

UNCLASSIFIED

**DEPARTMENT OF THE AIR FORCE
RDT&E DESCRIPTIVE SUMMARIES FOR**

FY 2001 PRESIDENT'S BUDGET

VOLUME IIA



FEBRUARY 2000

DISTRIBUTION STATEMENT A
Approved for Public Release
Distribution Unlimited

DTIC QUALITY INSPECTED 3

20000330 102

UNCLASSIFIED

TABLE OF CONTENTS

PE	PROGRAM ELEMENT TITLE	PAGE
#1 - Basic Research		
1	0601102F Defense Research Sciences	1
#2 - Applied Research		
2	0602102F Materials	43
3	0602201F Aerospace Flight Dynamics	57
4	0602202F Human Effectiveness Applied Research	73
5	0602203F Aerospace Propulsion	93
6	0602204F Aerospace Sensors	111
7	0602269F Hypersonic Technology Program	133
8	0602601F Space Technology	137
9	0602602F Conventional Munitions	161
10	0602605F DIRECTED ENERGY TECHNOLOGY	169
11	0602702F Command Control and Communications	175
12	0602805F Dual Use Science & Technology	191
#3 - Advanced Technology Development		
13	0603106F Logistics Systems Technology	195
14	0603112F Advanced Materials for Weapon Systems	199
15	0603202F Aerospace Propulsion Subsystems Integration	211
16	0603203F Advanced Aerospace Sensors	215
17	0603205F Flight Vehicle Technology	227
18	0603211F Aerospace Structures	233
19	0603216F Aerospace Propulsion and Power Technology	237
20	0603227F Personnel Training and Simulation Technology	247
21	0603231F Crew Systems and Personnel Protection Technology	253
22	0603245F Flight Vehicle Technology Integration	261
23	0603253F Advanced Sensor Integration	265
24	0603270F Electronic Combat Technology	271
25	0603302F Space and Missile Rocket Propulsion	281

TABLE OF CONTENTS

	PROGRAM ELEMENT TITLE	PAGE
26	0603311F Ballistic Missile Technology	293
27	0603401F Advanced Spacecraft Technology	297
28	0603410F Space Systems Environmental Interactions Technology	321
29	0603444F MAUI SPACE SURVEILLANCE SYSTEMS	325
30	0603601F Conventional Weapons Technology	327
31	0603605F Advanced Weapons Technology	337
32	0603707F Weather Systems Technology	353
33	0603723F Environmental Engineering Technology	355
34	0603726F Aerospace Info Tech Sys Integration	359
35	0603728F Battlespace C2 Technology	369
36	0603789F C3I Advanced Development	377
37	0603876F Space Based Laser	389
#4 - Demonstration and Validation		
38	0603260F Intelligence Advanced Development	395
39	0603319F Airborne Laser Technology	413
40	0603430F Advanced (EHF MILSATCOM (Space)	419
41	0603432F Polar MILSATCOM (Space)	425
42	0603434F National Polar-Orbiting Operational Environmental Satellite System (NPOESS)	431
43	0603438F Space Control Technology	439
44	0603441F Space Based IR Arch (Dem Val)(Space)	445
45	0603617F Command Control and Communication Applications	451
46	0603690F Information Operations Technology	471
47	0603742F Combat Identification Technology	475
48	0603790F NATO Cooperative R&D	483
49	0603800F Joint Strike Fighter	505
50	0603850F Integrated Broadcast Service (DEM/VAL)	517
51	0603851F ICBM - DEM/VAL	523
52	0603854F Wideband MILSATCOM (Space)	551
53	0603856F Air Force/National Program Cooperation (AFNPC)	571
54	0603859F Pollution Prevention	577

