	694	692	Continuing	Continuing
M720 Technical Information Functional Activities	2697	3036	2970	2976	3052	3133	3215	Continuing	Continuing
M727 Technical Information Activities	3081	2946	2905	3063	3256	3290	3368	Continuing	Continuing
M729 Youth Science Activities	1962	2283	2089	2109	2123	2137	2133	Continuing	Continuing
M735 Net Assessment Directorate	0	0	800	800	800	800	800	Continuing	Continuing
D730 Personnel and Training Analysis Activities	3233	987	2077	2134	2291	2347	2404	Continuing	Continuing
M733 Acquisition Technology Act	2078	2138	1974	1624	1571	1410	1368	Continuing	Continuing

Mission Description and Budget Item Justification: This program provides for upgrading the accuracy, timeliness, availability, and accessibility of scientific, technical, and management information at all levels of Army Research and Development (R&D). This includes initiatives to improve information derivation, storage, access, display, validation, transmission, distribution, and interpretation. This program addresses the need to increase the competitiveness and availability of scientific, engineering, and technical skills in the DoD and National workforce. It accomplishes this through outreach programs that provide direct working experience for high school students in Army laboratories, thereby exposing these students to the working world of science and engineering. Funding under this program provides for the conduct of analyses, using behavioral science-based analytic tools, to provide policy and decision makers with soldier oriented recommendations concerning manpower, personnel and training issues. This program also provides for science advisors to Commanders-in-Chief (CINCs) and major Army commands and engineering teams to directly solve field Army technical problems. Coordination of this program with other Services is achieved through interservice working groups. The work in this program element is consistent with rigorous peer review and the Army Science and Technology Master Plan (ASTMP). These programs are accomplished under the management of the Army Research Laboratory, the Army Materiel Command, the Army Research Office, the Army Research Institute, the Army Corps of Engineers and the Information Management Office. The projects in this Program Element include management support of Science and Technology efforts and therefore are correctly placed in Budget Activity 6.

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605803A Technical Information Activities	PROJECT DC16

COST *(In Thousands)*	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC16 Field Assistance in Science and Technology	2477	2694	2734	2793	2848	2923	2999	Continuing	Continuing

A. **Mission Description and Justification:** This program focuses Army Materiel Command (AMC) resources to rapidly identify and solve field Army technical problems affecting improved readiness, safety, training, and operations and support (O&S) cost reductions. The Commanding General, AMC, institutionalized AMC Field Assistance in Science and Technology (FAST) in 1988 to plan for and allocate all AMC FAST program funding for projects to support CINCs and commanders and to operate the director's office. FAST tours provide major professional growth for scientists and engineers. Science advisers are recruited from AMC engineering centers to serve Commanders-in-Chief (CINCs) and major Army commanders world-wide and are supported by assigned Quick Reaction Coordinators (QRCs) within each AMC engineering center. All costs associated with science advisor assignments are funded by AMC subordinate commands who supply the science advisers for two to three year tours. FAST manages a level of effort type project with most projects recouping many times their cost in O&S cost savings.

FY 1997 Accomplishments:

•	2477	- Provided continuous activity on over 280 FAST projects. Defined, tested and recommended technological solutions to materiel problems identified by CINCs worldwide and prepared operational needs statements and test results for the highest priority programs. - Provided professional growth opportunity for 20 science advisers on two year and three year tours and 40 FAST Junior scientists and engineers on two to eight week tours. - Provided professional growth opportunity for 70 personnel in the Scientists and Engineers Field Experience with Soldiers (SEFEWS) program.
Total	2477	

FY 1998 Planned Program:

•	2638	- Provide continuous activity on over 280 FAST projects. Define, test and recommend technological solutions to materiel problems identified by CINCs worldwide and prepare operational needs statements and test results for the highest priority programs. - Provide professional growth opportunity for 20 science advisers on two year and three year tours and 40 FAST-junior scientists and engineers on two to eight week tours. - Provide professional growth opportunity for 70 personnel in the SEFEWS program.
•	56	- Small Business Innovation Research/Small Business Technology Transfer Programs.
Total	2694	

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605803A Technical Information Activities
PROJECT DC16	

FY 1999 Planned Program:

•	2734	- Provide continuous activity on over 280 FAST projects. Define, test and recommend technological solutions to materiel problems identified by CINCs worldwide and prepare operational needs statements and test results for the highest priority programs. - Provide professional growth opportunity for 20 science advisers on two year and three year tours and 40 FAST Junior scientists and engineers on two to eight week tours. - Provide professional growth opportunity for 70 personnel in the SEFEWS program.
Total	2734	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	2739	2887	3015
Appropriated Value	2798	2887	
Adjustments to Appropriated Value	-321	-193	
FY 1999 President's Budget	2477	2694	2734

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BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605803A Technical Information Activities		PROJECT: DC18

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC18 Board on Army Science and Technology	937	589	702	690	693	694	692	Continuing	Continuing

A. **Mission Description and Justification:** The Board on Army Science and Technology (BAST) was created in 1982 by the National Research Council (NRC) through its Commission on Engineering and Technology Systems at the request of the Under Secretary of the Army. The BAST designs, conducts, and supervises the NRC's Army-related studies of scientific and technological issues. As such, the BAST defines problems, brings together leading experts to study them, and most importantly, draws conclusions, identifies alternatives and implications, and makes recommendations as appropriate. The major activities of this group include board meetings, special requests, standing committees, study committees and workshops and seminars.

FY 1997 Accomplishments:

•	937	- Provided technical expert support for forecast of Army science and technology needs and respond to immediate science and technology requirements. - Provided experts to participate in peer reviews for annual In-House Laboratory Independent Research (ILIR) and Research and Development Activity (RDA) awards review. - Initiated BAST studies on "Compact Power" and "Logistics Demand".
Total	937	

FY 1998 Planned Program:

•	574	- Provide technical expert support for forecast of Army science and technology needs and respond to immediate science and technology requirements. - Provide experts to participate in peer reviews for annual ILIR and RDA awards review. - Complete BAST studies on "Compact Power" and "Logistics Demand".
•	15	- Small Business Innovation Research/Small Business Technology Transfer Programs.
Total	589	

FY 1999 Planned Program:

•	702	- Provide technical expert support for forecast of Army science and technology needs and respond to immediate science and technology requirements. - Provide experts to participate in peer reviews for annual ILIR and RDA awards review.
Total	702	

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BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605803A Technical Information Activities / PROJECT: DC18

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	675	734	758
Appropriated Value	690	734	
Adjustments to Appropriated Value	+247	-145	
FY 1999 President's Budget	937	589	702

Change Summary Explanation: FY 1997 - Funding increased (+262) to support high priority requirement (Logistics Demand study).

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BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605803A Technical Information Activities

PROJECT: M720

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M720 Technical Information Functional Activities	2697	3036	2970	2976	3052	3133	3215	Continuing	Continuing

A. Mission Description and Justification: Technology transfer activities to support acquisition, storage, and utilization of technical information for both military and domestic applications. Activities supported are: Army participation in the Defense Technical Information Center (DTIC) Work Unit Information Summary (WUIS) database; Army support for the Federated Laboratory Consortium (FLC); the Army Science Board; administration of the Army's Small Business Innovative Research (SBIR) and Small Business Technology Transfer Pilot Program (STTR) in accordance with the "Small Business Research and Development Enhancement Act of 1992". These costs are funded here because the Act prohibits use of PE 0605502 for funding administrative costs, studies and analyses to support the Acquisition Corps acquisition and retention of scientists and engineers and improvement of productivity of laboratories and centers. Technology transfer activities make technical information available to both the public and private sectors to reduce duplication in R&D programs and to increase competitiveness in the U.S. business community. In addition this project provides funding for patent fees and patent legal expenses for all U. S. Army Materiel Command (AMC) subordinate commands and laboratories. The requirement to fund this effort is a result of the Omnibus Budget Reconciliation Act requiring the U. S. Patent and Trademark Office to become a completely user-fee funded agency.

FY 1997 Accomplishments:

- 995 - Continued managerial, programming, database, clerical and personnel support to process, store, control and report the WUIS, on DD1498's.
  - Provided Army funding support for FLC as required by Public Law 99-502.
  - Provided administrative and contractual support for the ASB.
- 1702 - Provided administrative support for SBIR/STTR programs.
  - Provided Army Science and Technology Reports.
  - Provided funding for patent fees and patent legal expenses for AMC commands and laboratories.
  - Provided funding for Army Science and Technology Summer Study and awards.
  - Provided funding for support of Government/Industry Data Exchange Program (GIDEP).

Total 2697

FY 1998 Planned Program:

- 1044 - Continue managerial, programming, database, clerical and personnel support to process, store, control and report the WUIS, on DD1498's.
  - Provide Army funding support for FLC as required by Public Law 99-502.
  - Provide administrative, contractual and travel support for the ASB.
- 1916 - Provide administrative support for SBIR/STTR programs.
  - Provide Army Science and Technology Reports.
  - Provide funding for patent fees and patent legal expenses for AMC commands and laboratories.

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605803A Technical Information Activities
	PROJECT M720

FY 1998 Planned Program: (continued)

- Provide funding for Army Science and Technology Summer Study and awards.
- Provide funding for support of GIDEP.

•	76	- Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	3036	

FY 1999 Planned Program:

•	969	- Continue managerial, programming, database, clerical and personnel support to process, store, control and report the WUIS, 1498's.
		- Provide Army funding support for FLC as required by Public Law 99-502.
		- Provide administrative and contractual support for the ASB.
•	2001	- Provide administrative support for SBIR/STTR programs.
		- Provide Army Science and Technology Reports.
		- Provide funding for patent fees and patent legal expenses for AMC commands and laboratories.
		- Provide funding for Army Science and Technology Summer Study and awards.
		- Provide funding for support of GIDEP.
Total	2970	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	2562	3152	3222
Appropriated Value	2626	3152	
Adjustments to Appropriated Value	+71	-116	
FY 1999 President's Budget	2697	3036	2970

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DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605803A Technical Information Activities

PROJECT: M727

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M727 Technical Information Activities	3081	2946	2905	3063	3256	3290	3368	Continuing	Continuing

A. **Mission Description and Justification**: This project supports development of decision aids, databases, and automation support for the management and execution of the Army Research, Development, Test and Evaluation (RDTE) Appropriation. It includes the hardware, software and contractor support required to develop and implement a set of management decision aids, databases, and hardware/software tools to support technical and budgetary decisions at the Office, Secretary of Defense (OSD), Department of the Army (DA), Corps of Engineers, Army Materiel Command (AMC) and Army Research Laboratory. This project includes support of the Acquisition Management Integration Subgroup (AMIS) dealing with acquisition management systems.

FY 1997 Accomplishments:

•	2481	- Continued the S&T database computer engineering support contract.
		- Continued support to Army S&T strategic planning, analysis, and prioritization.
		- Continued support to AMC database and Defense Reliance management.
		- Provided guidance and policy relative to the content, utilization, and requirements of current and future acquisition management systems for AMIS.
	600	- Provided management and professional services to the AMC Quick Response Office for U.S. forces deployed worldwide.
Total	3081	

FY 1998 Planned Program:

•	2877	- Continue the S&T database computer engineering support contract.
		- Continue support to Army S&T strategic planning, analysis, and prioritization.
		- Continue support to AMC database and Defense Reliance management.
		- Provide guidance and policy relative to the content, utilization, and requirements of current and future acquisition management systems for AMIS.
•	69	- Small Business Innovation Research/Small Business Technology Transfer Programs.
Total	2946	

FY 1999 Planned Program:

•	2905	- Continue the S&T database computer engineering support contract.
		- Continue support to Army S&T strategic planning, analysis, and prioritization.
		- Continue support to AMC database and Defense Reliance management.
		- Provide guidance and policy relative to the content, utilization, and requirements of current and future acquisition management systems for AMIS.
Total	2905	

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605803A Technical Information Activities	PROJECT M727

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	2805	3060	3187
Appropriated Value	2870	3060	
Adjustments to Appropriated Value	+211	-114	
FY 1999 President's Budget	3081	2946	2905

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605803A Technical Information Activities

PROJECT: M729

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M729 Youth Science Activities	1962	2283	2089	2109	2123	2137	2133	Continuing	Continuing

A. Mission Description and Justification: Supports science activities to encourage over 100,000 high school youths to develop interest and achieve higher levels in science, engineering, and mathematics. These activities are consolidated within this program to "present the Army" to a potential pool of technical talent to fill future Army needs. No other program fulfills this long-range Army goal. The joint Army/Navy Washington regional area Science and Engineering Apprenticeship Program (SEAP) has been included in the overall effort. This provides an eight week hands-on learning experience for high school students working with bench level scientists within Army laboratories in hopes of encouraging more of them to enter scientific fields of study in the future. This program enhances the National Laboratory Science and Engineering pool, which in turn supports Defense industry, and laboratory needs.

FY 1997 Accomplishments:

- 1962 - Continued to foster high school student interest in science, mathematics, engineering and computer science, nationally, by sponsoring Junior Science and Humanities Symposium (JSHS), International Mathematics Olympiad (IMO), and Research and Engineering Apprentice Program (REAP).
  - Continued the Joint Army/Navy Washington Regional Area SEAP and increased Army Laboratory/RDE Center sponsorship of students.
  - Continued special tutorial programs for Native Americans, African Americans, and Spanish-speaking Americans designed to increase their chances of attending and completing engineering and/or science curriculum at the university level.
  - Continued the West Point cadet research internship program to enhance cadet training through field experience within Army research laboratories and centers.

Total 1962

FY 1998 Planned Program:

- 2226 - Continue to foster high school student interest in science, mathematics, engineering and computer science, nationally, by sponsoring: JSHS, IMO, and REAP.
  - Continue the Joint Army/Navy Washington Regional Area SEAP and increase Army Laboratory/RDE Center sponsorship of students.
  - Continue special tutorial programs for Native Americans, African Americans, and Spanish-speaking Americans designed to increase their chances of attending and completing engineering and/or science curriculum at the university level.
  - Continue the West Point cadet research internship program to enhance cadet training through field experience within Army research laboratories and centers.
- 57 - Small Business Innovation Research/Small Business Technology Transfer Programs.

Total 2283

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605803A Technical Information Activities PROJECT M729

FY 1999 Planned Program:

- 2089 - Continue to foster high school student interest in science, mathematics, engineering and computer science, nationally, by sponsoring: JSHS, IMO, and REAP.
  - Continue the Joint Army/Navy Washington Regional Area SEAP and increase Army Laboratory/RDE Center sponsorship of students.
  - Continue special tutorial programs for Native Americans, African Americans, and Spanish-speaking Americans designed to increase their chances of attending and completing engineering and/or science curriculum at the university level.
  - Continue the West Point cadet research internship program to enhance cadet training through field experience within Army research laboratories and centers.

Total 2089

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	2261	2372	2431
Appropriated Value	2309	2372	
Adjustments to Appropriated Value	-347	-89	
FY 1999 President's Budget	1962	2283	2089

Change Summary Explanation: FY 1997: Funding reprogrammed (-299) to higher priority requirements.
FY 1999: Funding reprogrammed (-342) to higher priority requirements.

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605803A Technical Information Activities

PROJECT: M735

COST *(In Thousands)*	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M735 Net Assessment Directorate	0	0	800	800	800	800	800	Continuing	Continuing

A. Mission Description and Justification: The Net Assessment Directorate develops and coordinates net assessments of the standing, trends, and future prospects of U.S. military capabilities and military potential in comparison with those of other countries or groups of countries so as to identify emerging or future threats or opportunities for the United States. This includes, as required, net assessments of: (1) current and projected U.S. and foreign military capabilities by theater, region, function, or mission; and (2) specific current and projected U.S. and foreign capabilities, operational tactics, doctrine, and major categories of weapon systems. The Directorate provides for the preparation of net assessments by the Chairman of the Joint Chiefs of Staff; develops, advises, and consults on the net assessment potion of the Annual Report of the Secretary of Defense to the President and Congress; provides guidance and staff assistance in the development of national net assessments by the National Security Council and acts as the primary Office of the Secretary of Defense (OSD) focal point for joint efforts with the Intelligence Community to produce net assessments; and provides support for the improvement and development of net assessments within the Department of Defense.

FY 1997 Accomplishments: Program funded in OSD in FY 1997.

FY 1998 Planned Program: Program funded in OSD in FY 1998.

FY 1999 Planned Program:

•	800	- Develop an all source Information Warfare (IW) assessment of U.S. capabilities against potential competitors, which will assist in the development of and IW model. - Develop ideas and strategies for successfully institutionalizing the process of efficient and effective transformation from today's military force structure to a force that is optimized for potentially very different long-term requirements. - Continue multi-year open literature research effort to identify current and evolving foreign perspectives of the Revolution in Military Affairs (RMA), including foreign views of the concept, nature and effects of the RMA; assessment of their ability and desire to participate; implications for existing defense infrastructure; risks associated with the changing conduct of warfare; and expected costs of revolutionary change.
Total	800	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	0	0
Appropriated Value			
Adjustments to Appropriated Value			
FY 1999 President's Budget	0	0	800

Change Summary Explanation: Funding for FY 1999 for Net Assessment Directorate transferred to Army from OSD.

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605803A Technical Information Activities

PROJECT: D730

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D730 Personnel and Training Analysis Activities	3233	987	2077	2134	2291	2347	2404	Continuing	Continuing

A. **Mission Description and Justification**: This project provides for the application of behavioral science-based analytical technologies by the U.S. Army Research Institute (ARI) for the Behavioral and Social Sciences to current and near-term soldier-related issues. The program is focused on policy issues to enhance soldier performance, and provides the Army a unique capability for addressing such issues as the effects of training on individual and unit readiness, the personnel costs of alternative force structures and the effects of a smaller Army on retention and readiness of quality soldiers. Requirements for studies and analyses for critical personnel and training issues of immediate importance are solicited on an annual basis.

FY 1997 Accomplishments:

•	3233	- Developed PC-based model and system to improve job/soldier skills match for use in recruiting and basic training/assignments.
		- Identified capabilities and actions that can be automated to reduce personnel costs associated with exercise control and feedback functions in a live training environment.
		- Conducted Army assessment of current soldier attitudes and concerns with regard to the Army's six imperatives.
		- Analyzed training requirements to enhance skill proficiency for effective backup operations for the digitized battlefield when systems are degraded or disrupted.
		- Developed plan for longitudinal investigation of the causes of first-term attrition.
Total	3233	

FY 1998 Planned Program:

•	963	- Derive the information requirements for trainers to control force-on-force simulated battles, and provide the most beneficial feedback to units.
		- Determine the Force XXI leader training requirements for aviation battle staffs.
		- Develop method for selection of vehicle drivers to improve safety.
		- Determine situations when subject-matter-expert ratings of training effectiveness can be substituted for resource-intensive field trials.
•	24	- Small Business Innovation Research/Small Business Technology Transfer Programs.
Total	987	

FY 1999 Planned Program:

•	2077	- Continue analyses of training issues identified by Training and Doctrine Command (TRADOC).
		- Conduct studies on personnel issues identified by the Chief of Staff of the Army (CSA) and Deputy Chief of Staff for Personnel (DCSPER).
Total	2077	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605803A Technical Information Activities PROJECT D730

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	3376	1025	1033
Appropriated Value	3448	1025	
Adjustments to Appropriated Value	-215	-38	
FY 1999 President's Budget	3233	987	2077

Change Summary Explanation: Funding: FY 1999 (+1044) reprogrammed to address high priority personnel issues, such as attrition, gender integration, and Military Occupational Specialty (MOS) redesign.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605803A Technical Information Activities / PROJECT: M733

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M733 Acquisition Technology Act	2078	2138	1974	1624	1571	1410	1368	Continuing	Continuing

A. **Mission Description and Justification:** This project provides for the engineering of Army acquisition process improvement through the application of decision support and expert information systems. This project provides funds to conduct analysis and evaluation of alternative acquisition strategies using techniques such as value-added analysis. Supports integrated management activities such as Horizontal Technology Integration and Army Ballistic Missile Defense. This project also provides an environment for the analysis and evaluation of new information technologies, concepts and applications in support of the Army acquisition community's dynamic requirements and for the engineering of Army acquisition process improvement through the application of decision support and expert information systems.

FY 1997 Accomplishments:

•	2078	- Developed a simulation and logical modeling test and evaluation environment that provides a prototype development tool in support of technology base initiatives. - Designed application program and user interface utilities for executive level information systems that offer Standard Query Language (SQL) services to Army Acquisition Corps (AAC) corporate and global databases. - Continued analysis of acquisition program financial programming and budgeting requirements. Initiated development of Weapon Systems Handbook, Analytic/Technical Support for Army Support for Army Science and Technology Programs, Long-Range Planning and Policy Analysis, Resource Allocation Analysis, Cost Tracking and Analysis, Cost Effectiveness and Database Management/Financial Analysis, Synthetic Aperture Radar (SAR) Technology Application Concept Research/Analysis.
Total	2078	

FY 1998 Planned Program:

•	2084	- Continue development of simulation and logical modeling test and evaluation environment that provides a prototype development tool in support of technology base initiatives, and beta test selected modules. - Validate application programs and user interface utilities for executive level information systems that offer SQL services to AAC corporate and global databases. - Continue analysis of acquisition program financial programming and budgeting requirements. Continue development of Weapon Systems Handbook, Analytic/Technical Support for Army Support for Army Science and Technology Programs, Long-Range Planning and Policy Analysis, Resource Allocation Analysis, Cost Tracking and Analysis, Cost-Effectiveness and Database Management/Financial Analysis, SAR Technology Application Concept Research/Analysis.
•	54	- Small Business Innovation Research/Small Business Technology Transfer Programs.
Total	2138	

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BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605803A Technical Information Activities / PROJECT: M733

FY 1999 Planned Program:

- 1974 - Validate simulation and logical modeling test and evaluation environment that provides a prototype development tool in support of technology base initiatives.
  - Distribute and beta test application programs and user interface utilities for executive level information systems that offer Standard Query Language (SQL) services to AAC corporate and global databases.
  - Continue analysis of acquisition program financial programming and budgeting requirements. Continue development of Weapon Systems Handbook, Analytic/Technical Support for Army Support for Army Science and Technology Programs, Long-Range Planning and Policy Analysis, Resource Allocation Analysis, Cost Tracking and Analysis, Cost-Effectiveness and Database Management/Financial Analysis, SAR Technology Application Concept Research/Analysis.

Total 1974

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	2134	2221	2226
Appropriated Value	2180	2221	
Adjustments to Appropriated Value	-102	-83	
FY 1999 President's Budget	2078	2138	1974

Change Summary Explanation: FY 1999: Funding reprogrammed (-252) to higher priority requirements.

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605805A Munitions Standardization Effectiveness and Safety

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	3083	11064	8497	8812	8770	8111	8240	Continuing	Continuing
DF21 North Atlantic Treaty Organization (NATO) Small Arms Evaluation	269	301	0	0	0	0	0	0	570
DF24 Conventional Ammunition Demilitarization	1653	9416	4712	4779	4767	4880	5012	Continuing	Continuing
D293 Field Artillery Ammunition (NATO) Engineering Development	0	81	86	0	0	0	0	0	1672
D297 Munitions Survivability & Logistics	0	0	2500	2500	2500	2500	2500	Continuing	Continuing
M296 Pyrotechnic Reliability and Safety	600	686	654	782	774	0	0	0	3496
M857 Explosive Safety Standards	561	580	545	751	729	731	728	Continuing	Continuing

Mission Description and Budget Item Justification: This Program Element supports continuing technology investigations. It provides a coordinated tri-service mechanism for the collection and free exchange of technical data on the performance and effectiveness of all non-nuclear munitions and weapons systems in a realistic operational environment. It provides for NATO interchangeability testing; joint munitions effectiveness manuals used by all services; development of standardization agreements (STANAGS) and associated Manuals of Proof and Inspection (MOPI); operation of the North American Regional Test Center (NARTC); evaluation of demilitarization methods for existing conventional ammunition; evaluation of useful shelf life, safety, reliability and producibility of pyrotechnic munitions; and improvement of explosives safety criteria for DOD munitions via the DOD Explosives Safety Board. Pyrotechnic Reliability and Safety (M296) supports pyrotechnic research, development and testing to identify, characterize and resolve reliability, safety, storage and manufacturing issues that impact production availability and field use of pyrotechnics. It will result in the development and demonstration of new, safe, reliable and environmentally acceptable munitions. Munitions Survivability and Logistics (D297) will make Army units more survivable by testing and demonstrating munitions logistics system solutions that prevent or minimize catastrophic explosive events and accelerate ammunition resupply. Projects in this Program Element support studies and analyses of numerous Army and Joint-Services programs and are correctly placed in Budget Activity 6.

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DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605805A Munitions Standardization Effectiveness and Safety

PROJECT: DF21

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DF21 North Atlantic Treaty Organization (NATO) Small Arms Evaluation	269	301	0	0	0	0	0	0	570

A. **Mission Description and Justification:** This program assures complete interchangeability of small caliber and automated cannon-caliber ammunition and weapons among all NATO countries with all of the associated logistic, strategic and tactical advantages. Project involves development, maintenance and testing compliance of NATO STANAGS and staffing of the NARTC.

FY 1997 Accomplishments:

•	60	Continued to staff, equip and maintain the NARTC for 9mm, 5.56mm and 7.62mm only
•	70	Continued to maintain standardization of previously qualified calibers, including the 25mm
•	38	Completed implementation of the 6215 pressure transducer for all NATO standardization testing, including 25mm
•	42	Other activities, including Partners in Peace initiatives
•	32	Initiated facilitization of NARTC for 12.7mm testing
•	27	Completed 12.7mm Manual of Proof and Inspection (MOPI)
Total	269	

FY 1998 Planned Program:

•	60	Continue to staff, equip and maintain the NARTC for 9mm, 5.56mm and 7.62mm only
•	70	Continue to maintain standardization of previously qualified calibers, including 25mm
•	12	Initiate standardization of 35mm and/or 45mm cased telescoped ammunition
•	32	Partners in Peace and other initiatives
•	58	Complete facilitization of NARTC for 12.7mm testing
•	65	Initiate facilitization of NARTC for 40mm testing
•	4	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	301	

FY 1999 Planned Program: Project not funded in FY 1999.

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605805A Munitions Standardization Effectiveness and Safety PROJECT DF21

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	274	311	0
Appropriated Value	280	311	
Adjustments to Appropriated Value	-11	-10	0
FY 1999 President's Budget	269	301	0

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605805A Munitions Standardization Effectiveness and Safety PROJECT DF24

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DF24 Conventional Ammunition Demilitarization	1653	9416	4712	4779	4767	4880	5012	Continuing	Continuing

A. Mission Description and Justification: This project supports a continuing technology evaluation of demilitarization methods for existing conventional ammunition and conventional ammunition recovered from formerly used defense sites (FUDS). It will complete the development and demonstration of new, safe, and environmentally acceptable alternatives to open burning/open detonation (OB/OD) for recovery/recycle/reclamation equipment and processes to reduce the extremely large stockpile of munitions in the resource recovery disposition account and recovered munitions from FUDS.

FY 1997 Accomplishments:

•	653	Continued supercritical water oxidation of carcinogenic/toxic-colored smokes and dyes
•	1000	Continued cryofracture demilitarization for explosives-loaded small munitions
Total	1653	

FY 1998 Planned Program:

•	1940	Complete testing and evaluation of prototype SCWO system for demilitarization of colored smokes and dyes
•	1250	Complete development of explosives rework process for cast loaded munitions
•	295	Continue cryofracture development for demilitarization
•	880	Complete fabrication and installation of pilot scale plasma arc technology
•	1038	Complete construction of Explosive Waste Incinerator
•	3780	Conduct demonstration program using commercially available blast chamber technology
•	233	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	9416	

FY 1999 Planned Program:

•	2587	Continue cryofracture development for demilitarization
•	525	Initiate development of recycle/reuse technology for magnesium/aluminum
•	950	Initiate development of recycle/reuse technology for smoke pot oils
•	650	Explore advanced cutting technology
Total	4712	

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605805A Munitions Standardization Effectiveness and Safety PROJECT DF24

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/99 President's Budget	1694	4616	4607
Appropriated Value	1731	9716	
Adjustments to Appropriated Value	-78	-300	
FY 1999 President's Budget	1653	9416	4712

Change Summary Explanation: Funding: FY 1998-Undistributed congressional reductions (-300)

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DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605805A Munitions Standardization Effectiveness and Safety

PROJECT: D293

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D293 Field Artillery Ammunition (NATO) Engineering Development	0	81	86	0	0	0	0	0	1672

A. **Mission Description and Justification:** This project supports US/NATO howitzer and ammunition rationalization, standardization, interoperability, and compatibility.

FY 1997 Accomplishments: Program not funded in FY 1997.

FY 1998 Planned Program:

- 50 Engineering support of 155mm joint interoperability requirements
- 29 Interoperability testing of Modular Charge System (MCS); translation
- 2 Small Business Innovative Research/Small Business Technology Transfer Programs

Total 81

FY 1999 Planned Program:

- 50 Engineering support of 155mm joint interoperability requirements
- 36 Interoperability testing of NATO projectiles and MCS; translation

Total 86

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/99 President's Budget	0	83	86
Appropriated Value	0	83	
Adjustments to Appropriated Value	0	-2	
FY 1999 President's Budget	0	81	86

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DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605805A Munitions Standardization Effectiveness and Safety

PROJECT: D297

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D297 Munitions Survivability & Logistics	0	0	2500	2500	2500	2500	2500	Continuing	Continuing

A. Mission Description and Justification: This project makes Army units more survivable by investigating, testing and demonstrating munitions logistics system solutions that prevent or minimize catastrophic explosive events and accelerate ammunition resupply. Key thrusts are munitions storage area survivability, insensitive munitions technology integration, weapon system rearm, explosive incompatibilities in strategic configured loads and advanced packaging and distribution system enhancements. Within each thrust, a broad array of solutions will be identified, tested and evaluated against developed system measures of effectiveness. Optimum, cost effective solutions that enable the rapid projection of lethal and survivable forces will be demonstrated. The early stages of force deployment are especially critical. Theater ammunition storage areas are vulnerable and present the enemy with lucrative targets. These areas and distribution nodes contain the only available munitions stocks in theater, and loss of these munitions could cripple the force, jeopardize the mission and result in high loss of life. This project mitigates vulnerabilities and ensures a survivable, effective fighting force.

FY 1997 Accomplishments: Project not funded in FY 1997.

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program:

•	1000	Complete design architecture of prototype demonstration level munitions survivability software that allows soldiers to quickly design survivable and efficient ammunition storage sites
•	1115	Evaluate Insensitive Munitions (IM) technologies/solutions (energetics, packaging, limited redesign of system components), apply cost effective improvements to specific artillery, mortars, mine and missile ordnance which are not IM compliant, and conduct testing to validate solutions
•	385	Design and fabricate advanced composite cylindrical and rectangular ammunition packaging containers that significantly reduce weight, provide rapid access, and increase environment environmental protection and a closure mechanism for next generation large diameter cylindrical containers. Validate thermal model codes by testing materials/configuration changes that reduce thermal loading on munitions
Total	2500	

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605805A Munitions Standardization Effectiveness and Safety PROJECT D297

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/99 President's Budget	0	0	0
Appropriated Value	0	0	
Adjustments to Appropriated Value	0	0	
FY 1999 President's Budget	0	0	2500

Change Summary Explanation: Funding: FY 1999 – funds realigned from Ammunition appropriation to fund this critical area.

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DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605805A Munitions Standardization Effectiveness and Safety

PROJECT: M296

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M296 Pyrotechnic Reliability and Safety	600	686	654	782	774	0	0	0	3496

A. Mission Description and Justification: This project will support pyrotechnic research, development and testing to identify, characterize and resolve reliability, safety, storage and manufacturing issues that impact production availability and field use of pyrotechnics, including training realism. Project will result in the development and demonstration of new, safe, reliable and environmentally acceptable munitions.

FY 1997 Accomplishments:

- 300 Developed and lab tested new environmentally friendly organic binder system to replace the existing Laminac/Epoxy binder systems
- 95 Completed a market survey and literature search; initiated preliminary function testing with alternative materials/compositions
- 105 Selected and developed organic coatings for magnesium powders to preclude outgassing. Developed a two chamber reaction system with automatic data acquisition to monitor magnesium outgassing characteristics
- 100 Selected and acquired various pyrotechnic end items for shelf life study. Conducted environmental chamber tests under various temperature and humidity conditions

Total 600

FY 1998 Planned Program:

- 369 Continue development of safer pyrotechnic munitions/systems, including Radio Frequency safe designs, reduced fragmentation effects, and tamper resistant configurations
- 150 Conduct parametric formulations, performance characterization/evaluations and optimization of selected alternate magnesium candidates
- 150 Develop organic coatings for magnesium powders. Conduct performance test and evaluations of pyrotechnic compositions containing the coated magnesium
- 17 Small Business Innovative Research/Small Business Technology Transfer Programs

Total 686

FY 1999 Planned Program:

- 100 Initiate development and investigate merit of substitutes for carcinogenic and critical materials. Perform preliminary testing to screen candidate materials
- 324 Continue development of safer pyrotechnic munitions/systems, including Radio Frequency safe designs, reduced fragmentation effects, and tamper resistant configurations

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605805A Munitions Standardization Effectiveness and Safety PROJECT M296

FY 1999 Planned Program: (continued)

- 110 Complete development of alternate to magnesium. Conduct parametric formulations, performance characterization/evaluations and optimization of selected candidates in white, green and red illuminants
- 120 Continue technology pyrotechnic shelf life study. Conduct environmental tests under various temperature/humidity conditions. Perform function test and evaluation on conditioned items

Total 654

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/99 President's Budget	667	708	614
Appropriated Value	682	708	
Adjustments to Appropriated Value	-82	-22	
FY 1999 President's Budget	600	686	654

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DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605805A Munitions Standardization Effectiveness and Safety

PROJECT: M857

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M857 Explosive Safety Standards	561	580	545	751	729	731	728	Continuing	Continuing

A. **Mission Description and Justification**: Supports explosive effects research and testing to quantify hazards and to develop techniques to mitigate these hazards in all DOD manufacturing, testing, transportation, maintenance, storage and disposal of ammunition and explosives operations. Results are essential to the development and improvement of quantity-distance standards, hazard classification procedures, cost effective explosion-resistant facility design procedures, and personnel hazard/protection criteria.

FY 1997 Accomplishments:

•	175	Collected and analyzed data for revising DOD and NATO hazard interpretation for Hazard Divisions 1.1, 1.3, 1.4, and 1.6 ammunition outside and inside structures
•	147	Continued development of improved tri-service design procedures and improved computer codes for explosion-resistant structures
•	78	Continued development of improved explosives and munitions tests and characterization data
•	118	Continued development of improved DOD guidelines for munitions storage facilities
•	43	Continued to conduct other hazards analyses and expand/automate explosives safety data bases
Total	561	

FY 1998 Planned Program:

•	40	Continue to collect and analyze data for revising DOD and NATO hazard interpretation for Hazard Divisions 1.1, 1.3, 1.4, and 1.6 ammunition outside and inside structures
•	110	Continue development of improved tri-service design procedures and improved computer codes for explosion-resistant structures
•	47	Continue development of improved explosives and munitions tests and characterization data
•	288	Develop improved DOD and NATO explosives safety guidelines for munitions storage, explosives operating and field operation facilities
•	80	Continue to conduct other hazards analyses and expand/automate explosives safety data bases
•	15	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	580	

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FY 1999 Planned Program:

•	100	Collect and analyze airblast/fragment/thermal data for revising DOD, NATO and United Nations hazard classification interpretations for Hazard Divisions 1.1, 1.2, 1.3, 1.4, 1.4S, 1.5 and 1.6
•	100	Continue development of improved tri-service design procedures and improved computer codes for explosion-resistant structures
•	47	Continue development of improved explosives and munitions tests and characterization data
•	218	Continue to develop improved DOD and NATO explosives safety guidelines for munitions storage, explosives operating and field operation facilities
•	80	Continue to conduct other hazards analyses and expand/automate explosives safety data bases
Total	545	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/99 President's Budget	576	599	588
Appropriated Value	589	599	
Adjustments to Appropriated Values	-28	-19	
FY 1999 President's Budget	561	580	545

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BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605853A Environmental Conservation

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	1874	1723	3195	3501	3121	3108	3140	Continuing	Continuing
M0CC Environmental Conservation - AMC Test Ranges	1416	1451	2903	3098	2864	2898	2931	Continuing	Continuing
M1CC Environmental Conservation - AMC Major Subordinate Commands/Laboratories	110	144	154	140	141	140	139	Continuing	Continuing
M5CC Environmental Conservation - USASSDC	348	128	138	263	116	70	70	Continuing	Continuing

Mission Description and Budget Item Justification: This program ensures that resources are available to fund actions specifically required to protect or enhance natural and cultural resources, preserve access to improved and unimproved training areas, and make necessary repairs to minimize erosion and otherwise rehabilitate lands and waters at Army RDTE installations, laboratories and test ranges. No Operation and Maintenance, Army (OMA) appropriation funds are budgeted for environmental conservation efforts at RDTE facilities. It focuses on compliance with natural and cultural resource laws and on responsible management of natural and cultural resources to ensure resources are used wisely and are protected. It finances studies and surveys to identify, inventory, and manage natural (endangered or threatened species, other wildlife, timber, agricultural lands, training areas, etc.) and cultural resources and evaluation of the resources so identified and inventoried; Integrated Training Area Management; preparation of natural and cultural resource management plans; design, construction, maintenance or repair costs specifically required to restore, improve or maintain natural or cultural resources; supplies and equipment required to carry out applicable natural and cultural resources management activities. It includes appropriated RDTE funds attributable to fish, wildlife, agricultural outleasing and timber management activities. It does not include normal maintenance required for appearance, including landscaping, or normal building maintenance associated with present day, non-cultural uses of historic buildings. Army defines environmental effort as: Class O - Project needed to cover essential administrative, personnel, and other costs required to manage environmental activities and monitor environmental conditions associated with compliance. Class I - support compliance with legally binding agreements or judgments under applicable Federal, State, local or host nation natural or cultural resource environmental laws; correct deficiencies cited in an inspection or notice of violation by a natural or cultural resource regulatory agency, or host nation equivalent; correct deficiencies where a statutory or regulatory deadline has passed; Class II - projects required to comply with an established natural or cultural resource standard, and deadline for compliance is in the future. Includes effort directed toward support of installations or operations required for general research and development use and therefore is appropriate to Budget Activity 6.

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BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605853A Environmental Conservation

PROJECT: M0CC

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M0CC Environmental Conservation - AMC Test Ranges	1416	1451	2903	3098	2864	2898	2931	Continuing	Continuing

A. **Mission Description and Justification:** Project MOCC resources in this project ensure an adequate level of funding for environmental natural and cultural resource management requirements, at Yuma Proving Ground (YPG), AZ; Garrison Aberdeen Proving Ground (GAPG), MD; Dugway Proving Ground (DPG), UT; and White Sands Missile Range (WSMR), NM. The operations are critical to the infrastructure and execution of the Army testing mission. Improper management of natural and cultural resources at these installations could shut down the test mission.

FY 1997 Accomplishment:

- 1416 Funded Class O, Class I and Class II environmental natural and cultural resource management programs such as management/protection of endangered species, and preservation of cultural resources, national historic preservation, wet lands management/studies and shoreline erosion. Projects accomplished include the Annual Chesapeake Bay Report and Implementation Plan at GAPG; Endangered Species Survey at DPG; Endangered Species Management Plan at WSMR; and Historic Preservation Planning at YPG.

Total 1416

FY 1998 Planned Program:

- 1415 Fund Class O, Class I and Class II environmental natural and cultural resource management programs such as management/protection of endangered species, and preservation of cultural resources according to the national historic preservation plans. Also funds ecosystem management, wildlife surveys and habitat delineation. Include projects such as Support of Required National Register Sampling and Historic Property Stabilization at GAPG; Natural Resource Management Plan at DPG; Endangered Species Management Plan and Wetland Delineation at WSMR; National Historic Preservation Act Compliance Plan at YPG.
- 36 Small Business Innovation Research /Small Business Technology Transfer (SBIR/STTR) Programs.

Total 1451

FY 1999 Planned Program:

- 2903 Fund Class O, Class I and Class II environmental natural and cultural resource management programs such as management/protection of endangered species, and preservation of cultural resources according to the historic preservation plans. Also fund ecosystem management, wildlife surveys and habitat delineation. Projects such as Pesticide Management at GAPG; Threatened & Endangered Species Survey at DPG; Development of Watershed Management Plan and Wetland ID/Mapping at WSMR; and Preservation & Management-White Tanks National Register District at YPG.

Total 2903

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B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	1467	1498	2636
Appropriated Value	1498	1498	
Adjustments to Appropriated Value	-82	-47	
FY 1999 President's Budget	1416	1451	2903

Change Summary Explanation: Funding: FY 1999 funds (+267) required for "must fund" environmental projects.

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BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605853A Environmental Conservation

PROJECT: M1CC

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M1CC Environmental Conservation - AMC Major Subordinate Commands/Laboratories	110	144	154	140	141	140	139	Continuing	Continuing

A. Mission Description and Justification: Project M1CC resources in this project ensure an adequate level of funding for environmental natural and cultural resource management requirements, as discussed in the program element's mission description and budget item justification on page one of this exhibit, at Army Research Laboratory (ARL), Adelphi, MD; Armament Research, Development and Engineering Center (ARDEC), Picatinny Arsenal, Dover, NJ; Soldier Systems Command (SSCOM), Natick, MA.

FY 1997 Accomplishments:

- 110 Funded Class I and Class II environmental natural and cultural resource management programs such as required surveys of historical buildings and preservation of the building.

Total 110

FY 1998 Planned Program:

- 141 Fund Class I and Class II environmental natural and cultural resource management programs such as required surveys of historical buildings and preservation of the building.
- 3 Small Business Innovative Research/Small Business Technology Transfer Programs (SBIR/STTR) Programs.

Total 144

FY 1999 Planned Program:

- 154 Fund Class I and Class II environmental natural and cultural resource management programs such as required surveys of historical buildings and preservation of the building.

Total 154

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	113	148	203
Appropriated Value	115	148	
Adjustments to Appropriated Value	-5	-4	
FY 1999 President's Budget	110	144	154

Change Summary Explanation: Funding: FY 1999 (-49) funds reprogrammed for higher priority requirements.

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BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605853A Environmental Conservation

PROJECT: M5CC

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M5CC Environmental Conservation - USASSDC	348	128	138	263	116	70	70	Continuing	Continuing

A. Mission Description and Justification: Project M5CC Environmental Conservation - U.S. Army Space and Strategic Defense Command (USASSDC): Resources in this project ensure an adequate level of funding for environmental natural and cultural resource management requirements, at USASSDC.

FY 1997 Accomplishments:

•	348	Continued the development of Historic Preservation Plan for management of historic properties to comply with National Historic Preservation Act.
Total	348	

FY 1998 Planned Program:

•	125	Continue development of Historic Preservation Plan for management of historic properties to comply with National Historic Preservation Act.
•	3	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	128	

FY 1999 Planned Program:

•	138	Continue development of Historic Preservation Plan for management of historic properties to comply with National Historic Preservation Act
Total	138	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	143	132	138
Appropriated Value	146	132	
Adjustments to Appropriated Value	+202	-4	
FY 1999 President's Budget	348	128	138

Change Summary Explanation: Funding: FY 1997 funds (+202) reprogrammed for environmental projects.

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DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605854A Pollution Prevention

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	13413	5187	8694	13401	6396	6381	6330	Continuing	Continuing
M0PP Pollution Prevention - AMC Test Ranges	517	0	1157	841	745	746	741	Continuing	Continuing
M1PP Pollution Prevention - AMC Major Subordinate Commands/Laboratories	137	151	147	128	122	119	118	Continuing	Continuing
M5PP Pollution Prevention - USASSDC	2051	2219	1141	1164	403	401	398	Continuing	Continuing
M7PP Pollution Prevention - Ozone Depleting Chemicals (ODC) Elimination	763	0	0	6114	0	0	0	Continuing	Continuing
M8PP Pollution Prevention - Acquisition Pollution Prevention	9945	2817	6249	5154	5126	5115	5073	Continuing	Continuing

Mission Description and Budget Item Justification: This program funds the non-research portion of the Army's RDTE funded environmental pollution prevention program. It finances primarily test and evaluation pollution prevention efforts addressing environmental compliance and mission readiness issues effecting Army weapon systems; supporting industrial facilities; and RDTE funded installations, laboratories and test ranges. Pollution prevention is any action designed to reduce or eliminate (rather than control or treat), through source reduction actions, the procurement and use of hazardous materials and the generation of hazardous waste; more efficient use of natural resources; recycling; and/or reduced emissions of toxins and other waste to the environment. Acquisition pollution prevention addresses the adverse impact of hazardous materials and hazardous waste on the operational readiness of Army weapon systems and facilities. Issues include prove-out/engineering of alternatives to (1) ozone-depleting chemicals and (2) hazardous and toxic chemicals and materials used in weapon system fire protection, cooling and refrigeration applications, manufacturing and maintenance processes and specialized test practices throughout the weapon system life cycle. These activities account for approximately 90 percent of the hazardous waste generated by the U.S. Army. This program includes the review and revision of standardized technical documentation containing design, procurement and maintenance requirements, and procedures supporting materiel procurement such as the Joint Group for Acquisition Pollution Prevention. No Operations and Maintenance, Army (OMA) funds are programmed for these purposes. Projects under this program meet Army definitions: Class O - Projects needed to cover essential administrative, personnel, and other costs required to manage environmental activities and monitor environmental condition associated with compliance; Class I - support compliance with legally binding agreements or judgments under applicable federal, state, local or host nation environmental laws; Class II - projects required to comply with established standard, and deadline for compliance in the future. Class I and II projects comply with the Montreal Protocol, the Clean Air Act, the Pollution Prevention Act, the Emergency Planning and Right-to-Know Act, and Executive Order 12856 (and others). The program supports installations and operations required for general research and development use and therefore is appropriate to Budget Activity 6.

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BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605854A Pollution Prevention

PROJECT: M0PP

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M0PP Pollution Prevention - AMC Test Ranges	517	0	1157	841	745	746	741	Continuing	Continuing

A. Mission Description and Justification: Project M0PP - Pollution Prevention - AMC Test Ranges: Resources in this project ensure an adequate level of funding for pollution prevention requirements, at Yuma Proving Ground (YPG), AZ; Garrison Aberdeen Proving Ground (GAPG), MD; Dugway Proving Ground (DPG), UT; and White Sands Missile Range (WSMR), NM. These operations are critical to the infrastructure and execution of the Army testing mission.

FY 1997 Accomplishments:

- 517 Funded Class O, Class I and Class II pollution prevention projects such as reporting of Toxic Release Inventories, solid and hazardous waste reduction programs, implementation of storm water pollution prevention plans, purchase of spill response supplies and equipment, etc. Projects accomplished include Natural Gas Conversion of Boilers at APG; Development of Pollution Prevention Plan at DPG; and Natural Gas Refueling Station at WSMR.

Total 517

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

FY 1999 Planned Program:

- 1157 Fund Class O, Class I and Class II pollution prevention programs and projects. Programs such as reporting of Toxic Release Inventories, solid and hazardous waste reduction programs, implementation of storm water pollution prevention plans, purchase of spill response supplies and equipment, etc. Also fund Emergency Planning and Community Right-to-Know Act (EPCRA) compliance preventive projects. Include projects such as Chlorine Replacement – Water treatment and Closed Loop Washrack at GAPG; Implementation of Pollution Prevention Opportunities at DPG; Yard Waste and Tire Shredder at WSMR; and Executive Order 12856 Implementing Strategy at YPG.

Total 1157

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	534	0	1248
Appropriated Value	546		
Adjustments to Appropriated Value	-25		
FY 1999 President's Budget	517	0	1157

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BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605854A Pollution Prevention

PROJECT: M1PP

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M1PP Pollution Prevention - AMC Major Subordinate Commands/Laboratories	137	151	147	128	122	119	118	Continuing	Continuing

A. Mission Description and Justification: Project M1PP - Pollution Prevention - AMC Major Subordinate Commands/Laboratories: Resources in this project ensure an adequate level of funding for pollution prevention requirements, at Army Research Laboratory (ARL), Adelphi, MD; Armament Research, Development and Engineering Center (ARDEC), Picatinny Arsenal, Dover, NJ; Soldier Systems Command (SSCOM), Natick, MA; and Army Research Laboratory Materials Technology Directorate (ARLMTD), APG, MD.

FY 1997 Accomplishments:

•	137	Funded Class I and Class II pollution prevention programs such as waste solvent replacement programs, purchase of alternate fuel vehicles, construction of sound-absorbing barriers, implementation of storm water pollution prevention plans, purchase of spill response equipment, etc.
Total	137	

FY 1998 Planned Program:

•	147	Fund Class I and Class II pollution prevention programs such as waste solvent replacement programs, purchase of alternate fuel vehicles, construction of sound-absorbing barriers, implementation of storm water pollution prevention plans, purchase of spill response equipment, etc.
•	4	Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	151	

FY 1999 Planned Program:

•	147	Fund Class I and Class II pollution prevention programs such as waste solvent replacement programs, purchase of alternate fuel vehicles, construction of sound-absorbing barriers, implementation of storm water pollution prevention plans, purchase of spill response equipment, etc.
Total	147	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	140	156	159
Appropriated Value	143	156	
Adjustments to Appropriated Value	-6	-5	
FY 1999 President's Budget	137	151	147

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BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605854A Pollution Prevention

PROJECT: M5PP

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M5PP Pollution Prevention - USASSDC	2051	2219	1141	1164	403	401	398	Continuing	Continuing

A. Mission Description and Justification: Project M5PP - U.S. Army Space and Strategic Defense Command (USASSDC): Resources in this project ensure an adequate level of funding for pollution prevention requirements at the USASSDC.

FY 1997 Accomplishments:

•	2051	Funded pollution prevention programs such as hazardous material satellite areas, recycling of metals, Halon reduction, pollution prevention, etc.
Total	2051	

FY 1998 Planned Program:

•	2164	Fund pollution prevention programs such as hazardous material satellite areas, recycling of metals, Halon reduction, pollution prevention, etc.
•	55	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
Total	2219	

FY 1999 Planned Program:

•	1141	Fund pollution prevention programs such as hazardous material satellite areas, recycling of metals, Halon reduction, pollution prevention, etc.
Total	1141	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	1916	2290	1231
Appropriated Value	1957	2290	
Adjustments to Appropriated Value	94	-71	
FY 1999 President's Budget	2051	2219	1141

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BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605854A Pollution Prevention

PROJECT: M7PP

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M7PP Pollution Prevention - Ozone Depleting Chemicals (ODC) Elimination	763	0	0	6114	0	0	0	Continuing	Continuing

A. Mission Description and Justification: Project M7PP - Pollution Prevention - ODC Elimination: Develop and implement the Army program to eliminate the use of ozone depleting chemicals on/for weapon systems. The program has been developed due to International Agreements (Montreal Protocol) Title VI of the Clean Air Act of 1990 and section 326 of P.L. 102-484. Funding for this program has been transferred to 0605854/M8PP Pollution Prevention - Acquisition Pollution Prevention beginning with FY 2001.

FY 1997 Accomplishments:

- 125 Tested and Evaluated alternative Chemical-Biological Protective Overgarments testing agents
- 125 Tested and Evaluated Nuclear Biological Protective Filter agents
- 104 Developed Fire Safety Test Enclosure
- 409 Tested and Evaluated Ammunition Inspection Cleaning Process Alternatives

Total 763

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

FY 1999 Planned Program: Project is not funded in FY 1999.

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	782	0	0
Appropriated Value	799	0	
Adjustments to Appropriated Value	-36		
FY 1999 President's Budget	763	0	0

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COST *(In Thousands)*	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M8PP Pollution Prevention - Acquisition Pollution Prevention	9945	2817	6249	5154	5126	5115	5073	Continuing	Continuing

A. Mission Description and Justification: Project M8PP - Pollution Prevention - Acquisition Pollution Prevention: Develop and implement the Army Acquisition Pollution Prevention program to reduce requirements for hazardous materials and toxic chemicals used throughout the weapon system life cycle. The program supports Army compliance with the Montreal Protocol, the Clean Air Act, the Pollution Prevention Act and Executive Order 12856 (and others). This program primarily funds test and evaluation of environmentally acceptable alternative materials and processes used in weapon system design, testing, production, maintenance, operation and support. Issues directly affecting operational readiness of weapon systems and supporting facilities take top priority. Support is also provided for the Joint Group for Acquisition Pollution Prevention.

FY 1997 Accomplishments:

- 675 Toxicological Assessment of Alternative New Materials
- 300 Program Management and Oversight
- 1715 Tested and Evaluated Alternative Materials and Process Related to Paint Coating and Stripping Processes, Engine Oil Life Extension and Propylene Glycol Antifreeze
- 300 Tested and Evaluated Aviation Materials and Processes (Non-Chromate Processes)
- 610 Tested and Evaluated Alternative Materials and Processes for Missile Production (Powder Coating Processes and Alternative Fuels)
- 250 Implemented Laser Stripping Processes for Helicopter Components
- 1819 Tested and Evaluated Ammunition/Munitions Production
- 500 Tested and Evaluated Alternative Battery Production
- 450 Tested and Evaluated Chemical Biological Defense Test Procedures
- 125 Tested and Evaluated Soldier System products
- 200 Developed Solvent Substitution Selection Procedures
- 1281 Developed Fire Safety Test Enclosure
- 250 Funded Joint Group for Acquisition Pollution Prevention (JG-APP)
- 1470 Implemented Alternative Processes at Depots, Arsenals and Ammunition

Total 9945

FY 1998 Planned Program:

- 302 Toxicological Assessment of Alternative New Materials
- 350 Program Management and Oversight
- 450 Test and Evaluation related to Ammunition/Munition Production (test procedures, tracer composition, sealing and coating

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605854A Pollution Prevention PROJECT M8PP

FY 1998 Planned Program: (continued)

•	350	Test and Evaluation related to Aviation and Missile Production (powder coating, and alternative fuels)
•	250	Test and Evaluation related to Electronics Production and Support (batteries)
•	250	Test and Evaluation related to Chemical Biological Defense test procedures.
•	75	Test and Evaluation related to Soldier System test procedures
•	694	Process Support in the Industrial Base.
•	25	Joint Group for Acquisition Pollution Prevention
•	71	Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.
Total	2817	

FY 1999 Planned Program:

•	500	Toxicological Assessment of Alternative New Materials
•	250	Program Management and Oversight
•	1000	Test and Evaluation related to Ammunition/Munition Production
•	825	Test and Evaluation related to Aviation and Missile Production
•	530	Test and Evaluation related to Electronics Production and Support
•	650	Test and Evaluation related to Chemical Biological Defense
•	250	Test and Evaluation related to Soldier System
•	1799	Process Support in the Industrial Base
•	195	Process Support to the Test Activities
•	250	Joint Group for Acquisition Pollution Prevention
Total	6249	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	10230	2907	2043
Appropriated Value	10449	2907	
Adjustments to Appropriated Value	-504	-90	
FY 1999 President's Budget	9945	2817	6249

Change Summary Explanation: Funding: FY 1999 increase (+4206) required for "must fund" environmental projects.

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DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605856A Environmental Compliance - Research, Development, Testing & Evaluation

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	52716	56576	44116	40365	38356	38415	38320	Continuing	Continuing
M0VV Environmental Compliance - AMC Test Ranges	33333	35523	32296	28746	27678	27718	27660	Continuing	Continuing
M1VV Environmental Compliance - AMC Major Subordinate Commands/Laboratories	13503	12335	9946	10125	9010	9024	8987	Continuing	Continuing
M4VV Environmental Compliance - Corps of Engineers	1430	6784	0	0	0	0	0	Continuing	Continuing
M5VV Environmental Compliance - USASSDC	4450	1934	1874	1494	1668	1673	1673	Continuing	Continuing

Mission Description and Budget Item Justification: This program ensures that resources are available to fund legally mandated environmental compliance activities at U.S. Army RDTE installations, laboratories and test ranges. (No Operation and Maintenance, Army (OMA) appropriation funds are budgeted for environmental compliance efforts at RDTE facilities). It finances environmental staff salaries; minor construction, repair and upgrade of facilities to meet environmental standards, including waste treatment and disposal; radon abatement; repair and clean up of underground storage tank hazards; management of hazardous waste storage and disposal; permits and licensing fees; environmental training, plans and studies; and environmental monitoring and audits. Funds cost of complying with Federal Facility Compliance Agreements (FFCA) and other environmental agreements, and correcting notices of violation. It does not finance construction or repairs unrelated to environmental compliance or Defense Environmental Restoration Account (DERA) funded environmental restoration. In summary, this program provides for environmental quality control of current defense operations and disposal of hazardous waste incident to defense operations funded by the RDTE appropriation. Army defines environmental effort as: Class O - projects needed to cover essential administrative, personnel, and other costs required to manage environmental activities and monitor environmental conditions associated with compliance. Class I - support compliance with legally binding agreements or judgments under applicable federal, state, local or host nation environmental law; correct deficiencies cited in an inspection or notice of violation by a regulatory agency, or host nation equivalent; correct deficiencies where a statutory or regulatory deadline has passed; Class II - projects required to comply with an established standard, and deadline for compliance is in the future; Class III - salaries and training for environmental personnel and projects required to maintain/improve environmental quality, but where non-compliance is not imminent. Includes effort directed toward support of installations or operations required for general research and development use and therefore is appropriate for Budget Activity 6.

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605856A Environmental Compliance - Research, Development, Testing & Evaluation PROJECT M0VV

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M0VV Environmental Compliance - AMC Test Ranges	33333	35523	32296	28746	27678	27718	27660	Continuing	Continuing

A. Mission Description and Justification: Project M0VV - Environmental Compliance - AMC Test Ranges: Resources in the project ensure an adequate level of funding for legally mandated environmental compliance requirements at Yuma Proving Ground (YPG), AZ; Garrison Aberdeen Proving Ground (GAPG), MD; Dugway Proving Ground (DPG), UT; and White Sands Missile Range (WSMR), NM. These operations are critical to the infrastructure of the Army testing program.

FY 1997 Accomplishments:

•	33333	Funded Class O, Class I, Class II, and other "Must Fund" environmental compliance programs and projects. Programs such as underground storage tank removal/remediation, Environmental Impact Statement, asbestos disposal, wastewater compliance, expansion of solid waste landfill, backflow prevention program and closure of solid waste management units. Also funds hazardous waste disposal and program management. Projects accomplished include Above Ground Tank Testing, Repairs & Upgrade and Permitting for National Pollutant Discharge Elimination System Wastewater at GAPG; Master Planning Environmental Impact Statement at DPG; Sewage Treatment Plants-Phase 1 at WSMR; and Underground Storage Tank Site Characterization and Integrated Natural Resources Management Plan-Implementation Phase at YPG.
Total	33333	

FY 1998 Planned Program:

•	34847	Fund Class O, Class I, Class II, and other "Must Fund" environmental compliance programs and projects. Programs such as underground storage tank removal/remediation, Environmental Impact compliance, expansion of solid waste landfill, backflow prevention program and closure of solid waste management units. Also funds hazardous waste disposal and program management. Include projects such as Hazardous Materials Inventory/Tracking/Reporting Compliance and Solid Waste Compliance Management at GAPG; Management of Central Storage Facility at DPG; Monitoring of Drinking (Ground) Water at WSMR; and Sample & Analysis of Depleted Uranium at YPG.
•	676	Small Business Innovative Research/Small Business (SBIR/STTR) Programs.
Total	35523	

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605856A Environmental Compliance - Research, Development, Testing & Evaluation PROJECT M0VV

FY 1999 Planned Program:

•	32296	Fund Class O, Class I, Class II, and other "Must Fund" environmental compliance programs and projects. Programs such as underground storage tank removal/remediation, Environmental Impact Statement, asbestos disposal, wastewater compliance, expansion of solid waste landfill, backflow prevention program and closure of solid waste management units. Also funds hazardous waste disposal and program management. Include projects such as Inflow/Infiltration Reduction at GAPG; Permit Application for Open Burning & Open Denotation at DPG; Sewage Lagoon at WSMR; and Storm Water Control at YPG.
Total	32296	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	34126	36655	34849
Appropriated Value	34856	36655	
Adjustments to Appropriated Value	-1523	-1132	
FY 1999 President's Budget	33333	35523	32296

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DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605856A Environmental Compliance - Research, Development, Testing & Evaluation

PROJECT: M1VV

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M1VV Environmental Compliance - AMC Major Subordinate Commands/Laboratories	13503	12335	9946	10125	9010	9024	8987	Continuing	Continuing

A. **Mission Description and Justification:** Project M1VV - Environmental Compliance - AMC MSC/LAB: Resources in this project ensure an adequate level of funding for legally mandated environmental compliance requirements at Army Research Laboratory (ARL), Adelphi, MD; Armament Research, Development and Engineering Center (ARDEC), Picatinny Arsenal, Dover, NJ; and Soldier Systems Command (SSCOM), Natick, MA.

FY 1997 Accomplishments:

•	13503	Funded Class I, Class II, and other environmental programs, such as, drinking water cross-connection program and compliance with sewage prevention requirement at ARDEC; upgrade of fume hood exhaust controls and underground storage tank compliance requirements. Fund remaining compliance requirements such as hazardous waste disposal and program management.
Total	13503	

FY 1998 Planned Program:

•	12278	Fund Class I, Class II, and other environmental programs, such as, drinking water cross-connection program and compliance with sewage prevention requirement at ARDEC; continue upgrade of fume hood exhaust controls and underground storage tank compliance program; Fund compliance requirements such as hazardous waste disposal and program management.
•	57	Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs.
Total	12335	

FY 1999 Planned Program:

•	9946	Fund Class I, Class II, and other environmental programs, such as, drinking water cross-connection program and compliance with sewage prevention requirement; underground storage tank compliance program. Fund remaining compliance requirements such as hazardous waste disposal and program management.
Total	9946	

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BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605856A Environmental Compliance - Research, Development, Testing & Evaluation — PROJECT: M1VV

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	13680	12727	10733
Appropriated Value	13972	12727	
Adjustments to Appropriated Value	-469	-372	
FY 1999 President's Budget	13503	12335	9946

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DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605856A Environmental Compliance - Research, Development, Testing & Evaluation

PROJECT: M4VV

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M4VV Environmental Compliance - Corps of Engineers	1430	6784	0	0	0	0	0	Continuing	Continuing

A. Mission Description and Justification: **Project M4VV-Environmental Compliance - Corps of Engineers:** Resources in this project are for an industry cost-shared demonstration of a 3000 HP low emission natural gas boiler. The funds went to Construction Engineering Research Laboratory (CERL) for Industry cost-shared demonstration of low emission boiler at 2 Army sites and for industry cost-shared demonstration for privatized fuel cell combined heat electrical supply technology at approximately 20 sites.

FY 1997 Accomplishments:

•	1430	Developed with industry cost-shared demonstration of a 3000 HP low emission natural gas boiler.
Total	1430	

FY 1998 Planned Program:

•	6614	Industry cost-shared demonstration of low emission boiler at 2 Army sites and Industry cost shared demonstration for privatized fuel cell combined heat and electrical supply technology at approximately 20 sites.
•	170	Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs.
Total	6784	

FY 1999 Planned Program: Project is not funded in FY 1999.

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	1469	0	0
Appropriated Value	1500	7000	
Adjustments to Appropriated Value	-70	-216	
FY 1999 President's Budget	1430	6784	0

Change Summary Explanation: Funding: FY 1999 increase (+7000) is a Congressional plus-up.

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DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605856A Environmental Compliance - Research, Development, Testing & Evaluation

PROJECT: M5VV

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M5VV Environmental Compliance - USASSDC	4450	1934	1874	1494	1668	1673	1673	Continuing	Continuing

A. Mission Description and Justification: Project M5VV - Environmental Compliance - U.S. Army Space and Strategic Defense Command (USASSDC): Resources in this project ensure an adequate level of funding for legally mandated environmental compliance requirements at the USASSDC.

FY 1997 Accomplishments:

- 4450 Funded environmental compliance programs such as PCB removal, testing for hazardous materials, shipment and disposal of hazardous wastes, environmental staff training, water quality, clean up fuel/oil contamination, underground storage tank compliance, asbestos removal and shipment, mitigation monitoring, etc.

Total 4450

FY 1998 Planned Program:

- 1885 Fund environmental compliance programs such as PCB removal, testing for hazardous materials, shipment and disposal of hazardous wastes, environmental staff training, water quality, clean up fuel/oil contamination, underground storage tank compliance, asbestos removal and shipment, mitigation monitoring, etc.
- 49 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs.

Total 1934

FY 1999 Planned Program:

- 1874 Fund environmental compliance programs such as PCB removal, testing for hazardous materials, shipment and disposal of hazardous wastes, environmental staff training, water quality, clean up fuel/oil contamination, underground storage tank compliance, asbestos removal and shipment, mitigation monitoring, etc.

Total 1874

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	4976	1996	2022
Appropriated Value	5083	1996	
Adjustments to Appropriated Value	-633	-62	
FY 1999 President's Budget	4450	1934	1874

Change Summary Explanation: Funding: FY 1997 reduction (-526) reprogrammed to higher priority requirements.

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605876A Minor Construction - Research, Development, Testing & Evaluation

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	4148	4258	4205	4097	4085	4096	4091	Continuing	Continuing
M0WW Minor Construction - Test Ranges	2642	2662	2601	2628	2651	2661	2660	Continuing	Continuing
M1WW Minor Construction - AMC Subordinate Commands and Laboratories	1038	1098	1127	1020	999	1001	998	Continuing	Continuing
M4WW Minor Construction - Corps of Engineers	468	498	477	449	435	434	433	Continuing	Continuing

Mission Description and Budget Item Justification: This program element finances activities and functions necessary to provide facility related minor construction for U.S. Army RDTE installations, laboratories and test ranges. Minor construction includes: erection, installation, or assembly of a new real property facility; expansion, extension, alteration, conversion, relocation or replacement of an existing real property facility. Includes design costs directly associated with accomplishing a designated project undertaking. These projects substantially prolong the useful life of the facility and are all actually facility investments. Includes effort directed toward support of installations or operations required for general research and development use and therefore is appropriate to Budget Activity 6.

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BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605876A Minor Construction - Research, Development, Testing & Evaluation — PROJECT: M0WW

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M0WW Minor Construction - Test Ranges	2642	2662	2601	2628	2651	2661	2660	Continuing	Continuing

A. Mission Description and Justification: Finances RDTE minor construction projects for U.S. Army Materiel Command (AMC) technical test ranges assigned to Test and Evaluation Command (TECOM), i.e., Yuma Proving Ground, AZ; Aberdeen Proving Ground, MD; Dugway Proving Ground, UT; and White Sands Missile Range, NM. In addition, project provides common service host support for over 100 tenants and satellites located on these four TECOM ranges. Facility assets managed include over approximately 4 million acres of land, over 24 million square feet of building space, 3 thousand miles of roads, and 2 thousand miles of utility lines.

FY 1997 Accomplishments:

- 1374 Funded minor construction projects at Aberdeen Proving Ground, MD
- 291 Funded minor construction projects at Dugway Proving Ground, UT
- 660 Funded minor construction projects at White Sands Missile Range, NM
- 317 Funded minor construction projects at Yuma Proving Ground, AZ

Total 2642

FY 1998 Planned Program:

- 1350 Fund minor construction projects at Aberdeen Proving Ground, MD
- 285 Fund minor construction projects at Dugway Proving Ground, UT
- 649 Fund minor construction projects at White Sands Missile Range, NM
- 311 Fund minor construction projects at Yuma Proving Ground, AZ
- 67 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.

Total 2662

FY 1999 Planned Program:

- 1352 Fund minor construction projects at Aberdeen Proving Ground, MD
- 286 Fund minor construction projects at Dugway Proving Ground, UT
- 650 Fund minor construction projects at White Sands Missile Range, NM
- 313 Fund minor construction projects at Yuma Proving Ground, AZ

Total 2601

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605876A Minor Construction - Research, Development, Testing & Evaluation PROJECT M0WW

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	2708	2746	2807
Appropriated Value	2766	2746	
Adjustments to Appropriated Value	-124	-84	
FY 1999 President's Budget	2642	2662	2601

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605876A Minor Construction - Research, Development, Testing & Evaluation PROJECT M1WW

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M1WW Minor Construction - AMC Subordinate Commands and Laboratories	1038	1098	1127	1020	999	1001	998	Continuing	Continuing

A. Mission Description and Justification: This project finances minor construction projects for U.S. Army Materiel Command major subordinate command RDTE installations and laboratories, i.e., Army Research Laboratory (ARL), Adelphi , MD; Armament Research, Development and Engineering Center (ARDEC), Picatinny Arsenal, Dover, NJ; and Soldier Systems Command (SSCOM), Natick, MA. Also provides common service host support to 36 tenants located at these installations. Facilities managed include 8,996 acres of land and 6.4 million square feet of building space.

FY 1997 Accomplishments:

- 813 Funded minor construction projects at ARDEC, Picatinny Arsenal, NJ
- 147 Funded minor construction projects at ARL, Adelphi, MD
- 78 Funded minor construction projects at SSCOM, Natick, MA.

Total 1038

FY 1998 Planned Program:

- 864 Fund minor construction projects at ARDEC, Picatinny Arsenal, NJ
- 152 Fund minor construction projects at ARL, Adelphi, MD
- 82 Fund minor construction projects at SSCOM, Natick, MA.

Total 1098

FY 1999 Planned Program:

- 669 Fund minor construction projects at ARDEC, Picatinny Arsenal, NJ
- 290 Fund minor construction projects at ARL, Adelphi, MD
- 168 Fund minor construction projects at SSCOM, Natick, MA.

Total 1127

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605876A Minor Construction - Research, Development, Testing & Evaluation PROJECT M1WW

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	1040	1133	1216
Appropriated Value	1062	1133	
Adjustments to Appropriated Value	-24	-35	
FY 1999 President's Budget	1038	1098	1127

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DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605876A Minor Construction - Research, Development, Testing & Evaluation

PROJECT: M4WW

COST *(In Thousands)*	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M4WW Minor Construction - Corps of Engineers	468	498	477	449	435	434	433	Continuing	Continuing

A. Mission Description and Justification: Project finances those minor construction projects for U.S. Army Corps of Engineers RDTE laboratories located at Waterways Experiment Station (WES), Vicksburg, MS; Cold Regions Research and Engineering Laboratory (CRREL), Hanover, NH; Topographic Engineering Center (TEC), Alexandria, VA and Construction Engineering Research Laboratory (CERL), Champaign, IL.

FY 1997 Accomplishments:

- 220 Funded minor construction projects at CRREL, Hanover, NH
- 154 Funded minor construction projects at WES, Vicksburg, MS
- 94 Funded minor construction projects at TEC, Alexandria, VA

Total 468

FY 1998 Planned Program:

- 103 Fund minor construction projects at TEC, Alexandria, VA
- 213 Fund minor construction projects at CRREL, Hanover, NH
- 169 Fund minor construction projects at WES, Vicksburg,
- 13 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.

Total 498

FY 1999 Planned Program:

- 103 Fund minor construction projects at TEC, Alexandria, VA
- 205 Fund minor construction projects at CRREL, Hanover, NH
- 169 Fund minor construction projects at WES, Vicksburg, MS

Total 477

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605876A Minor Construction - Research, Development, Testing & Evaluation
	PROJECT M4WW

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	481	514	514
Appropriated Value	491	514	
Adjustments to Appropriated Value	-23	-16	
FY 1999 President's Budget	468	498	477

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DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605878A Maintenance and Repair - Research, Development, Testing & Evaluation

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	66869	83751	49233	63333	69246	76659	74905	Continuing	Continuing
M0YY Maintenance and Repair - AMC Test Ranges	51337	58484	33027	48826	52859	59646	60599	Continuing	Continuing
M1YY Maintenance and Repair - AMC Subordinate Commands/Laboratories	12187	10896	14063	11819	13353	13613	10344	Continuing	Continuing
M4YY Maintenance and Repair - U.S. Army Corps of Engineers	3345	4707	2143	2688	3034	3400	3962	Continuing	Continuing
M744 Modernization of Utilities	0	9664	0	0	0	0	0	0	0

Mission Description and Budget Item Justification: This program element finances activities and functions necessary for maintenance and repair of real property at U.S. Army RDTE installations, laboratories and test ranges. Maintenance and repair of real property includes applicable expenses of cyclic and preventive maintenance and annual recurring repair incurred by building trade shops, construction units, grounds and pavements units, machine shops and contracts. Funding also provide for modernization of utility systems. These projects substantially prolong the useful life of the facility, and are all actually facility investments. Includes effort directed toward support of installations or operations required for general research and development use and therefore is appropriate to Budget Activity 6.

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BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605878A Maintenance and Repair - Research, Development, Testing & Evaluation

PROJECT: M0YY

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M0YY Maintenance and Repair - AMC Test Ranges	51337	58484	33027	48826	52859	59646	60599	Continuing	Continuing

A. Mission Description and Justification: This project finances the maintenance and repair for sustaining the infrastructure of the U.S. Army Materiel Command (AMC) installations assigned to the Test and Evaluation Command (TECOM), i.e. Aberdeen Proving Ground, MD; Dugway Proving Ground, UT; Yuma Proving Ground, AZ and White Sands Missile Range, NM. Funding provides maintenance and repair to over 24 million square feet of facilities, 3 thousand miles of road, 1400 miles of electric distribution systems, and over 600 miles of water and sewage distribution systems.

FY 1997 Accomplishments:

- 28012 Funded minimum operational maintenance requirements and $1.9 million for repair to U.S. Army Ordnance Center and School student training facility at Aberdeen Proving Ground, MD.
- 4299 Funded minimum operational maintenance requirements at Dugway Proving Ground, UT.
- 10042 Funded minimum operational maintenance requirements at White Sands Missile Range, NM.
- 4984 Funded minimum operational maintenance requirements at Yuma Proving Ground, AZ.
- 4000 Funded Federal Energy Management Projects (FEMP).

Total 51337

FY 1998 Planned Program:

- 32453 Funds sustainment costs at Aberdeen Proving Ground, MD.
- 5372 Funds sustainment costs at Dugway Proving Ground, UT.
- 13124 Funds sustainment costs at White Sands Missile Range, NM.
- 6406 Funds sustainment costs at Yuma Proving Ground, AZ.
- 1129 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs.

Total 58484

FY 1999 Planned Program:

- 19106 Funds sustainment costs at Aberdeen Proving Ground, MD.
- 2880 Funds sustainment costs at Dugway Proving Ground, UT.
- 7360 Funds sustainment costs at White Sands Missile Range, NM.
- 3681 Funds sustainment costs at Yuma Proving Ground, AZ. Ground, AZ .

Total 33027

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
6 - Management and Support	0605878A Maintenance and Repair - Research, Development, Testing & Evaluation	M0YY

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	49797	60347	58714
Appropriated Value	50862	60347	
Adjustments to Appropriated Value	+475	-1863	
FY 1999 President's Budget	51337	58484	33027

Change Summary Explanation: Funding: FY 1999 funds (-25687) reprogrammed to higher priority requirements.

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BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605878A Maintenance and Repair - Research, Development, Testing & Evaluation

PROJECT: M1YY

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M1YY Maintenance and Repair - AMC Subordinate Commands/Laboratories	12187	10896	14063	11819	13353	13613	10344	Continuing	Continuing

A. Mission Description and Justification: This project finances those maintenance and repair activities and functions necessary for maintaining and repairing infrastructure for the U.S. Army Materiel Command major subordinate command RDTE installations and laboratories, i.e., Army Research Laboratory, Adelphi, Maryland; Armament Research, Development and Engineering Center, Picatinny Arsenal, Dover, New Jersey; and Soldier System Command, Natick, Massachusetts. Also provides common service host support to 36 tenants located at these installations. Facilities managed include 8,996 acres of land and 6.4 million square feet of building space with necessary utilities and road systems.

FY 1997 Accomplishments:

- 7206 Funded maintenance and repair projects at Picatinny Arsenal, NJ.
- 2797 Funded maintenance and repair projects at Army Research Laboratory, Adelphi, MD.
- 2184 Funded maintenance and repair projects at Soldier Systems Command, Natick, MA.

Total 12187

FY 1998 Planned Program:

- 6184 Funds maintenance and repair projects at Picatinny Arsenal, NJ.
- 2946 Funds maintenance and repair projects at Army Research Laboratory, Adelphi, MD.
- 1493 Funds maintenance and repair projects at Soldier Systems Command, Natick, MA.
- 273 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs.

Total 10896

FY 1999 Planned Program:

- 7276 Funds maintenance and repair projects at Picatinny Arsenal, NJ.
- 2585 Funds maintenance and repair projects at Army Research Laboratory, Adelphi, MD.
- 4202 Funds maintenance and repair projects at Soldier Systems Command, Natick, MA.

Total 14063

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605878A Maintenance and Repair - Research, Development, Testing & Evaluation PROJECT M1YY

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	15476	11243	11965
Appropriated Value	15807	11243	
Adjustments to Appropriated Value	-3620	-347	
FY 1999 President's Budget	12187	10896	14063

Change Summary Explanation:

Funding: FY 1997 decrease (-3289) reprogrammed to higher priority requirements.
FY 1999 increase (+2098) to repair barracks at Soldier Systems Command, Natick, MA.

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DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605878A Maintenance and Repair - Research, Development, Testing & Evaluation

PROJECT: M4YY

COST *(In Thousands)*	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M4YY Maintenance and Repair - U.S. Army Corps of Engineers	3345	4707	2143	2688	3034	3400	3962	Continuing	Continuing

A. Mission Description and Justification: This project finances those maintenance and repair activities and functions necessary for maintaining and repairing infrastructure for the U.S. Army Corps of Engineers RDTE laboratories located at Waterways Experiment Station (WES), Vicksburg, MS; Cold Regions Research and Engineering Laboratory (CRREL), Hanover, NH; Construction Engineering Research Laboratory (CERL), Champaign, IL and Topographic Engineering Center (TEC), Alexandria, VA.

FY 1997 Accomplishments:

- 676 Funded maintenance and repair projects at CERL, Champaign, IL.
- 1588 Funded maintenance and repair projects at CRREL, Hanover, NH.
- 439 Funded maintenance and repair projects at TEC, Alexandria, VA.
- 642 Funded maintenance and repair projects at WES, Vicksburg, MS.

Total 3345

FY 1998 Planned Program:

- 709 Fund maintenance and repair projects at CERL, Champaign, IL.
- 2858 Fund maintenance and repair projects at CRREL, Hanover, NH.
- 467 Fund maintenance and repair projects at TEC, Alexandria, VA.
- 673 Fund maintenance and repair projects at WES, Vicksburg, MS.

Total 4707

FY 1999 Planned Program:

- 429 Fund maintenance and repair projects at CERL, Champaign, IL.
- 1029 Fund maintenance and repair projects at CRREL, Hanover, NH.
- 279 Fund maintenance and repair projects at TEC, Alexandria, VA.
- 406 Fund maintenance and repair projects at WES, Vicksburg, MS.

Total 2143

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BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605878A Maintenance and Repair - Research, Development, Testing & Evaluation PROJECT M4YY

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	3307	3557	4002
Appropriated Value	3378	4857	
Adjustments to Appropriated Value	-33	-150	
FY 1999 President's Budget	3345	4707	2143

Change Summary Explanation:

Funding: FY 1998 increase (+1300) is a Congressional plus-up.
FY 1999 decrease (-1859) realigned to higher priority requirements.

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DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605878A Maintenance and Repair - Research, Development, Testing & Evaluation

PROJECT: M744

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M744 Modernization of Utilities	0	9664	0	0	0	0	0	0	0

A. Mission Description and Justification: Project M744 Modernization of Utilities. This is not a new start. It is the repair to an existing facility and system infrastructure. This project will finance the repair of the steam heat distribution system, Edgewood Area, Aberdeen Proving Ground, MD. This steam heat distribution system is 40 to 50 years old. Corrosion-related problems and other deficiencies are discharging condensate into the ground. Some areas of the system are beyond repair and must be replaced. The condensate piping is severely corroded and in extremely poor condition. Leaks and steaming are common place. Standing water exists in many manholes causing deterioration and excessive spalling and cracking, posing serious safety and environmental concerns. Boilers in the Central Plant (Vintage 1940) need to be replaced. They are inefficient, in poor shape and technically obsolete. The estimated $9664K will repair the entire steam system.

FY 1997 Accomplishments: Project not funded in FY 1997.

FY 1998 Planned Program:

•	9421	Repair steam heat distribution system, Edgewood Area, Aberdeen Proving Ground, MD
•	243	Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs.
Total	9664	

FY 1999 Planned Program: Project not funded in FY 1999.

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	9972	0
Appropriated Value	0	9972	
Adjustments to Appropriated Value		-308	
FY 1999 President's Budget	0	9664	0

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DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605879A Real Property Services (RPS)

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	88190	86199	87172	86667	85871	88096	89970	Continuing	Continuing
M0UU Real Property Services - TECOM	60096	56137	58520	58112	56640	58157	59389	Continuing	Continuing
M1UU Real Property Services - AMC MSC/LAB	23695	25438	26399	26256	26907	27543	28142	Continuing	Continuing
M4UU Real Property Services - COE	4399	4624	2253	2299	2324	2396	2439	Continuing	Continuing

Mission Description and Budget Item Justification: The Real Property Services program finances activities and functions necessary for operation of utilities (with the exception of communications). It includes purchase of electricity, operations of heating plants and water distribution and sewage systems. Element also finances the labor associated with real property support along with fire prevention, custodial service contracts, collection and disposal of refuse, pest control management, snow/ice and sand removal. It also supports the engineering, general management, supervision, mapping, planning, utilization inspection and other activities of a general nature performed by the Directorate for Public Works (DPW) both in-house and by contract. Includes effort directed toward support of installations or operations required for general research and development use and therefore is appropriate to Budget Activity 6.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605879A Real Property Services (RPS) / PROJECT: M0UU

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M0UU Real Property Services - TECOM	60096	56137	58520	58112	56640	58157	59389	Continuing	Continuing

A. <u>Mission Description and Justification:</u> Project M0UU - Operation of Utilities & Other Engineering - AMC Test Ranges: This project funds the operations of utilities and other engineering services for the U.S. Army Materiel Command (AMC) installations assigned to the Test and Evaluation Command (TECOM), i.e. Aberdeen Proving Ground, MD; Dugway Proving Ground, UT; Yuma Proving Ground, AZ and White Sands Missile Range, NM. Funding provides for the utility costs and system operation of 1400 miles of electric distribution and 600 miles of water and sewer systems. Additionally, this project provides utilities services to the TECOM test mission and over 100 tenants and satellites that reside in 24 million square feet of facilities. Another major responsibility is the removal of snow and sand, extremely important to the safety of the workforce that travel on approximately 3000 mile road systems located on the TECOM installations. This account also funds the contracts for custodial and refuse collections and civilian firefighters responsible for the safety and health of the workforce that support the varied Army missions located on these installations.