TABLE OF CONTENTS

	PE	PROGRAM ELEMENT TITLE	PAGE
55	0603860F	Joint Precision Approach and Landing Systems - Dem/Val	583
56	0604237F	Variable Stability In-Flight Simulation Test Aircraft	589
57	0604327F	Hardened Target Munitions	593
#5 - Engineering and Manufacturing Development			
58	0207249F	Precision Attack Systems	599
59	0305176F	Combat Survivor Evader Locator	603
60	0604012F	Joint Helmet Mounted Cueing System (JHMCS)	609
61	0604201F	Integrated Avionics Planning and Development	615
62	0604222F	Nuclear Weapons Support	627
63	0604226F	B-1B	647
64	0604227F	Distributed Mission Training (DMT)	655
65	0604233F	Specialized Undergraduate Pilot Training	659
66	0604239F	F-22 EMD	675
67	0604240F	B-2 Advanced Technology Bomber	689
68	0604270F	EW Development	695
69	0604441F	Space Based Infrared Systems (SBIRS) High EMD	727
70	0604442F	Space Based Infrared Systems (SBIRS) Low	733
71	0604479F	MILSTAR LDR/MDR Sat Comm	739
72	0604600F	Munitions Dispenser Development	747
73	0604602F	Armament/Ordnance Development	753
74	0604604F	Submunitions	767
75	0604617F	Agile Combat Support	773
76	0604618F	Joint Direct Attack Munition	779
77	0604703F	Aeromedical Systems Development	785
78	0604706F	Life Support Systems	791
79	0604708F	Civil, Fire, Environmental, Shelter	799
80	0604727F	Joint Standoff Weapons Systems	807
81	0604735F	Combat Training Ranges	813
82	0604740F	Integrated Command & Control Applications	821
83	0604750F	Intelligence Equipment	831

TABLE OF CONTENTS

	PE	PROGRAM ELEMENT TITLE	PAGE
84	0604754F	Joint Tactical Information Distribution System	839
85	0604762F	Common Low Observable Verification Sys	853
86	0604779F	Joint Interoperability of Tactical Command/Control	859
87	0604800F	Joint Strike Fighter EMD	865
88	0604805F	Commercial Operations and Support Savings Initiative	871
89	0604851F	ICBM - EMD	877
90	0604853F	Evolved Expendable Launch Vehicle - EMD	901
91	0605011F	RDT&E For Aging Aircraft	907
#6 - Management and Support			
92	0604256F	Threat Simulator Development	913
93	0604258F	Target Systems Development	925
94	0604759F	Major T&E Investment	929
95	0605101F	RAND Project Air Force	939
96	0605306F	Ranch Hand II Epidemiology Study	943
97	0605712F	Initial Operational Test & Evaluation	947
98	0605807F	Test and Evaluation Support	957
99	0605808F	Development Planning	969
100	0605854F	Pollution Prevention	973
101	0605860F	Rocket Systems Launch Program (RSLP)	977
102	0605864F	Space Test Program	981
103	1001004F	International Activities	987
#7 - Operational System Development			
104	0101113F	B-52 SQUADRONS	995
105	0101120F	Advanced Cruise Missile	1,015
106	0101122F	Air Launched Cruise Missile	1,021
107	0102325F	Joint Surveillance System	1,029
108	0102326F	Region/ Sector Operations Control Center	1,035
109	0102411F	North Atlantic Defense System	1,041
110	0207027F	Air Space Command & Control Agency	1,047