FY 1997 Accomplishments:

•	36179	Funded operations of utilities and other engineering at Aberdeen Proving Ground, Maryland.
•	5596	Funded operations of utilities and other engineering at Dugway Proving Ground, Utah.
•	13949	Funded operations of utilities and other engineering at White Sands Missile Range, New Mexico.
•	4372	Funded operations of utilities and other engineering at Yuma Proving Ground, Arizona.
Total	60096	

FY 1998 Planned Program:

•	31994	Funds operation of utilities and other engineering requirements at Aberdeen Proving Ground, Maryland.
•	5202	Funds operation of utilities and other engineering requirements at Dugway Proving Ground, Utah.
•	13319	Funds operation of utilities and other engineering requirements at White Sands Missile Range, New Mexico.
•	4214	Funds operation of utilities and other engineering at Yuma Proving Ground, Arizona.
•	1408	Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs.
Total	56137	

FY 1999 Planned Program:

•	37674	Fund operations of utilities and other engineering at Aberdeen Proving Ground, Maryland.
•	5941	Fund operations of utilities and other engineering at Dugway Proving Ground, Utah.
•	11122	Fund operations of utilities and other engineering at White Sands Missile Range, New Mexico.
•	3783	Fund operations of utilities and other engineering at Yuma Proving Ground, Arizona.
Total	58520	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605879A Real Property Services (RPS) / PROJECT: M0UU

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	61601	57925	57715
Appropriated Value	62918	57925	
Adjustments to Appropriated Value	-2822	-1788	
FY 1999 President's Budget	60096	56137	58520

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605879A Real Property Services (RPS) / PROJECT: M1UU

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M1UU Real Property Services - AMC MSC/LAB	23695	25438	26399	26256	26907	27543	28142	Continuing	Continuing

A. Mission Description and Justification: Project M1UU - Operation of Utilities and Other Engineering - AMC MSC/LAB: Finances the operation of utilities and other engineering services for U.S. Army Materiel Command (AMC) installations and laboratories, i.e., Armament Research, Development and Engineering Center (ARDEC), Picatinny Arsenal, NJ; Army Research Laboratory (ARL), Adelphi, MD; and Soldier Systems Command (SSCOM), Natick, MA.

FY 1997 Accomplishments:

- 15588 Armament Research, Development and Engineering Center, Picatinny Arsenal, NJ.
- 5465 Army Research Laboratory, Adelphi, MD.
- 2642 Soldier Systems Command, Natick, MA.

Total 23695

FY 1998 Planned Program:

- 15582 Armament Research, Development and Engineering Center, Picatinny Arsenal, NJ.
- 6462 Army Research Laboratory, Adelphi, MD.
- 2756 Soldier Systems Command, Natick, MA.
- 638 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Programs.

Total 25438

FY 1999 Planned Program:

- 16459 Armament Research, Development and Engineering Center, Picatinny Arsenal, NJ.
- 7267 Army Research Laboratory, Adelphi, MD.
- 2673 Soldier Systems Command, Natick, MA.

Total 26399

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	24338	26248	26261
Appropriated Value	24858	26248	
Adjustments to Appropriated Value	-1163	-810	
FY 1999 President's Budget	23695	25438	26399

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY: 6 - Management and Support	PE NUMBER AND TITLE: 0605879A Real Property Services (RPS) / PROJECT: M4UU

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M4UU Real Property Services - COE	4399	4624	2253	2299	2324	2396	2439	Continuing	Continuing

A. Mission Description and Justification: Project M4UU - Operation of Utilities and Other Engineering - COE: Finances the operation of utilities and other engineering services for U.S. Corps of Engineers Laboratories, i.e., Waterways Experiment Station (WES), Vicksburg, MS; Cold Regions Research and Engineering Laboratories (CRREL), Hanover, NH; Construction Engineering Research Laboratory (CERL), Champaign, IL; and Topographic Engineering Center (TEC), Alexandria, VA.

FY 1997 Accomplishments:

•	1080	Waterways Experiment Station, Vicksburg, MS
•	1093	Cold Regions Research and Engineering Laboratories; Hanover, NH
•	1098	Construction Engineering Research Laboratory, Champaign, IL
•	1128	Topographic Engineering Center, Alexandria, VA
Total	4399	

FY 1998 Planned Program:

•	1150	Waterways Experiment Station, Vicksburg, MS
•	1193	Cold Regions Research and Engineering Laboratories; Hanover, NH
•	1188	Construction Engineering Research Laboratory, Champaign, IL
•	977	Topographic Engineering Center, Alexandria, VA
•	116	Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs.
Total	4624	

FY 1999 Planned Program:

•	563	Waterways Experiment Station, Vicksburg, MS
•	563	Cold Regions Research and Engineering Laboratories; Hanover, NH
•	563	Construction Engineering Research Laboratory, Champaign, IL
•	564	Topographic Engineering Center, Alexandria, VA
Total	2253	

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

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
6 - Management and Support	0605879A Real Property Services (RPS)	M4UU

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	4518	4772	4960
Appropriated Value	4614	4772	
Adjustments to Appropriated Value	-215	-148	
FY 1999 President's Budget	4399	4624	2253

Change Summary Explanation: Funding: FY 1999 funds (-2707) reprogrammed for higher priority requirements.

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605896A Base Operations - Research, Development, Testing & Evaluation

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	217667	224593	230029	227290	227972	230229	233743	Continuing	Continuing
M0ZZ Base Operations - Army Materiel Command (AMC) Test Ranges	140168	143538	145667	145684	148194	150236	152358	Continuing	Continuing
M1ZZ Base Operations - AMC Major Subordinate Commands and Laboratories	65631	69669	72152	69727	67954	68052	69289	Continuing	Continuing
M4ZZ Base Operations - Corps of Engineers	11868	11386	12210	11879	11824	11941	12096	Continuing	Continuing

Mission Description and Budget Item Justification: The Base Operations (BASEOPS) program finances those activities and functions necessary for operating and maintaining U.S. Army RDTE installations, laboratories, test ranges and a significant tenant/satellite population. BASEOPS activities and functions include: (1) operation of post supply functions; (2) direct and general maintenance activities; (3) operation and maintenance of transportation equipment and local transportation; (4) operation of laundry and dry cleaning plants and contractual services where Army-owned plants are not operated; (5) Army food service program; (6) support to military and civilian personnel; (7) operation and administration of unaccompanied personnel housing; (8) command element activities required for commanding all Army units assigned or attached to the installation; (9) automation activities; (10) reserve component support; (11) development and administration of morale, welfare and recreation facilities and activities along with quality of life initiatives for the military and their families; (12) police and security services and counterintelligence; (13) resource management operations; (14) Defense Finance and Accounting Service (DFAS); (15) contracting operations; and (16) records management and publications. This is a labor intensive program, providing salaries and related personnel benefits for authorized civilian personnel and associated administrative support functions outlined above. Funding does not include dollars required for Commercial Activities (CA) study or implementation costs resulting from current CA reviews. Includes effort directed toward support of installations or operations required for general research and development use and therefore is appropriate to Budget Activity 6.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605896A Base Operations - Research, Development, Testing & Evaluation PROJECT M0ZZ

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M0ZZ Base Operations - Army Materiel Command (AMC) Test Ranges	140168	143538	145667	145684	148194	150236	152358	Continuing	Continuing

A. Mission Description and Justification: Finances installation management for operating and maintaining technical test ranges assigned to the U.S. Army Test and Evaluation Command (TECOM), i.e., Yuma Proving Ground, AZ; Aberdeen Proving Ground, MD; Dugway Proving Ground, UT; and White Sands Missile Range, NM. Provides for the test infrastructure base support along with common service base support to over 100 tenants and satellites served by the four TECOM Major Range & Test Facility Bases (MRTFB). Base Operations infrastructure includes fixed costs for payroll as well as personnel costs associated with downsizing and re-engineering to civilian workforce commensurate with technical testing, diverse Army R&D tenants, and a principal training mission at the Ordnance Center and School. Beginning in FY 98, funding for Youth Activities, Child Development and Army Community Services, audio visual support to USA Ordnance Center & School, and Civilian Illness & Injury Compensation (CIIC) transferred from OMA to RDTE ($10310K). Funds are required to: maintain minimum operating levels necessary to support the technical test mission at AMC test ranges; prevent facility failures which jeopardize the health, safety and quality of life of the military and civilian personnel that work on these installations; support new missions passed to the four TECOM RDTE installations without resources (i.e., BASOPS for an additional 1.2M square foot from BRAC consolidations and new construction; commercial activity implementation costs; Defense Mega Center fees; DFAS support; restoration of English Village; etc.) and for computer modernization to include Local Area Network Upgrades, Technology Advancements, Equipment Replacement and Productivity Enhancements.

FY 1997 Accomplishments:

- 72781 Garrison, Aberdeen Proving Ground Support Activity, MD
- 14887 Dugway Proving Ground, UT
- 37083 White Sands Missile Range, NM
- 15417 Yuma Proving Ground, AZ
- Above funding included specific projects below:
  - Civilian Illness and Injury Compensation Costs.
  - Defense Finance and Accounting Services (previously operated by Army Installations)
  - Funded Military Police (MP) conversion to civilian police/guards

Total 140168

FY 1998 Planned Program:

- 75393 Garrison, Aberdeen Proving Ground Support Activity, MD
- 13705 Dugway Proving Ground, UT

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605896A Base Operations - Research, Development, Testing & Evaluation PROJECT M0ZZ

FY 1998 Planned Program: (continued)

- 38470 White Sands Missile Range, NM
- 15970 Yuma Proving Ground, AZ
- Above funding includes specific projects below:
  - Civilian Illness and Injury Compensation Costs.
  - Defense Finance and Accounting Services (previously operated by Army Installations)
  - Civilian Personnel Operations Center (Regionalized Army Civilian Personnel Operations).
  - Fund transfer of Materials Technology Laboratory, Watertown, MA to Aberdeen Proving Ground, MD (BRAC Action)
  - Provides minimum funding for English Village operations at Dugway Proving Ground, UT.
  - Military Police (MP) conversion to civilian police/guards
  - Year 2000 Millenium Computer Upgrades.
  - Funds minimum essential requirements.

Total 143538

FY 1999 Planned Program:

- 77252 Garrison, Aberdeen Proving Ground Support Activity, MD
- 14101 Dugway Proving Ground, UT
- 38694 White Sands Missile Range, NM
- 15620 Yuma Proving Ground, AZ
- Above funding includes specific projects below:
  - Civilian Illness and Injury Compensation Costs
  - Defense Finance and Accounting Services (previously operated by Army Installations).
  - Civilian Personnel Operations Center (Regionalized Civilian Personnel Operations).
  - Fund transfer of Materials Technology Laboratory, Watertown, MA to Aberdeen Proving Ground, MD (BRAC Action)
  - Provides minimum funding for English Village operations at Dugway Proving Ground, UT.
  - Military Policy (MP) conversion to civilian police/guards
  - Managerial Accountants (50 positions) transferred from DFAS back to TECOM Installations.
  - Funds minimum essential requirements.

Total 145667

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605896A Base Operations - Research, Development, Testing & Evaluation PROJECT M0ZZ

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	145038	148043	152287
Appropriated Value	148139	148043	
Adjustments to Appropriated Value	-7971	-4505	
FY 1999 President's Budget	140168	143538	145667

Change Summary Explanation: Funding: FY 1999 decrease of (-6620) realigned to higher priority requirements.

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605896A Base Operations - Research, Development, Testing & Evaluation

PROJECT: M1ZZ

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M1ZZ Base Operations - AMC Major Subordinate Commands and Laboratories	65631	69669	72152	69727	67954	68052	69289	Continuing	Continuing

A. **Mission Description and Justification:** Finances installation management for operating and maintaining other U.S. Army Materiel Command RDTE installations and laboratories, i.e., Army Research Laboratory (ARL), Adelphi, MD; Armament Research, Development and Engineering Center (ARDEC), Picatinny Arsenal, NJ; and Soldier Systems Command (SSCOM), Natick, MA. Provides for the infrastructure base support along with common service base support to tenants and satellites.

FY 1997 Accomplishments:

- 26303 ARDEC, Picatinny Arsenal, NJ
- 26694 ARL, Adelphi, MD
- 12634 SSCOM, Natick, MA

Total 65631

FY 1998 Planned Program:

- 34085 ARDEC, Picatinny Arsenal, NJ
- 23074 ARL, Adelphi, MD
- 12131 SSCOM, Natick, MA
- 379 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs.

Total 69669

FY 1999 Planned Program:

- 35740 ARDEC, Picatinny Arsenal, NJ
- 22979 ARL, Adelphi, MD
- 13433 SSCOM, Natick, MA

Total 72152

NOTE: Effective FY 98, ARDEC includes OMA transfer of Youth Activities, Child Development Services, Army Community Services, Public Affairs, ADP and Base Communications to RDTE.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605896A Base Operations - Research, Development, Testing & Evaluation PROJECT M1ZZ

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	62727	71863	71311
Appropriated Value	64068	71863	
Adjustments to Appropriated Value	+1563	-2194	
FY 1999 President's Budget	65631	69669	72152

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605896A Base Operations - Research, Development, Testing & Evaluation PROJECT M4ZZ

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M4ZZ Base Operations - Corps of Engineers	11868	11386	12210	11879	11824	11941	12096	Continuing	Continuing

A. Mission Description and Justification: Finances BASEOPS activities and functions necessary for operating and maintaining the following U.S. Army Corps of Engineers RDTE laboratories: Waterways Experiment Station (WES), Vicksburg, MS; Cold Regions Research and Engineering Laboratories (CRREL), Hanover, NH; Construction Engineering Research Laboratory (CERL), Champaign, IL; and Topographic Engineering Center (TEC), Alexandria, VA.

FY 1997 Accomplishments:

- 2937 CERL, Champaign, IL
- 2973 CRREL, Hanover, NH
- 3044 TEC, Alexandria, VA
- 2914 WES, Vicksburg, MS

Total 11868

FY 1998 Planned Program:

- 2925 CERL, Champaign, IL
- 2937 CRREL, Hanover, NH
- 2418 TEC, Alexandria, VA
- 2831 WES, Vicksburg, MS
- 275 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs.

Total 11386

FY 1999 Planned Program:

- 3195 CERL, Champaign, IL
- 3208 CRREL, Hanover, NH
- 2714 TEC, Alexandria, VA
- 3093 WES, Vicksburg, MS

Total 12210

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 6 - Management and Support	PE NUMBER AND TITLE 0605896A Base Operations - Research, Development, Testing & Evaluation PROJECT M4ZZ

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	12181	11747	10035
Appropriated Value	12442	11747	
Adjustments to Appropriated Value	-574	-361	
FY 1999 President's Budget	11868	11386	12210

Change Summary Explanation: Funding: FY 1999 increase (+2175) required for additional requirements.

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605898A Management Headquarters (Research and Development)

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	18035	25039	4683	4996	5003	4986	5002	Continuing	Continuing
MM65 Army Research Laboratory	4690	4687	4683	4996	5003	4986	5002	Continuing	Continuing
M831 AKAMAI	13345	20352	0	0	0	0	0	0	0

Mission Description and Budget Item Justification: This program funds the Research, Development, Test and Evaluation (RDTE) Army Management Headquarters Activities (AMHA) for the U.S. Army Research Laboratory (ARL), Adelphi, MD. This program provides for (1) the development of policy and guidance, (2) long-range planning, (3) programming and budgeting, (4) management of resources (manpower and dollars), and (5) review and evaluation of program performance. Provides salaries and related personnel benefits for authorized civilian personnel and the associated administrative support (travel, supplies and equipment). Includes research and development effort directed toward support of installations or operations required for general research and development use and therefore is appropriate to Budget Activity 6.

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605898A Management Headquarters (Research and Development)

PROJECT: MM65

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
MM65 Army Research Laboratory	4690	4687	4683	4996	5003	4986	5002	Continuing	Continuing

A. Mission Description and Justification: This project provides the funding for management headquarters activities at the U.S. Army Research Laboratory (ARL), Adelphi, MD, to (1) develop RDTE program policy and guidance; (2) perform long range planning, programming and budgeting; (3) provide for the management of resources; and (4) conduct program performance review and evaluation. This project provides for the salaries and related personnel benefits for the authorized civilian personnel and the administrative support (temporary duty travel, operating supplies and equipment).

FY 1997 Accomplishments:

- 4690 Funded the operation of ARL headquarters activities which administers the Army laboratory research and development program to sustain technological superiority.

Total 4690

FY 1998 Planned Program:

- 4687 Funds the operation of ARL headquarters activities which administers the Army laboratory research and development program to sustain technological superiority.

Total 4687

FY 1999 Planned Program:

- 4683 Funds the operation of ARL headquarters activities which administers the Army laboratory research and development program to sustain technological superiority.

Total 4683

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	4700	4837	4765
Appropriated Value	4801	4837	
Adjustments to Appropriated Value	-111	-150	
FY 1999 President's Budget	4690	4687	4683

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

DATE: February 1998

BUDGET ACTIVITY: 6 - Management and Support

PE NUMBER AND TITLE: 0605898A Management Headquarters (Research and Development)

PROJECT: M831

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M831 AKAMAI	13345	20352	0	0	0	0	0	0	0

A. Mission Description and Justification: This is a state-of-the art tele-imaging advanced development effort to implement the medical diagnostic imaging support (MDIS) system at Tripler Army Medical Center, HI, for tele-imaging throughout the Pacific Rim and to further the proliferation of clinically effective time and distance independent medicine techniques through the use of state-of-the-art telecommunications.

FY 1997 Accomplishments:

•	13345	Expanded number of spokes and continued hub infrastructure development.
Total	13345	

FY 1998 Accomplishments:

•	4000	Evaluate telemedicine impact on health care delivery and military readiness.
•	8942	Conduct telemedicine and digital imaging trials throughout Pacific region.
•	6900	Investigate clinically relevant applications of emerging telemedicine related products technologies and services.
•	510	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	20352	

FY 1999 Planned Program: Project is not funded in FY 1999.

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	13707	0	0
Appropriated Value	14000	21000	
Adjustments to Appropriated Value	-655	-648	
FY 1999 President's Budget	13345	20352	0

Change Summary Explanation: Funding: FY 1998 increase (+2100) is a Congressional plus-up.

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0102419A Aerostat Joint Program

PROJECT: DE55

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DE55 JLENS	25680	33011	103937	129095	123044	0	0	85100	499867

A. **Mission Description and Budget Item Justification:** The Under Secretary of Defense (Acquisition and Technology) and the Army Acquisition Executive (AAE) directed the establishment of the Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS) Project Office (PO), formerly Aerostat, for Land Attack Cruise Missile Defense (LACMD) and directed the funding for FY 96-01. This is a multiservice effort with the Army as the lead service. The JLENS PO is assigned to the AAE with operational control assigned to the U. S. Army Space and Missile Defense Command. The program mission is to maximize the battle space of land, sea and air based missile systems by providing Over-the-Horizon (OTH) surveillance and precision track for broad area defense against land attack cruise missiles. JLENS is a theater based system employing advanced technologies with specific focus on LACMD. JLENS sensors provide the OTH surveillance/precision tracking for the Air Directed Surface to Air Missile (ADSAM) concept. The role of the JLENS is to expand the battlefield Commander's surveillance and engagement capability against cruise missiles and other targets by extending the battle space for systems such as Patriot, Medium Extended Air Defense System(MEADS)/Corps SAM, Aegis and Advanced Medium Range Air-to-Air Missile (AMRAAM). This project supports upgrades to surveillance and tracking systems.

Acquisition Strategy: The JLENS PO executed a successful Concept Studies Phase by soliciting Cruise Missile Defense (CMD) architecture concepts that employ elevated sensors. The JLENS PO through a formal selection process has selected Hughes & Raytheon (H&R), a joint venture of Hughes Aircraft Company and the Raytheon Company (now Raytheon Systems Co), as the prime contractor for the JLENS Demonstration Program. The contract structure requires the contractor to perform risk mitigation on state of the art hardware and conduct system design activities leading to a critical design review (CDR) during segment one of the contract. Upon a successful CDR, segment 2 (Option one) will provide for the development, test, and demonstration of an operational prototype sensor system . Technology developed by DARPA and Other Government Agencies (OGAs) is being leveraged to mitigate technical risk areas. Testbed and modeling/simulation activities support the risk mitigation effort. The operational prototype JLENS system will be fully demonstrated together with Patriot PAC-3 and Standard Missile 2 (SM 2) Cooperative Engagement Capability (CEC) in counter LACM ADSAM live fire engagements. The prototype system is intended to be provided to a Commander-in-Chief (CINC) for contingency missions beginning in FY02.

FY 1997 Accomplishments:

•	8265	Completed Concept Definition; continued modeling and simulation analysis.
•	1012	Conducted Tests and Evaluation (Testbed)
•	3447	Joint Project Office.
•	12956	Continued Risk reduction program, vulnerability, weatherability & survivability, simulation analysis & experiments. Issued prime RFP and conducted Source Selection Evaluation Board..
Total	25680	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 7 - Operational System Development	PE NUMBER AND TITLE: 0102419A Aerostat Joint Program
	PROJECT: DE55

FY 1998 Planned Program:

•	23003	Award Risk Mitigation & Design Contract and support contracts.
•	3730	Maintain Test Bed Facility; Conduct Joint demonstrations and exercises using Cooperative Engagement Capability (CEC), Joint Tactical Information Distribution System (JTIDS), and continue vulnerability and survivability analysis/experiments.
•	1900	CEC Development/Integration
•	500	SM-2 Development/Integration
•	3050	JLENS Project Office.
•	828	Small Business Innovative Research/Small Business Technology Transfer Programs.
Total	33011	

FY 1999 Planned Program:

•	77773	Complete Risk Mitigation & Design contract phase; begin Development/Test/Demo Option; other support contracts.
•	9730	Maintain Test Bed Facilities, Conduct Joint demonstrations and exercises using Cooperative Engagement Capability (CEC), Joint Tactical Information Distribution System (JTIDS), and continue vulnerability and survivability analysis/experiments.
•	5690	Continue CEC Development/Integration.
•	4044	Continue SM-2 Development/Integration.
•	3600	Purchase Government Furnished Equipment (GFE)
•	3100	JLENS Project Office.
Total	103937	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	26376	86193	134298
Appropriated Value	26940	35000	
Adjustments to Appropriated Value	-1260	-1989	
FY 1999 President's Budget	25680	33011	103937

Change Summary Explanation:
Funding: FY 97 - Reprogrammed to higher priority requirements (-1260)
Funding: FY 98- Undistributed Congressional reductions were (-1989).
FY 99 - Funds realigned (-30000) to higher priority requirements

C. Other Program Funding Summary: Not applicable

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 7 - Operational System Development	PE NUMBER AND TITLE: 0102419A Aerostat Joint Program
	PROJECT: DE55

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Concept Definition Phase	X	X	X	X*								
Risk Mitigation/Design **						X	X	X	X	X		
Preliminary Design Review (PDR)								X				
Critical Design Review (CDR)										X		
Development/Test/Demo **											X	X
Test Bed/Risk Mitigation **	X*	X*	X*	X*	X*	X	X	X	X	X	X	X

* Denotes completed milestone.

** Efforts are/will be on going. Will be denoted by an asterisk when completed.

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0102419A Aerostat Joint Program

PROJECT: DE55

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Product Development & Risk Mitigation	21221	28961	96237
Government Test Facility	1012	1000	1000
Government Furnished Equipment (GFE)	0	0	3600
Program Management	3447	3050	3100
Total	25680	33011	103937

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
H&R	CPFF	30 SEP 96	2000	2007	1162	845				2007
Lockheed Martin·	CPFF	30 SEP 96	2000	2000	667	1333				2000
Northrop Grumman	CPFF	30 SEP 96	2000	1981	667	1314				1981
OGAs	MIPR			13366	411	12955				13366
H&R	CR/CPIF/CPAF	30 JAN 98	TBD	336139	0	0	21141	74800	240198	336139
OGA	MIPR	various		86378	0	0	5958	18464	61956	86378
Support and Management										
JLENS PO				20688	191	3447	3050	3100	10900	20688
Support Contracts	CPFF	Various		19346	902	4774	1862	2973	8835	19346
Test and Evaluation Organizations										
Test Bed - TBD	MIPR			9612	0	1012	1000	1000	6600	9612

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE: February 1998
BUDGET ACTIVITY: 7 - Operational System Development	PE NUMBER AND TITLE: 0102419A Aerostat Joint Program / PROJECT: DE55

Government Furnished Property:

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property									
CEC Identifier Friend or Foe, Enhanced Position Location Reporting System, AN/ARC-210 (airborne radio system), Mobile Subscriber Equip components, etc.	TBD	TBD	TBD	0	0	0	3600	8750	12350
Test and Evaluation Property: None									
Subtotal Product Development				4000	24668	32011	102937	330639	494255
Subtotal Support and Management					1012	1000	1000	6600	9612
Subtotal Test and Evaluation				4000	25680	33011	103937	337239	503867
Total Project									

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203726A Advanced Field Artillery Tactical Data System

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	37507	37455	35111	25814	16907	13756	10887	0	563695
D322 AFATDS Development	32856	33164	31103	24075	16608	13756	10887	0	545460
D2ET AFATDS Operational Test	4651	4291	4008	1739	299	0	0	0	18235

A. **Mission Description and Budget Item Justification:** The Advanced Field Artillery Tactical Data System (AFATDS) will broaden and modernize the US Army fire support command, control and communications (C3) system. As a battle management system, AFATDS will provide automated fire support in the Army Battle Command System (ABCS) architecture in support of close, rear and deep operations, fire planning and the coordination and employment of all service/combined fire support assets to complement the commander's scheme of maneuver. AFATDS will accomplish this by providing fully automated support for planning, coordination and control of all fire support assets (mortars, close air support, naval gunfire, attack helicopters, offensive electronic warfare, field artillery cannons, rockets and guided missiles) in the execution of close support, counterfire, interdiction, suppression of enemy air defense and deep operations. AFATDS will automatically implement detailed commander's guidance in the automation of operational planning, movement control, targeting, target value analysis and fire support planning. These projects support development of a replacement system for the Initial Fire Support Automated System (IFSAS) and are appropriately funded in Budget Activity 7.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203726A Advanced Field Artillery Tactical Data System PROJECT D322

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D322 AFATDS Development	32856	33164	31103	24075	16608	13756	10887	0	545460

A. Mission Description and Justification: Project D322 - AFATDS Development: The project is composed of a common suite of hardware Army Tactical Command and Control System (ATCCS) Common Hardware/Software (CHS) employed in varying configurations at different operational facilities (or nodes) and unique system software interconnected by tactical communications in the form of a software-driven, automated network. Both hardware and software will be capable of being tailored to perform the fire support command, control and coordination requirements at any level of command. This will permit variable command and control relationships and full fire support functionality at all echelons of field artillery and maneuver, from corps to battery or company in support of all levels of conflict. The Marine Corps will also utilize AFATDS. AFATDS will interoperate with Navy and Air Force Command and Control weapon systems as well as the German fire support system (ADLER), the French fire support system (ATLAS) and British fire support system (BATES).

Acquisition Strategy: AFATDS software will be developed in incremental releases. AFATDS '96, previously named Version 1, received Materiel Release 13 Dec 96. It automates 51% of the required tasks including fire support planning, target nomination, order of fire, and meteorological/survey operations. AFATDS Releases '97, '98 and '99, previously identified as Version 2, will add additional functions, providing automated capabilities for the required tasks including fire support sensor planning and additional munitions. Completion of AFATDS '00, previously identified as Version 3, will result in automation of all the required tasks to meet the objective system, including full fire support planning, target acquisition support and field artillery mission support. Additionally, the completed software will utilize the Joint Common Operating Environment (JCOE) and the Army Technical Architecture. AFATDS will also provide prototype software to support the Division XXI and Army Warfighter Experiments through FY03.

FY 1997 Accomplishments:

•	16752	Completed AFATDS '97 and Support Testing
•	800	Prepared for AFATDS '97 Operational Testing
•	11979	Continued AFATDS '98 software development
•	3325	Initiated AFATDS '99 software development
Total	32856	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203726A Advanced Field Artillery Tactical Data System PROJECT D322

FY 1998 Planned Program:

•	23198	Complete AFATDS '98 and Support Testing
•	800	Prepare for AFATDS '98 Operational Testing
•	8350	Continue AFATDS '99 software development
•	816	Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
Total	33164	

FY 1999 Planned Program:

•	4323	Support AFATDS '98 Operational Test and Materiel Release
•	18750	Continue AFATDS '99 software development
•	800	Prepare for AFATDS '99 Operational Test
•	7230	Initiate AFATDS '00 software development
Total	31103	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	33735	34354	30951
Appropriated Value	34564	34354	
Adjustments to Appropriated Value	-1708	-1190	
FY 1999 President's Budget	32856	33164	31103

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA - B28600	36845	32270	36671	37733	41589	41685	40130	144495	479756
Spares (BA9708/MA9708/BS9708)	2077	1970	3343	2762	2725	2911	2623	8580	28251

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203726A Advanced Field Artillery Tactical Data System
	PROJECT D322

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
TFXXI NTC Participation		X*										
Division XXI AWE Participation					X*							
AFATDS '97 Limited User Test					X*							
Release AFATDS '97						X						
AFATDS '98 Limited User Test											X	
Release AFATDS '98												X

*Milestone Complete

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203726A Advanced Field Artillery Tactical Data System

PROJECT: D322

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Software Development	27558	27977	27531
Support Contracts	1466	1055	1078
In-House Support	1312	1315	1336
GFE	2420	2001	1158
Test and Evaluation	100		
SBIR/STTR		816	
Total	32856	33164	31103

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
HDC (prev. MX)	SS/CPAF	27 Apr 90	276045	276045	148561	24632	25099	24593	53160	276045
Various, MX BOA		FY 87	34891	34891	34891	0	0	0	0	34891
STRICOM/FSATS	MIPR		12092	12092	12092	0	0	0	0	12092
COE/ATCCS	MIPR		15461	15461	7060	2036	2078	2121	2166	15461
SED	MIPR		8814	8814	4375	890	800	817	1932	8814
NRAD (USMC/NAVY)				244	244	0	0	0	0	244
ADCCS	MIPR	FY95		2200	2200	0	0	0	0	2200
Support and Management Organizations										
CSC/ARC	C/CPFF	Dec 92	12963	12963	8522	966	729	744	1186	12147
PROGRAM MANAGEMENT:										
PM FATDS					18083	599	581	588	1674	21525
MATRIX					14826	713	734	748	2174	19195
Misc. Contracts										

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203726A Advanced Field Artillery Tactical Data System

PROJECT: D322

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
CECOM					71217	500	326	334	820	73197
SBIR/STTR							816		0	816
Test and Evaluation Organizations										
OPTEC					6081	0	0	0	0	6081
MISC. (Ft. Hood)	MIPR				3355	100	0	0	0	3455

Government Furnished Property

Item Description	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property								
LCU, TCU, PSE C/FFP			33476	2420	2001	1158	2201	41256
Support and Management Property: None								
Test and Evaluation Property								
TEST HARDWARE			18041	0	0	0	0	18041
Subtotal Product Development			242899	29978	29978	28689	59459	391003
Subtotal Support and Management			112648	2778	3186	2414	5854	126880
Subtotal Test and Evaluation			27477	100				27577
Total Project			383024	32856	33164	31103	65313	545460

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203726A Advanced Field Artillery Tactical Data System

PROJECT: D2ET

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D2ET AFATDS Operational Test	4651	4291	4008	1739	299	0	0	0	18235

A. **Mission Description and Justification: Project D2ET - Operational Test:** The project finances the direct costs of planning and conducting operational testing and evaluation of the Advanced Field Artillery Tactical Data System (AFATDS) by the Operational Test and Evaluation Command (OPTEC). AFATDS is an Acquisition Category (ACAT) I system which passed the Initial Operational Tests and Evaluation (IOTE) in FY 95. Follow on Operational Tests (OTs) are planned for AFATDS software releases in FY 97, FY98, FY99 and FY00. 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.

Acquisition Strategy: Not Applicable.

FY 1997 Accomplishments:

- 4311 Prepared for and initiated AFATDS '97 Limited User Test
- 340 Completed Test Players preparation for AFATDS '97 Limited User Test (LUT)

Total 4651

FY 1998 Planned Program:

- 714 Complete AFATDS '97 LUT and evaluate test results
- 3115 Prepare for AFATDS '98 Operational Test (OT)
- 354 Complete OT unit preparation for AFATDS '98
- 108 Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)

Total 4291

FY 1999 Planned Program:

- 748 Conduct AFATDS '98 OT and evaluate test results
- 2899 Prepare for AFATDS '99 Operational Test
- 361 Complete OT unit preparation for AFATDS '99

Total 4008

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203726A Advanced Field Artillery Tactical Data System PROJECT D2ET

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	4777	4685	3988
Appropriated Value	4933	4685	
Adjustments to Appropriated Value	-282	-394	
FY 1999 President's Budget	4651	4291	4008

C. Other Program Funding Summary: Not Applicable

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
AFATDS '97 LUT					X*							
AFATDS '98 LUT											X	

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203726A Advanced Field Artillery Tactical Data System

PROJECT: D2ET

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Operational Test and Evaluation	4651	4291	4008
Total	4651	4291	4008

B. Budget Acquisition History and Planning Information:

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations: None										
Support and Management Organizations: None										
Test and Evaluation Organizations										
OPTEC					3267	4651	4291	4008	2038	18235
Government Furnished Property: None										
Subtotal Product Development										
Subtotal Support and Management										
Subtotal Test and Evaluation					3267	4651	4291	4008	2038	18235
Total Project					3267	4651	4291	4008	2038	18235

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203735A Combat Vehicle Improvement Programs

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	203653	161497	94756	28439	4983	26112	110601	Continuing	Continuing
D280 Recovery Vehicle Improvement Program	3170	0	0	0	0	0	0	0	53926
D2TT Bradley A3 IOTE	1960	5286	2923	0	0	0	0	0	10885
D2UT Abrams IOTE	97	0	0	0	0	0	0	0	97
D330 Abrams Tank Improvement Program	69187	38559	6421	2982	3973	9923	34805	Continuing	Continuing
D344 Fire Support Team Vehicle Integration	17442	9614	10974	4106	0	0	0	0	78102
D365 Bradley Linebacker	0	3877	0	0	0	0	0	0	0
D371 Bradley Base Sustainment Program	85435	69287	67989	2312	0	0	0	0	480380
D377 Bradley A3 P3I (BFV A4)	0	0	0	0	0	15185	74793	Continuing	Continuing
D718 Ground Combat Vehicle HTI	11343	17452	2012	16039	1010	1004	1003	0	49863
DC64 DC64	15019	17422	4437	3000	0	0	0	0	40495

Mission Description and Budget Item Justification: This Program Element (PE) responds to vehicle deficiencies identified during Desert Storm, continues technical system upgrades, and addresses needed evolutionary enhancements to tracked combat (Abrams, Bradley) and tactical (Recovery Vehicle, Bradley FIST) vehicles. This PE provides combat effectiveness enhancements for the Abrams Tank through a series of product improvements to the current M1A2 production vehicles. Additional improvements allow the M1A2 SEP tank to operate effectively with the M2A3 Bradley. This PE also addresses future product improvements to the M2A3. These projects support development of upgrades to current production vehicles and are appropriate to Budget Activity 7.

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203735A Combat Vehicle Improvement Programs

PROJECT: D280

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D280 Recovery Vehicle Improvement Program	3170	0	0	0	0	0	0	0	53926

A. Mission Description and Justification: The M88A2 Heavy Recovery Vehicle (HRV), also known as the HERCULES, is an armored, full-tracked, diesel-powered recovery vehicle configured with an A-frame boom, three winches, and a spade. The HERCULES has a 1050 HP engine, an improved transmission to handle the additional towing capability, and hydraulic assisted brakes. The boom has a 35 ton lift capacity. The main winch has a constant pull capability of 70 tons. There is an additional 3 ton auxiliary winch which is used to deploy the main winch. The hull is armored for protection against small arms fire, artillery fragments, and anti-personnel mines. The vehicle has a caliber .50 machine gun mounted for self-protection. The M88A2 HRV is capable of performing recovery, evacuation, and limited repair of the main battle tank. The HERCULES migrated from the Engineering, Manufacturing and Development Phase with Low Rate Initial Production (LRIP) to Full Rate Production (FRP), with a Milestone III decision on 21 August 1997.

Acquisition Strategy: All development and production contract actions are on a sole source basis to United Defense Limited Partnership.

FY 1997 Accomplishments:

- 3157 Traction Evaluation, Design and Test
- 13 Program Management

Total 3170

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 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	3051	0	0
Appropriated Value	3116		
Adjustments to Appropriated Value	54		
FY 1999 President's Budget	3170	0	0

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
GA0570 Improved Recovery Vehicle (M88 Mod)	55529	31922	38175	57350	58159	77772	101794	Con't	Con't
GE0171 Spares (Initial) M88A2	2011	815	2941	3154	3114	4180	4152	Con't	Con't

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 7 - Operational System Development	PE NUMBER AND TITLE: 0203735A Combat Vehicle Improvement Programs / PROJECT: D280

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
End IOT&E	X*											
Begin Traction Evaluation			X*									
Milestone III Decision				X*								
First Unit Equipped (FUE)				X*								
Complete Traction Evaluation						X						

* Milestone Completed

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203735A Combat Vehicle Improvement Programs

PROJECT: D280

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Traction Evaluation, Design and Test	3157		
Program Management	13		
Total	3170	0	0

B. Budget Acquisition History and Planning Information

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Performing Organizations										
Product Development Organizations										
United Defense York, PA	SS-CPFF	Various	N/A		41526	1611				43137
TACOM Warren, MI					285	30				315
Other					50					50
Support and Management Organizations										
PMO/TACOM Warren, MI					1522	13				1535
Other Government Agencies					278					278
Test and Evaluation Organizations										
TECOM/ATC-APG, MD					5554	482				6036
TACOM Warren, MI					542					542
Other					999	1034				2033
Government Furnished Property: None										
Subtotal Product Development					41861	1641				43502
Subtotal Support and Management					1800	13				1813
Subtotal Test and Evaluation					7095	1516				8611
Total Project					50756	3170				53926

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203735A Combat Vehicle Improvement Programs

PROJECT: D2TT

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D2TT Bradley A3 IOTE	1960	5286	2923	0	0	0	0	0	10885

A. Mission Description and Justification: This project provides for the initial operational test and evaluation (IOTE) of Bradley A3 prototypes and pre-production vehicles in order to generate a system performance profile in support of a Milestone III decision. Critical areas for test include command and control, lethality, survivability, mobility, and sustainability.

Acquisition Strategy: Not Applicable

FY 1997 Accomplishments:

•	1960	Testing Support
Total	1960	

FY 1998 Planned Program:

•	5154	Testing Support
•	132	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	5286	

FY 1999 Planned Program:

•	2923	Testing Support [Initial Operational Test and Evaluation (IOTE)]
Total	2923	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	2013	5771	3154
Appropriated Value	2079	5771	
Adjustments to Appropriated Value	-119	-485	
FY 1999 President's Budget	1960	5286	2923

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Bradley Base Sustainment (G80717)	175878	115878	272564	352580	424460	429368	358820	Cont'd	Cont'd

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203735A Combat Vehicle Improvement Programs PROJECT D2TT

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
LUT 1					X*							
LUT 2								X				
IOTE											X	

*Milestone Completed

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203735A Combat Vehicle Improvement Programs

PROJECT: D2UT

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D2UT Abrams IOTE	97	0	0	0	0	0	0	0	97

A. Mission Description and Justification: This project originally supported the participation of 4 M1A2 SEP tanks (See Project D330) in a combined arms war game designed to demonstrate the operational effectiveness of the first fully digital version of the Bradley Infantry Fighting Vehicle. This project is commonly referred to as the M2A3 Initial Operational Test and Evaluation (IOT&E).

Acquisition Strategy: Not Applicable

FY 1997 Accomplishments:

- 97 Testing Support

Total 97

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program: Project not funded in FY 1999

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	1415	0	0
Appropriated Value	1460		
Adjustments to Appropriated Value	-1363		
FY 1999 President's Budget	97	0	0

Change Summary Explanation:

Funding: FY 1997 decrease due to undistributed congressional reductions/rescission (-83), and reprogramming to Project D330 (-1280)

C. Other Program Funding Summary: Not Applicable

D. Schedule Profile: Not Applicable

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY: 7 - Operational System Development	PE NUMBER AND TITLE: 0203735A Combat Vehicle Improvement Programs / PROJECT: D330

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D330 Abrams Tank Improvement Program	69187	38559	6421	2982	3973	9923	34805	Continuing	Continuing

A. **Mission Description and Justification:** This project funds improvements to the Abrams Main Battle Tank (M1 series) which began production in 1979. Its mission is to close with and destroy enemy forces on the integrated battlefield using firepower, maneuver, and shock effect. The current production model, the M1A2, is the Army's first fully digital ground combat system. The first Army unit was equipped with M1A2 tanks in October 1995.

The M1A2 System Enhancement Program (SEP) is the name given to the latest group or "block" of improvements funded under this project. SEP is an upgrade to the computer core that is the essence of the M1A2. It provides better microprocessors, color flat panel displays, more memory capacity, better Soldier-Machine Interface (SMI), and a new open operating system. An Under Armor Auxiliary Power Unit (UAAPU) is being developed for production in order to mitigate power demands on the batteries so that all systems may operate without turning on the main engine. A new thermal management system will dissipate the heat generated by the electronic components. The M1A2's formidable target acquisition capabilities will also be significantly enhanced with the development for production of the 2nd Generation Forward Looking Infra-Red (2nd Gen FLIR) technology. Both the Gunner's Primary Sight (GPS) and the Commander's Independent Thermal Viewer (CITV) will be modified to integrate the improved thermal imaging capabilities of the new FLIR technology.

The first M1A2 SEP tank is scheduled for production at the end of FY1999. The M1A2 SEP tank will be capable of running the Army's Common Operating Environment (ACOE) software for digital communication with the rest of the combined arms team. Its computer systems will also accommodate future growth without significant hardware changes. The Army plans to develop and incorporate a series of target acquisition, fire control, and survivability enhancements which will bridge the gap between the Abrams Main Battle Tank (M1A2 SEP) and the Future Combat System (PE 0603645A, Project DQ19).

Acquisition Strategy: General Dynamics Land Systems Division (GDLS) is the prime contractor for this development program. Texas Instruments, Inc. is the principal contractor developing the FLIR sights, which the Government will provide to General Dynamics. The cost plus fixed fee contract with General Dynamics was awarded on 14 September 1994.

FY 1997 Accomplishments:

•	63595	Continued development, prototype fabrication and completed component testing; Evaluated M1A2 compatibility with ACOE and continued Command and Control (C2) integration efforts
•	1737	Began contractor component testing and system test planning
•	3855	Provided Government Support/GFE
Total	69187	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY: 7 - Operational System Development	PE NUMBER AND TITLE: 0203735A Combat Vehicle Improvement Programs / PROJECT: D330

FY 1998 Planned Program:

•	17000	Complete fabrication and assembly of demonstration hardware, continue logistics, quality and other concurrent engineering development efforts
•	10202	Continue contractor component testing and begin joint government / contractor system testing
•	10390	Provide Government Support/GFE
•	967	Small Business Innovative Research / Small Business Technology Transfer Programs
Total	38559	

FY 1999 Planned Program:

•	900	Complete logistics, quality and other concurrent engineering developmental efforts, and finalize documentation
•	2800	Complete testing of hardware/software on tank
•	2721	Provide Government Support/GFE
Total	6421	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	69749	33287	6421
Appropriated Value	71246	39787	
Adjustments to Appropriated Value	-2059	-1228	
FY 1999 President's Budget	69187	38559	6421

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Abrams IOTE (D2UT)	97	0	0	0	0	0	0	0	97
Abrams Upgrade Program (GA0750)	461999	582162	675603	647305	540982	586299	530939	344300	5897078
Abrams Vehicle Modification (GA0700)	62934	29230	53301	30447	62457	97092	119856	Cont'd	Cont'd
M1A2 Training Devices (GB1302)	12546	13076	13411	8218	10782	12087	12426	27000	155400
Training Device Mod (GA5208)	3170	2176	8536	2683	5473	5674	5671	13000	64600
Initial Spares (GE0161)	9248	13662	9800	9914	10844	16867	15976	38000	14567
PE 0604649A (DG26)	2000	0	0	0	0	0	0	0	2000
PE 0203758A (D374)	0	0	6700	0	0	0	0	0	22300

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 7 - Operational System Development	PE NUMBER AND TITLE: 0203735A Combat Vehicle Improvement Programs / PROJECT: D330

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Program Milestones :												
PDR - Software			X*									
CDR - Software						X						
Preliminary Mfg TDP Complete					X*							
Begin Government/Contractor Testing	X*											
Complete Government/Contractor Testing										X		
Contract Completion												X

* Milestone Completed

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203735A Combat Vehicle Improvement Programs

PROJECT: D330

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
GDLS Contract	56395	15000	900
Texas Instruments Contract	7200	2000	
Government/Contractor Testing	1737	10202	2800
Government Support/GFE	3855	10390	2721
SBIR / STTR		967	
Total	69187	38559	6421

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC*	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Prior Contracts				472549	472549					472549
GDLS Phase I	SS-CPFF	Sep 94		6984	4688					4688
GDLS Phase II Sterling Hgts, MI	SS-CPFF	Aug 95		133000	38674	56395	15000	900	Cont'd	110969
Texas Instruments McKinney, TX	C-CPAF	Jul 94		25000	15800	7200	2000			25000
SBIR / STTR	N/A	N/A					967			967
Note: GDLS contracts (Phase I / Phase II) include funding from 0203758A / D374 and 0604649A / DG26										
Support and Management Organizations										
PMO / Matrix Spt	MIPR				34477	3243	3000	1021	Cont'd	41741
GFE	MIPR				3837	612	7390	1700	Cont'd	13539
Test and Evaluation Organizations										
Various Sites	MIPR				30120	1737	10202	2800	Cont'd	44859
Government Furnished Property	None									
Subtotal Product Development					531711	63595	17967	900		614173
Subtotal Support and Management					38314	3855	10390	2721		55280
Subtotal Test and Evaluation					30120	1737	10202	2800		44859
Total Project					600145	69187	38559	6421		714312

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203735A Combat Vehicle Improvement Programs

PROJECT: D344

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D344 Fire Support Team Vehicle Integration	17442	9614	10974	4106	0	0	0	0	78102

A. **Mission Description and Justification:** The Bradley Fire Support (BFIST) vehicle program integrates Mission Equipment Packages (MEP) into a Bradley Fighting Vehicle and supports heavy maneuver force operations. BFIST replaces the aging M981 Fire Support Vehicle in our heavy divisions. BFIST allows fire support operations to be performed on the battlefield in vehicles with the same signature, survivability, and mobility as other Bradley maneuver units. This program supports material development and conversion of selected Bradley A2 Operation Desert Storm (ODS) based upgrades and Bradley A3 vehicles to the BFIST configuration. The A2 ODS based BFIST is designated M7 and the A3 version is A3 BFIST.

Acquisition Strategy: The BFIST program is executed in two-phases: Phase I converts Bradley A2 ODS platforms to the M7 BFIST configuration and Phase II converts Bradley A3 platforms to the A3 BFIST configuration. A Phase I Cost Plus Incentive Fixed Fee (CPIF), Engineering and Manufacturing Development (EMD) contract through full and open competition requires design and fabrication of four (4) BFIST prototypes for pre-production/user testing. Sole Source/Firm Fixed Price (SS/FFP) Low Rate Initial Production (LRIP) and Full Rate Production contracts with options followed a successful milestone decision. Follow-on Phase II focuses on the A3 BFIST. Full Rate Production contracts will be awarded for development and production of the Bradley BFIST.

FY 1997 Accomplishments:

- 11609 Phase I Design Engineering
- 1180 Phase I Prototype Manufacturing
- 1500 Phase II Design Engineering
- 3153 Program Management

Total 17442

FY 1998 Planned Program:

- 3050 Phase I Design Engineering
- 1400 Phase I Prototype Manufacturing
- 1118 Phase II Design Engineering
- 1067 Program Management
- 2138 3 LRIP IOTE/Test Vehicles
- 600 P3I
- 241 Small Business Innovative Research / Small Business Technology Transfer Programs

Total 9614

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203735A Combat Vehicle Improvement Programs PROJECT D344

FY 1999 Planned Program:

- 1000 Phase I PVT/IOTE Test Support
- 5526 Phase II Design Engineering
- 2500 Phase II Prototype Manufacturing
- 1948 Program Management

Total 10974

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	17915	7920	8974
Appropriated Value	18298	9920	
Adjustments to Appropriated Value	-856	-306	
FY 1999 President's Budget	17442	9614	10974

Change Summary Explanation: Funding – FY 1999 increase (+2000) to provide development support to the A3 BFIST program. This continues Phase II A3 BFIST design.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
GZ2300 FIST Vehicle (M7/A3 BFIST)	0	15595	20720	43455	47448	50113	62321	355818	595470

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Phase I												
First A2 ODS BFIST Prototype	X*											
Pre-Production Verification Test C/G		X*										
Limited User Test #1			X*									
LRIP Milestone Decision				X*								
LRIP Contract Award					X*							
Phase II												
Begin Design Engineering					X*							
Critical Design Review										X		
Pre-Production Verification Test C/G												X

* Milestone Completed

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203735A Combat Vehicle Improvement Programs

PROJECT: D344

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Phase I Design Engineering	11609	3050	
Phase I Prototype Manufacturing	1180	1400	
Phase II Design Engineering	1500	1118	5526
Phase II Prototype Manufacturing			2500
Program Management	3153	1067	1948
LRIP IOTE Vehicles		2138	
Phase I PVT/IOT&E Test Support (Per Funding Policy)		600	1000
SBIR/STTR		241	
Total	17442	9614	10974

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
UDLP	C/CPIF	Jun 95		36689	28330	7317	2800			38447
UDLP	CPFF	April 97		13302		1500	1118	7276	3376	13270
UDLP	SS/FFP	Dec 97		2138			2138			2138
Other Contracts					4326	5472	1650	750		12198
Support and Management Organizations:										
PM/Govt					3310	2223	1067	1783	730	9113
SBIR/STTR							241			241
Test and Evaluation Organizations:										
ATC/TECOM						930	600	1165		2695
Government Furnished Property: None										
Subtotal Product Development					32656	14289	7706	8026	3376	66053
Subtotal Support and Management					3310	2223	1308	1783	730	9354
Subtotal Test and Evaluation						930	600	1165		2695
Total Project					35966	17442	9614	10974	4106	78102

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203735A Combat Vehicle Improvement Programs

PROJECT: D365

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D365 Bradley Linebacker	0	3877	0	0	0	0	0	0	0

A. Mission Description and Budget Item Justification: The Air Defense Alerting Device (ADAD) is an improved target acquisition sensor suite that will fully exploit the capabilities of the improved Stinger Block II Seekers on the Bradley Linebacker. The Bradley Linebacker provides air defense coverage for mechanized forces against airborne threats, such as: fixed and rotary wing aircraft, cruise missiles and UAVs. Target acquisition sensors and signal processing techniques are necessary to recognize and identify the threat targets that will support maximum range engagements and still avoid fratricide. Funding will be used by the Stinger Product Manager's Office to determine requirements for this improved sensor suite and to evaluate alternative seeker sensors using range testing.

Acquisition Strategy: The Air Defense Alerting Device acquisition approach will consist of four phases: Phase I involves Preliminary Studies and Analysis, Phase II involves Technology Demonstrations, Phase III involves Modeling and Simulation Feedback and Phase IV involves Assessing the Results and Determining viability of Follow-on Actions.

FY 1997 Accomplishments: Program not funded in FY 1997.

FY 1998 Planned Program:

•	3579	Preliminary Studies and Analysis
•	200	Project Management
•	98	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	3877	

FY 1999 Planned Program: Program not funded in FY 1999.

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY1998/1999 President's Budget	0	0	0
Appropriated Value		4000	
Adjustments to Appropriated Value		-123	
FY 1999 President's Budget	0	3877	0

Change Summary Explanation: FY 1998 increase result of Congressional plus-up (+4000) less (-123) for Congressional undistributed reductions.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203735A Combat Vehicle Improvement Programs PROJECT D365

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

D. **Schedule Profile**

	FY 1997				FY 1998				FY 1999				FY 2000			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Award Study Effort							X									

* Milestone Completed

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

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
7 - Operational System Development	0203735A Combat Vehicle Improvement Programs	D365

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Preliminary Studies and Analysis		3579	
Project Management		200	
SBIR/STTR		98	
Total	0	3877	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
TBD							3579			3579
Support and Management Organizations										
PMO Stinger							200			200
SIBR/STTR							98			98
Test and Evaluation Organizations: Not applicable										
Government Furnished Property Not Applicable										
Subtotal Product Development							3579			3579
Subtotal Support and Management							298			298
Subtotal Test and Evaluation										
Total Project							3877			3877

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 7 - Operational System Development	PE NUMBER AND TITLE: 0203735A Combat Vehicle Improvement Programs / PROJECT: D371

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D371 Bradley Base Sustainment Program	85435	69287	67989	2312	0	0	0	0	480380

A. **Mission Description and Justification:** The Bradley A3 program upgrades a proven, tracked combat vehicle with digital command and control, increased situational awareness, enhanced lethality and survivability, and supportability/sustainability improvements. This project funds engineering and manufacturing development (EMD) of the Bradley A3. The effort develops and fully integrates digital electronics featuring a 1553 databus core electronic architecture and upgraded vehicle system software packages (command and control, navigation, communications, fire control, system/component diagnostics, and embedded training capabilities), 2nd Gen FLIR, and other systems/components into renovated (overhauled) Bradley A2s. Current plans call for conversion of 1602 Bradley A2s to the Bradley A3 configuration.

Acquisition Strategy: Milestone II/IV for the Bradley A3 was held in FY94 and the program was approved for EMD. United Defense was subsequently awarded a Cost Plus Incentive Fee (CPIF) contract for development and integration of advanced A3 systems and components. Ten principal subcontractors, comprising approximately 33% of the contract cost, are participating in the EMD work effort. The first of eight prototypes was completed in 4QFY96; six prototypes are currently undergoing contractor and government production qualification testing. Low Rate Initial Production (LRIP) procurements were awarded in FY 1997 and FY 1998. Limited User Testing and Live Fire Testing will be conducted in FY 1998 and FY 1999, respectively.

FY 1997 Accomplishments:

•	70333	Continued Design Engineering Effort
•	6500	Continued Prototype Manufacturing
•	3305	Began Prototype Qualification Testing (PQT) and Contractor Test Support
•	5297	Project Management
Total	85435	

FY 1998 Planned Program:

•	61171	Continue Design Engineering Effort
•	1400	Continue Prototype Manufacturing Effort
•	2344	Continue Prototype Qualification Testing; Begin Production Verification Testing (PVT) and Live Fire Testing
•	2635	Project Management
•	1737	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	69287	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203735A Combat Vehicle Improvement Programs
	PROJECT D371

FY 1999 Planned Program:

•	50378	Continue Design Engineering Effort
•	16421	Complete Live Fire , PQT, and PVT Testing
•	1190	Project Management
Total	67989	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	87753	69494	33989
Appropriated Values	89635	71494	
Adjustments to Appropriated Value	-4200	-2207	
FY 1999 President's Budget	85435	69287	67989

Change Summary Explanation: Funding: FY 1999 increase (+34000) due to realignment of funds from WTCV procurement to RDTE.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
G80717 Bradley Base Sustainment	175878	115878	272564	352580	424460	429368	358820	Cont'd	Cont'd
GE0163 Spares (Initial) BFVS	2271	293	7130	9322	11822	10980	11199	Cont'd	Cont'd
G20900 Bradley FVS Training Devices	571		12728	23821	19027	2649	3256	Cont'd	Cont'd

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
PQT-Government	X*											
LRIP IPR			X*									
LRIP Award (Phased Awards)				X*	X*				X			
Limited User Test #1					X*							
Production Verification Testing (PVT) - Government									X			
Limited User Test #2							X					

* Milestone Completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY: 7 - Operational System Development	PE NUMBER AND TITLE: 0203735A Combat Vehicle Improvement Programs / PROJECT: D371

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Design Engineering	70333	61171	50378
Prototype Manufacture	6500	1400	
Testing	3305	2344	16421
Project Management	5297	2635	1190
SBIR/STTR		1737	
Total	85435	69287	67989

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
United Defense San Jose, CA	CPIF	Aug 95	295000	293300	166684	57700	42451	26165	300	293300
Texas Instruments McKinney, TX	SS/CPIF	Feb 94	63720	66456	53161	9951	3092			66204
Other Contracts					15198	7854	15998	23958	2012	65020
Support and Management Organizations:										
PMO					4105	2092	1335	1190		8722
PM CCAWS					12863	3205	1300			17368
SBIR/STTR							1737			1737
Other					3346	1328	1030	255		5959
Test and Evaluation Organizations:										
TECOM/Other						3305	2344	16421		22070
Government Furnished Property: None										
Subtotal Product Development					235043	75505	61541	50123	2312	424524
Subtotal Support and Management					20314	6625	5402	1445		33786
Subtotal Test and Evaluation						3305	2344	16421		22070
Total Project					255357	85435	69287	67989	2312	480380

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY: 7 - Operational System Development	PE NUMBER AND TITLE: 0203735A Combat Vehicle Improvement Programs / PROJECT: D718

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D718 Ground Combat Vehicle HTI	11343	17452	2012	16039	1010	1004	1003	0	49863

A. **Mission Description and Budget Item Justification:** The Suite of Survivability Enhancement Systems (SSES) is an effort to develop, produce and apply Defensive Aids Suites (DAS) to all Army ground combat vehicles. A DAS inhibits successful engagement of the host vehicle by providing advance warning of attack and activating countermeasures which obscure the protected platform and jam, decoy or deflect the enemy munitions. Advance warning enables the crew to take defensive action such as maneuvering or returning fire on the enemy. SSES leverages hit avoidance technology developed for aviation electronic warfare (EW) systems, incorporates changes to meet ground requirements, and returns technical improvements to the aviation EW community. It also incorporates ground vehicle specific hit avoidance technology being developed within the technology base. The first phase of this program, the development and fielding of Laser Warning Receivers (LWR) and the Commander's Decision Aid (CDA), is funded for application to the A3 Bradley Fighting Vehicle. The LWR will provide warning of laser assisted engagement of the host vehicle (e.g., laser range finding, laser designation for artillery attack or laser beamrider missile guidance). The LWR program leverages the existing AN/AVR-2A aviation LWR program. The CDA will integrate current and future sensors and countermeasures into the host vehicle's electronic architecture and will provide sensor fusion, threat prioritization and manual, semi-automatic or automatic activation of countermeasures. The CDA leverages work accomplished under the Hit Avoidance Advanced Technology Demonstration.

The Field Emissive Display (FED) program, also known as the High Performance Flat Panel Display (FPD) technology development program, is an effort to develop common, multi-purpose displays for Army ground combat vehicles. This includes the capability for real time interpretation and application of command and control, target imagery and situation awareness information. The FPD will also provide common, multi-purpose, high performance (low power, color, and sunlight readable, high-resolution) system displays. The application of the FPD supports the Force XXI Battle Command - Brigade and Below (FBCB2) operational requirement for the display of common imagery and data in removable and remote operations. In doing so, this program focuses on the near to mid-term opportunity to improve the performance of system displays for combat and combat support vehicles, both tracked and wheeled. The high performance FPD program takes advantage of advanced display technologies under development by the Defense Advanced Research Projects Agency (DARPA) by incorporating changes to meet the requirements of ground systems. System display performance specifications will optimize industry standard interfaces allowing incremental and inexpensive upgrades for future information display requirements. This program has been funded through congressional plus-ups, with $7.0M provided in FY 1997 and $12.0M in FY 1998.

As additional HTI projects are identified with funding, these projects will be added to and funded under project D718.

Acquisition Strategy: With regard to LWR effort, we will use existing contracts for RDTE. Full and Open Competition for Production with first year's purchase made using existing production contracts will mitigate risk of late delivery to vehicle production line (and avoid the attendant retrofit costs) and enable the return of technology improvement to aviation electronic warfare system.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203735A Combat Vehicle Improvement Programs
	PROJECT D718

FY 1997 Accomplishments:

•	1690	Developed Plans for and estimated cost of EMD and production. (SSES)
•	396	Developed system and components specifications and interface control documents. (SSES)
•	1700	Designed and fabricated 3 prototype Laser Warning Receivers (LWR). (SSES)
•	786	Designed and fabricated A kits for Bradley A3. (SSES)
•	200	Designed Bradley A3 specific CDA software (Main CDA development funded by Hit Avoidance ATD). (SSES)
•	3221	FPD prototype electronics developed via semiconductor technology (FPD)
•	3000	FPD prototype design completed (FPD)
•	350	Common display functions derived from vehicle operational requirements for input to performance specification(FPD)
Total	11343	

FY 1998 Planned Program:

•	867	CDA Development and Test on Bradley A3 SIL. (SSES)
•	1192	LWR and MWR technical tests and vehicle tests on prototype BFVS A3. (SSES)
•	672	Vehicle Integration on BFVS A3. (SSES)
•	614	Logistics Development (SSES)
•	428	Systems Engineering and Simulation (SSES)
•	1096	Operational Test in conjunction with BFVS A3 (SSES)
•	966	Support and Management (ALL)
•	10730	Design and build high resolution FPD engineering unit (FPD)
•	450	Evaluate FPD Prototype Vehicle Interfaces (FPD)
•	437	Small Business Innovative Research / Small Business Technology Transfer Programs
Total	17452	

FY 1999 Planned Program:

•	530	Operational Test Support in conjunction with BFVS A3. (SSES)
•	200	Integration Test Support on BFVS A3. (SSES)
•	595	Logistics Support, manual changes and logistical analysis. (SSES)
•	587	Support and Management. (SSES)
•	100	Continued FPD Development. (FPD)
Total	2012	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 7 - Operational System Development	PE NUMBER AND TITLE: 0203735A Combat Vehicle Improvement Programs / PROJECT: D718

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	11651	2009	2012
Appropriated Value	11900	18009	
Adjusted to Appropriated Value	-557	-557	
FY 1999 President's Budget	11343	17452	2012

Program change summary: FY 1998 increase (+16000) result of Congressional increase (+12000 FED; +4000 LWR).

C. Other Program Funding Summary: None

D. Schedule Profile

	FY 1997				FY 1998				FY 1999				FY 2000			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
LWR Technical Test						X										
LWR Veh Integration								X								
LWR/CDA Integration (SIL)							X									
LUT 1	X*															
LUT 2							X									
Log Demo								X								
IOTE												X				
PVT												X				
PEO IPT												X				
Contract Award														X		
FPD Performance Demo			X*										X			
Common Display Perf Spec			X*					X								
Performance Verification Test							X									X

* Milestone Completed

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203735A Combat Vehicle Improvement Programs

PROJECT: D718

A. Project Cost Breakdown

	FY1997	FY 1998	FY 1999
CDA Development & Test on Bradley A3 SIL (SSES)	200	867	
LWR & MWS Tech Test and vehicle tests on prototype BFVS A3 (SSES)		1192	
Vehicle Integration on BFVS A3 (SSES)	3912	672	100
Logistics Development (SSES)		614	595
Systems Engineering and Simulation (SSES)		428	
Operational Test in conjunction with BFVS A3 (SSES)		1096	530
Support and Management (ALL)	910	966	687
Design and build high resolution FED engineering unit (FPD)	6181	10730	100
Evaluate FPD Prototype Vehicle Interfaces (FPD)		450	
Complete common FPD performance specification (FPD)	140		
SBIR/STTR		437	
Total	11343	17452	2012

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 FY1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Hughes (SSES)	Prod STS/FFP	Nov 97	11906	11906		1700	1672	885	7649	11906
UDLP LWR/CDA Spec Dev (SSES)	CPIF	Nov 97	4690	4690		2212	978		1500	4690
Sanders Lockheed Martin	CPAF	Nov 97	945	945		200	345	100	300	945
MICRON (FPD)	Cost/Share	Jan 98	17151	17151		6321	10730	100		17151
UDLP (FPD)	CPIF	Jan 98	225	225			225			225
GDLS (FPD)	CPIF	Jan 98	225	225			225			225
CECOM (SSES)	MIPR	Nov 97	923	923		200	483	240		923
TARDEC (SSES)	MIPR	Jan 98	866	866			687	179		866

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203735A Combat Vehicle Improvement Programs

PROJECT: D718

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Prod (Full/Open)	TBD	Jan 00	8795	8795					8795	8795
SBIR/STTR							437			437
TRW (SSES/FPD)	CPFF	Nov 97	177	177		30	67	40	40	177
Camber (SSES)	CPAF	Nov 97	140	140		140				140
STRICOM (SSES)	MIPR	Feb 98	250	250			250			250
PM CCAWS (SSES)	MIPR	Nov 97	30	30			30			30
Support and Management Organizations										
PM GSI (SSES)	MIPR	Oct 97	2278	2278		361	677	468	772	2278
PM GSI (FPD)	MIPR	Oct 97	301	301		179	122			301
PM Bradley	MIPR	Jan 98	100	100			100			100
Test and Evaluation Organizations										
SLAD (SSES)	MIPR	Dec 97	288	288			288			288
YPG, AZ (SSES)	MIPR	Jan 98	68	68			68			68
RTTC, AL (SSES)	MIPR	Jan 98	68	68			68			68
Government Furnished Property: None										
Subtotal Product Development						10803	16129	1544	18284	46760
Subtotal Support and Management						540	899	468	772	2679
Subtotal Test and Evaluation							424			424
Totals:						11343	17452	2012	19056	49863

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203740A Maneuver Control System

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	27166	24510	28923	17976	10366	3747	3882	846	437309
D2HT MCS Operational Test	3673	0	0	0	0	0	0	0	8740
D484 Maneuver Control System	23493	24510	28923	17976	10366	3747	3882	846	428569

Mission Description and Budget Item Justification: This program element funds the evolutionary software development, integration and testing of the Maneuver Control System (MCS). Project D2HT, MCS Operational Test, supported the Limited Users Test (LUT) of MCS. Project D484, Maneuver Control System (MCS), automates command and control (C2) functions previously performed manually. It provides secure, automated assistance to the Operations Staff (G3/S3) and other key staff to meet the information needs of commanders for quicker decisions and application of battlefield resources. MCS provides standardized message sets, acquires commander's critical information requirements, and displays status screens and battlefield graphics. These projects involve the development, enhancement, and integration of software functionality that currently exists within the Army's inventory or is currently under development and are therefore appropriately included in Budget Activity 7.

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203740A Maneuver Control System

PROJECT: D2HT

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D2HT MCS Operational Test	3673	0	0	0	0	0	0	0	8740

A. Mission Description and Justification: Project D2HT - MCS Operational Test: The project finances the direct costs of planning and conducting operational testing and evaluation of the Maneuver Control System (MCS) by the Operational Test and Evaluation Command (OPTEC). MCS is an Acquisition Category (ACAT) 1D system. Operational Testing and Evaluation was conducted in FY 97 via a Limited Users Test (LUT). 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.

Acquisition Strategy: Not Applicable

FY 1997 Accomplishments:

- 3291 Conducted MCS V12 Limited User's Test (LUT)
- 382 Evaluation of MCS V12

Total 3673

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program: Project not funded in FY 1999

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	3772	0	0
Appropriated Value	3895		
Adjustments to Appropriated Value	-222		
FY 1999 President's Budget	3673	0	0

C. Other Program Funding Summary: Not Applicable

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
MCS V12 LUT	X*											

*Milestone Complete

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203740A Maneuver Control System

PROJECT: D2HT

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Operational Test and Evaluation	3673	0	0
Total	3673	0	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations: None										
Support and Management Organizations: None										
Test and Evaluation Organizations										
Misc.	Allot				338	0	0	0	0	338
TEXCOM	Allot				4554	3291	0	0	0	7845
OEC	Allot				175	382	0	0	0	557
Subtotal Product Development					0	0	0	0	0	0
Subtotal Support and Management					0	0	0	0	0	0
Subtotal Test and Evaluation					5067	3673	0	0	0	8740
Total Project					5067	3673	0	0	0	8740

Government Furnished Property: None

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE: February 1998
BUDGET ACTIVITY: 7 - Operational System Development	PE NUMBER AND TITLE: 0203740A Maneuver Control System		PROJECT: D484

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D484 Maneuver Control System	23493	24510	28923	17976	10366	3747	3882	846	428569

A. Mission Description and Justification: Project D484 - Maneuver Control System (MCS): The project satisfies an urgent need for efficient command and control of tactical operations on the battlefield. MCS is the Army's tactical C2 system used in command posts from Corps to Battalion to provide automated C2 for the commander and staff at and between echelons (i.e., Force Level Control). MCS is the heart of the Army Battle Command System (ABCS) and provides critical coordination among Battlefield Functional Areas (BFAs) within each echelon. The primary component of controlling Force Level Information transactions is MCS's management of common picture information. This includes information across all Battlefield Operating Systems (BOSs) consisting of the Situation Map (SITMAP) using Defense Mapping Agency map data to display friendly and enemy unit locations, control measures (e.g., boundaries, phase lines, etc.), Intelligence and Electronic Warfare graphics, Fire Support plans, combat service support location information, air corridors and air defense weapons control information.

MCS software is based on the Common Operating Environment (COE) standard architecture with applications to automate C2 operations. MCS uses the Terrain Evaluation Module (TEM) for terrain analysis, planning and SITMAP graphical displays. The Unit Task Organization (UTO) Tool provides the commander and staff a means of organizing (graphically and textually) tactical Army units by echelon. Unit commanders and their staffs can quickly and efficiently prepare and disseminate combat orders with MCS's automated OPORD generating tool. MCS's report displays provide resource information roll-ups on all reporting battlefield units. In addition to serving as the common picture database for all ATCCS BFAs, MCS is the gateway for Situational Awareness information received from appliqué. MCS provides the Army "ground track" segment of the joint tactical common picture to the Army Global Command and Control System (AGCCS).

Acquisition Strategy: Since the initial MCS was introduced in Europe in 1981, this program has been and will continue to be, evolutionary software development, broken out into Blocks. The MCS capability continues to expand in pre-planned, time-phased steps toward the objective system. The final block of MCS software, Block IV, consists of development of Versions 12.1, 12.2 and Version 12.3, which will become the objective system. Versions 12.2 and 12.3 add applications and stand-alone functionality from V12.1. Therefore technical risk associated with each version is minimized. The use of a non-developmental item (NDI) tactical computer processor enables the MCS to capitalize on state of the art ruggedized, commercial equipment and reduce life cycle costs. Commencement of the transition to common hardware/software (CHS) began in FY 1989 with the initiation of the porting of software as well as the initiation of the integration of CHS into both the Standardized Integrated Command Post System (SICPS) and the existing Command and Control Unit vehicle.

FY 1997 Accomplishments:

•	21512	Continued MCS V12 development and integration efforts
•	175	Supported LUT activities
•	1806	Horizontal Battlefield Digitization
Total	23493	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203740A Maneuver Control System
	PROJECT D484

FY 1998 Planned Program:

•	19362	Continue MCS V12 software development
•	2660	Block III IOTE
•	1888	Horizontal Battlefield Digitization
•	600	Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
Total	24510	

FY 1999 Planned Program:

•	27135	Continue MCS V12 software development
•	1788	Horizontal Battlefield Digitization
Total	28923	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	24116	25641	23932
Appropriated Value	25187	25641	
Adjustments to Appropriated Value	-1694	-1131	
FY 1999 President's Budget	23493	24510	28923

Change Summary Explanation:

Funding: FY 1999 (+4991) Increase accelerates initiation of software version 12.2 development

Schedule: IOT&E with Block III Version 12.01 rescheduled to Jun 98.

C. Other Program Funding Summary

Other Procurement, Army	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
BA9320 Maneuver Control System	13011	0	13033	40117	52921	640	640	54041	544974
MCS Spares - BS9710	849	0	0	0	5115	0	2451	4473	59058

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
V12.01 Limited User's Test	X*											
Task Force XXI Participation		X*										
Prairie Warrior97 Operational Assessment			X*									
Division XXI Participation					X*							

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203740A Maneuver Control System

PROJECT: D484

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
IOT&E Completed								X				
Begin V12.2 Software Development							X					
Begin V12.3 Software Development											X	

*Milestone Complete

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY: 7 - Operational System Development	PE NUMBER AND TITLE: 0203740A Maneuver Control System / PROJECT: D484

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Major Contracts	19267	20053	23113
Support Contracts	256	55	477
In-House Support	2660	982	4113
GFE/Other	1310	2820	1220
SBIR/STTR		600	
Total	23493	24510	28923

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Block IV (LMC)	C/CPIF	Various		63054	1000	11200	14100	21000	15754	63054
Block III (TKC)	C/CPIF/AF	Various		57690	45544	6910	5236	0	0	57690
Other Contracts	C/Various	Various			191786	1157	717	2113	6803	202576
CECOM					9731	1206	406	1878	5068	18289
In-House					22193	1304	422	1605	4332	29856
Support and Management Organizations										
In-House					15395	150	154	630	1700	18029
Other Contracts	C/Various				16145	256	55	477	1066	17999
SBIR/STTR							600			600
Test and Evaluation Organizations										
OGA					2050	1060	2660	1000	1619	8389
Other Contracts					1042	250	160	220	475	2147

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203740A Maneuver Control System PROJECT D484

Government Furnished Property

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property									
ATCCS Contr				7159	0	0	0	0	7159
Pgm Spt Env				2168	0	0	0	0	2168
Support and Management Property									
Test and Evaluation Property									
CHS-1 HW				613	0	0	0	0	613
Subtotal Product Development				279581	21777	20881	26596	31957	380792
Subtotal Support and Management				31540	406	809	1107	2766	36628
Subtotal Test and Evaluation				3705	1310	2820	1220	2094	11149
Total Project				314826	23493	24510	28923	36817	428569

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203744A Aircraft Modifications/Product Improvement Program

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	21836	21567	26681	8325	2589	4149	12976	Continuing	Continuing
D028 Guardrail Common Sensor	0	0	0	859	1681	4149	12976	Continuing	Continuing
D179 CH-47D Product Improvement	4481	0	0	0	0	0	0	0	4481
D430 Improved Cargo Helicopter	17116	21567	26681	7466	908	0	0	0	78621
D504 UH-60 Door Gun	239	0	0	0	0	0	0	0	239

Mission Description and Budget Item Justification: This PE supports the CH-47 Product Improvement to upgrade T55-L-712 engines to T55-GA-714A configuration to increase power to meet lift requirements for mission needs. The Improved Cargo Helicopter (ICH) is a development program to extend useful life of the CH-47D Cargo Helicopter. This funding will assure heavy lift capability into the 21st century. The projects in this program element support development efforts for existing systems and are correctly placed in Budget Activity 7.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203744A Aircraft Modifications/Product Improvement Program PROJECT D179

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D179 CH-47D Product Improvement	4481	0	0	0	0	0	0	0	4481

A. Mission Description and Budget Item Justification: The engine upgrade program will convert the T55-L-712 engine to T55-GA-714A configuration, increasing power to allow the aircraft to carry its primary payloads under high altitude/temperatures. The CH-47D, as configured, does not meet its existing 1975 Required Operational Capability (ROC). The addition of numerous engineering changes to provide safety, the latest in operational technology, and improved communications has increased the empty weight of the aircraft. Upgrade of the T55-L-712 engine to T55-GA-714A configuration will provide the capability to meet the required operational capability.

Acquisition Strategy: Sole source contract for engineering changes and Low rate initial production contracts awarded.

FY 1997 Accomplishments;

•	4457	Initiate Engineering Changes
•	24	Initiate Government In-house Support of the Engine Upgrade Effort
Total	4481	

FY 1998 Planned Program: Project not funded in FY98.

FY 1999 Planned Program: Project not funded in FY99.

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	4602	0	0
Appropriated Value	4490		
Adjustments to Appropriated Value	-9		
FY 1999 Pres Bud Request	4481	0	0

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203744A Aircraft Modifications/Product Improvement Program PROJECT D179

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
APA AA0252 CH-47 Cargo Helicopter Mods (MYP)*	47496	49559	87224	71765	178534	196720	199279	420010	1250627

* Represents that portion of the program dedicated to CH-47 engine upgrade.

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Engineering Change				X								
Low Rate Initial Production Contract					X							

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203744A Aircraft Modifications/Product Improvement Program

PROJECT: D179

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Engineering Change	4457		
In-house Support	24		
Total	4481	0	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Allied Signal	SS/FP-	Sep 97				4457				4457
Support and Management Organizations										
Government			AMCOM			24				24
In-house Support										

Test and Evaluation Organizations: None

Government Furnished Property: Not Applicable

Subtotal Product Development	4457				4457
Subtotal Support and Management	24				24
Subtotal Test and Evaluation					
Total Project	4481	0	0		4481

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203744A Aircraft Modifications/Product Improvement Program

PROJECT: D430

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D430 Improved Cargo Helicopter	17116	21567	26681	7466	908	0	0	0	78621

A. Mission Description and Justification: The Improved Cargo Helicopter (ICH) is a program to extend useful life of the CH-47D cargo helicopter. This funding will assure heavy lift capability into the 21st century. This program will award a contract for Engineering Manufacturing Development (EMD) which includes decreasing operation and support costs through vibration reduction/airframe stiffening, incorporating a new electronics/architecture system for compatibility with the digital battlefield and structural modifications as necessary to extend the life of the airframe. This program will be the basis for establishing remanufacture, modernization, and upgrade program to meet the readiness needs of the future for heavy lift capability.

Acquisition Strategy: Sole source development contract in Engineering Manufacturing Development (EMD) stage leading to production contract in FY 00.

FY 1997 Accomplishments:

- 880 Initiate Technical assessment Electronic-Architecture Assessment in advance of Risk Reduction Contracts
- 500 Initiate Airworthiness Design Specification Study
- 2324 Initiate Flight Test II operational field trials
- 1600 Initiate Request for Proposal (RFP) Board
- 3819 Continue In-house and program management administration
- 7993 Initiate Program Definition Risk Reduction for the Airframe and the Electronic Architecture

Total 17116

FY 1998 Planned Program:

- 16884 Initiate Engineering Manufacture Development (EMD)
- 2458 Continue In-house and program management administration
- 1684 Continue Government Test and Evaluation
- 541 Small Business Innovative Research and Small Business Technology Transfer

Total 21567

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203744A Aircraft Modifications/Product Improvement Program PROJECT D430

FY 1999 Planned Program:

- 21300 Continue Engineering Manufacturing Development (EMD)
- 3923 Continue In-house and program management administration
- 400 Provide Government furnished equipment for EMD
- 1058 Continue Government Test and Evaluation

Total 26681

B. Project Change Summary

	FY 1997	FY 1998	FY1999
FY 1998/1999 President's Budget	17539	2609	28791
Appropriated Value	17111	22609	
Adjustments to Appropriated Value	+5	-1042	
FY 1999 Pres Bud Request	17116	21567	28791

Change Summary Explanation: Funding: FY 98 (+18958) increase due to Congressional plus-up (+20000) and a decrease due to undistributed Congressional Reductions (-1042)

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
APA, SSN AA0254, CH-47 ICH	0	0	0	28250	74285	216092	225416	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Programmatic Documentation		X			*	X				X		
Vibration Analysis Support				X								
Risk Reduction				X								
Engineering Manufacturing Development							X					

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203744A Aircraft Modifications/Product Improvement Program

PROJECT: D430

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Government in-house support for studies & program planning	3819		
In-house support of Engineering Manufacturing Development		2458	3923
Vibration analysis flight tests	2324		
ADS-33 Study	500		
Request for Proposal (RFP) Board	1600		
Engineering Manufacturing Development/Tech Assessment	7993	17425	21300
Government furnished equipment			400
Technical assessment/Electronic-Architecture	880		
Government Test and Evaluation		1684	1058
Total	17116	21567	26681

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
CAMBER	SS/FP	APR 98		3090	740	1350	500	500		3090
WESTAR	SS/FP			90	90					90
Boeing Defense & Space Group	SS/FP	Jun 97		2450	1386	1064				2450
Boeing Defense & Space Group	SS/FP	Aug 97		880		880				880
Boeing Defense & Space Group	SS/FP	Sep 97		7993		7993				7993
Boeing Defense & Space Group	SS/FP	Mar 98		46558			16884	21300	8374	46558

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203744A Aircraft Modifications/Product Improvement Program

PROJECT: D430

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Support and Management Organizations										
Army Aviation & Missile Comd/PEO AVN				10107	1307	3419	1958	3423		10107
Army Training & Doctrine Command Aviation Center-Ft. Rucker				2285	1160	1125				2285
Army Training & Doctrine Cmd Anal Cntr-Ft Lee		Aug 96		850	200	650				850
SBIR/STTR				541			541			541
Test and Evaluation Organizations										
Operational Test and Eval Command				3377		635	1684	1058		3377

Government Furnished Property

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property							400		

Support and Management Property: None
Test and Evaluation Property: None

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203744A Aircraft Modifications/Product Improvement Program PROJECT D430

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	2216	11287	17384	22200	8374	61461
Subtotal Support and Management	2667	5194	2499	3423		13783
Subtotal Test and Evaluation		635	1684	1058		3377
Total Project	4883	17116	21567	26681	8374	78621

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203744A Aircraft Modifications/Product Improvement Program

PROJECT: D504

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D504 UH-60 Door Gun	239	0	0	0	0	0	0	0	239

A. Mission Description and Budget Item Justification: This project supports operational testing of the GAU/19.50 caliber weapon system on the Black Hawk helicopter to determine the appropriate defensive armament carried by the Army utility helicopters for self-protection and landing zone suppression during airborne assaults. This project was a new start in FY 1997.

Acquisition Strategy: Not applicable.

FY 1997 Accomplishments:

•	239	Operational test of the GAU/19.50 caliber weapon system on a Black Hawk helicopter.
Total	239	

FY 1998 Planned Program: Project not funded in FY98.

FY 1999 Planned Program: Project not funded in FY99.

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998President's Budget	245	0	0
Appropriated Value	239		
Adjustments to Appropriated Value			
FY 1999Pres Budget Request	239	0	0

C. Other Program Funding Summary: Not applicable

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Operational Testing on Black Hawk Armament			X									

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203744A Aircraft Modifications/Product Improvement Program

PROJECT: D504

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Operational Testing on Black Hawk Armament	239		
Total	239	0	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations: None										
Support and Management Organizations: None										
Test and Evaluation Organizations										
TRADOC						239				239

Government Furnished Property: Not Applicable.

Subtotal Product Development										
Subtotal Support and Management										
Subtotal Test and Evaluation						239				239
Total Project						239	0	0		239

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203752A Aircraft Engine Component Improvement Program

PROJECT: D106

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D106 Aircraft Engine Component Improvement Program (CIP)	3734	2849	2948	3026	3098	3317	3416	Continuing	Continuing

A. **Mission Description and Budget Item Justification:** Aircraft Engine Component Improvement Program (CIP) develops, tests, and qualifies improvements to aircraft engine components to correct service revealed deficiencies, improve flight safety, enhance readiness and reduce operating and support (O&S) costs. In addition, CIP provides the test vehicles for the testing and qualification efforts required as a part of the Army's Flight Safety Parts program. CIP is included in the RDTE budget vice procurement appropriations in accordance with congressional direction. The tasks in this project support development of upgrades to current production vehicles and are appropriately funded in Budget Activity 7.

Acquisition Strategy: Improved designs will be implemented via Engineering Change Proposal (ECP) and follow-on procurement or modification to a production contract to introduce the improved hardware.

FY 1997 Accomplishments:

- 1400 **T700 Engine:** Completed analysis for the update of life limits on the T700-701 engine components utilizing improved analytical and modeling techniques. Design and qualification testing of a WGC HMU T2 Sensor Coating that will prevent related engine stalls. Initiated program with the Navy to provide engine monitoring equipment for Black Hawk to gather field data used to define mission profiles used in life analysis calculations. Redesign HI-Temp connector for the Speed and Torque sensor for maintainability problems Developed engine running water wash system to reduce downtime in combat. Initiated Electrical Cable EMI shielding improvements for engine wiring harnesses based on recent test results to improve reliability/enhance safety. Design and test an Improved "A" Sump Pressure System to preclude oil leaks to extend service life/reduce O&S cost.
- 1000 **T55 Engine:** Continued to develop bearing improvements to improve reliability and fatigue life/ reduce cost. Completed machined combustor liner program to improve durability and survivability and reduce O&S costs. Completed pinned first turbine blade program to prevent catastrophic engine failure from blades shifting forward. Continued to design improved compressor impeller to improve efficiency/extend service life and reduce cost.
- 942 **LOLA Engine Fuel Pump:** Completed design of a Liquid Or Light-ends/Air (LOLA) engine fuel pump for UH-60 Black Hawk and Apache to prevent uncommanded engine shutdowns in flight/ restore design flight safety and eliminate operational restrictions.
- 300 **GTCP 36 APU:** Developed multiple element thermocouple for Black Hawk to improve accuracy and reduce premature APU removals/reduce O&S cost. Designed and tested improved Apache fuel line connection to eliminate leaks/restore design safety. Test and qualify the Longbow shaft torque limiting valve for use on Apache to reduce gearbox over-torques, improve readiness/reduce O&S cost. Develop & qualify a mainshaft bearing retention device to prevent race spinning and wear to preclude premature APU removal/reduce O&S cost.
- 92 **In-house cost.**

Total 3734

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203752A Aircraft Engine Component Improvement Program PROJECT D106

FY 1998 Planned Program:

•	1400	**T700 Engine:** Perform T700-700 and 701C turbine disc heat transfer and stress analysis to update life limits/preclude catastrophic failures. Install field performance monitors in select Black Hawks to collect field engine performance data needed to validate life calculations. Bench test improved Electrical Cable shielding to resolve known EMI deficiency; improve reliability/enhance safety. Complete design and test an Improved "A" Sump Pressure System to preclude chronic oil leaks/extend service life. Engine test at CCAD HI-Temp connector. **LOLA Engine Fuel Pump:** Complete design assurance testing, qualification testing, engine testing and flight testing as a part of a two year project funded in FY97 (directed effort). The LOLA pump will prevent uncommanded engine shutdowns in flight/ restore design flight safety and eliminate operational restrictions.
•	1000	**T55 Engine:** Continue redesign of bearings to reduce cost and improve reliability and fatigue life. Begin redesign of exterior plumbing to meet current flight safety standards for fireproofing of oil and fuel lines. Design electronic N2 speed sensor to replace the current mechanical system resulting in improved reliability/reduced O&S cost. Redesign T55 tailpipe to improve reliability and reduce performance losses/improve readiness & reduce cost.
•	300	**GTCP 36 APU:** Perform 200 hour engine test to qualify improved hardware developed in previous CIP efforts. Complete testing of shaft torque limiting valve for application to the Apache to reduce gearbox over-torques, improve readiness/reduce O&S cost. Evaluate potential for commonality of parts between Black Hawk, Apache and Air Force APUs to reduce O&S cost.
•	79	**IN-HOUSE:** In house support for the component improvement program engineers.
•	70	Small Business Innovative Research/ Small Business Technology Transfer Programs
Total	2849	

FY 1999 Planned Program:

•	1568	**T700 Engine:** Continue fracture mechanics and stress analysis on T700-700 and -701C turbine rotors to update life limits/preclude catastrophic failures. Continue data gathering & analysis from Black Hawk mission recorders to permit accurate life limits updates. Qualify and flight test electrical cables with improved shielding to resolve known EMI deficiency; improve reliability/enhance safety.
•	1000	**T55 Engine:** Complete qualification testing of bearings to reduce cost and improve reliability and fatigue life. Continue plumbing redesign program to meet current fireproofing flight safety standards for oil and fuel lines. Continue electronic N2 speed sensor design program to improve reliability/reduce O&S cost. Continue tailpipe redesign program improve readiness & reduce cost.
•	300	**GTCP 36 APU:** Tear-down and analyze high-time Black Hawk and Apache APUs to determine incipient failures/ identify need for redesign to extend service life and reduce O&S cost. Develop an erosion resistant turbine wheel for Black Hawk APU to extend service life/ reduce O&S cost.
•	80	In-House
Total	2948	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203752A Aircraft Engine Component Improvement Program PROJECT D106

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	3834	2940	2933
Appropriated Value	3742	2940	
Adjustments to Appropriated Value	-8	-91	
FY 1999 President's Budget	3734	2849	2948

C. Other Program Funding Summary: There are no other RDTE or other Appropriation efforts.

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
T700 Engine: Complete improved "A" sump redesign and qualification testing.								X				
LOLA Engine Fuel Pump Design Complete				X							X	
T55 Engine: Develop improved bearings to reduce O&S cost and improve bearing life				X								
GTCP 36 APU: Improved thermocouple designed and tested.			X									
T700 Engine: Complete electrical cable EMI shielding design and qualify improvements.											X	
T55 Engine: Design Fireproof Exterior Plumbing.								X				
GTCP 36 APU: Complete testing of torque limiting valve							X					
T700 Engine: T2 Sensor Coating.								X				
T55 Engine: Develop pinned retention feature for first stage turbine blades to improve flight safety.				X								
T700 Engine: Hi-Temp connector for speed and torque sensor									X			

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203752A Aircraft Engine Component Improvement Program PROJECT D106

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
T55 Engine: LOLA Engine Fuel Pump: Complete design and qualification testing.							X					

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203752A Aircraft Engine Component Improvement Program

PROJECT: D106

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Product Development	3734	2849	2948
Support and Management	0	0	0
Test and Evaluation	0	0	0
Total	3734	2849	2948

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
General Electric	SS/CPFF	Dec 94			38418	1400	1400	1568	Cont	Cont
Allied Signal	SS/CPFF	Dec 94			17872	1000	1000	1000	Cont	Cont
Air Force	MIPR	Jun 96			12600	1242	300	300	Cont	Cont
Chandler Evans	SS/CPFF	Jun 96								
Support and Management Organizations										
ATCOM (In House)	MIPR	Dec 94	N/A	N/A	10342	92	149	80	0	10663
T53 Engine					352			0	0	352

Test and Evaluation Organizations: Not Applicable

Government Furnished Property: Not Applicable

Subtotal Product Development	68890	3642	2700	2868	Cont	Cont
Subtotal Support and Management	10694	92	149	80	0	11015
Subtotal Test and Evaluation Organizations					0	0
Total Project	79584	3734	2849	2948	Cont	Cont

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203758A Digitization		PROJECT D374

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D374 Horizontal Battlefield Digitization	98124	94103	45007	29445	28248	16337	15368	Continuing	Continuing

A. **Mission Description and Budget Item Justification:** This program provides the interoperability of combat, combat support, and combat service support platforms (i.e., tanks, fighting vehicles, aircraft, command/control and logistics/resupply) and battlefield automated systems {i.e., Maneuver Control System (MCS)/Phoenix, Force XXI Battle Command, Brigade and Below (FBCB2), Advanced Field Artillery Tactical Data System (AFATDS), Forward Area Air Defense Command, Control and Intelligence (FAADC2I), All Source Analysis System (ASAS), Combat Service Support Control System (CSSCS)} with common technology through new acquisitions, Pre-Planned Product Improvements (P3I), and system-component upgrades. The application of common technologies across multiple systems through an integrated and seamless battlefield architecture improves the capabilities of battlefield systems that fight together as units or integrated task forces, providing a significant and potentially decisive warfighting improvement to the force. Battlefield digitization allows the Army's primary weapons and battle command systems to see, acquire and engage threats while sharing the same information with equal clarity, using advanced technologies and digital communications. To prove out concepts and requirements, near term efforts were focused on developing a seamless battlefield architecture and digitized appliqué systems to support experimentation with brigade-sided maneuver task force in FY 1997 and a division level experiment in FY 1998. This program supports the horizontal battlefield systems program integration office (Army Digitization Office), responsible for the overall horizontal integration of digitization capabilities throughout the Army. Supports engineering and integration of FBCB2 capability for the Abrams tank using government furnished equipment (GFE) FBCB2 hardware/software and provides the M1A1 with basic situational awareness and Command and Control via FBCB2. Supports engineering and integration of FBCB2 into the Bradley Fighting Vehicle Legacy Fleet and a "go-to-war" FBCB2 capability to the M2/M3 A2 ODS (which were changes made to the basic vehicle as a result of lessons learned from Operation Desert Storm). Also, provides comprehensive modeling and simulation efforts, thorough requirements analysis to combine AWE, operational architecture, interoperability exchange requirements with technical overheads to obtain realistic data traffic flows and mission thread analysis; and the system engineering required to ensure First Digitized Division command and control systems are fully interoperable. This program element is appropriately placed in Budget Activity 7 since it supports experimentation, system integration, interoperability and modification of equipment in the Army inventory.

Acquisition Strategy: Starting in FY 99, FBCB2 was transferred to a new program element 0203759A entitled "Force XXI Battle Command, Brigade and Below." Digitization resources the systems engineering, testing, and integration of digital capability across multiple command and control, communications, sensor and weapons platforms. The result will be an integrated digital capability to multiple battlefield operating systems, with initial emphasis on meeting the near-term requirements for the first digitized division. Also, supports Army's part of joint and multinational digitization programs; coordinates/manages security, vulnerability and "Red Teaming" functions; and manages MANPRINT, modeling and simulations, analysis and supports Advanced Warfighting Experiments (AWEs).

FY 1997 Accomplishments:

- 16578 Continued development of appliqués and their platform integration.
- 31470 Continued development of command and control software for brigade and below.
- 25948 Conducted simulation, experimentation and evaluation of prototype hardware and software.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203758A Digitization
	PROJECT D374

FY 1997 Accomplishments: (continued)

•	4662	Completed development of data distribution system.
•	7166	Interoperability: Continued development of protocols and standards, M1A2/appliqué digital connectivity, and Battlefield Interoperability Program.
•	4300	Initiated modification to existing FBCB2 hardware and development of new integrated appliqué software for M1A1 and M2A2.
•	8000	Initiated rapid acquisition of software enhancements for the Tactical Internet.
Total	98124	

FY 1998 Planned Program:

•	1500	Equip and train 1BN test unit and conduct LUT.
•	15000	Hardware to support IOTE testing.
•	15322	Continue development and upgrades to Brigade and Below Command and Control Software.
•	13641	Continue test, simulation, experimentation and evaluation of prototype hardware and software.
•	13034	System Engineering/Development/Platform Integration.
•	10311	Interoperability: Abrams/Bradley/FBCB2 digital connectivity, and Battlefield Interoperability Program.
•	3432	Complete development of FBCB2 software interface with Abrams and Bradley.
•	5665	Continue rapid acquisition of software enhancements for the Tactical Internet.
•	2885	Analysis (including modeling/simulation) to predict overall digitized system of systems performance.
•	4595	Thorough validation of digital requirements/architecture to ensure realistic/adequate data flows, mission thread analysis, interoperability, human resource engineering, security, and physical layout.
•	1320	Integration tools, plans, specifications, and other training, logistics, interface, and configuration management products.
•	5665	Tactical Personal Communications.
•	1733	Small Business Innovative Research/Small Business Technology Programs.
Total	94103	

FY 1999 Planned Program:

•	6388	Test, experimentation and simulation of prototype hardware/software.
•	4099	System Engineering/Platform Integration
•	3500	International Command & Control System/ Integration Program/ Battlefield Interoperability Program
•	4110	Analysis (including modeling/simulation) to predict overall digitized system of systems performance.
•	6225	Thorough validation of digital requirements/architecture to ensure realistic/adequate data flows, mission thread analysis, interoperability, human resource engineering, security, and physical layout.
•	1885	Integration tools, plans, specifications, and other training, logistics, interface, and configuration management products.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203758A Digitization
	PROJECT D374

FY 1999 Planned Program: (continued)

- 18800 Complete software/hardware integration, procure prototypes and initiate testing of FBCB2 in M1A2 SEP, M1A1 Abrams, and M2A2ODS Bradley.

Total 45007

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/99 President's Budget Request	88125	57333	49487
Appropriated Value	90180	71560	
Adjustments to Appropriated Value	+7940	+22543	
FY 1999 President's Budget Request	98120	94103	45007

Change Summary Explanation:

FY 1997 - Congressional increase for WRAP Initiatives - for FBCB2 Software Interface/Integration with M1A1/M2A2 and for Tactical Internet.

FY 1998 - Congressional increase for continued WRAP Initiatives - $2.4M for FBCB2 Software Interface/Integration with M1A1/M2A2 and $5.7M for Tactical Internet, and $5.7M for Tactical Personal Communications. Also includes Army's Congressional emergency reprogramming for Digitization - $16.2M FBCB2 Software development and hardware to support IOTE testing, and $8.8M for Systems Integration.

FY 1999 - Transferred $29.7M from Proj D374 to new FBCB2 Program Element 0203759A, Project D120; transferred $5.8M to OPA SSN BZ9962 to procure LAN routers to support fielding of digitized division and corps; increased funding $12.22M for Systems Integration; and increased funding $18.8M for engineering/procurement of an integrated FBCB2 capability for M1A2 SEP and M1A1 Abrams using GFE FBCB2 software/hardware and "go-to-war" FBCB2 capability to M2A2ODS.

C. Other Program Funding Summary: Not applicable

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Brigade Task Force XXI AWE	X	X										
NTC Rotation for TF XXI		X										
FBCB2 MS I/II Decision Review			X	X								
Integrated Product Team (IPT)Review			X									
Version 2.0 FBCB2 Software Delivery				X								
Division XXI AWE					X							
FBCB2 Software Interface/Integration with Abrams and Bradley				X				X				
Develop Tactical Internet Software				X				X				
Limited User Test (LUT)								X				

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203758A Digitization

PROJECT: D374

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
US/UK Lab Interoperability Demo			X									
US/UK Field Demo				X								
Develop ATCCIS International Stds								X				
Develop International C2 Op Arch.								X				
Develop International MCS Gateway												X
Tactical Personal Communications							X					
Corps Warfighter Exercise									X			
Procure FBCB2 Integration Kits								X				
Initiate testing FBCB2 in M1A1 and M1A2SEP											X	

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203758A Digitization	PROJECT D374

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
Hardware Development/Integration	18710	18285	
Software Development	31180	20792	
Development, Experimentation, & Evaluation	26724	19239	5529
Program Management and Engineering Support	9210	10492	8458
Hardware/Software Integration of FBCB2 with M1A1/M2A2	1200		
Develop FBCB2 and M1A1/M2A2 Integration Package	3100	3432	
Software/Hardware Integration M1A2SEP and M1A1 Abrams			8700
Procure M1A1/M2A2 prototypes and initiate Abrams and Bradley C2 testing			10100
Software Acquisition Tactical Internet	8000	5665	
Tactical Personal Communications		5665	
Detailed digital architecture engineering/integration/implementation		8800	12220
SBIR/STTR		1733	
Total	98124	94103	45007

B. Budget Acquisition History and Planning Information: Not Applicable

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203759A Force XXI Battle Command, Brigade and Below(FBCB2)
	PROJECT D120

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D120 Force XXI Battle Command, Brigade & Below (FBCB2)	0	0	52469	47000	30000	20000	20000	Continuing	Continuing

A. Mission Description and Budget Item Justification: The initial FBCB2 effort was developed under Program Element 0203758A Project D374 as part of the Army's digitization initiative and was transferred to this Program Element for central management by PEO C3S/PM Applique beginning in FY-99. The mission of FBCB2 is to field a Digital Battle Command information system that provides mounted tactical combat, combat support, and combat service support commanders, leaders, and soldiers integrated, on-the-move, real-time/near real-time, battle command and information and situation awareness from brigade down to the soldier/platform level across all battlefield functional areas (BFAs). FBCB2 is located in the mounted and dismounted maneuver (divisional, separate, heavy and light) calvary/reconnaissance and armored cavalry, mechanized infantry and aviation units; FBCB2 integrates ATCCS located within the brigade and battalion. Battlefield digitization allows the Army's primary weapons and battle command systems to see, acquire, and engage threats while sharing the same information with equal clarity, using advanced technologies and digital communications. FBCB2 develops a seamless battlefield architecture and digitized appliqué systems (computer with graphics display, global positioning system, communications link, and command and control software) required to field the First Digitized Division by FY-00 and First Digitized Corps by FY-04/05.

Acquisition strategy: The primary goal of the FBCB2 acquisition is to minimize the time, cost, and technology risks of satisfying requirements while providing a capability that is fully integrated with the overall Division's warfighting capabilities. The technical approach involves the incorporation of digital communications, situation awareness and digital message traffic capabilities in a variety of embedded and non-embedded platforms. These platforms are then connected through communications infrastructure provided by the Tactical Internet. Interoperability is provided through the use of graphics, images common messages and data elements. The interfaces between FBCB2 and ATCCS systems will provide users at all levels a common picture of their battlespace. The Program Executive Officer for Command, Control and Communications (PEOC C3S) is responsible for executing the FBCB2, ATCCS, communications infrastructure, and weapons platforms.

FY 1997 Accomplishments: Program Funded in Program Element 0203758A Project D374 in FY 1997.

FY 1998 Planned Program: Program Funded in Program Element 0203758A Project D374 in FY 1998.

FY 1999 Planned Program:

•	33793	Brigade and Below Command and Control software/hardware development/upgrades.
•	5973	Simulation, experimentation and evaluation of prototype software (Version 3.0 & 3.1)
•	12703	System Engineering/Test/Integration/Training
Total	52469	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203759A Force XXI Battle Command, Brigade and Below(FBCB2)
	PROJECT D120

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	0	0
Appropriated Value	0	0	0
Adjustments to Appropriated Value	0	0	0
FY 1999 President's Budget	0	0	52469

Change Summary Explanation: FY 99 (+52469) funding reprogrammed from 0203758A, Project D374(+30860) and Project D398(+21609)

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Other Procurement Army Activity 2 SSN W61900				75456	69528	79444	101440	Cont	Cont
OMA, PE 423829				400	1000	2400	5600	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Version 3.0 FBCB2 Software Delivery												X
Force Development Test & Evaluation												X
IOTE												X

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203759A Force XXI Battle Command, Brigade and Below(FBCB2)

PROJECT: D120

A. Project Cost Breakdown:

	FY 1997	FY 1998	FY 1999
Major Contracts	0	0	47318
Support Contracts	0	0	2101
In-house/Matrix	0	0	3050
Total	0	0	52469

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
TRW	CPIF	Jan 95*				0	0	47318	Cont	47318
Support and Management Organizations										
PM office support						0	0	2050	Cont	2050
Matrix support								1000	Cont	1000
Misc Contracts								1426	Cont	1426
Test and Evaluation Organizations										
OGA	MIPR					0	0	675	Cont	675

*FY 97-98 funded under 0203758A, project D374

Government Furnished Property: Not applicable

Subtotal Product Development								47318		47318
Subtotal Support and Management								4476		4476
Subtotal Test and Evaluation								675		675
Total Project								52469		52469

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203761A Force XXI Warfighter Rapid Acquisition Program (WRAP)

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	16640	43126	99528	99421	99345	99244	99362	Continuing	Continuing
D394 Force XXI Warfighter Rapid Acquisition Program (WRAP)	0	37700	99528	99421	99345	99244	99362	Continuing	Continuing
D399 Striker (WRAP)	5600	3779	0	0	0	0	0	0	9500
D414 Integrated Combat Services Support Systems Radio Frequency Data Tags (WRAP)	1700	1647	0	0	0	0	0	0	3400
D406 Gun Laying Positioning System (WRAP)	3500	0	0	0	0	0	0	0	3500
D416 Avenger Slew-To-Cue (WRAP)	5840	0	0	0	0	0	0	0	5840

Mission Description and Budget Item Justification: Force XXI Initiatives (Warfighting Rapid Acquisition Program) continues as one of the Army's successful Acquisition Reform initiatives. The overall intent of the Force XXI Initiatives is to put proven technologies in the hands of the soldiers sooner while gaining significant time and dollar savings. Candidates considered for funding through this program are compelling, mature technologies capable of achieving a milestone III decision immediately or following one to two years of continued development. Initiatives can originate from virtually anywhere. "Good ideas" continue to emerge from such sources as the Training and Doctrine Command (TRADOC) Centers, Schools and Battle Labs, the user community, the Army Materiel Command (AMC), Research Development & Engineering Centers (RDECs), the Project Manager/Program Executive Officer (PM/PEO) community, industry, Academia, Horizontal Technology Integration (HTI), General Officer Steering Committees (GOSCs), and the Federally Funded Research and Development Centers (FFRDCs). The Army's Advanced Warfighting Experiments (AWE) continue to provide the testing ground of choice for many of these emerging technologies, as in the case of Task Force XXI AWE at the National Training Center, Fort Irwin, California for the FY97 WRAP, and Division XXI AWE at Fort Hood, Texas for the FY98 program.

This program element was established in FY97 to serve as a holding account for all funding appropriated by Congress to support this program, consistent with Congressional language reflected in the Department of Defense Appropriations Bill for FY97. As experienced with the FY97 and FY98 WRAP funding , which required a number of internal realignments of funds for WRAP initiatives associated with on-going programs, execution of FY99 WRAP funding will require reprogramming of funds from this line to other program elements or other appropriations, as deemed appropriate under current congressional or legal constraints. This program element supports upgrades to existing systems and is therefore appropriately placed in Budget Activity 7.

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203761A Force XXI Warfighter Rapid Acquisition Program (WRAP)

PROJECT: D394

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D394 Force XXI Warfighter Rapid Acquisition Program (WRAP)	0	37700	99528	99421	99345	99244	99362	Continuing	Continuing

A. Mission Description and Budget Item Justification: Force XXI Warfighter Rapid Acquisition Program

Acquisition Strategy: This program serves as a holding account for FY 98 WRAP candidates to be approved by Congress and for initiatives that will be identified in FY99 and beyond, consistent with the WRAP process.

FY 1997 Accomplishments: Project not funded in FY 97

FY 1998 Planned Program:

- 36755 To be reprogrammed to existing Program Elements (PE) and projects upon Congressional approval of WRAP candidates
- 945 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Program

Total 37700

FY 1999 Planned Program: Funds to be reprogrammed to existing Program Elements (PE) and projects upon Congressional approval of WRAP candidates.

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	0	0
Appropriated Value	0	38900	
Adjustments to Appropriated Value	0	-1200	
FY 1999 President's Budget	0	37700	99528

Change Summary Explanation: Funding: FY98/99 funds reprogrammed from PE 0203758/Proj 376

C. Other Program Funding Summary	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Army Airborne Command & Control System (A2C2s)- PE 0604201.DC97	3400	11000						0	14400
Palletized Load System-Enhanced (PLSE)- PE 0604622.659	3000							0	3000

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203761A Force XXI Warfighter Rapid Acquisition Program (WRAP)

PROJECT D394

C. Other Program Funding Summary	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Mortar Fire Control System (MFCS)- PE 0604802.D613	5000	10000						0	15000
LightWeight Laser Designator RangeFinder (LLDR)-PE 0604710.L70	5000	2800						0	7800
Applique – PE 0203758.374	4300	2600						0	6900
Tactical Internet - PE 0203758.374	8000	6000						0	14000
Combat Synthetic Training Assessment Range (CSTAR)-PE 0604715.241	1116	5414						0	6530
Palletized Load System-Enhanced (PLSE)Other Procurement, A		3000							

D. Schedule Profile: Not applicable.

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203761A Force XXI Warfighter Rapid Acquisition Program (WRAP)

PROJECT: D399

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D399 Striker (WRAP)	5600	3779	0	0	0	0	0	0	9500

A. Mission Description and Budget Item Justification: The Striker support vehicle integrates the same modern Bradley Fire Support Vehicle (BFIST) Mission Equipment Package into a High Mobility Multi-purpose Wheeled Vehicle (HMMWV) chassis. Specifically, the program provides the Combat Observation Lasing Teams (COLT), both heavy and light, with unprecedented mobility, flexibility, stealth and a highly automated targeting/C3 package.

Acquisition Strategy: Use of existing contract for Engineering and Manufacturing Development (EMD)

FY 1997 Accomplishments:

- 5000 EMD contract
- 600 Management Organization

Total 5600

FY 1998 Planned Program:

- 3685 Continue EMD
- 94 Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs

Total 3779

FY 1999 Planned Program: Project not funed in FY 99

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	0	0
Appropriated Value	0	3900	
Adjustments to Appropriated Value	5600	-121	
FY 1999 President's Budget	5600	3779	0

Change Summary Explanation: Funding: FY98 - Funds reprogrammed from 0203758A/Proj 374

C. Other Program Funding Summary Not applicable

D. Schedule Profile: Not applicable

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203761A Force XXI Warfighter Rapid Acquisition Program (WRAP)
	PROJECT D399

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
EMD Contract with SEI	5600		
Additional Contract for EMD with SEI		700	
Testing Requirements		1479	
Contractual STS Efforts with SEI		800	
Purchase of Equipment to support testing/experimentation		400	
Government support to contract		400	
Total	5600	3779	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Sys Elec Inc (SEI)	CPAF	26 Sep 97			0	3736			0	3736
SEI	CPAF					1264	3179			4443
Support and Management Organizations										
TACOM						600	600			1200

Test and Evaluation Organizations: Not applicable

Government Furnished Property: Not applicable

Subtotal Product Development						5000	3179			8179
Subtotal Support and Management						600	600			1200
Subtotal Test and Evaluation										
Total Project						5600	3779			9379

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203761A Force XXI Warfighter Rapid Acquisition Program (WRAP)
	PROJECT D414

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D414 Integrated Combat Services Support Systems Radio Frequency Data Tags (WRAP)	1700	1647	0	0	0	0	0	0	3400

A. Mission Description and Budget Item Justification: Radio Frequency Tags/Interrogators provide total asset visibility/in-transit capability to units and mangers. RF Tags are fixed to containers to provide the ability to track materiel through the distribution system. RF Tags have embedded data of container contents, shipment data and vehicle identification. Interrogators provide passive tracking of RF Tags.

Acquisition Strategy: Not applicable

FY 1997 Accomplishments:

•	1700	Initiated Global Combat Support System-Army (GCSS-Army), formerly ICS3, RF Tag Integration effort
Total	1700	

FY 1998 Planned Program:

•	1606	Integrate RF technology into GCSS-Army for supply and ammunition for passing of information through maintenance and management modules.
•	41	Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) Programs
Total	1647	

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	0	0
Appropriated Value		1700	
Adjustments to Appropriated Value	1700	-53	
FY 1999 President's Budget	1700	1647	0

Change Summary Explanation: Funding: Funds reprogrammed from PE 0203758A/Proj 376

C. Other Program Funding Summary	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Radio Frequency Data Tags (Other Proc, A)	1200	1172							

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203761A Force XXI Warfighter Rapid Acquisition Program (WRAP)
	PROJECT D414

D. **Schedule Profile:** Not applicable

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203761A Force XXI Warfighter Rapid Acquisition Program (WRAP)
	PROJECT D414

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
Contract for the development/integration and testing	1700		
Additional contract to continue integration effort		1647	
Total	1700	1647	0

B. Budget Acquisition History and Planning Information: Not applicable

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203761A Force XXI Warfighter Rapid Acquisition Program (WRAP)

PROJECT: D406

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D406 Gun Laying Positioning System (WRAP)	3500	0	0	0	0	0	0	0	3500

A. Mission Description and Budget Item Justification: The Gun Laying Positioning System (GLPS) is a tripod mounted positioning and orienting device consisting of a non-developmental item (NDI) gyroscope, electronic theodolite, Precision Lightweight Global positioning System (GPS) receiver, and a short-range, eye-safe laser range-finder. GLPS will provide non-Paladin artillery forces with capability to determine location and provide timely, accurate fire support.

Acquisition Strategy: Not applicable

FY 1997 Accomplishments:

- 2431 Acquisition of 21 test articles
- 1069 Developmental test / Operational Test – June 1998

Total 3500

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 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	0	0
Appropriated Value	0		
Adjustments to Appropriated Value	3500		
FY 1999 President's Budget	3500	0	0

Change Summary Explanation: Funding: Funds reprogrammed from 0203758A/proj 374

C. Other Program Funding Summary	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Gun Laying Positioning System (Other Proc, A)		5860							

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203761A Force XXI Warfighter Rapid Acquisition Program (WRAP)
	PROJECT D406

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Developmental Test/Operational Test							X					

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203761A Force XXI Warfighter Rapid Acquisition Program (WRAP)

PROJECT: D406

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Product Development	2289		
Support and Management	142		
Test and Evaluation	1069		
Total	3500	0	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Leica Tech, Inc.	FFP ID/IQ	19 Nov 97			0	2,289				2289
Support and Management Organizations										
ACALA					0	142				142
Test and Evaluation Organizations										
OPTEC					0	1069				1069

Government Furnished Property: Not applicable

Subtotal Product Development						2289				2289
Subtotal Support and Management						142				142
Subtotal Test and Evaluation						1069				1069
Total Project						3500				3500

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203761A Force XXI Warfighter Rapid Acquisition Program (WRAP)

PROJECT: D416

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D416 Avenger Slew-To-Cue (WRAP)	5840	0	0	0	0	0	0	0	5840

A. Mission Description and Budget Item Justification: Digitizes the sensor-to-shooter link, enabling the gunner to quickly acquire and engage a target. Enhances the capability of Avenger to engage targets at maximum range and to engage a higher percentage of targets, especially those of low visibility or of a fleeting nature (e.g. UAVs or cruise missiles).

Acquisition Strategy: Not applicable

FY 1997 Accomplishments:

- 5457 Development of Slew-to-Cue Kits
- 383 Management Overhead

Total 5840

FY 1998 Planned Program: Project not funded in FY98-See Other Program Funding Summary

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	0	0
Appropriated Value	0		
Adjustments to Appropriated Value	5840		
FY 1999 President's Budget	5840	0	0

Change Summary Explanation: Funding: Funds reprogrammed from 0203758A.374

C. Other Program Funding Summary	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Avenger Slew-to-Cue (Missile Proc, A)		7200							

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203761A Force XXI Warfighter Rapid Acquisition Program (WRAP)
	PROJECT D416

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Contract Award												
Develop Prototypes						X						
Developmental Tests						X						
Conduct LUT								X				
Milestone III								X				
Production Contract Award								X				

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203761A Force XXI Warfighter Rapid Acquisition Program (WRAP)
	PROJECT D416

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Product Development	5457		
Support and Management	383		
Total	5840	0	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
		Mar 98			0	5457			0	5457
Support and Management Organizations										
ATCOM						383			0	383
Test and Evaluation Organizations										

Government Furnished Property: Not applicable

Subtotal Product Development		5457		5457
Subtotal Support and Management		383		383
Subtotal Test and Evaluation				
Total Project		5840		5840

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203801A Missile/Air Defense Product Improvement Program

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	60882	30443	11252	32105	31034	50593	69885	Continuing	Continuing
D036 PATRIOT Product Improvement Program	45087	21698	9285	8873	7791	5099	5122	48800	474954
D038 Avenger Product Improvement Program	0	0	0	0	0	2103	0	0	2103
D303 Stinger RMP Product Improvement Program	15795	8745	1967	23232	23243	42536	61325	Continuing	Continuing
D633 THAAD P3I	0	0	0	0	0	855	3438	Continuing	Continuing

Mission Description and Budget Item Justification: The changing global threat and the new Army Warfighting Doctrine developed to respond to this changing threat all significantly impact the mission of Air Defense Artillery (ADA). This doctrine calls for U.S. forces to be able to win two nearly simultaneous major regional conflicts and to conduct combat operations characterized by rapid response and a high probability of success while minimizing the risk of significant American casualties. ADA must continually be upgraded and modernized in accordance with the ADA missions. The FY 99 budget funds critical improvements to PATRIOT and Stinger. This project supports development of upgrades to current equipment and is appropriately funded in Budget Activity 7.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 7 - Operational System Development	PE NUMBER AND TITLE: 0203801A Missile/Air Defense Product Improvement Program; PROJECT: D036

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D036 PATRIOT Product Improvement Program	45087	21698	9285	8873	7791	5099	5122	48800	474954

A. <u>Mission Description and Justification</u> D036 - PATRIOT Product Improvement Program: The PATRIOT system is being upgraded through a series of individual materiel changes (MC) culminating in the attainment of the PATRIOT Advanced Capability - 3 (PAC-3) system. The communication upgrades improve PATRIOT's above and below battalion communication equipment. These changes eliminate PATRIOT peculiar communications equipment and improve PATRIOT's interoperability between systems and between the services.

<u>Acquisition Strategy</u>: The design objective of the PATRIOT system was to provide a baseline system capable of being modified to cope with the evolving threat. This alternative minimizes technological risks and provides a means of enhancing system capability through planned upgrades of deployed systems. The PATRIOT program consists of two interrelated acquisition programs - The PATRIOT growth program and the PAC-3 missile program. Growth program modifications are grouped into configurations which are scheduled to be fielded in the same time frame. Configuration groupings are a convenience for managing block changes of hardware and software and are not a performance-related grouping. However, incremental increases in performance will be determined for each configuration in order to provide benchmarks for configuration testing and for the development of user doctrine and tactics.

FY 1997 Accomplishments:

- 5341 P3I test program
- 5667 Communications upgrades
- 750 Responsive threat analysis
- 33329 Anti-Cruise Missile upgrade

Total 45087

FY 1998 Planned Program:

- 5515 P3I test program
- 6198 Communication upgrade
- 9473 Anti-Cruise Missile Upgrade
- 512 Small Business Innovative Research/Small Business Technology Transfer Programs

Total 21698

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 7 - Operational System Development	PE NUMBER AND TITLE: 0203801A Missile/Air Defense Product Improvement Program
	PROJECT: D036

FY 1999 Planned Program:

•	5899	P3I test program
•	600	Responsive threat analysis
•	2786	Horizontal Battlefield Digitization
Total	9285	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	46280	12388	9474
Appropriated Value	46280	22388	
Adjustments to Appropriated Value	-1193	-690	
FY 1999 President's Budget	45087	21698	9285

Change Summary Explanation: Funding: FY 1998: Congressional increase for Patriot Anti-Cruise Missile (+10000); Undistributed Congressional reductions (-690).

C. Other Program Funding Summary

Missile Procurement, Army	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete	Total Cost
Budget Activity 3 - PATRIOT Mod (C50700)	23283	7784	15259	26407	29338	19248	15366	180890	317575

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Post Deploy Build-4 Software Release	X*											
Configuration 2 First Unit Equipped	X*											
Configuration 3 Contractor Development Test & Evaluation							X					
Configuration 3 Initial Operational Test & Evaluation										X		
PDB-5 Software Release												X
PAC-3 FUE												X

*Milestone completed.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203801A Missile/Air Defense Product Improvement Program PROJECT D036

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Contract Engineering Support	40054	14585	3186
Program Management Support	1399	2581	1922
Developmental Test and Evaluation	3634	4532	4177
Total	45087	21698	9285

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Raytheon										
DAAH0182CA181					3722					3722
DAAH0187CA025					22455					22455
DAAH0189C0458					23228					23228
DAAH0192C0036					5000					5000
Small Contracts					1168					1168
General Electric										
DAAH0187CA006					4824					4824
Brunswick Corp.										
DAAH0189C0167					3100					3100
Martin Marietta										
DAAH0192C0301	SS/CPFF	15Jul92			3863					3863
Raytheon										
DAAH0191C0602	SS/CPIF	22Apr92			23077					23077
DAAH0192C0006	SS/CPAF	27Jan92			56460					56460
DAAH0195C0043	SS/CPAF	01Feb95			10098	1479	500	400		12477
Martin Lockheed										
DAAH0196C0406						200	450			650

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203801A Missile/Air Defense Product Improvement Program

PROJECT: D036

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
PAC 2 Anti-Cruise					33183	33329	9473			75985
Raytheon RLCEU										
DAAH0196C0018						5046	4162			9208
Link 16/Jt Tac Info									5900	5900
Dis Sys JTIDS										
Horiz Btlfld Digit								2786		2786
Post PBD 5									56785	56785
RAM									13000	13000
Improvements										
Support and Management Organizations										
CAS, Inc.										
DAAH0187CA008					2270					2270
DAAH0190C0487					6266					6266
DAAH0194C0105	C/CPAF	31Jan94			6135					6135
DAAH0197C0324							1099	791		1890
In-House Support					11327	1399	1482	1131		15339
Test and Evaluation Organizations										
Missile Command	1095				3420	694	1000	700		5814
White Sands										9473
Missile Range	1095/MIPR				4211	1591	1934	1737		
Other Govt Agen	MIPR				4015	1349	1598	1740		8702
RDEC and										95377
Other Govt Agent					95377					

Government Furnished Property: None.

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203801A Missile/Air Defense Product Improvement Program PROJECT D036

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	190178	40054	14585	3186	75685	323688
Subtotal Support and Management	25998	1399	2581	1922		31900
Subtotal Test and Evaluation	107023	3634	4532	4177		119366
Total Project	323199	45087	21698	9285	75685	474954

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE: February 1998
BUDGET ACTIVITY: 7 - Operational System Development	PE NUMBER AND TITLE: 0203801A Missile/Air Defense Product Improvement Program	PROJECT: D303

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D303 Stinger RMP Product Improvement Program	15795	8745	1967	23232	23243	42536	61325	Continuing	Continuing

A. Mission Description and Budget Item Justification: This project provides a product evolution of the STINGER-RMP to improve countermeasures capability via externally loaded software, which is downloaded from a reprogrammable module. This concept allows for timely upgrades to correct system deficiencies, rapid reaction to new threats or threat countermeasures, development of specialty software programs where full capability may not be desired, and accommodation of new missions. The Block I upgrade project, which adds a roll sensor and enhanced software, extends the missile service life, solves the recognized system performance deficiencies in countermeasures and other engagement conditions, and increases terminal accuracy. The Block II program is a development of an advanced infrared (IR) Focal Plane Array Seeker which improves the performance of the missile against an expanded target and in background clutter. The program develops the improved missile for adaptation to any or all of the STINGER firing platforms, extends the missile service life and establishes a government post deployment software support posture. The Block II engineering, manufacturing and development (EMD) program provides for development to a performance specification, design qualification of guidance section conducted as part of the production qualification, and platform integration. Funds also develop MIL-STD 1760 launcher electronics to be fielded with the Apache Longbow Helicopter air-to-air requirements, based on Joint Service (U.S. Air Force and U.S. Army) doctrine. The air-to-air requirement satisfies three tasks: self-protection, protect force, and augmentation of air defense forces. Funding also supports an eight nation Memorandum of Understanding (MOU) signed by the Office of Secretary of Defense in 1994 for the conduct of a two-year competitive feasibility study on NATO Very Short Range Air Defense Systems (VSHORADS) and Short Range Air Defense Systems (SHORADS); this will form the basis for the development of a VSHORADS/SHORADS NATO Staff Requirement and information to support the development of a follow-on system to STINGER.

Acquisition Strategy: The Block I development program is a SS/CPIF contract awarded in 1992. The Block II development began FY 1993 as Technology Base Broad Agency announcement with a SS/CPFF contract. Current SS/CPFF contract awarded 1996 for pre-EMD, EMD start FY 2000, MS IIIa FY 2005, and FUE FY 2007. A SS/CPIF contract for MIL-STD Launcher electronics development was awarded mid-FY 1997. The VSHORADS/SHORADS Competitive/Firm Fixed Price contract was awarded to two international consortia; the United Kingdom was designated as the Pilot Nation, serving as contracting authority.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203801A Missile/Air Defense Product Improvement Program PROJECT D303

FY 1997 Accomplishments:

•	702	Completed Block I Performance Assessment
•	3898	Produced Prototype Block II Electronics State of the Art Packaging (Miniaturization) of Electronics Section
•	930	Designed and Packaged Block II Control Section
•	4811	Integration of Block II Tactical-sized Guidance Assembly
•	2191	Performed Evaluation of Block II Guidance Assembly
•	2202	VSHORADS/SHORADS System Variants Development and Evaluation of System Variants
•	1061	Continued Development of MIL-STD 1760 Launcher Electronics
Total	15795	

FY 1998 Planned Program:

•	2865	Finalize Block II Packaging; Fabricate and Assemble Three Tactical size Guidance Sections
•	1464	Integrate Guidance Assembly with Control Section
•	1588	Block II Airframe Dynamic Analysis, Tests, Performance Prediction
•	759	Telemetry Unit Design
•	200	Target Acquisition Sensor Study
•	1650	Complete VSHORADS/SHORADS Feasibility Study and Forward NATO Staff Requirement
•	219	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	8745	

FY 1999 Planned Program:

•	735	Design/Fabricate/Evaluate Three Block II Launch Tube and End Cap Units
•	840	Continue Hardware-in-the-Loop Flight Simulations
•	392	Telemetry Unit Design; Performance Prediction; Preparation for Entry into EMD
Total	1967	

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203801A Missile/Air Defense Product Improvement Program

PROJECT: D303

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	18277	5024	1957
Appropriated Value	18277	9024	
Adjustments to Appropriated Value	-2482	-279	
FY 1999 President's Budget	15795	8745	1967

Change Summary Explanation: Funding: FY 1997: Reprogrammed to higher priority requirements (-2482). FY 1998: Congressional increase (+4,000) and undistributed Congressional reductions (-279K).

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Missile Procurement, Army									
Budget Activity 3 - Stinger Mods (C21300)	37184	17425	13924	19624	26318	31550	26097	Cont'd	Cont'd
Budget Activity 3 - BSFV-E Mods (C21500)		3701							

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Block I Performance Assessment			X*									
Initiate Block II Guidance Section Integration Design			X*									
Complete Block II Tactical Size Electronics						X						
Complete Block II Guidance Section Integration Design								X				
Complete Integration of Guidance Hardware with Simulation												X

*Milestone completed

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203801A Missile/Air Defense Product Improvement Program

PROJECT: D303

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Project Management In-House	1071	439	75
Res Dev & Eng Cmd (RDEC) Engineering Support	2616	439	159
Major Development Contractor	9396	5726	1733
Contracted Services	60	200	
Other Government Agencies	450	380	
UK MOU Contractor	1732	1168	
UK Management Office	176	29	
UK MOU U.S. Program Support	294	364	
Total	15795	8745	1967

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Block I Dev	Various	Various		30937	30907	30				30937
Block II PDRR	Various	Various			6775	30		1733		8538
DAAH0196C0180	SS-CPFF	Mar 96			6750	7496	5426			19672
DAAH0197C0099	SS-CPFF	Jul 97				900	300			1200
SUE Dev	Various	Various			102	1000				1102
BSFV Prior	Various	Various			7025					7025
PMO/RDEC	Allot/1095	Various			3155	3687	878	234		7954
Other Govt Agen	MIPR	Various			42	450	380			872
Blk II EMD 00-05	TBD	TBD							Cont'd	Cont'd
Future SHORAD	TBD	TBD							Cont'd	Cont'd
British Aerospace	C-FFP	Jul 96			322	866	584			1772
Thomson-CSF	C-FFP	Aug 96			321	866	584			1772

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203801A Missile/Air Defense Product Improvement Program

PROJECT: D303

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
UK Ministry of Defense (Mgt Ofc)	MOU/1095	Dec 95			106	176	29			2311
Support and Management Organizations										
DLA90093D0011	SS-FFP	Aug 96			575		200			775
U.S. Prog Spt MOU VSHORAD/ SHORADS	1095	Dec 95			291	294	364			949
Test and Evaluation Organizations: None										
Government Furnished Property: Not applicable										
Subtotal Product Development					55505	15501	8181	1967	Cont'd	Cont'd
Subtotal Support and Management					866	294	564			1724
Subtotal Test and Evaluation										
Total Project					56371	15795	8745	1967	Cont'd	Cont'd

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203802A Other Missile Product Improvement Programs

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	13570	1216	1248	0	47806	85188	76489	126590	1244316
D045 HELLFIRE Product Improvement Program	3717	0	0	0	0	23427	18983	0	505866
D2MT ATACMS BLK IA Oper Tests	212	0	0	0	0	0	0	0	3609
D304 Army TACMS BLK IA	8965	0	0	0	0	0	0	0	92699
D336 TOW Product Improvement Program	676	1216	1248	0	0	0	0	0	348479
D689 ATACMS BLK IIIB	0	0	0	0	36240	42608	45965	111918	236731
D785 Longbow HELLFIRE PIP	0	0	0	0	11566	19153	11541	14672	56932

Mission Description and Budget Item Justification: Expanding regional power threats require an evolutionary improvement program to maintain the effectiveness of the HELLFIRE, Army TACMS, TOW and Hydra 70 Systems. The HELLFIRE PIP funding was utilized to conduct component qualification tests (CQT) of the HELLFIRE II insensitive munitions (IM) rocket motor under various environments and for product improvements to the Laser HELLFIRE Missile Systems such as countermeasure improvements to respond to changing threats, air-to-air capability improvements, a multi-mode warhead (shaped charge/blast fragmentation), IFF capability, increased field of view and target acquisition range, and development of mission specific rocket motors such as a short range training motor and an extended range boost sustain rocket motor. The Longbow HELLFIRE PIP consists of the Longbow HELLFIRE Home-on-Jam (HOJ) and Counter-Active Protection System (CAPS) improvements. The Longbow HELLFIRE missile provides a fire-and-forget capability, greatly increasing weapon system effectiveness and aircraft survivability. The weapon system is employable by day or night, in adverse weather, and in countermeasures environment. The HOJ and CAPS objective is to maintain the Longbow missile's low vulnerability and susceptibility to existing and future battlefield jammer threats and "hard kill" Active Protection System (APS) threats. The Army TACMS Block IA development effort integrated Global Positioning System (GPS) technology into the guidance system of the Army TACMS Block I missile to provide more accurate information for orientation of the missile in position and azimuth. The payload quantity of M74 anti-personnel/anti-materiel (APAM) bomblets will be reduced resulting in a range approximately twice that of the current Block I missile. The inherent GPS accuracies will be achievable independent of range, thereby enhancing system performance. These funds also supported participation by Block IA prototype missiles in the Joint Precision Strike Demonstration (JPSD). The Army TACMS IIIB will achieve ranges of approximately one and one-half times that of the Army TACMS Block IA and will employ an earth penetrator warhead designed to neutralize "Hard and Deeply Buried Targets". These target sets might include underground chemical warfare and munitions storage sites, underground command and control facilities, or surface-to-surface missile storage and assembly areas. Project D2MT provided for the operational testing of the Army TACMS Block IA Program. The TOW PIP provides advances in the day/night sight

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203802A Other Missile Product Improvement Programs

improvements, fire control and missile improvements. Improvements are required to maintain the infantry's capability to support the US Army mission of crisis response to regionally based threat and allows for TOW to continue to be integral to the strategic principle of forward presence. Included in this PIP are missile improvements to include a lethality effort against new/evolving threats and the Improved Target Acquisition System (ITAS). The ITAS is a technology insertion program using Second Generation Forward Looking Infrared (FLIR) technology to upgrade the current TOW Target Acquisition and Fire Control subsystems. These projects support development of upgrades to current production vehicles and are appropriately funded in this budget activity, 7.

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203802A Other Missile Product Improvement Programs

PROJECT: D045

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D045 HELLFIRE Product Improvement Program	3717	0	0	0	0	23427	18983	0	505866

A. Mission Description and Budget Item Justification: Project D045- HELLFIRE Product Improvement Program: The Army intends to use funding to conduct component qualification tests (CQT) of the HELLFIRE II insensitive munitions (IM) rocket motor under various environments. The new IM rocket motors will be much less susceptible to catastrophic failure from external stimuli such as bullet impact, fire, fragment impact and sympathetic detonation. CQTs of the IM rocket motors are to demonstrate, meet specifications, safety and IM requirements.

Acquisition Strategy: Awarded the HELLFIRE II Insensitive Munitions rocket motor Letter Contract (Cost Plus Fixed Fee) in FY 1997.

FY 1997 Accomplishments:

•	3400	IM rocket motor contract
•	317	In-house support
Total	3717	

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program: Project not funded in FY 1999

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	3818	0	0
Appropriated Value	3818		
Adjustments to Appropriated Value	-101		
FY 1999 President's Budget	3717	0	0

C. Other Program Funding Summary	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Compl	Cost
Missile Procurement, Army									
C70100 Laser HELLFIRE	107113	9546	14331	2243					2078793

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203802A Other Missile Product Improvement Programs PROJECT D045

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
CQT							X					
IM Rocket Motor Technology Transfer			*X									
Design for assembly/cost reduction Initiatives				*X								

*Milestone completed

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203802A Other Missile Product Improvement Programs

PROJECT: D045

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Contractor Testing	3400		
In-house	317		
Total	3717	0	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
HELLFIRE Systems Limited Liability	LC/CPFF	Mar 97	TBD	TBD		3400			39423	42823
SBIR/STTR										
PY Sunk Cost					366000					366000
Support and Management Organizations										
In-House Spt						317			2987	3304
PY Sunk Cost					93739					93739
Test and Evaluation Organizations										
Government Furnished Property: None										
Subtotal Product Development					366000	3400			39423	408823
Subtotal Support and Management					93739	317			2987	97043
Subtotal Test and Evaluation										
Total Project					459739	3717	0	0	42410	505866

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203802A Other Missile Product Improvement Programs

PROJECT: D2MT

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D2MT ATACMS BLK IA Oper Tests	212	0	0	0	0	0	0	0	3609

A. Mission Description and Budget Item Justification: Project D2MT- ATACMS BLOCK 1A Operational Tests: This project finances the direct costs of planning and conducting operational testing and evaluation of the Army Tactical Missile System Block IA system by the Operational Test and Evaluation Command (OPTEC). The Army TACMS is an Acquisition Category (ACAT) I system with a dedicated Initial Operational Test and Evaluation (IOTE) started in FY 96 in support of Milestone III full production decisions. Operational Testing is conducted under conditions similar to those encountered in actual combat with typical user troops trained to employ the system. OPTEC provides the Army leadership with independent test and evaluation of system effectiveness and suitability.

Acquisition Strategy: Not applicable.

FY 1997 Accomplishments:

•	212	Army TACMS Block IA operational testing.
Total	212	

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program: Project not funded in FY 1999

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	378	0	0
Appropriated Value	378		
Adjustments to Appropriated Value	-166		
FY 1999 President's Budget	212	0	0

Change Summary Explanation: Funding: FY 1997 reprogrammed to higher priority requirements (-166).

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

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE: February 1998
BUDGET ACTIVITY: 7 - Operational System Development	PE NUMBER AND TITLE: 0203802A Other Missile Product Improvement Programs / PROJECT: D2MT

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Complete Army TACMS Block IA Operational Testing						X						

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203802A Other Missile Product Improvement Programs

PROJECT: D2MT

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Operational Testing	212		
Total	212	0	0

B. Budget Acquisition History and Planning Information:

Government Furnished Property

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property: None									
Support and Management Property: None									
Test and Evaluation Property									
Misc.				3397	212				3609
Subtotal Product Development									
Subtotal Support and Management									
Subtotal Test and Evaluation				3397	212				3609
Total Project				3397	212	0	0	0	3609

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203802A Other Missile Product Improvement Programs

PROJECT: D304

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D304 Army TACMS BLK IA	8965	0	0	0	0	0	0	0	92699

A. Mission Description and Budget Item Justification: Project D304 - ARMY TACMS BLOCK IA: The Army TACMS Block IA development effort integrates Global Positioning System (GPS) technology into the guidance system of the Army TACMS Block I missile to provide more accurate information for orientation of the missile in position and azimuth. The payload quantity of M74 anti-personnel/anti-materiel (APAM) bomblets will be reduced resulting in a range approximately twice that of the current Block I missile. The inherent GPS accuracies will be achievable independent of range, thereby enhancing system performance. Funds also supported participation by Block IA prototype missiles in the Joint Precision Strike Demonstration (JPSD). The Block IA Engineering and Manufacturing Development (EMD) program incorporates the improved guidance capability. The improved missile will destroy high value targets.

Acquisition Strategy: The Army TACMS Block IA program develops an extended range version of the currently fielded Army TACMS Block I missile. This is achieved by reducing the bomblet payload and adding the Global Positioning System into the guidance to maintain system accuracy. A sole source EMD contract was awarded to Loral (now Lockheed Martin Vought). Low Rate Initial Production (LRIP) began in FY 1996.

FY 1997 Accomplishments:

•	2865	Block IA EMD (fourth increment).
•	5600	Testing activities, data analysis and reporting (3200 reprogrammed from missile procurement to support testing for survivability & effectiveness).
•	500	Studies, development, and validation of future improvement programs.
Total	8965	

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program: Project not funded in FY 1999

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	4376	0	0
Appropriated Value	4376		
Adjustments to Appropriated Value	+4589		
FY 1999 President's Budget	8965	0	0

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203802A Other Missile Product Improvement Programs PROJECT D304

Change Summary Explanation:

Funding: FY 1997 funding increased by Congressional reprogramming (+3200) and other below threshold reprogrammings (+1389).

Schedule: Reference decision by Army Acquisition Executive 22 Apr 97; the Milestone III Decision in 2QFY98 will be contingent upon the Block IA missile satisfying the exit criteria approved at the Milestone IV ASARC in February 1994.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete	Total Cost
Missile Procurement, Army									
C98501 ATACMS	135311	93537	90585	94635	89907	14992	7299		595299

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Complete PPQT				X*								
Complete Block IA EMD						X						
Block IA Milestone III Decision						X						

*Milestone completed

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203802A Other Missile Product Improvement Programs

PROJECT: D304

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Prime Contractor Activity	1548		
Developmental Test & Evaluation	5600		
Project Management Support	1039		
Project Management Personnel	778		
Total	8965	0	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Loral Vought Sys	SS/CPIF	Nov 93	8041	8041	8041					8041
Loral Vought Sys	SS/CPIF	Mar 94	54090	54090	52371	1548				53919
In-House Spt					3913	539				4452
Support and Management Organizations										
Sys Eng & Tech										1825
Asst Contracts and Program Mgt					1325	500				
In-House Spt					5624	778				6402

Test and Evaluation Organizations: None

Government Furnished Property

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program

Product Development Property: None

Support and Management Property: None

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

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
7 - Operational System Development	0203802A Other Missile Product Improvement Programs	D304

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Test and Evaluation Property									
White Sands Missile Range (WSMR)	MIPR			9077	1013				10090
Range Support	MIPR			131	0				131
Redstone Technical Test Center (RTTC)	MIPR			650	0				650
Army Research Laboratory (ARL)	MIPR			1053	4244				5297
Misc.	MIPR			1549	343				1892
Subtotal Product Development				64325	2087				66412
Subtotal Support and Management				6949	1278				8227
Subtotal Test and Evaluation				12460	5600				18060
Total Project				83734	8965	0	0	0	92699

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0203802A Other Missile Product Improvement Programs

PROJECT: D336

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D336 TOW Product Improvement Program	676	1216	1248	0	0	0	0	0	348479

A. Mission Description and Budget Item Justification: Project D336 -TOW Product Improvement Program: Provides for continued development of improvements to the TOW missile system. Improvements are required to maintain the Infantry's capability to support the US Army mission of crisis response to regionally based threats and allow TOW to continue to be integral to the strategic principle of forward presence. Included in this PIP are missile improvements (seeker, lethality, acrodynamics, guidance, control, reduced missile time of flight), and Improved Target Acquisition System (ITAS). The ITAS increases the capability of the TOW Heavy Antitank Weapon System by providing improved target detection and acquisition range, improved probability of hit, enhanced fire control capabilities and improved logistics supportability through modular design and extensive built-in test/built-in test equipment. ITAS contains the Army's pathfinder common components for its Second Generation FLIR, sustains concurrent common components production with Improved Bradley Acquisition System (IBAS) and is a baseline platform for the Follow-on to TOW (FOTT). The ITAS design provides simple growth potential for digitization applications and upgrades the anti-armor capability of light forces using the TOW System.

Acquisition Strategy: The ITAS is a technology insertion program utilizing Second Generation FLIR technology to upgrade the current TOW Target Acquisition and Fire Control subsystems. The 2nd Low Rate Initial Production (LRIP) contract will be awarded sole source to the EMD contractor in FY 98. First Full Rate Production (FRP) contract will be awarded in FY 99.

FY 1997 Accomplishments:

- 121 Completed ITAS Perf Spec/Develop ITAS Indoor Trainer
- 555 Continued missile enhancement efforts against the evolving threat [to include Counter Active Protection System (CAPS)]
  - Developed analytical/simulation model
  - Designed long stand-off warhead
  - Designed electrical active/passive measures
  - Designed/developed adaptive warheads for target variety

Total 676

FY 1998 Planned Program:

- 752 Continue EMD efforts on ITAS Indoor Trainer
- 443 Continue missile enhancement efforts against the evolving threat [to include Counter Active Protection System (CAPS)]
  - -Update analytical/simulation model based on latest intelligence reports
  - Design/test long stand-off warhead

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203802A Other Missile Product Improvement Programs PROJECT D336

FY 1998 Planned Program: (continued)

- Demonstrate electrical active/passive measures

• 21 Small Business Innovative Research/Small Business Technology Transfer Program

Total 1216

FY 1999 Planned Program:

• 202 Complete ITAS Indoor Trainer

• 1046 Continue missile enhancement efforts against the evolving threat (to include Counter Active Protection System (CAPS))

- Update analytical/simulation model based on latest intelligence reports
- Test long stand-off warhead
- Test electrical active/passive measures

Total 1248

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	1302	1255	1242
Appropriated Value	1302	1255	
Adjustments to Appropriated Value	-626	-39	
FY 1999 President's Budget	676	1216	1248

Change Summary Explanation: Funding: FY 1997 reprogramming to higher priority requirements (-626).

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete	Total Cost
Missile Procurement, Army									
C61700 ITAS/TOW Mods	16	61061	62478	62814	61992	65481	57739	264484	1182349

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
LRIP 2 Decision						X						
ITAS Milestone III Review								X				

* Milestone Completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203802A Other Missile Product Improvement Programs PROJECT D336

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Primary Hardware Development	198	160	291
Program Management Support	112	283	139
Developmental Test and Evaluation	265		616
Training Development	101	752	202
SBIR/STTR		21	
Total	676	1216	1248

B. Budget Acquisition History and Planning Information

Performing Organizations Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
PY Sunk Cost			60640	60640	145427					145427
Texas Instruments, McKinney, TX	C/CPIF/AF	Apr 93			59724					59724
STRICOM, Orlando, FL	MIPR	Sep 93			9128					9128
Misc.	TBD	TBD			2986	299	912	493		4690
Support and Management Organizations										
PY Sunk Cost					46912					46912
PM CCAWS, RSA	PO				2772	27	28	29		2856
MICOM, RSA,AL	PO				14653	85	255	110		15103
Misc.	TBD				2683					2683
Test and Evaluation Organizations										
PY Sunk Cost					42221					42221
TECOM,APG,MD	PO				15836			616		16452
TEXCOM, Ft Bliss, TX	MIPR				1557					1557
Misc.	TBD				1440	265	21			1726

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0203802A Other Missile Product Improvement Programs PROJECT D336

Government Furnished Property: None.

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	217265	299	912	493		218969
Subtotal Support and Management	67020	112	283	139		67554
Subtotal Test and Evaluation	61054	265	21	616		61956
Total Project	345339	676	1216	1248	0	348479

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0208010A Joint Tactical Communications Program (TRI-TAC)

PROJECT: D107

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D107 Echelons Above Corps (EAC) Comm	17747	21105	35941	19071	20431	8119	8127	122300	316633

A. Mission Description and Budget Item Justification: A requirement exists to automate Signal Corps unit's capability to manage multiple tactical communications systems in support of battlefield operations. The Integrated System Control (ISYSCON) facility will provide automated, integrated management of the tactical communications network, establish an interface with each technical control facility in the Army Tactical Command and Control System (ATCCS) architecture, and enable automation assisted configuration and management of a dynamic battlefield. ISYSCON is being developed in an evolutionary manner with incremental software releases. A change to the requirements document has added planning and management of satellite resources as a requirement. The ISYSCON has been selected as the baseline for network management system for joint task force use. The Battlefield Spectrum Management (BSM) software has been designated as part of the migration system for DOD use. The ISYSCON Program serves as a baseline foundation to support future network management initiatives tied to and part of the evolution to the Digitized Division and the WIN Architecture. ISYSCON is also being extended to manage the Tactical Internet at brigade and battalion levels. FY 1999 supports the development of software (P1, P2, P3), supports IOT&E, and supports releases. This program element also supports any development required for PM, Joint Tactical Area Communications System (JTACS) Area Common User Systems (ACUS). This program is assigned to Budget Activity 7 since it includes those development projects, in support of a development acquisition program or upgrades, still in engineering and manufacturing development but which have received approval for production through DAB or other action, or production funds have been included in the DOD budget submission for the budget or subsequent fiscal year.

Acquisition Strategy: A competitive Engineering & Manufacturing Development (EMD) contract was awarded to GTE in Sep 92. An IOT&E is scheduled for 2QFY98.

FY 1997 Accomplishments:

•	5197	Participated in the Army Warfighter Experiment (AWE) Exercise
•	1500	Participated in Division AWE Ramp Up
•	2000	Supported 3rd Sig Brigade Field Exercises in preparation for Initial Operational Test & Evaluation (IOT&E)
•	1500	Completed Battlefield Spectrum Mgmt (BSM) Module for integration into IOT&E Baseline
•	550	Conducted Developmental Progress Review (DPR) for IOT&E Baseline
•	3000	Completed Systems Design for IOT&E Software Baseline
•	4000	Conducted Software Coding for IOT&E Baseline
Total	17747	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0208010A Joint Tactical Communications Program (TRI-TAC)
	PROJECT D107

FY 1998 Planned Program:

•	2500	Conduct Unit Test, System Test for IOT&E Baseline
•	1700	IOT&E Training and Test Conduct Support
•	2500	Initial Migration to COE Compliance
•	1200	Div XXI AWE support
•	2018	Develop Initial First Digitized Division(FDD) Dynamic Management Capabilities
•	1002	Conduct DPR for P2 Baseline (increment 1&2)
•	2087	Conduct System Design for P1 Baseline
•	7880	Conduct Software Coding for P2 Baseline (increment 1&2)
•	218	Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
Total	21105	

FY 1999 Planned Program:

•	1500	Continue Software Coding for P2 Baseline
•	2000	Conduct Unit Test, System Test for P2 Baseline
•	941	P2 Software Release
•	1200	Conduct P2 FOT&E Training/Test Conduct Support
•	2500	Enhanced migration to COE Compliance
•	1800	Complete System Design for P2 Baseline (increment 3,4, &5)
•	4200	Conduct Software Coding for P2 (increment3,4, &5)
•	1500	Conduct Unit Test, System Test for P2(increment 3,4, &5)
•	9300	Integrate FDD-B2 Software coding for Dynamic Management Capabilities
•	4500	Develop Enhanced FDD(WIN-T) Dynamic Management Capabilities
•	1600	Conduct DPR for P2 Baseline (increment 3,4 &5)
•	600	Conduct P3 DPR
•	2200	Complete System Design for P3
•	2100	Conduct Software Coding for P3
Total	35941	

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0208010A Joint Tactical Communications Program (TRI-TAC)

PROJECT: D107

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	18229	8983	9941
Appropriated Value	18693	8983	
Adjustments to Appropriated Value	-946	+12122	
FY 1999 President's Budget	17747	21105	35941

Change Summary Explanation:

Funding: FY1998(+12122) ISYSCON development for FDD. Represents Congressional approval of Army's emergency reprogramming request for Digitization.

FY1999(+26000) Funding increase supports ISYSCON development required to meet the Army's digitization plans and schedule for FDD and beyond.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Comp	Total Cost
Other Procurement, Army-2, BX0007	2674	10333	34175	16049	26549	10700	3000		116246

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
IOT&E Software												
DPR		X*		X*		X						
IOT&E						X						
P2 Software												
DPR								X		X		X
FOT&E										X		

*Milestone Completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0208010A Joint Tactical Communications Program (TRI-TAC)
	PROJECT D107

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
Software Development (Contractor)	16184	17970	31337
Contractor Engineering Support	439	1431	3046
Government Engineering Support	923	1193	1232
Program Management Support	201	293	326
SBIR/STTR		218	
Total	17747	21105	35941

B. Budget Acquisition History and Planning Information: Not applicable

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0208053A Joint Tactical Ground Station (TIARA)

PROJECT: M635

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
M635 Joint Tactical Ground Station P3I (TIARA)	2022	5001	12229	29034	6551	5468	3232	0	63537

A. Mission Description and Budget Item Justification: This program supports development of critical improvements to the Joint Tactical Ground Station (JTAGS) program. JTAGS was designed as a quick response non-developmental item (NDI) acquisition to satisfy critical in-theater deficiencies in Tactical Ballistic Missile (TBM) warning and cueing. JTAGS is designated the in-theater element of the United States Space Command's (USSPACECOM) Theater Event System (TES). The objectives of the JTAGS critical improvements program are to keep pace with modernization of the Department of Defense (DoD) Defense Support Program (DSP) satellites into the evolving Space Based Infrared System (SBIRS), to retain timely dissemination of TBM launch data through sensor technology advances and to increase the accuracy and timeliness of TBM warning and cueing. This project supports development of upgrades to current production modifications and is appropriately funded in Budget Activity 7.

Acquisition Strategy: Critical JTAGS improvements under this program will be developed making maximum use of NDI/Commercial Off-The Shelf (COTS) elements. After selection and assembly, the modification design will be subjected to thorough integration and performance testing to ensure suitability for procurement. Once approved for procurement, an upgrade package will be procured for each of the 5 tactical units. Application of the upgrades will be accomplished at each of the JTAGS operational sites.

FY 1997 Accomplishments:

•	294	Initiated modification to integrate the JTIDS commo net into JTAGS.
•	795	Initiated modification to fuze DSP sensor data with data from other battlefield sensors.
•	933	Initiated modification to calibrate sensor via static sources or beacons.
Total	2022	

FY 1998 Planned Program:

•	782	Complete fusion development.
•	633	Complete beacon development.
•	1461	Continue JTIDS development.
•	2000	Initiate modification for the Phase II (SBIRS) development.
•	125	Small Business Innovation Research/Small Business Technology Transfer Program.
Total	5001	

FY 1999 Planned Program:

•	75	Complete JTIDS development.
•	25	Prepare for JTIDS Decision Review.
•	12129	Continue SBIRS development.
Total	12229	

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0208053A Joint Tactical Ground Station (TIARA)

PROJECT: M635

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	2077	3195	0
Appropriated Value	2124	5195	
Adjustments to Appropriated Value	-102	-194	
FY 1999 President's Budget	2022	5001	12229

Change Summary Explanation:

Funding: FY 1998 Congressional increase of 2000 for upgrade of JTAGS to interface with SBIRS followed by a (-194) undistributed Congressional reduction. FY1999 increase (+12229) to continue upgrade of JTAGS to interface with SBIRS.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Other Procurement Army, OPA-2									
BZ8420 Joint Tactical Ground Station Mods	0	2827	2638	0	0	0	0	0	5465

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Initiated JTAGS Modification Program	X											
Initiated Sensor Fusion Development	X											
Initiated Beacon Development	X											
Initiated JTIDS Development			X									
Complete Sensor Fusion Development					X							
Complete Beacon Development						X						
Initiate SBIRS Development						X						
Complete JTIDS Development								X				

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0208053A Joint Tactical Ground Station (TIARA)

PROJECT: M635

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Prime Contractor	607	2358	8470
Contract Engineering Support	800	558	911
Program Management Support	517	1742	2110
Government Engineering Support	98	343	738
Government Furnished Equipment	0	0	0
Total	2022	5001	12229

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Aerojet (Prime)	C/CPFF				0	607	452	0	0	1059
Lockheed (Prime)	C/CPAF				0	0	1906	8470	27317	37693
Support and Management Organizations										
Proj Mgt	N/A	N/A	N/A	N/A	0	517	1742	2110	7763	12132
Contract Eng Spt	C/CPIF	Mar 95	N/A	N/A	0	800	558	911	3352	5621
Govt Eng Spt			N/A	N/A	0	98	343	738	4068	5247

Test and Evaluation Organizations: None

Government Furnished Property

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property: None									
Support and Management Property									
To Be Defined								1785	1785
Test and Evaluation Property: None									

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0208053A Joint Tactical Ground Station (TIARA)	PROJECT M635

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development		607	2358	8470	27317	38752
Subtotal Support and Management		1415	2643	3759	16968	24785
Subtotal Test and Evaluation						
Total Project		2022	5001	12229	44285	63537

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0303140A Communications Security (COMSEC) Equipment

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	3048	11771	7433	7433	8174	9060	9332	Continuing	Continuing
D491 Communications Security Equipment Technology (COMSEC)	2474	8432	6264	6217	6980	7889	8188	Continuing	Continuing
D501 Army Key Management System (AKMS)	574	3339	1169	1216	1194	1171	1144	Continuing	Continuing

Mission Description and Budget Item Justification: The Communications Security Equipment Program develops Information Systems Security (ISS) equipment and techniques required to combat threat Signal Intelligence capabilities and to insure the integrity of data network. This program will also develop, integrate, and demonstrate C2 Protect Common Tools into C4I systems that consist of hardware, software, and applications which can manage, protect, detect and react to C2 system vulnerabilities, threats, reconfigurations, and reconstitution. The Army's RDTE ISS program objective is to implements National Security Agency (NSA) developed security technology in Army information systems. The Communications Security Equipment Technology (COMSEC) insures total signals and data security of all Army information systems, to include any operational enhancement and specialized Army configurations. The Army Key Management System (AKMS) automates key generation and distribution while supporting joint interoperability. It provides communications and network planning with key management on a single platform. AKMS is a part of the management/support infrastructure for the Warfighter Information Network (WIN) program. Additional modifications to the AKMS baseline shall be required to support the emerging WIN architecture. System security engineering, integration of available information security (INFOSEC) products, development (when required), and testing are services provided to ensure that C4I systems are protected against malicious or accidental attacks by our enemies or friends. Modeling, simulation, and risk management tools will be used to develop C2 Protect capabilities that will enable the warfighter to distribute complete and unaltered information while maintaining a dynamic, continuous synchronous operational force. Several joint service/NSA working groups exist in the area of key management to avoid duplication and to assure interoperability between all Services' systems to include standards and testing. For the emerging multilevel network security, the Defense Information Systems Agency (DISA) Multi-Level Security (MLS) working group coordinates the Services different technology efforts. The National Security Agency reviews each Service RDT&E program to avoid duplication. These projects support development of upgrades to current production vehicles and are appropriately funded in Budget Activity 7.

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0303140A Communications Security (COMSEC) Equipment

PROJECT: D491

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D491 Communications Security Equipment Technology (COMSEC)	2474	8432	6264	6217	6980	7889	8188	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project D491 - Communications Security Equipment Technology: Project implements National Security Agency (NSA) developed security technology in Army information systems. Project objectives are to provide systems security mechanisms through encryption, trusted software or standard operating procedures to protect the information and to integrate these mechanisms into specified systems so secure operations are as transparent as possible to the users. This entails performing architecture studies and modeling, development models, system integration and testing, installation kits and certifications and accreditation of Automation Information Systems.

Acquisition Strategy: Initial Operational Testing and Evaluation (IOTE) for Tactical End-to-End Encryption Device (TEED) will be done during Task Force XXI in FY 97. The Production Milestone decision will be made after the Joint Warfighter Demonstration in Fall FY 97.

FY 1997 Accomplishments:

•	2474	Expanded TEED Internet Security Manager (TISM) to include both FASTLANE and TACLANE Security Management capabilities (TISM is now JOINT Army/NSA Program). Employed TEEDs in various test beds (Task Force XXI, Division XXI, IMETS, Patriot); As part of "electronic operations" to protect Army networks from penetration and exploitation. Investigated and evaluated several COTS products (ISS, Secureware, Intouch, NIDS, Secret Agent). Evaluated Unissued Purge Product to zeroize disk drives of all information.
Total	2474	

FY 1998 Planned Program:

•	2200	Support NSA TACLANE Program.
•	729	Evaluation of Commercial INFOSEC (COMSEC & COMPUSEC) equipments, evaluation of New COMSEC Chips for embedding and development of new installation kits for TACLANE, complete development efforts on TISM with FASTLANE and TACLANE Security Management capabilities.
•	3061	Initiate development of Common Tools Set for C2 Protect (Information Operations/Warfare) by doing the following: - Investigate and evaluate COTS/GOTS products for Network Access Control - Investigate and evaluate COTS/GOTS products for Intrusion Detection Systems - Investigate and evaluate Host Machines for vulnerabilities and identify solutions for vulnerabilities
•	2231	Support Defense Health Care Information Assurance Program (DHIAP)
•	211	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	8432	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0303140A Communications Security (COMSEC) Equipment PROJECT D491

FY 1999 Planned Program:

•	1097	Perform in-house evaluations and integration of INFOSEC equipment such as COMSEC foreign nation releasable chips, high speed encryptors, trusted computer platforms and secure applications; perform evaluations of latest NSA INFOSEC crypto chips.
•	200	Continue support of TACLANE development.
•	4967	Continue Common Tool Set for C2 Protect (Information Operations/Warfare) by doing the following: - Continue investigation and evaluation of Network Access Control , Network Mapping and Password Generation/Authentication COTS/GOTS products. - Continue investigation and evaluation of Network Intrusion Detection System - Initiate investigation and evaluation of COTS/GOTS products for Risk Management - Continue investigation and evaluations of Host systems in the area of Anti-Viruses, purge tools and vulnerabilities - Initiate investigation of techniques for Audit Analysis
Total	6264	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	2574	6201	2564
Appropriated Value	2574	8701	
Adjustments to Appropriated Value	-100	-269	
FY 1999 President's Budget	2474	8432	6264

Change Summary Explanation: Funding: Funding for FY98, +$2.231M supports the Defense Health Care Information Assurance Program
Funding for FY99 increased to support Common Tool Set for Command & Control (C2) Protect (Information Operations/Warfare).

C. Other Program Funding Summary: None

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
TEED Prototype Model Testing												
TEED Prototype Model Delivery												
Trusted Network Base contract award												
Trusted Network Base system review												
Trusted Network Base software coding												

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0303140A Communications Security (COMSEC) Equipment PROJECT D491

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Trusted Network Base system integration			X									
Trusted Network Base delivery				X								
Re-Programmable COMSEC award												
Re-Programmable COMSEC card design												
Re-Programmable COMSEC card test												
Integration into multiband, multimode digital radio		X										
AIRTERM installation kits designed												
AIRTERM installation kits testing												
TACLANE Support	X			X	X		X		X			X
C2 Protect Tool Set					X		X		X			X
- Network Access Control					X			X	X			X
- Intrusion Detection System					X			X	X			X
- Host Machine Vulnerabilities					X			X	X			X
- Risk Management									X			X
- Anti -Viruses									X			X
- Purge Tools									X			X
- Audit Analysis									X			X

*Denotes completed effort

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0303140A Communications Security (COMSEC) Equipment PROJECT D491

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Ancillary Hardware and Software Development	1330	2789	3000
System Engineering	0	1450	2000
Government Engineering Support	1034	1576	1097
Travel	60	100	92
Miscellaneous	50	75	75
DHIAP		2231	
SBIR/STTR		211	
Total	2474	8432	6264

B. Budget Acquisition History and Planning Information:

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
GTC, Tampa, FL	C-CPFF	AUG 91	8687	8687	113435	0	0	0	5500	118935
GTE, Waltham, MA	C-CPFF	AUG 93	3857	3857	3091	800	1087	0	20000	24978
Booz, Allen & Hamilton Linthicum MD	C-CPFF	Sep 96			0	0	822	375	2250	3447
SYTEX, Inc Tinton Falls, NJ	TM/LH	Apr 97			0	0	692	245	1470	2407
CECOM, RDEC	PO	OCT 95	700	700	0	1174	4024	5644	cont'd	10842
NSA	MIPR	MAR 95	200	200	145	500	1807	0	0	2452

Support and Management Organization: None
Test and Evaluation Organization: None

Government Furnished Property: N/A

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0303140A Communications Security (COMSEC) Equipment PROJECT D491

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	116671	2474	8432	6264	29220	163061
Subtotal Support and Management						
Subtotal Test and Evaluation						
Total Project	116671	2474	8432	6264	29220	163061

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0303140A Communications Security (COMSEC) Equipment

PROJECT: D501

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D501 Army Key Management System (AKMS)	574	3339	1169	1216	1194	1171	1144	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project D501 - Army Key Management System (AKMS): This program provides decentralized and automated key generation, distribution and management while enhancing joint interoperability. It eliminates paper encryption key and provides communications network planning with key management on a single platform.

Acquisition Strategy: AKMS Initial operational test and evaluation (IOTE) is scheduled August through September FY97 with IOC in February FY98.

FY 1997 Accomplishments:

•	554	Completed software for the AKMS workstation
•	20	Provided contractor and programmatic support
Total	574	

FY 1998 Planned Program:

•	3255	Provide contractor and programmatic support , and software development upgrades for Common Tier III and AKMS Workstation
•	84	Small Business Innovative Research/Small Business Technology Transfer Programs (SIBIR/STTR)
Total	3339	

FY 1999 Planned Program:

•	1169	Provide contractor and programmatic support, and software development upgrades for Common Tier III and AKMS workstation.
Total	1169	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	587	3446	1262
Appropriated Value	587	3446	
Adjustments to Appropriated Value	-13	-107	
FY 1999 BES	574	3339	1169

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0303140A Communications Security (COMSEC) Equipment

PROJECT: D501

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Comp	Total Cost
OPA Z16800	13496	0	0	0	0	0	0	cont'd	cont'd
OPA TA0600	19879	13403	29714	29340	30407	26612	25894	cont'd	cont'd
OPA BS9716	827	548	350	858	847	1358	1662	cont'd	cont'd
OPA BA1201	0	4576	10315	6459	1657	48561	51559	cont'd	cont'd

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
AKMS Decision Brief												
AKMS Award Competitive Follow-on Contract												
AKMS Computer Software Configuration Item Testing			X									
AKMS Initial Operational Test & Evaluation				X								
AKMS Milestone III					X							
AKMS Type Classification					X							
AKMS Material Release					X							
AKMS Begin Fielding with Upgraded Software						X						
AKMS Initial Operational Capability						X						
AKMS Material Release CT3 Upgrade								X				
AKMS Material Release Work Station Upgrade								X				

*Milestone completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0303140A Communications Security (COMSEC) Equipment PROJECT D501

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
Software Engineering (Contractor)	562	946	305
Government Engineering Support	10	2293	814
Program Management Support	2	100	50
Congressional Adjustments	0		
Total	574	3339	1169

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

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0303142A Satellite Command (SATCOM) Ground Environment

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	37665	48939	53897	37846	34714	25512	35059	Continuing	Continuing
D2PT SMART-T Operational Test	134	4318	0	0	0	0	0	0	4452
D253 Defense Satellite Communications Systems-Defense Communications systems (DSCS-DCS)(Phase II)	15833	14317	16160	9397	8321	11981	12418	Continuing	Continuing
D384 SMART-T	15729	14274	25264	15684	11011	7654	6680	0	267863
D386 SCAMP Block I	985	2705	0	0	0	0	0	0	100354
D455 MILSTAR EDM Terminal	857	0	0	0	0	0	0	0	299901
D456 Milsatcom System Engineering	4127	3934	4131	4735	4972	4986	5015	Continuing	Continuing
D559 Automated Communications Management System (ACMS)	0	9391	8342	6196	8606	0	0	0	32535
D561 Military Individual Communicator (MIC)	0	0	0	1834	1804	891	869	Continuing	Continuing
D562 Multiband Integrated Satellite Terminal (MIST)	0	0	0	0	0	0	4036	Continuing	Continuing
D566 Transit MDR (TRAM)	0	0	0	0	0	0	6041	Continuing	Continuing

Mission Description and Budget Item Justification: Military Satellite Communications (MILSATCOM) systems are joint program/project efforts with each Service, Joint Chiefs of Staff (JCS), National Command Authority, Commanders-In-Chief (CINCs), National Security Agency and Office of the Secretary of Defense assigned specific responsibilities as specified in JCS Memorandum of Policy (MOP) 37. The worldwide MILSATCOM systems are the following: Ultra High Frequency (UHF) Fleet Satellite/Air Force Satellite (FLTSAT/AFSAT) system; the Super High Frequency (SHF) Defense Satellite Communications System (DSCS); the Extremely High Frequency (EHF) MILSTAR system; the UHF Follow-On Satellite system; and all MIL-STD-1582C compatible payloads. MOP 37 designated Army as the Executive Agent for MILSATCOM Ground Subsystems. As Executive Agent for MILSATCOM Ground Subsystems, Army is responsible for developing, procuring, and maintaining the life cycle logistics support for satellite terminals; satellite control subsystems; communications subsystems; and all related equipment required to achieve end-to-end connectivity to satisfy JCS Command, Control, Communications, and Intelligence (C3I) supporting the President; JCS; CINCs; Military Departments; Department of State; and other

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0303142A Satellite Command (SATCOM) Ground Environment

Departments and Agencies of the government. The projects in this Program Element support development acquisition programs or upgrades, still in engineering and manufacturing development (DoDD 5000.1), but which have received approval for production through DAB or other action, or production funds have been included in the DoD budget submission for the budget or subsequent fiscal year, and are, therefore, placed in Budget Activity 7.

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0303142A Satellite Command (SATCOM) Ground Environment

PROJECT: D2PT

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D2PT SMART-T Operational Test	134	4318	0	0	0	0	0	0	4452

A. **Mission Description and Budget Item Justification: Project D2PT - SMART-T Operational Test:** Project D2PT finances the direct costs of planning and conducting operational testing and evaluation of the Secure Mobile Anti-Jam Reliable Tactical Terminal (SMART-T) by the Operational Test and Evaluation Command (OPTEC). SMART-T is an Acquisition Category (ACAT) IC system with an Initial Operational Test and Evaluation (IOTE) in FY 98. 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.

Acquisition Strategy: Not Applicable

FY 1997 Accomplishments:

•	134	Planning and preparation for IOT&E
Total	134	

FY 1998 Planned Program:

•	4210	Conducts IOT&E
•	108	Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
Total	4318	

FY 1999 Planned Program: Project not funded in FY 1999

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	137	4715	26
Appropriated Value	142	4715	
Adjustments to Appropriated Value	-8	-397	
FY 1999 President's Budget	134	4318	0

Change Summary Explanation: Funding: FY 1999 (-26) Funds realigned to higher priority requirements

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0303142A Satellite Command (SATCOM) Ground Environment PROJECT D2PT

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

D. **Schedule Profile**

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Initiate IOT&E planning and preparation		X*										
Conduct IOT&E							X					

*Denotes Milestone Completion

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0303142A Satellite Command (SATCOM) Ground Environment

PROJECT: D2PT

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Operational Test and Evaluation	134	4210	0
SBIR/STTR		108	
Total	134	4318	

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations: Not Applicable										
Support and Management Organizations: Not Applicable										
Test and Evaluation Organizations										
OPTEC					0	134	4210	0	0	4344
SBIR/STTR							108			108

Government Furnished Property: None

Subtotal Product Development				
Subtotal Support and Management				
Subtotal Test and Evaluation	134	4318		4452
Total Project	134	4318		4452

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0303142A Satellite Command (SATCOM) Ground Environment

PROJECT: D253

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D253 Defense Satellite Communications Systems-Defense Communications systems (DSCS-DCS)(Phase II)	15833	14317	16160	9397	8321	11981	12418	Continuing	Continuing

A. **Mission Description and Budget Item Justification:** **Project D253 - DSCS-DCS Phase II:** This project provides funds required to develop strategic and tactical Ground Subsystem equipment to support JCS validated Command, Control, Communications and Intelligence (C3I) for the worldwide Super High Frequency (SHF) Defense Satellite Communications System (DSCS) program. Continuing upgrades for the DSCS are vital to support the emerging power projection and rapid deployment role of the Armed Forces. DSCS provides warfighters multiple channels of tactical connectivity as well as interface with strategic networks and national decision-makers.

Acquisition Strategy: The Universal Modem System (UMS), Replacement Satellite Configuration Control Element (RSCCE), and Replacement Batson (RBATSON), programs will be followed by Competitive Firm Fixed Price Procurement Programs that contain a basic production year followed by one or more option years of production. The DSCS Integrated Management System (DIMS) and Common Network Planning Software (CNPS) programs are software development programs that are not planned to have follow-on production.

FY 1997 Accomplishments:

•	2560	Completed MDR Technical Insertion UM Program
•	2888	Continued DIMS Interface Software (Phase II)
•	1718	Continued the NDI Adaptation Phase for the RSCCE
•	4573	Initiated development of the Replacement Batson
•	1800	Initiated development of the Integrated Baseband Workstation (IBWS)
•	560	Developed the specification and acquisition requirements package for the Common Network Planning Software (CNPS)
•	1734	Continued IRF and SETA efforts
Total	15833	

FY 1998 Planned Program:

•	403	Complete the NDI Adaptation Phase for the RSCCE
•	4038	Continue DIMS Interface Software (Phase III)
•	4555	Continue the RBATSON program
•	1900	Complete the IBWS program
•	559	Complete the specification and acquisition requirements package for the Common Network Planning Software(CNPS) program

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0303142A Satellite Command (SATCOM) Ground Environment PROJECT D253

FY 1998 Planned Program: (continued)

•	2508	Continue IRF and SETA efforts
•	354	Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
Total	14317	

FY 1999 Planned Program:

•	700	Complete the RBATSON program
•	3300	Continue the DIMS Interface Software program
•	3850	Initiate the CNPS program
•	6000	Develop prototype microwave link from Kaiserslautern through Donnersburg to Heidelburg Germany as per agreement between Program Manager, Defense Communications and Army Transmission Systems and Defense Information Systems Agency
•	2310	Continue IRF and SETA efforts
Total	16160	

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	16510	14890	11610
Appropriated Value	17063	14890	
Adjustments to Appropriated Value	-1230	-573	
FY 1999 President's Budget	15833	14317	16160

Change Summary Explanation:

Funding: FY 1999 (+4550) funding adjustment represents an increase to support CINC and US Army Europe transmission requirements(+6000) and realignment to higher priority requirements (-1450).

Schedule: FY98 CNPS contract award delayed until FY99 due to budget reductions leading to a program restructure based on Defense Information Systems Agency(DISA) prioritization

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
OPA 2 - SSN: BB8500	92689	84631	94616	71549	75791	65130	63544	Cont	Cont

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0303142A Satellite Command (SATCOM) Ground Environment PROJECT D253

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Award R-Batson Contract	X*											
DIMS Interface SW Testing (Phase I)		X*										
IBWS System Specification Completion		X*										
RSCCE Testing						X						
DIMS Interface SW Testing (Phase II)						X						
CNPS Contract Award										X		
RBATSON Testing										X		
DIMS Interface SW Testing (Phase III)											X	
Microwave Test Link Contract Award											X	

* Denotes milestone completion

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0303142A Satellite Command (SATCOM) Ground Environment PROJECT D253

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
Development (Prototype, Sys Engr, Test & Evaluation)	11331	10036	12950
Integrated Research Facility	723	800	800
Contractor Engineering Support	987	638	498
Government Engineering Support	1556	1291	910
Program Management Support	1236	1198	1002
SBIR/STTR		354	
Total	15833	14317	16160

B. Budget Acquisition History and Planning Information: Not Applicable

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0303142A Satellite Command (SATCOM) Ground Environment PROJECT D384

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D384 SMART-T	15729	14274	25264	15684	11011	7654	6680	0	267863

A. Mission Description and Budget Item Justification: Project D384 - SMART-T: The Secure Mobile Anti-Jam Reliable Tactical Terminal (SMART-T) will provide a range extension capability for the Army's Mobile Subscriber Equipment (MSE) to support the Force Projection Army. Specifically, it will provide a satellite interface to permit uninterrupted communications as our advancing forces move beyond the line-of-sight capability of MSE. This equipment will communicate at both low and medium data rates (LDR/MDR) over the MILSTAR satellite constellation. It will also be compatible with the UHF Follow-On (UFO); the Navy Fleetsatcom EHF satellite package; and MIL-STD-1582B/C compatible payloads. It will provide the security, mobility, and anti-jam capability required to defeat the threat and satisfy the critical need as stated above. The SMART-T will also have Low Probability of Interception and Low Probability of Detection (LPI/LPD) to avoid being targeted for destruction, jamming or intercept. The prime mover will be a High Mobility Multi-Purpose Wheeled Vehicle (HMMWV) configured with all the electronics and the self-erectable antenna.

Acquisition Strategy: The SMART-T program employed a competitive development strategy. The development phase included two contractors performing under Cost-Plus-Incentive-Fee (CPIF) contracts. The contracts were awarded on 9 Nov 92 to Raytheon Company (Marlborough, MA) and Rockwell International (Richardson, TX). Twelve Engineering Development Model (EDM) terminals (6 from each contractor) were developed under the two contracts. The streamlining features of this phase included a reliability growth plan to achieve the required reliability by Follow-On Test and Evaluation (FOT&E). Both Low Rate Initial Production (LRIP) and Full Rate Production (FRP) were competitively awarded to Raytheon Company on 7 Feb 96 under a single contract based upon the development contract effort and LRIP/FRP proposals. The Project Management Office elected to defer discrete development initiatives until after down select for greater cost efficiency. A SMART-T Milestone III Decision will be conducted prior to exercising the first FRP Option in FY 99. The total Army terminal requirement is 209, of which 43 will be procured during LRIP (base year plus one option) to ensure sufficient quantities are available for the launch of the first MDR satellite in FY 99. The Air Force will also be procuring 9 terminals during LRIP. The Full Rate Production (FRP) quantities (166 Army terminals) will be awarded as fixed price options to the LRIP/FRP contract following Milestone III approval. Additional quantities (i.e., 95) will be procured for the Air Force, Marine Corps, and JCSE.

FY 1997 Accomplishments:

•	10335	Continued development of Network Control, Demand Assigned Multiple Access, Payload Specification Changes and C4I Technical Architecture
•	3530	Continued development of interactive training courseware
•	1864	Conducted Terminal Test with Lincoln Labs MDR Simulator
Total	15729	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0303142A Satellite Command (SATCOM) Ground Environment
	PROJECT D384

FY 1998 Planned Program:

- 10270 Continue development of Demand Assigned Multiple Access
- 2545 Continue development of Network Control, Payload specification and C4I Technical Architecture
- 1101 Complete development of interactive training courseware
- 358 Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)

Total 14274

FY 1999 Planned Program:

- 12512 Continue development of Network Control and C4I Technical Architecture
- 8252 Continue development of Demand Assigned Multiple Access
- 4500 Continue Payload Specification Change development work resulting from test with on-orbit MDR Payload satellite

Total 25264

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	16413	17264	24641
Appropriated Value	17217	15664	
Adjustments to Appropriated Value	-1488	-1390	
FY 1999 President's Budget	15729	14274	25264

Change Summary Explanation:

Funding: FY 1998 reduction due to undistributed Congressional reductions applied against this PE/Project(-1390)

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Other Procurement Army 2 - SSN: BC 4002	33112	22237	57743	63009	43228	15635	10682	8451	305526
Other Procurement Army 4 - SSN: BS 9720	1583	1042	1407	0	2817	2553	1965	1053	12420

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0303142A Satellite Command (SATCOM) Ground Environment PROJECT D384

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Conduct SIM 2 Test			X*									
Complete Interactive Training Courseware								X				
Complete DAMA Development										X		

*Denotes Milestone Completion

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0303142A Satellite Command (SATCOM) Ground Environment

PROJECT: D384

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Contractor	9617	11620	19814
Government Systems Engineering & Project Mgmt	6112	2296	5450
SBIR/STTR		358	
Total	15729	14274	25264

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC *	Project Office EAC *	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Dual Development Contracts	C-CPIF	09 Nov 92			117173	0	0	0	0	117173
Other Contracts	MIPR/PWD	Various			5615	9617	11620	19814	18891	65557
Govt Support	N/A	Various			8742	2239	900	1450	10838	24169
Support and Management Organizations										
Other Contracts	MIPR/PWD	Various			10890	400	0	700	2800	14790
Core Support	N/A	Various			3772	355	25	300	1500	5952
Lab Activities	MIPR/PWD	Various			3266	468	171	1800	3000	8705
Lincoln Labs	MIPR	Various			21960	2650	1200	1200	4000	31010
SBIR/STTR							358			358

* Contract effort completed

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0303142A Satellite Command (SATCOM) Ground Environment PROJECT D384

Government Furnished Property

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property									
CDH Chips/Chip Carriers	MIPR	Jul 93		149	0	0	0	0	149

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	131679	11856	12520	21264	29729	207048
Subtotal Support and Management	39888	3873	1754	4000	11300	60815
Subtotal Test and Evaluation						
Total Project	171567	15729	14274	25264	41029	267863

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0303142A Satellite Command (SATCOM) Ground Environment PROJECT D386

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D386 SCAMP Block I	985	2705	0	0	0	0	0	0	100354

A. Mission Description and Budget Item Justification: Project D386 - SCAMP: The SCAMP Block I Terminal will provide four simultaneous channel full duplex data, half duplex voice communications at 2400 bits per second (bps) each in a 37 pound manportable configuration. These satellite terminals are to be employed by units that require range extension for command and control communications. Block I will provide priority tactical ground users with the capability to transmit and receive intelligence, command, and control traffic from a base station. 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 I will be fully interoperable within the Army C4I Technical Architecture. The terminal will have embedded COMSEC and TRANSEC with set-up and teardown in less than 10 minutes. In addition to operation on MILSTAR satellites, the SCAMP BLK I will operate on all satellites which utilize the MIL-STD-1582C/D LDR waveform. It will be required to operate in environmental conditions that include smoke, aerosol, rain, fog, snow, haze and dust, and must operate in the transmit, receive or stand-by mode throughout an entire mission (typically 30 days). SCAMP Block I is the first EHF manportable terminal and provides direct support to the tactical warfighter mobile forces with greater anti-jam protection, lower probability of intercept, and lower probability of detection.

Acquisition Strategy: The Block I development phase initially included two competing contractors performing under Cost-Plus-Incentive-Fee (CPIF) which was competitively awarded in Sep 92. Based upon unexpected cost growth of both contractors and the lack of government affordability to retain two, an early determination was made to Terminate for Convenience the Lockheed Corporation contract on 16 Sep 93. A Market Survey was conducted in Jun 94 in which five vendors participated. On 26 Oct 94, the AAE restructured the SCAMP Block I program and the Martin Marietta Corporation contract was Terminated for Convenience. A Milestone III Decision for a competitive full-scale production buy (quantity of 312 multi-service terminals) was approved on 15 Nov 94. An Advanced Planning Briefing to Industry was held at Fort Monmouth, New Jersey, on 29 Nov 94. On 7 Apr 95, the SCAMP Block I was redesignated an ACAT III program. Team Fort Monmouth awarded the SCAMP Block I Firm Fixed Price Production Contract to Rockwell Collins Inc, Richardson, Texas, on 23 Feb 96. Engineering Feasibility Efforts (EFE) to develop the objective terminal in the range of 12-15 pounds was approved in the Acquisition Decision Memorandum to begin in FY 96 through FY 99. These efforts provide confidence in technical approach and lead to Milestone II Engineering/Manufacturing Development (EMD) Phase for the objective system. The SCAMP Block II effort previously funded in this PE is restructured to PE 0603856A, Project D389 beginning in FY 97.

FY 1997 Accomplishments Program:

•	748	Conducted System level tests
•	237	Initiated/completed UHF Follow-On (UFO), Fleetsat EHF Package (FEP) Control Planning Tools
Total	985	

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0303142A Satellite Command (SATCOM) Ground Environment

PROJECT: D386

FY 1998 Planned Program:

- 1300 Conduct System Level tests
- 1338 Milsatcom Architecture Impact Analysis
- 67 Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)

Total 2705

FY 1999 Planned Program: Project not funded in FY 1999

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	1007	2905	0
Appropriated Value	1029	2905	
Adjustments to Appropriated Value	-44	-200	
FY 1999 President's Budget	985	2705	0

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Other Procurement Army 2 - SSN: BC 4003	14356	16514	4708	1711	1597	475	231	Cont	Cont
Other Procurement Army 4 - SSN: BS 9718	1224	2571	3806	0	0	0	0	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Award Option 1	X*											
Conduct Follow-On Test and Evaluation (FOT&E)								X				
Begin Fielding and Support										X		
Conduct System Level Tests				X*								
Initiate/Complete UHF Follow-On (UFO)/ Fleetsat EHF Package (FEP) Planning Tools				X*								
Initiate/Complete Milsatcom Architecture Impact Analysis								X				
Conduct System Level Tests								X				

*Denotes Milestone Completion

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0303142A Satellite Command (SATCOM) Ground Environment

PROJECT: D386

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Contractor	732	1800	0
Government Systems Engineering and Project Management	253	838	0
SBIR/STTR		67	
Total	985	2705	

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations**										
Martin Marietta	CPIF	Sep 92	38998	38998	38998	0	0	0	0	38998
Lockheed	CPIF	Sep 92	9650	9650	9650	0	0	0	0	9650
Other Contracts	PWD	Various	N/A		15845	732	1800	0	0	18377
Govt Support	MIPR/PWD	Various	N/A		7826	0	121	0	0	7947
Support and Management Organizations:										
Other Contracts	MIPR/PWD	Various	N/A		7861	253	0	0	0	8114
Core Support	N/A	Various	N/A		3719	0	0	0	0	3719
Lincoln Labs	MIPR	Various	N/A		12352	0	717	0	0	13069
Lab Activities	MIPR/PWD	Various	N/A		353	0	0	0	0	353
SBIR/STTR							67			67
Test and Evaluation Organizations:										
EMP Test (Kirkland AFB)	MIPR	Sep 96			60		0	0	0	60

** Lockheed Terminated for Convenience 9/93

** Martin Marietta Terminated for Convenience 10/94

Government Furnished Property: Not Applicable

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0303142A Satellite Command (SATCOM) Ground Environment PROJECT D386

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	72319	732	1921			74972
Subtotal Support and Management	24345	253	784			25382
Subtotal Test and Evaluation						
Total Project	96664	985	2705			100354

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0303142A Satellite Command (SATCOM) Ground Environment

PROJECT: D455

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D455 MILSTAR EDM Terminal	857	0	0	0	0	0	0	0	299901

A. Mission Description and Budget Item Justification: Project D455 - MILSTAR EDM Terminal (MET): These EHF MILSTAR Engineering Development Model (EDM) terminals will be utilized as test assets to support satellite payload tests. They will also reduce risk in the Secure Mobile Anti-Jam Reliable Tactical Terminal /(SMART-T) and Single Channel Anti-Jam Manportable (SCAMP) terminal development process. The terminals are capable of providing mobile, survivable, anti-jam, low probability-of-intercept communications from an S-250 shelter mounted on a Common Utility Cargo Vehicle (CUCV) truck towing a trailer with generator.

Acquisition Strategy: A single Full-Scale Engineering Development (FSED) contract was awarded in Mar 85 to develop and produce 15 FSED terminals. Magnavox Electronic Systems Company received the award. A sole source production contract was to be executed in Nov 92; however, due to the changed world situation, no production buy was required. The MET will be used for SCAMP and SMART-T contractor risk reduction tests and satellite payload tests.

FY 1997 Accomplishments:

•	857	Continued Government and Contractor support of testing with SCAMP and SMART-T to reduce risk
Total	857	

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program: Project not funded in FY 1999

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	859	0	0
Appropriated Value	878		
Adjustments to Appropriated Value	-21		
FY 1999 President's Budget	857	0	0

C. Other Program Funding Summary: Not Applicable

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0303142A Satellite Command (SATCOM) Ground Environment
	PROJECT D455

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
SMART-T Low Data Rate (LDR) Verification	X*											

*Denotes milestone completion

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0303142A Satellite Command (SATCOM) Ground Environment

PROJECT: D455

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Government Systems Engineering and Project Management	857		
Total	857	0	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Magnavox (D501)	FFP	Dec 85	112544	112544	112544	0	0	0	0	112544
Magnavox (E716)	CPIF	Sep 90	11363	11363	11363	0	0	0	0	11363
Raytheon (D500)	T&M	Mar 90	933	933	933	0	0	0	0	933
Magnavox (B754)	T&M	Apr 92	1126	1126	1126	0	0	0	0	1126
Govt Support					31574	302	0	0	0	31876
Lab Activities					4256	0	0	0	0	4256
Lincoln Labs					18949	0	0	0	0	18949
Support and Management Organizations										
Other Contracts					16394	450	0	0	0	16844
SS/MSP JMPO					4373	0	0	0	0	4373
Crosslink										
Statistical					3396	0	0	0	0	3396
MITRE					1613	0	0	0	0	1613
Core Support					67557	105	0	0	0	67662
Test and Evaluation Organizations										
Test Support					24966	0	0	0	0	24966

Government Furnished Property: Not applicable

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0303142A Satellite Command (SATCOM) Ground Environment PROJECT D455

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	180745	302				181047
Subtotal Support and Management	93333	555				93888
Subtotal Test and Evaluation	24966					24966
Total Project	299044	857				299901

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0303142A Satellite Command (SATCOM) Ground Environment PROJECT D456

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D456 Milsatcom System Engineering	4127	3934	4131	4735	4972	4986	5015	Continuing	Continuing

A. Mission Description and Budget Item Justification: Project D456 - Milsatcom System Engineering: . As Executive Agent for MILSATCOM Ground Subsystems, Army is responsible for developing, procuring, and maintaining the life cycle logistics support for satellite terminals; satellite control subsystems; communications subsystems; and all related equipment required to achieve end-to-end connectivity to satisfy JCS Command, Control, Communications, and Intelligence (C3I) supporting the President; JCS; CINCs; Military Departments; Department of State; and other Departments and Agencies of the government. This project provides centralized funding for advanced systems engineering, analysis, research, development, test, and evaluation of new and emerging technologies that optimize terminal performance and interoperability on the digitized battlefield.

Acquisition Strategy: This project funds advanced systems engineering, research, development, test and evaluation of new and emerging technologies to enhance terminal performance and optimize communications control. Once the technologies are mature and deemed feasible, funding and management responsibility for implementation of the technology is transitioned to cognizant Milsatcom programs.

FY 1997 Accomplishments:

•	1360	Continued Spitfire 5KHz DAMA Waveform Improvement
•	1458	Completed government and contractor support of SHF Tri-Band Advanced Range Extension Terminal (STAR-T)
•	714	Continued developments and conducted field tests for SATCOM-on-the-Move initiatives (formerly SCATS)
•	595	Battlefield Digitization integration efforts
Total	4127	

FY 1998 Planned Program:

•	450	Continue Spitfire DAMA Waveform Improvement
•	1100	Initiate Spitfire software remoting capability development
•	320	Complete various SATCOM on the Move analysis, acquisition, and test efforts
•	750	Battlefield Digitization integration efforts
•	1215	Advanced SATCOM architecture development
•	99	Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
Total	3934	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0303142A Satellite Command (SATCOM) Ground Environment
	PROJECT D456

FY 1999 Planned Program:

- 574 Complete Spitfire DAMA Waveform Improvement
- 671 Complete Spitfire software remoting capability development
- 750 Continue Battlefield Digitization architecture efforts
- 1036 Advanced SATCOM architecture development

1100 Advanced EHF waveform development

Total 4131

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	4495	4235	4110
Appropriated Value	4348	4235	
Adjustments to Appropriated Value	-221	-301	
FY 1999 President's Budget	4127	3934	4131

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Other Procurement Army 2; SSN: K77200	18520	6274	2485	679	0	0	0	0	27958
Other Procurement Army 2, SSN: BB8417	5411	1961	1474	0	0	0	0	0	8846
Other Procurement Army 2, SSN BA9350	13260	13907	25328	29984	60139	70006	44076	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
SATCOM-on-the-Move Award/Field Test			X*									
Conduct 5KHz Waveform demonstration				X*								
Complete 5KHz Waveform Improvement										X		
Initiate Spitfire Software Remoting Development						X						
Complete Spitfire Software Remoting Development										X		

* Denotes milestone completion

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

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
7 - Operational System Development	0303142A Satellite Command (SATCOM) Ground Environment	D456

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
Development Support Equipment Acquisition	2175	2190	2273
Contractor Engineering Support	479	545	661
Government Engineering Support	753	500	585
Program Management Support	720	600	612
SBIR/STTR		99	
Total	4127	3934	4131

B. Budget Acquisition History and Planning Information: Not Applicable

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0303142A Satellite Command (SATCOM) Ground Environment PROJECT D559

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D559 Automated Communications Management System (ACMS)	0	9391	8342	6196	8606	0	0	0	32535

A. Mission Description and Budget Item Justification: Project D559 - ACMS: The Air Force funded the ACMS from FY93-FY95. All Services (USAF, Army, and Navy) are funding for their unique software and hardware requirements. ACMS is critical to the dynamic and efficient operation of battlefield command and control networks using Air Force developed MILSTAR satellites and Army developed MILSTAR terminals. ACMS enables Army users to take advantage of advanced features of the MILSTAR system, to include directly tasking the satellite constellation, repointing payload antennas, and rapidly changing network configurations. ACMS is not a new start. The Army initiated participation in FY96 under project D384. The ACMS must be integrated into ISYSCON to make it available to the tactical user and to coordinate MILSTAR range extension of MILSTAR networks.

Acquisition Strategy: ACMS is not a new start. Development efforts were initiated in FY96 under D384 and D386. The D559 ACMS Development funding line was newly created in FY98. ACMS is a Joint Service MILSTAR community initiative which is an integral part of the MILSATCOM Architecture. The Milstar Joint Program Office (MJPO) is managing the overall development effort. Input and interaction with the terminal offices is required to ensure a comprehensive system solution is achieved. Development work began in FY96 and will continue through FY01, as ACMS is phased in and tested incrementally.

FY 1997 Planned Program: Efforts funded in Project D384, PE 0303142A

FY 1998 Planned Program:

•	7985	Begins integration, test and fielding of incremental builds
•	650	Participates in MILSTAR Intersegment Test (MST6000)
•	420	Participates in Joint Technical Reviews, Management Reviews, Technical Interchange Meetings, and Technical Demonstrations
•	336	Small Business Innovative Research/Small BusinessTechnology Transfer Programs(SBIR/STTR)
Total	9391	

FY 1999 Planned Program:

•	7322	Continues integration, test and fielding of incremental builds
•	600	Participates in MILSTAR Intersegment Test (MST8000)
•	420	Participates in Joint Technical Reviews, Management Reviews, Technical Interchange Meetings, and Technical Demonstrations
Total	8342	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0303142A Satellite Command (SATCOM) Ground Environment PROJECT D559

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	13818	3901
Appropriated Value	0	13818	
Adjustments to Appropriated Value	0	-4427	
FY 1999 President's Budget	0	9391	8342

Change Summary Explanation:

Funding: FY 1998 (-4000) Army reprogramming to support critical digitization requirements and (-427) undistributed Congressional reduction.
FY 1999 (+4441) Increase funds continuation of integration, test, and fielding of incremental builds. These efforts were originally budgeted in FY 1998 but have been rephased to FY 1999 to free up funds for digitization.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
NA									

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Participate in MST6000						X						
Participate in MST8000											X	

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0303142A Satellite Command (SATCOM) Ground Environment

PROJECT: D559

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Product Development	0	7794	6924
Support and Management	0	1261	1418
SBIR		336	
Total	0	9391	8342

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Other Contracts	TBD	TBD	N/A	N/A	0	0	6855	6090	10805	23750
Govt Support	MIPR/PWD	TBD			0	0	939	834	1481	3254
Support and Management Organizations										
Other Contracts	MIPR/PWD				0	0	910	808	1434	3152
Core Support	N/A				0	0	351	610	1082	2043
SBIR/STTR							336			336

Test and Evaluation Organizations: None

Government Furnished Property: None

Subtotal Product Development	7794	6924	12286	27004
Subtotal Support and Management	1597	1418	2516	5531
Subtotal Test and Evaluation				
Total Project	9391	8342	14802	32535

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0303150A Army Global Command and Control System (AGCCS)
	PROJECT DC86

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC86 Army Global Command and Control System	18877	14581	17543	9526	14633	14473	13476	12176	115285

A. **Mission Description and Budget Item Justification: Project DC86 - AGCCS:** This project is the Army component system that directly supports the implementation of the Joint Global Command and Control System (GCCS). This support is being accomplished through the Army's Global Command and Control System (AGCCS), which is a selection of the Army's best-of-breed command and control functionality. The AGCCS-developed software systems will dramatically improve the Army's ability to analyze courses of action; develop and manage Army Forces supporting joint war plans; and ensure that the Army portions of war plans are feasible. The AGCCS will provide a layered architecture and functional best-of-breed software applications to develop a totally integrated component of the GCCS. This project involves the development, enhancement and integration of software functionality that currently exists within the Army's inventory or is currently under development and is therefore appropriately included in Budget Activity 7.

Acquisition Strategy: The AGCCS software integration and development effort is a five year incrementally funded completion effort. A hybrid (Cost-Plus-Award Fee and Firm-Fixed-Price) contract was awarded to Lockheed Martin Corporation (LMC) in December 1994. The contract consists of software development, software maintenance and relocation/de-installation of the test facility upon completion of the contract. Based on the priority of achieving WWMMCS shutoff and replacing the system with the GCCS/AGCCS, the remaining software integration and development effort that was originally scheduled as Capability Packages 1 through 10 deliveries was restructured. PM STCCS established an Integrated Process Team (IPT) to review the status of the remaining software integration and development functional deliveries. The results of the IPT were instituted providing the users of AGCCS, five mission support software deliveries identified as Capability Package 1 (CP1), and Deliveries 1 through 4. CP1, which was delivered in 2QFY96 and designated IOC in 4QFY96, provided the replacement for the AWIS strategic mission support applications/software and the Army's GCCS interface to selected HQDA, and FORSCOM sites. Deliveries 1 through 4, which will be delivered throughout the remainder of the LMC contract, will provide the integration of selected STACCS, TACCIMS, and CSSCS Echelons Above Corps (EAC) mission support applications/software into the CP1 baseline. Deliveries 1 through 4 are scheduled to be delivered to 18 Army sites located throughout the world. A common hardware platform will be used within the Army to implement AGCCS/GCCS. This will include products from the Army's Common Hardware/Software-2 (CHS-2) contract, which consists of Commercial Off The Shelf (COTS) hardware and software. The COTS hardware and software will provide computers with expanded processing, storage and communications capability, as well as office-automation and management software.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0303150A Army Global Command and Control System (AGCCS)
	PROJECT DC86

FY 1997Accomplishments:

•	1636	Performed Systems Engineering
•	11651	Continued Prime Mission Software Development
•	644	Performed Data Engineering
•	2984	Conducted Systems Test and Evaluation
•	1962	Performed Program Support and Management Efforts
Total	18877	

FY 1998 Planned Program:

•	708	Perform Systems Engineering
•	10324	Continue Prime Mission Software Development
•	500	Perform Data Engineering
•	750	Conduct Systems Test and Evaluation
•	1933	Perform Program Support and Management Efforts
•	366	Small Business Innovative Research/Small Business Technology Transfer Programs(SBIR/STTR)
Total	14581	

FY 1999 Planned Program:

•	2516	Perform Systems Engineering
•	11577	Continue Prime Mission Software Development IDIQ
•	550	Perform Data Engineering
•	1150	Conduct Systems Test and Evaluation
•	1750	Perform Program Support and Management Efforts
Total	17543	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	19389	15045	14793
Appropriated Value	19804	14045	
Adjustments to Appropriated Value	-927	-536	
FY 1999 President's Budget	18877	14581	17543

Change Summary Explanation: Funding: FY 1999 (+2750) increased as a result of a realignment action from AGCCS OPA. The realignment properly aligns procurement and RDT&E funding, and will allow the funding of additional required development and test effort.

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0303150A Army Global Command and Control System (AGCCS)

PROJECT: DC86

C. Other Program Funding Summary

Procurement OPA-2	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
BA8250 Army Global Cmd & Cont Sys (AGCCS)	20340	16807	20562	13229	8710	6438	6440	84391	205229

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
AGCCS Delivery 2 Start				X*								
AGCCS Delivery 1 Complete					X*							
AGCCS Delivery 3 Start							X					
AGCCS Delivery 4 Start										X		
AGCCS Delivery 2 Complete								X				
AGCCS Delivery 3 Complete											X	

*Milestone Complete

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0303150A Army Global Command and Control System (AGCCS)
	PROJECT DC86

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Systems Engineering	1636	708	2516
Prime Mission - Software Development	11651	10324	11577
Data Engineering	644	500	550
System Test and Evaluation	2984	750	1150
Support and Management	1962	1933	1750
SBIR/STTR		366	
Total	18877	14581	17543

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
LMC	HYBRID	DEC 94	TBD	TBD	0	12748	10324	7758	2327	33157
COE Support	MIPR				0	0	0	550	2000	2550
TBD	TBD	TBD	TBD	TBD	0	0	0	4500	38574	43074
Support and Management Organizations										
PM STCCS					0	3690	2336	3045	11947	21018
CECOM Matrix					0	707	310	400	1656	3073
Vitro/Sytex/MTC					0	623	630	645	2375	4273
SAIC					0	463	475	495	2015	3448
SBIR/STTR							366			366
Test and Evaluation Organizations										
CECOM - IV&V	MIPR				0	305	140	150	640	1235
EPG-Test Spt	MIPR				0	41	0	0	0	41

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0303150A Army Global Command and Control System (AGCCS) PROJECT DC86

Government Furnished Property

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Property									
GFE	MIPR			0	300	0	0	2750	3050

Support and Management Property: None
Test and Evaluation Property: None

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development		13048	10324	12808	45651	81831
Subtotal Support and Management		5483	4117	4585	17993	32178
Subtotal Test and Evaluation		346	140	150	640	1276
Total Project		18877	14581	17543	64284	115285

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0305114A Joint Precision Approach Landing System (JPALS)

PROJECT: D711

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D711 Joint Precision Approach Landing System (JPALS)	0	728	0	0	0	0	0	0	728

A. Mission Description and Budget Item Justification: The Joint Precision Approach Landing System (JPALS) is a precision approach and landing system providing joint operational capability for U.S. forces assigned to conventional and special operation missions operating from fixed base, ship, tactical and austere environments. The effort will develop methodology to incorporate JPALS into aircraft while considering aircraft environment, electrical power, system space, weight, antenna placement and electromagnetic compatibility without nullifying low observable capability requirements. The project in this Program Element supports research efforts in the engineering and manufacturing development phase of the acquisition strategy and is, therefore, correctly placed in Budget Activity 7.

Acquisition Strategy: The acquisition strategy is to support the joint research and development project leading to production of a joint system.

FY 1997 Accomplishments: Project not funded in FY 97

FY 1998 Planned Program:

•	710	Support JPALS research and development efforts.
•	18	Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR)
Total	728	

FY 1999 Planned Program: Project not funded in FY 99

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	750	0
Appropriated Value	0	750	
Adjustments to Appropriated Value		-22	
FY 1999 Pres Budget Request	0	728	0

C. Other Program Funding Summary: Not applicable

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Support JPALS efforts					X							

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0305114A Joint Precision Approach Landing System (JPALS)
	PROJECT D711

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Program Management Support		710	
SBIR/STTR		18	
Total	0	728	0

B. Budget Acquisition History and Planning Information:

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations : None										
Support and Management Organizations										
Gov't Agencies	MIPR	Feb 98	710	710			710			710
SBIR/STTR			18	18			18			18
Test and Evaluation Organizations: None										

Government Furnished Property: None

Subtotal Product Development										
Subtotal Support and Management							728			728
Subtotal Test and Evaluation										
Total Project							728			728

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0305128A Security and Intelligence Activities		PROJECT H12

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
H12 Intelligence Support to Force XXI	464	484	950	942	933	948	964	0	5673

A. Mission Description and Budget Item Justification: This program element provides funding to develop Proof of Concepts to define fundamental capabilities and limitations of Focused Intelligence XXI technologies which supports Force XXI. Focused Intelligence addresses the functional areas of Situational Awareness, Information Management, and Predictive Analysis. This requires a comprehensive understanding of the following seven critical technologies when integrated into live, virtual or constructive environments. These critical technology areas include: Displays (public, cockpit and heads-up), computer hardware capable of high speed analytical and graphical processing, computer software for distributed tactical or simulation environments (including tools such as Knowledge Based Reasoning and Artificial Intelligence), networks which link tactical and high speed wide area capabilities (utilizing Asynchronous Transfer Mode (ATM), Synchronous Optical Net (SONET), and multi-level security capabilities) throughout all echelons, sensors for real-time information of the battlefield throughout the electromagnetic spectrum, the Dynamic Visualization Databases for live or synthetic environment (including terrain, features, texture, images, weather, environment, entities and units as a minimum) , and the Automatic Target Recognition (ATR) and Assisted Target Recognition (AITR) for timeline reductions. This project supports development of new operational concept efforts in the Focused Intelligence arena and is therefore appropriately funded in Budget Activity 7.

Acquisition Strategy: Utilize existing INSCOM and the Defense Advanced Research Project Agency contracts to obtain hardware and software integration support. Major integrated Proofs of Concepts, with U.S. Forces Korea and the 18th Airborne Corps (101st Airborne Division and 525th Military Intelligence Brigade) as the user, will occur on a quarterly basis. Major milestones in FY97 are XVIII ABC exercises (June 1997 and September 1997) and Division XXI AWE (November 1997).

FY 1997 Accomplishments:

•	125	Focused Intelligence Proofs of Concepts during USFK FOAL EAGLE Exercise, November 1996 on situational awareness applications
•	264	Focused Intelligence Proofs of Concepts with USFK ULCHI FOCUS LENS Exercise, July/August 1997, emphasis on situational awareness information operations predictive analysis and information management
•	75	Transition USFK Proofs of Concepts into Force XXI train-up, September 1997, with applications emphasizing Blue Force support
Total	464	

FY 1998 Planned Program:

•	472	Expand Proofs of Concepts vertically to Divisions with quarterly integration tests
•	12	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	484	

FY 1999 Planned Program:

•	950	Transition technology horizontally to Corps/Divisions continuing Proofs of Concept test with quarterly integration tests
Total	950	

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0305128A Security and Intelligence Activities

PROJECT: H12

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY1998/1999 President's Budget	477	500	955
Appropriated Value	487	500	
Adjustments to Appropriated Value	-23	-16	-5
FY1999 President's Budget	464	484	950

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Not applicable									

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Proofs of Concept	X*	X	X	X	X	X	X	X	X	X	X	X

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0305128A Security and Intelligence Activities	PROJECT H12

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
Primary Hardware Development	95	93	352
Software Development	195	187	390
Developmental/Operational Test	134	139	142
Integrated Logistics Support	40	65	66
Total	464	484	950

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

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0305204A Tactical Unmanned Aerial Vehicles

PROJECT: D114

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D114 Tactical Unmanned Aerial Vehicles	0	0	75636	4000	4476	5500	5241	Continuing	Continuing

A. Mission Description and Budget Item Justification The Tactical Unmanned Aerial Vehicle (TUAV), "Outrider", provides Army brigades/battalions, USMC regiments/battalions, and Navy forces with dedicated day/night, reconnaissance, surveillance and target acquisition (RSTA) and intelligence. Outrider provides the tactical warfighting commander with critical battlefield information in the rapid cycle time required for success at the tactical level. The Joint Requirements Oversight Council (JROC) reassessed warfighter UAV priorities and reconfirmed the TUAV as the JROC's top UAV priority to meet Service requirements in JROCM 173-96, Unmanned Aerial Vehicles, 12 November 1996. The Outrider Advanced Concept Technology Demonstration (ACTD) system consist of four air vehicles, each configured with an electro-optic (EO)/infrared (IR) sensor payload, ground control equipment, including communications equipment and launch and recovery equipment, remote video terminal, two HMMWV's and a trailer, and one mobile maintenance facility for every three TUAV systems. The TUAV ACTD provides for the placement of systems in the hands of the operational users as quickly as possible for use in demonstrations and exercises. The ACTD process provides users with the opportunity to assess the military utility of the system thereby becoming informed buyers and applying lessons learned while evolving system requirement

Acquisition Strategy: The TUAV ACTD contract was competitively awarded with industry being advised of the possibility of follow-on production buys should the ACTD system demonstrate a military utility. The ACTD contract has an option for six (6) LRIP systems. The Outrider LRIP options supports a Full Rate Production (FRP) decision. The ACTD will address Joint Services (Army, Navy, Marine Corps) tactical UAV requirements and will validate military utility for each Service. The TUAV program will employ "cost as an independent variable" in acquiring any follow-on systems.

FY 1997 Accomplishments: FY97 efforts were funded under Program Element 0305154D (Tactical UAV's Defense-Wide)

FY 1998 Planned Program: FY98 efforts are funded under Program Element 0603003A (Aviation Advanced Technology).

FY 1999 Planned Program:

- 75636 - Evaluate and execute MUA users lessons learned
  - Bridge Gap between ACTD & LRIP (ie. Documentation, AV Improvements, Weight Reduction)
  - Continue CARS Integration and Demonstration
  - 2 Systems for Land & Sea CONOPS Development (ie. NTC rotation)
  - Award LRIP contract
  - Transition to a formal acquisition program and begin OT&E

Total 75636

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0305204A Tactical Unmanned Aerial Vehicles
	PROJECT D114

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	0	0
Appropriated Value	0	0	
Adjustments to Appropriated Value	0	0	
FY1999 President's Budget	0	0	75636

Change Summary Explanation:

Funding: The FY1998 DoD Appropriations Act transferred Outrider funding to the Army in PE0603003A. Out-year funding was moved to PE0305204A via OSD direction to provide visibility to this DARP program.

C. Other Program Funding Summary: Not Applicable.

D. Schedule Profile: Not Applicable.

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0603778A Multiple Launch Rocket System Product Improvement Program

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	61721	36171	20244	25148	40032	43851	80665	Continuing	655463
D027 MLRS ILMS	25724	17842	0	0	0	0	0	0	66732
D050 IMP FIRE CONT SYS-IFCS	25592	0	0	0	0	0	0	0	140149
D054 EXTENDED RANGE ROCKET	10405	0	0	0	0	0	0	0	84804
D090 MLRS HIMARS	0	0	0	2742	13517	22174	26031	Continuing	79464
D093 MLRS JOINT TECHNICAL ARCHITECTURE-ARMY	0	825	2425	2043	1642	7932	6041	0	20908
D783 MLRS SMART TACT RKT	0	0	0	0	0	8988	48593	Continuing	145681
D784 GUIDED MLRS	0	17504	17819	20363	24873	4757	0	10414	95730

Mission Description and Budget Item Justification: Expanding regional power threats require an evolutionary improvement program to maintain the effects of the Multiple Launch Rocket System (MLRS). This Product Improvement Program (PIP) provides for the Engineering and Manufacturing Development of an Extended Range Rocket (ER-MLRS), Improved Fire Control System (IFCS), Improved Launcher Mechanical System (ILMS), Guided MLRS Rocket (GMLRS), Joint Technical Architecture-Army (JTA-A) (formerly designated MLRS Army Technical Architecture), High Mobility Artillery Rocket System (HIMARS), and MLRS Smart Tactical Rocket (MSTAR). The ER-MLRS project will enhance the capability of the existing MLRS by providing improvements in range, accuracy, effectiveness, and maneuver force safety. The IFCS corrects present and future supportability problems resulting from electronic component obsolescence in the existing design. The ILMS, by decreasing the stow to aim point timeline, will increase responsiveness, improve survivability, and enhance effectiveness in countering surface to surface missile fire. The GMLRS will greatly enhance the capability of the ER-MLRS by providing greater range and significantly enhanced accuracy. The improvement in accuracy and range will reduce the number of rockets required to defeat targets, thus dramatically reducing the logistics burden, and will increase crew survivability. The JTA-A will implement dual protocol capability and Force XXI Situational Awareness in M270A1 launchers and trainers. HIMARS will allow MLRS capability to be C-130 transportable by mounting one rocket or missile pod on a 5-ton truck. It gives early entry forces immediate fire support within a hot landing zone without waiting for heavy-lift aircraft. The MSTAR will be a guided MLRS rocket carrying terminally guided smart submunitions that will detect, classify, and engage stationary or moving armored and other high valued targets. These projects support development of upgrades to current production vehicles and are appropriately funded in Budget Activity 7.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0603778A Multiple Launch Rocket System Product Improvement Program PROJECT D027

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D027 MLRS ILMS	25724	17842	0	0	0	0	0	0	66732

A. Mission Description and Budget Item Justification: Project D027 – Improved Launcher Mechanical System (ILMS): This project provides for the Engineering and Manufacturing Development (EMD) of the ILMS. The ILMS will decrease the stow to aim point timeline, enhance effectiveness in engaging and supporting the force, and increase MLRS platform survivability. The ILMS will replace selected hydraulic and mechanical components of the MLRS M270 launcher mechanical drive system. The time required for movement of the Launcher Loader Module from the stowed position to first rocket away will be reduced from 93 seconds to 16 seconds. Reload operations for twelve rockets will be reduced from 260 seconds to 160 seconds. These improvements will allow faster engagement of short dwell time targets and increase crew survivability on the firing point and reload area. Reduced operation and support costs are expected with this design. When combined with the Improved Fire Control System, the launcher will be designated as M270A1.

Acquisition Strategy: This is an ACAT III program with an EMD phase ending in 3QFY99 and fielding beginning in FY 00. A sole source contract for EMD was awarded to Lockheed Martin Vought Systems (LMVS) in August 1995.

FY 1997 Planned Program:

•	22110	Software Development Qualification, Hardware Delivery, Qualification Testing
•	125	System Integration
•	1075	Government Furnished Equipment Launcher Modifications
•	2414	Minor Tasks Including In-House
Total	25724	

FY 1998 Planned Program:

•	11235	System Integration/ Testing
•	2997	Government Test Support
•	2863	Minor Tasks Including In-House
•	300	Government Furnished Equipment Launcher Modifications
•	447	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	17842	

FY 1999 Planned Program: Project not funded in FY 1999

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0603778A Multiple Launch Rocket System Product Improvement Program PROJECT D027

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	26350	14607	0
Appropriated Value	26350	18607	
Adjustments to Appropriated Value	-626	-765	
FY 1999 President's Budget	25724	17842	0

Change Summary Explanation:

Funding: FY 1998 project funding increased by Congress (+4000); undistributed Congressional reductions (-765).

Schedule: ILMS schedule for joint Operational Test slipped to 3QFY99 due to IFCS software changes. ILMS and IFCS make up the M270A1 remanufactured launcher.

Technical: New Azimuth Drive Unit required to meet system timelines and reliability requirements.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY2002	FY2003	To Complete	Total Cost
Missile Procurement, Army									
Budget Activity 2:									
MLRS Launcher (C65900)	103565	118710	85387	158621	206351	217254	246184	Cont	Cont
Budget Activity 4:									
MLRS Initial Spares (CA0257)	0	998	6862	6117	10485	12597	12407	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Critical Design Review (CDR)	X*											
Engineering Developmental Test (EDT)		X *										
System Tests							X					
Operational Tests											X	
LRIP (Procurement Funded)								X				
R&D Contract Completed											X	

*Milestone Complete

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0603778A Multiple Launch Rocket System Product Improvement Program

PROJECT: D027

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Contractor/EMD	23310	11535	
Program Management Support	1929	3310	
Developmental Test Support	485	2997	
Total	25724	17842	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
LMVS	CPIF	Aug 95			19969	22235	11235			53439
Support and Management Organizations										
MLRS Project Ofc					1328	960	1463			3751
RDEC-AMCOM					912	969	1847			3728
Test and Evaluation Organizations										
Range Support						100	961			1061
Other Test Activity					377	335	955			1667
Operational Test					80	50	1081			1211
Government Furnished Property:										
Product Development Property										
LMVS	CPIF	Aug 95			500	1075	300			1875

Support and Management Property: None

Test and Evaluation Property: None

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0603778A Multiple Launch Rocket System Product Improvement Program PROJECT D027

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	20469	23310	11535			55314
Subtotal Support and Management	2240	1929	3310			7479
Subtotal Test and Evaluation	457	485	2997			3939
Total Project	23166	25724	17842			66732

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0603778A Multiple Launch Rocket System Product Improvement Program PROJECT D050

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D050 IMP FIRE CONT SYS-IFCS	25592	0	0	0	0	0	0	0	140149

A. Mission Description and Budget Item Justification: Project D050 - Improved Fire Control System (IFCS): The current MLRS Fire Control System provides position data, communication interface through which fire missions are received, processes data, controls the launcher, inputs mission critical data to the weapons and fires the weapon. This project provides for the Engineering and Manufacturing Development (EMD) of an IFCS, which will correct present and future supportability problems resulting from electronic component obsolescence in the existing design. This effort will result in reduced operation and support costs due to addition of built-in test equipment (BITE) to the circuit card and cable level and will provide growth capabilities for existing and future MLRS Family of Munitions (MFOM) weapon systems.

Acquisition Strategy: IFCS is an ACAT III program with an EMD phase ending in 2QFY98 and fielding beginning in FY 00. A sole source contract was awarded to Lockheed Martin Vought Systems (LMVS) in September 1992. Sole source was determined necessary due to the integration of the IFCS into the existing MLRS design, and due to the mechanical, electrical, and software interface with all rockets, missiles, and munitions utilizing the MLRS launcher. It is essential that the source be responsible for systems and perform the interface/design efforts for integrating the IFCS into the MFOM. The MLRS, as an internationally co-developed and co-produced system, must have computer software with common application to be utilized by the sponsor countries.

FY 1997 Planned Program:

•	20940	System Integration Tests, Flight Tests, Extended System Integration Tests
•	1000	EMD Contract Award Fee
•	450	White Sands Missile Range (WSMR) Test & Software
•	250	Fire Control Panel Trainer (FCPT)/Maintenance Trainer
•	2952	Minor Tasks Including In-House
Total	25592	

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program: Project not funded in FY 1999

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0603778A Multiple Launch Rocket System Product Improvement Program

PROJECT: D050

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	25773	0	0
Appropriated Value	25773		
Adjustments to Appropriated Value	-181		
FY 1999 President's Budget	25592	0	0

Change Summary Explanation:

Schedule: The IFCS Program has experienced a 6-month schedule slippage into FY 98 because of software development problems, system architecture changes and late delivery of engineering and qualification hardware.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY2002	FY2003	To Complete	Total Cost
Missile Procurement, Army									
Budget Activity 2:									
MLRS Launcher (C65900)	103565	118710	85387	158621	206351	217254	246184	Cont	Cont
Budget Activity 4:									
MLRS Initial Spares (CA0257)	0	998	6862	6117	10485	12597	12407	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Qualification Test	X*						X					
System Integration Test					X		X					
Test Firings					X		X					
MS IIIA							X					
R&D Contract Complete							X					

*Milestone Completed

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0603778A Multiple Launch Rocket System Product Improvement Program

PROJECT: D050

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Contractor/EMD	21940		
Program Management Support	3052		
Developmental Test Support	600		
Total	25592	0	0

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
LMVS	CPIF	Sep 92			97793	21940				119733
Support and Management Organizations										
Support Contract										
MLRS Project Ofc					6278	1745				8023
RDEC-AMCOM					7313	1307				8620
Test and Evaluation Organizations										
Develop Test Supp					1377	600				1977

Government Furnished Property

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	FY 1997	FY1998	FY1999	Budget to Complete	Total Program
Product Development Property									
GFE	CPIF	Sep 92		1796					1796

Support and Management Property: None

Test and Evaluation Property: None

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0603778A Multiple Launch Rocket System Product Improvement Program PROJECT D050

	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development	99589	21940				121529
Subtotal Support and Management	13591	3052				16643
Subtotal Test and Evaluation	1377	600				1977
Total Project	114557	25592				140149

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0603778A Multiple Launch Rocket System Product Improvement Program

PROJECT: D054

COST *(In Thousands)*	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D054 EXTENDED RANGE ROCKET	10405	0	0	0	0	0	0	0	84804

A. Mission Description and Budget Item Justification: Project D054 - Extended Range MLRS (ER-MLRS): This project provides for the Engineering and Manufacturing Development (EMD) of an ER-MLRS. The ER-MLRS will enhance the capability of the existing MLRS by providing improvements in range, accuracy, effectiveness, and maneuver force safety.

Acquisition Strategy: The ER-MLRS acquisition strategy is a streamlined product improvement program which permitted entering Low Rate Initial Production (LRIP) (funded with Missile Procurement) and subsequent Full-Scale Production after completion of a 54-month EMD program. The primary objective of the EMD phase was to develop and qualify a successor rocket to the MLRS basic M26 with extended range capability and with minimum impact on existing basic MLRS companion hardware and software. This effort incorporated the results of other development efforts for a new submunition with a self-destruct fuze to reduce the hazards to friendly maneuver dud rate and for a no-load detent system to sustain accuracy at increased ranges. The acquisition alternative most advantageous to the Government was for a sole source EMD contract to the system prime contractor, Lockheed Martin Vought Systems (LMVS), containing a requirement to increase subcontract competition for subsystems and components.

FY 1997 Planned Program:

- 3346 Software Integration & Test
- 3009 Fuze Development
- 1619 Software IV&V Testing and Audits
- 2431 Minor Tasks Including In-House and Milestone Decision Review III Preparation

Total 10405

FY 1998 Planned Program: Project not funded in FY 1998

FY 1999 Planned Program: Project not funded in FY 1999

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	10681	0	0
Appropriated Value	10681		
Adjustments to Appropriated Value	-276		
FY 1999 President's Budget	10405	0	0

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0603778A Multiple Launch Rocket System Product Improvement Program PROJECT D054

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY2002	FY2003	To Complete	Total Cost
Missile Procurement, Army									
Budget Activity 2:									
ER-MLRS (C65402)	45318	19327	16513	17345	18378	24495	59732	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
IFCS Rkt Msl Guid Req Final Qual Test		X*				X						
Design Verification Tests (SDF Qual)						X						
Contract Complete						X						

*Milestone Completed

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0603778A Multiple Launch Rocket System Product Improvement Program

PROJECT: D054

A. Project Cost Breakdown	FY 1997	FY 1998	FY 1999
Contractor/EMD	6373		
Program Management Support	2413		
Developmental Test Support	1619		
Total	10405		

A. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
LMVS	CPIF	Dec 92			26634	3346				29980
LMVS	CPIF	Sep 92			26584					26584
KDI	CPIF	Jun 93			4319	1566				5885
Support and Management Organizations										
MLRS Project Ofc					3618	1319				4937
RDEC-AMCOM					5791	2555				8346
Test and Evaluation Organizations										
Develop Test Supp					7453	1619				9072
Government Furnished Property: Not Applicable										
Subtotal Product Development					57537	4912				62449
Subtotal Support and Management					9409	3874				13283
Subtotal Test and Evaluation					7453	1619				9072
Total Project					74399	10405				84804

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0603778A Multiple Launch Rocket System Product Improvement Program

PROJECT: D093

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D093 MLRS JOINT TECHNICAL ARCHITECTURE-ARMY	0	825	2425	2043	1642	7932	6041	0	20908

A. Mission Description and Budget Item Justification: Project D093 - MLRS Joint Technical Architecture - Army (JTA-A): MLRS JTA-A will integrate the Force XXI/JTA-A mandated 188-220A protocol and convert existing MLRS fire support messages to Variable Message Format (VMF) for M270A1 launchers. JTA-A hardware and software development effort will implement Force XXI situational awareness and JTA-A soldier-computer interface mandates for M270A1 launchers. Increased Force XXI capabilities include addition of a digitized map, tactical internet connectivity, and situational awareness.

Acquisition Strategy: The JTA-A standards will be implemented for the M270A1 launcher to perform the Force XXI capabilties. The M270A1 FCS will implement software reuse and OTS hardware to the maximum extent possible within hardware capabilities and M270A1 operational requirements.

FY 1997 Planned Program: Project not funded in FY 1997

FY 1998 Planned Program:

•	704	Developed New Communication Interface
•	100	Minor Tasks Including In-House
•	21	Small Business Innovative Research/Small Business Technology Programs
Total	825	

FY 1999 Planned Program:

•	1197	Develop VMF and Dual Protocol Logic Software
•	500	Development Testing
•	728	Minor Tasks Including In-House
Total	2425	

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	863	2617
Appropriated Value		863	
Adjustments to Appropriated Value		-38	
FY 1999 President's Budget	0	825	2425

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0603778A Multiple Launch Rocket System Product Improvement Program

PROJECT: D093

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY2002	FY2003	To Complete	Total Cost
Missile Procurement, Army									
Budget Activity 2:									
MLRS Launcher (C65900)	103565	118710	85387	158621	206351	217254	246184	Cont	Cont
Budget Activity 3:									
MLRS Mods(C67500)	6397	2129	2193	2229	5212	4287	5158	Cont	Cont
Budget Activity 4:									
MLRS Initial Spares (CA0257)	0	998	6862	6117	10485	12597	12407	Cont	Cont
MLRS Mod Spares (CA0265)	1829	991	622	488	860	884	911	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
JTA-A Comm Interface							X					
JTA-A Contract Award							X					
JTA-A Prelim Design Review (PDR)									X			

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0603778A Multiple Launch Rocket System Product Improvement Program
	PROJECT D093

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Contractor/EMD		725	1525
Program Management Support		100	400
Developmental Test Support			500
Total		825	2425

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
TBD	CPIF	May 98			0	0	725	1525	14860	17110
Support and Management Organizations										
Support Contract					0	0		200	442	642
MLRS Project Ofc					0	0	62	100	763	925
RDEC-AMCOM							38	100	708	846
Test and Evaluation Organizations										
Develop Test Supp					0	0	0	500	885	1385

Government Furnished Property: Not Applicable

Subtotal Product Development	725	1525	14860	17110
Subtotal Support and Management	100	400	1913	2413
Subtotal Test and Evaluation		500	885	1385
Total Project	825	2425	17658	20908

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0603778A Multiple Launch Rocket System Product Improvement Program PROJECT D784

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
D784 GUIDED MLRS	0	17504	17819	20363	24873	4757	0	10414	95730

A. Mission Description and Budget Item Justification: Project D784 - Guided Multiple Launch Rocket System (GMLRS): This project provides for the Engineering and Manufacturing Development (EMD) of a GMLRS that will greatly enhance the capability of the existing MLRS by providing greater range and significantly enhanced accuracy. Since fewer rockets are required to defeat a target, the logistics burden also will be reduced. The GMLRS will result in reduced mission times and increased survivability of the system.

Acquisition Strategy: The GMLRS acquisition strategy is a streamlined product improvement program which permits entering Low Rate Initial Production (LRIP) (funded with Missile Procurement) and subsequent Full-Scale Production, after completion of a 60-month EMD program. The primary objective of the EMD phase is to develop a rocket with greater range and significantly enhanced accuracy with a minimum impact on existing MLRS companion hardware and software. This effort will incorporate the results of other development efforts for a modified submunition and a modified extended range rocket motor for increased range. The acquisition alternative most advantageous to the government is a sole source EMD contract to the system prime contractor, Lockheed Martin Vought Systems (LMVS).

FY 1997 Planned Program: Project not funded in FY 1997

FY 1998 Planned Program:

•	12443	Simulation Development, Define and Design Code Software, System Trade Studies
•	1827	Wind Tunnel Testing
•	2795	Minor Tasks Including In-House
•	439	Small Business Innovative Research /Small Business Technology Transfer Programs
Total	17504	

FY 1999 Planned Program:

•	13719	Assembly of Components, Component Lab Testing and Static Tests
•	800	White Sands Missile Range Test Studies
•	400	Independent Analysis
•	2900	Minor Tasks Including In-House
Total	17819	

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0603778A Multiple Launch Rocket System Product Improvement Program

PROJECT: D784

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	11208	19228
Appropriated Value		18208	
Adjustments to Appropriated Value		-704	
FY 1999 President's Budget	0	17504	17819

Change Summary Explanation: Funding: FY 1998 project funding increased by Congress (+7000); undistributed Congressional reduction (-704).

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY2002	FY2003	To Complete	Total Cost
Missile Procurement, Army									
Budget Activity 2:									
ER-MLRS (C65402)	45318	19327	16513	17345	18378	24495	59732	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Contract Award						X						
Simulation Development						X						
Wind Tunnel Test							X					
Preliminary Design Review (PDR)								X				
Software Critical Design Review											X	

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0603778A Multiple Launch Rocket System Product Improvement Program

PROJECT: D784

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
Contractor/EMD		14115	15128
Program Management Support		3031	1744
Developmental Test Support		358	947
Total	0	17504	17819

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
TBD	CPIF	Mar 98					14115	15128	44900	74143
Support and Management Organizations										
MLRS Project Ofc							2056	867	5800	8723
RDEC-AMCOM							975	877	5300	7152
Test and Evaluation Organizations										
Develop Test Supp							358	947	4407	5712
Subtotal Product Development							14115	15128	44900	74143
Subtotal Support and Management							3031	1744	11100	15875
Subtotal Test and Evaluation							358	947	4407	5712
Total Project						0	17504	17819	60407	95730

Government Furnished Property: Not Applicable

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0708045A Army Industrial Preparedness Manufacturing Technology

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	45006	64278	30511	31487	31759	31699	31789	Continuing	Continuing
DE25 Manufacturing Technology (ManTech)	45006	32009	14511	15187	15759	16099	16489	Continuing	Continuing
DE26 Weapon Systems Modernization Software Maintenance	0	32269	0	0	0	0	0	0	32269
DE27 Reliability, Maintainability and Sustainability (RM&S)	0	0	11000	16300	16000	15600	15300	Continuing	Continuing
DE31 National Defense Center for Environmental Excellence (NDCEE)	0	0	5000	0	0	0	0	0	5000

Mission Description and Budget Item Justification: This program element comprises four projects: Manufacturing Technology (ManTech); Weapon Systems Modernization Software Maintenance; Reliability, Maintainability and Sustainability; and the National Defense Center for Environmental Excellence (NDCEE). The goal of the Army ManTech program is to provide essential manufacturing technologies that will enable the affordable production and sustainment of future weapon systems. Objectives include development of advanced manufacturing processes, equipment and systems; enhancement in quality while achieving reduction in cost of Army materiel; and transferring improved manufacturing technologies to the industrial base. The ManTech program is especially important in the current environment because of the large decline in weapon system production investments since much manufacturing technology was formerly accomplished within individual production programs. Projects selected to be funded under this program have the potential for high payoff across the spectrum of Army weapon systems as well as significant impact on national manufacturing issues and the U.S. industrial base. The Weapon Systems Modernization Software Maintenance project provides funding for modernization programs in which post-production embedded weapon system software must be upgraded and/or enhanced, as well as life cycle software engineering in the areas of tactical and satellite communications, intelligence and electronic warfare (IEW), avionics command and control (C2), fire support (FS), maneuver control (MC), and tactical fusion (TF). The work performed in project DE26 was formerly funded in the Operations and Maintenance, Army appropriation. The mission and associated funding for all software maintenance that provides performance enhancements and upgrades to weapons systems were transferred to the RDT&E, Army appropriation in FY 1998 in accordance with the criteria set forth in DOD 7000.14-R Financial Management Regulation, Volume 2A, Budget Presentation and Formulation, Chapter 1 Guidance. Beginning in FY1999, based on the determination of Headquarters, Department of the Army and the Deputy Chief of Staff for Operations and Plans requirements process, the funding for DE26 has been distributed into the appropriate RDT&E accounts of those specific systems requiring performance enhancements and upgrades in software. The Reliability, Maintainability and Sustainability (RM&S) program funds projects that reduce the cost of ownership through weapon system or equipment modifications to yield improvements in RM&S. Projects were evaluated for funding based on recognized principles of economic analysis, including the use of Savings-to-Investment analysis. The National Defense Center for Environmental Excellence (NDCEE) Technology is a Congressionally directed project which has the mission to demonstrate and export new

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE February 1998
BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0708045A Army Industrial Preparedness Manufacturing Technology

environmentally-acceptable technology to the industrial base; train the industrial base on the use of the new technology; perform research and development, where necessary, to mature a new technology prior to demonstrating and exporting the new technology to the industrial base; and assist DoD in technology transfer. The center's goal is to resolve the environmental technology and management requirements of the DoD community and commercial industrial base.

This program element is assigned to Budget Activity 7 since it includes projects that support the development of processes in technological feasibility assessment, weapon systems in development or production, and modifications/upgrades to, or sustainment of, fielded systems.

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0708045A Army Industrial Preparedness Manufacturing Technology

PROJECT: DE25

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DE25 Manufacturing Technology (ManTech)	45006	32009	14511	15187	15759	16099	16489	Continuing	Continuing

A. **Mission Description and Justification:** The goal of the Army Manufacturing Technology (ManTech) Program is to provide essential manufacturing technologies that will enable the affordable production and sustainment of future weapon systems. Objectives include development of advanced manufacturing processes, equipment and systems; enhancement in quality while achieving reduction in cost of Army materiel; and transferring improved manufacturing technologies to the industrial base. The ManTech program is especially important in the current environment because of the large decline in weapon system production investments since much manufacturing technology was formerly accomplished within individual production programs. Projects selected to be funded under this program have the potential for high payoff across the spectrum of Army weapon systems as well as significant impact on national manufacturing issues and the U.S. industrial base.

This project is assigned to Budget Activity 7 since it supports the development of processes in technological feasibility assessment, weapon systems in development or production, and modifications/upgrades to or sustainment of fielded systems.

Acquisition Strategy: The Army ManTech program is currently undergoing a major revision in which there will be significantly fewer projects (and contracts) of less than $300K than in the past. It is anticipated that future ManTech initiatives will require contracts of greater dollar value, focused on making more significant impact on affordability of weapon systems. The ManTech program uses firm fixed price contracts, cooperative research and development agreements, cost sharing arrangements, and utilization of DoD manufacturing centers of excellence to complete tasks.

FY 1997 Accomplishments:

- 6796 - Air Vehicles: Demonstrated low-cost Beryllium Aluminum investment casting process reducing machining time by 60% on the Comanche electro-optical sensor system; demonstrated co-cure process for composites with application to the Longbow Apache mast mounted assembly resulting in 15% weight reduction in radar mast assembly and demonstrated low cost fabrication and tooling technique for helicopter secondary structures; operated full scale factory for gear manufacturing technology and established a government, industry and academia coalition to solve manufacturing problems through an Instrumented Factory for Gears Center (INFAC) to reduce manufacturing costs by 15% and cycle times by 90%.
- 2535 - Ground Vehicles: Weld joints were developed for simulating a titanium turret design, which was used for evaluating the performance of the weld joints and performance of titanium in a turret box design; demonstrated affordability of composite armored vehicle technology to include manufacturing process flow and production feasibility summary with upper hull technology concept adopted by PM Crusader; developed demonstration articles utilizing ductile iron for vehicle track shoes for extended track life.

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BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0708045A Army Industrial Preparedness Manufacturing Technology PROJECT DE25

FY 1997 Accomplishments: (continued)

•	10650	- Missiles: Developed manufacturing processes for advanced multichip modules, interconnects, optoelectonics and assembly areas utilizing a government, industry and academia partnership to reduce the costs of missile seekers; identified 11 improvement areas and developed six improvements to reduce the cost of manufacturing millimeter wave transceivers for missile seekers; developed and demonstrated Internet web based integrated product/process development tools to support weapon system integrated product teams; completed review of domestic manufacturing capability and conducted activities to position industry to meet system requirements utilizing polyacrylonitrile (PAN) based, ultra high modulus, high strength carbon fibers for light weight, high performance, and stealthy structural applications including missile airframe and kinetic kill vehicles, aircraft airframes, and military spacecraft and satellite structures.
•	1275	- Electronics: Reduced cycle time by over 70% for linear drive coolers used in 2nd generation forward looking infra-red horizontal technology integration systems to include Javelin, Abrams, and Comanche; utilized lithium-ion and other battery packaging technologies in military-unique form/fit applications for advanced non-metallic rechargeable batteries; proved out physics-of-failure approach to up-front design and manufacturing of rotary wing communications radios.
•	21178	- Munitions: Identified propellant mixer technology process improvements which resulted in equipment and facility modifications for improved production; established a munitions enterprise consortium to address totally integrated munitions engineering and identified tantalum powder material process to produce penetrators, advanced tungsten warheads and flexible energetics processing; identified major cost drivers and evaluated integrated circuit technologies for best manufacturing processes for the Objective Individual Combat Weapon; utilized the DoD center of excellence for optics manufacturing to leverage DARPA efforts in aspheric and conformal optics development and complement this effort with advancing optics finishing technology and reflective/refractive optics for improvements in day and night vision devices; adapted software to support all computer numerically controlled (CNC) machinery development and changes and conducted industrial demos to promote and transition Opticam technology to US optics industry.
•	2572	- Materiel and Support Systems: Demonstrated smartweave sensor technologies on the Crusader ballistic shield which provided improved composite part processing and reduced production costs; demonstrated the capability for reduction of titanium fabrication time for lot size of one on low volume production applications such as missiles air vehicles and ground vehicles; identified ten areas of improved rotary wing sustainment and focused efforts on three processing areas to include remanufacturing of rotor blades, rotorcraft parts and composite components; demonstrated remanufacturing capabilities using robotic welding; established improved methodology for producing semi-dry rations for the warfighter.
Total	45006	

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FY 1998 Planned Program:

- - Fiscal year 1998 began a transition year for the ManTech Program. During FY97 the Army decided to restructure the program to focus more pointedly on those manufacturing technology objectives that promise to make significant impact on reducing the cost of future weapon systems. Under the new strategy, there will be fewer of the small ManTech contracts previously found supporting broad-based commodity area objectives. Replacing these will be major objective-based projects ($1M to $3M per year for duration of three to five years) selected by Army leadership for their potential to increase affordability of multiple systems in development or in the field. Full implementation of the revised program will occur in FY99. Projects other than the initiative on sensors described below, either will be brought to conclusion or incorporated in FY99 major focused ManTech initiatives.
- 1000 - Initiate the first phase of a five year major effort to develop the manufacturing technologies required for cooled and uncooled infrared staring sensors to include process development in uncooled and cooled focal plane arrays (FPAs) and improvements in infrared optics manufacturing. Goals are to replace costly uncooled FPA sensors with significantly less expensive uncooled versions in as many weapon systems as possible and to make significant advances in the manufacturing technology that will make cooled FPAs more affordable for those systems requiring the highest level of sensitivity and resolution.
- 600 - Ground Vehicles: A box design will be tested against ballistic threats at ARL Weapon Technology Directorate at Aberdeen Proving Grounds and the titanium welding processes will be established for enabling the capability to manufacture titanium turrets that weigh 20% less than conventional turrets.
- 3850 - Air Vehicles: For the Instrumented Factory for Gears, continue development of improved heat treatment processing, conduct final demonstration of prediction and control of heat treat distortion of gears, demonstrate automated deburring of spiral bevel gears and demonstrate digital optical-based inspection system for gears; continue development and demonstration of improved airframe manufacturing technology using composite manufacturing processes for helicopter dynamic rotor components; develop a prototype universal static balance system for helicopter main rotor blades; develop heat curing blanket for CH-47 and UH-60 main rotor blade leading edge surfaces at Corpus Christi Army Depot.
- 6500 - Missiles: Develop and implement Computer-Aided Design/Computer-Aided Engineering (CAD/CAE) millimeter-wave (MMW) design tools for at least one Army missile system; continue development of manufacturing process and testing improvements for multi-chip modules; complete development of advanced integrated product and process design aides and simulation systems for missiles; and continue cost reduction process improvements to traveling wave tube manufacturing; strengthen U.S. printed circuit board industry and its ability to support military needs through an Electronic Circuit Board Manufacturing Development Center.
- 350 - Electronics: Complete process improvements to the mid and mid-to-high performance focal plane array dewar assembly.

17173 - Munitions: Continue processing technology development for pyrotechnic materials, optimize process parameters for manufacture of fine particle explosives and coated energetics, and complete process development efforts for Modular Artillery Charge System (MACS); continue manufacturing development of the Objective Individual Combat Weapon System; prototype and prove out a second generation CNC machine for Magnetorheological Finishing (MRF) of optics and precise correction of non-symmetric errors; apply deterministic optics fabrication techniques to specific military optics

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FY 1998 Planned Program: (continued)

manufacturing problems; prototype and validate performance of a second generation machine for fabrication of optical prisms; develop optimechatronic assembly techniques; accelerate munitions manufacturing technology in the areas of composites, electronics and energetics; develop totally integrated munitions engineering through development of process scheduling and shop floor management tools.

- 802 - Small Business Innovation Program/Small Business Technology Transfer Program

Total 32009

FY 1999 Planned Program:

- 1000 - Continue major focused effort in cooled and uncooled FPA development to include manufacturing properties of electro-optical materials; develop process to reduce/eliminate yield limiters, reduce cycle times, improve performance, transition to larger uncooled focal plane arrays (320x240 to 640x480), reduce power consumption, and reduce cost by 10-20%.
- 3000 - Initiate a major 5-year effort focusing on knowledge and process tools for manufacturing affordable composite structures to reduce cost and time to manufacture large scale composite components for rotary wing vehicles, ground vehicles and munitions by demonstrating models for optimal fabrication, closed loop cure process control, and resin flow simulation accuracy to ultimately reduce labor costs by 30%.
- 1700 - Initiate the first phase of a major 3-year effort in the development of coatings that will be used during manufacturing of military application integrated circuits subjected to long term unpowered storage environments common to missiles and increasing the yield by 10%.
- 600 - Ground Vehicles: The titanium turret design will be computer modeled to reduce weight and maximize the protection and a prototype turret will be fabricated to demonstrate and verify the performance during operation and firing of the gun system.
- 650 - Air Vehicles: Demonstrate a preventive and predictive maintenance expert system focused on whirl towers, engine and transmission test cells and automatic test equipment for UH-60 and CH-47 components; demonstrate universal static balance system for helicopter rotor blades to include AH-64, UH-60, CH-47, UH-1, AH-1 and OH-58 which will reduce cycle times by 15%.
- 2700 - Missiles: Fabricate, integrate, assemble, and test five Longbow Cost Reduction Program Integrated Product and Process Design (IPPD) transceivers on the flexible work cell pilot production line; demonstrate 5X reduction in multichip module substrate and assembly cost through participation in Georgia Tech Packaging Research Center and insert smart FPA and dual-color technology into Stinger Block II missile production; implementation testbeds will be extended to demonstrate advanced integrated process team tools to the missile sector.
- 1125 - Munitions: Demonstrate technology to minimize seasonal variations of the solvent and thermal content of the propellant blocks, providing for a more uniform products, greater yields and less rework; demonstrate magnetorheological finishing deterministic microgrinding processes for optics components.
- 2086 - Materiel and Support Systems: Complete process optimization and demonstrate manufacturing capability for decontamination enzymes; develop digital data extraction technology and an automated reverse engineering fixture for remanufacturing capability of printed circuit boards.

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BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0708045A Army Industrial Preparedness Manufacturing Technology PROJECT DE25

FY 1999 Planned Program: (continued)

- 1650 - Funding to be designated to manufacturing demonstrations approved by the Manufacturing Technology Technical Council (MTTC) during 2Q FY98. Likely technology demonstration areas include munitions, sustainment and welding.

Total 14511

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY1998/1999 President's Budget	47819	11029	15211
Appropriated Value	47819	33029	
Adjustments to Appropriated Value	-3836	-1020	
FY 1999 President's Budget	45006	33009	14511

Change Summary Explanation: Funding: FY 1997 – Funds reprogrammed to higher priority requirements (-1644); reprogrammed for SBIR/STTR (-1169).
FY 1998 – Congressional add (+22000); Congressional undistributed reductions (-1020).

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0708045A Army Industrial Preparedness Manufacturing Technology

PROJECT: DE26

COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DE26 Weapon Systems Modernization Software Maintenance	0	32269	0	0	0	0	0	0	32269

A. Mission Description and Justification: The Weapon Systems Modernization Software Maintenance project provides funding for modernization efforts in which post-production embedded weapon system software must be upgraded and/or enhanced. This project provides life cycle software engineering support for weapon systems in the areas of tactical and satellite communications, intelligence and electronic warfare (IEW), avionics command and control (C2), fire support (FS), maneuver control (MC), and tactical fusion (TF). The project provides the capability to enhance or improve system software interoperability, integration and testing for command, control, communications, computer, intelligence, electronic warfare, and sensor (C4IEWS) functions in a continuous life cycle evaluation/certification process. Software changes funded under this project expands or upgrades the performance of the selected weapon systems, as well as ensure system interoperability. The project is managed by the Army Materiel Command (AMC). Prior to FY1998 the work performed in project DE26 was funded in the Operations and Maintenance, Army appropriation. The mission and associated funding for all software maintenance that provides performance enhancements and upgrades to weapons systems were transferred to the RDT&E, Army appropriation in FY 1998 in accordance with the criteria set forth in DOD 7000.14-R Financial Management Regulation, Volume 2A, Budget Presentation and Formulation, Chapter 1 Guidance. Beginning in FY1999, based on the determination of Headquarters, Department of the Army and the Deputy Chief of Staff for Operations and Plans requirements process, the funding for DE26 has been distributed into the appropriate RDT&E accounts of those specific systems requiring performance enhancements and upgrades in software.

This project is assigned to Budget Activity 7 since it supports the development of processes in technological feasibility assessment, weapon systems in development or production, and modifications/upgrades to, or sustainment of, fielded systems.

FY1997 Accomplishments: Program not funded in FY 1997

FY 1998 Planned Program:

- 31460 - Modify fire support command and control system software to accommodate new munitions and or doctrine.
  - Modify navigation and position reporting weapon system software to accommodate changes in mapping reference grids supplied by the National Imagery and Mapping Agency (NIMA).
  - Modify terrain dependent weapon system software platforms to accommodate changes in electronic terrain data supplied by the NIMA.
  - Modify software and/or databases in selected weapons systems to identify and defeat new, different, or re-deployed electronic threats employed by adversaries in particular regions of the world, such as laser or radar engagement systems used by enemy munitions and missiles, or communications jammers

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BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0708045A Army Industrial Preparedness Manufacturing Technology PROJECT DE26

FY 1998 Planned Program: (continued)

- Modify weapon system application software in existing systems to accommodate upgrades of Commercial Off The Shelf (COTS) products required by obsolesce of older products no longer support by vendors. Accommodate upgrades of COTS to ensure continuation of COTS vendor maintenance contracts necessary to sustain weapon system reliability.
- Modify weapon system software as required to ensure integrity of operations when the systems are re-deployed to new and unfamiliar or unanticipated regions of the world in which the original software and data was not designed to operate.
- Modify weapon systems software to accommodate interfaces with new and/or re-deployed NATO and Allied systems.
- Modify weapon systems software to accommodate short term critical user needs to increase capability and/or lethality required to meet operational mission needs and combat readiness.
- Incorporate weapon systems software enhancements which will provide the ability to manage data exchange between planning, monitoring and controlling subsystems, and which will provide a common integrated Man-Machine Interface (MMI) spanning these subsystems to achieve desired level of interoperability.
- Modernize, and/or develop new software interfaces between weapon system platforms to accommodate or improve interoperability for force multiplication; install and demonstrate new capabilities as required.
- Incorporate weapon systems software enhancements which will provide the ability to manage data exchange between planning, monitoring and controlling subsystems, and which will provide a common integrated Man-Machine Interface (MMI) spanning these subsystems to achieve desired level of interoperability.
- Incorporate into selected existing weapon systems software enhancements which will provide the ability to communicate information over secure network environments and increase the capability of existing secure communications links.

809 - Small Business Innovation Program/Small Business Technology Transfer Program

Total 32269

FY1999 Planned Program: Program not funded in FY 1999

B. Project Change Summary	FY 1997	FY 1998	FY 1999
FY1998/1999 President's Budget	0	33297	34875
Appropriated Value	0	33297	
Adjustments to Appropriated Value		-1028	
FY1999 President's Budget	0	32269	0

Change Summary Explanation: Funding: FY1999 (-34875) has been distributed to accounts of specific weapon systems requiring software performance enhancements and/or upgrades.

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0708045A Army Industrial Preparedness Manufacturing Technology

PROJECT: DE27

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DE27 Reliability, Maintainability and Sustainability (RM&S)	0	0	11000	16300	16000	15600	15300	Continuing	Continuing

A. Mission Description and Justification: The Reliability, Maintainability and Sustainabily (RM&S) program funds projects that reduce the cost of ownership through weapon system or equipment modifications to yield improvements in RM&S. Projects were evaluated for funding based on recognized principles of economic analysis, including the use of Savings-to-Investment analysis.

FY 1997 Accomplishments: Program funded in Other Procurement, Army appropriation, SSN MA0465.

FY 1998 Planned Program: Program funded in Other Procurement, Army appropriation, SSN MA0465.

FY 1999 Planned Program:

- 1800 - Redesign the AVENGER remote control unit system and cable to improve the reliability and survivability, and replace the current cable and connector with more reliable and less bulky fiber optic cable.
- 9200 - Design and procure long lead time items, develop test plans, complete component fabrication and qualification testing for a CH-47 low maintenance rotor hub which will have 75% fewer parts and a reduction in special tooling resulting in extended time between overhauls.

Total 11000

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY1998/1999 President's Budget	0	0	0
Appropriated Value			
Adjustments to Appropriated Value			
FY1999 President's Budget	0	0	11000

Change Summary Explanation: Funding : FY1999 – RM&S program restructured from Other Procurement, Army appropriation to RDT&E appropriation to properly align funding.

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DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 0708045A Army Industrial Preparedness Manufacturing Technology

PROJECT: DE31

COST (*In Thousands*)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DE31 National Defense Center for Environmental Excellence (NDCEE)	0	0	5000	0	0	0	0	0	5000

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

The NDCEE has positioned itself as a critical resource for the Deputy Under Secretary of Defense for Environmental Security for environmental management and technology validation and integration. Major programs supported by the Center include the Joint Group on Acquisition Pollution Prevention, Toxics Reduction Investment & Management (TRIM), environmental cost accounting standards development supporting the DOD sustainment community and the DoD fuel cell program. Beginning in FY1999, this program is restructured from PE0602720A to this PE.

FY 1997 Accomplishments: Program funded in PE060270A.

FY 1998 Planned Program: Program funded in PE0602720A.

FY 1999 Planned Program:

5000 - Continue support of Army/DOD pollution prevention needs.; assist Joint Logistic Commanders in use of Joint Group for Acquisition Pollution Prevention (JG-APP) methodology to aid depots.
- Maintain Environmental Technology Facility and continue demonstration of environmentally acceptable technologies on DOD components and conduct technology transfer activities (requirements determination, technology selection, equipment selection, installation, de-bugging, training) for DoD facilities.
- Ensure overall DOD/Army needs are addressed in execution of reimbursable projects (DOE/EPA/others).
- Support Pollution Prevention efforts in acquisition through development of joint test protocols, multi-service needs identification, regulatory analysis and prediction, environmental cost analyses, risk assessments, life cycle environmental assessments and incorporation of environmental management standards and principals.

Total 5000

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BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0708045A Army Industrial Preparedness Manufacturing Technology PROJECT DE31

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY1998/1999 President's Budget	0	0	0
Appropriated Value		0	
Adjustments to Appropriated Value		0	
FY1999 President's Budget	0	0	5000

Change Summary Explanation: Funding: FY1999 - Program restructured from PE0602720A to this PE.

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 1001018A NATO Joint STARS

PROJECT: DC35

COST (*In Thousands*)	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
DC35 NATO Joint STARS	0	10225	6405	0	0	0	0	Continuing	Continuing

A. Mission Description and Budget Item Justification: The United States is a major participant in a cooperative venture to select and procure a ground surveillance capability for NATO forces. Initial efforts to evaluate various potential solution sets for the NATO Alliance Ground Surveillance System (NAGS) commenced in May 1995. A NAGS Project Office was established at SHAPE Technical Center (STC) and will continue to operate until the final NAGS configuration is selected. Under this PE/Project, the Army will conduct and support interoperability experimentation and demonstrations between the Joint Surveillance Target Attack Radar System (Joint STARS) Ground Station and various Allied weapon systems. This is not a new start, but a continuation of the effort previously funded under PE 0604770A. This effort is in support of upgrades for NATO International Activities and appropriately placed in Budget Activity 7.

Acquisition Strategy: These funds are to be used for Architectural Design Study and interoperability demonstrations with the US CGS systems involving the principle NATO participants . All hardware has been procured (FY 96).

FY 1997 Accomplishments: Project not funded in FY 97

FY 1998 Planned Program:

•	6377	NATO Architectural Design Study
•	3280	Continue Support of NATO Interoperability Demonstrations and Experimentation at (NC3A)
•	240	Program Support
•	328	Small Business Innovative Research/Small Business Technology Transfer Programs
Total	10225	

FY 1999 Planned Program:

•	3850	Develop NATO directed interfaces and AGS Capabilities
•	600	Complete tests and demonstrations
•	1705	Support Allied/NATO exercises
•	250	Program Support
Total	6405	

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 1001018A NATO Joint STARS

PROJECT: DC35

B. Project Change Summary

	FY 1997	FY 1998	FY 1999
FY 1998/1999 President's Budget	0	13500	15105
Appropriated Value	0	13500	
Adjustments to Appropriated Value	0	-3275	
FY 1999 President's Budget	0	10225	6405

Change Summary Explanation: Funding FY 98 - reprogrammed (-3275) to higher priority requirements.
FY 99 – funding reduced (-8700) to reflect change in NATO program.

C. Other Program Funding Summary

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
BA1080 Joint STARS (TIARA)	84719	91079	87229	88463	107017	31330	7087	Cont	Cont
BS9724 Joint STARS Spares	8632	6313	8733	6335	6389	7093	4522	Cont	Cont
BA1082 NATO-AGS		611	0						
D202 Joint Stars(TIARA)	9406	6726	5503	4010	12135	17990	12179	Cont	Cont

D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
Complete Architectural Study								X				
Develop NATO Interfaces										X		
Complete Tests and Demonstrations												X

*Completed milestone

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

DATE: February 1998

BUDGET ACTIVITY: 7 - Operational System Development

PE NUMBER AND TITLE: 1001018A NATO Joint STARS

PROJECT: DC35

A. Project Cost Breakdown

	FY 1997	FY 1998	FY 1999
System Design/Analysis		6377	600
Interface Development/Interoperability Demonstrations		3280	5555
Program Management		240	250
SBIR/STTR		328	
Total	0	10225	6405

B. Budget Acquisition History and Planning Information

Performing Organizations

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Motorola (96-C-S204)	CFP	Dec 95	3800	3800	3800					3800
Motorola (95-C-S205)	SS/CPFF	Aug 95	4705	4705	4533		172	0	0	4705
Motorola TBD	SS/FP	Jan 98	TBD	12765			9485	6155	0	15640
Support and Management Organizations										
Project Mgmt					1167		240	250	0	1657
SBIR/STRR							328			328
Test and Evaluation Organizations: None										
Government Furnished Property: None										
Subtotal Product Development					8333		9657	6155		24145
Subtotal Support and Management					1167		568	250		1985
Subtotal Test and Evaluation										
Total Project					9500		10225	6405		26130

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