TABLE OF CONTENTS

PE	PROGRAM ELEMENT TITLE	PAGE
111	0207131F A-10 SQUADRONS	1,053
112	0207133F F-16 Squadrons	1,059
113	0207134F F-15E SQUADRONS	1,067
114	0207136F Manned Destructive Suppression	1,075
115	0207141F F-117A Squadron	1,081
116	0207161F Tactical AIM Missiles	1,087
117	0207163F Advanced Medium Range Air-to-Air Missile	1,095
118	0207247F Air Force TENCAP	1,101
119	0207253F Compass Call	1,107
120	0207268F Aircraft Engine Component Improvement Program (CIP)	1,111
121	0207320F Sensor Fuzed Weapon (SFW)	1,117
122	0207325F Joint Air-to-Surface Standoff Missile (JASSM)	1,123
123	0207412F Theater Air Control Systems	1,129
124	0207414F COMBAT INTELLIGENCE SYSTEM	1,135
125	0207417F Airborne Warning and Control System (AWACS)	1,141
126	0207423F Advanced Communications Systems	1,147
127	0207438F Theater Battle Management (TBM) C4I	1,157
128	0207581F JOINT STARS	1,177
129	0207590F Seek Eagle	1,185
130	0207601F USAF Modeling and Simulation	1,191
131	0207605F Wargaming and Simulation Centers	1,199
132	0208006F Mission Planning Systems	1,203
133	0208021F Information Warfare Support	1,211
134	0208031F WRM-EQUIPMENT/SECONDARY ITEMS	1,217
135	0208060F Theater Missile Defenses	1,223
136	0302015F E-4B NATIONAL AIRBORNE OPERATIONS CENTER	1,235
137	0303110F Defense Satellite Communications System	1,241
138	0303112F AIR FORCE COMMUNICATIONS	1,247
139	0303131F Minimum Essential Emergency Communications Network (MEECN)	1,251
140	0303140F Information Systems Security Program	1,267
141	0303141F Global Combat Support System (GCSS)	1,283

TABLE OF CONTENTS

PE	PROGRAM ELEMENT TITLE	PAGE
142	0303150F	1,289
143	0303401F	1,295
144	0303601F	1,301
145	0305099F	1,307
146	0305110F	1,325
147	0305111F	1,333
148	0305114F	1,339
149	0305119F	1,351
150	0305128F	1,357
151	0305137F	1,363
152	0305138F	1,369
153	0305144F	1,375
154	0305158F	1,381
155	0305160F	1,385
156	0305164F	1,393
157	0305165F	1,403
158	0305182F	1,411
159	0305202F	1,419
160	0305205F	1,427
161	0305206F	1,453
162	0305207F	1,475
163	0305208F	1,487
164	0305906F	1,499
165	0305910F	1,519
166	0305911F	1,535
167	0305913F	1,547
168	0305917F	1,553
169	0308601F	1,559
170	0308699F	1,567
171	0401115F	1,573
172	0401119F	1,583
	WWMCCS/GLOBAL COMMAND & CONTROL SYSTEM	
	Communications Security	
	MILSATCOM Terminals	
	Global Air Traffic Management (GATM)	
	Satellite Control Network	
	Weather Service	
	Air Traffic Control/Approach/Landing System (ATCALS)	
	Medium Launch Vehicles	
	Security And Investigative Activities	
	National Airspace System	
	Inert Upper Stage (IUS)	
	Titan Space Launch Vehicles	
	Tactical Terminals	
	Defense Meteorological Satellite Program	
	NAVSTAR Global Positioning System (User EQ) Space)	
	NAVSTAR GPS (Space)	
	Spacelift Range System	
	Dragon U-2 (JMIP)	
	Endurance Unmanned Aerial Vehicles	
	Airborne Reconnaissance Systems	
	Manned Reconnaissance System	
	Distributed Common Ground Systems	
	NCMC - TW/AA System	
	SPACETRACK	
	Defense Support Program	
	NUDET Detection System (Space)	
	Space Architect	
	Modeling and Simulation Support	
	Shared Early Warning System	
	C-130 AIRLIFT SQUADRONS	
	C-5 Airlift Squadrons	

TABLE OF CONTENTS

PE	PROGRAM ELEMENT TITLE	PAGE
173	0401130F	1,595
174	0401214F	1,607
175	0401218F	1,611
176	0401219F	1,617
177	0404011F	1,623
178	0702207F	1,629
179	0708011F	1,635
180	0708026F	1,641
181	0708071F	1,647
182	0708611F	1,653
183	0708612F	1,669
184	0901218F	1,675
185	1001018F	1,679

Other Exhibits

Military Construction Project Data (DD Form 1391)
Combating Terrorism Exhibit

ALPHABETICAL LISTING

Program Element Title	PE	PAGE
A-10 SQUADRONS	0207131F	1,053
Advanced (EHF) MILSATCOM (Space)	0603430F	419
Advanced Aerospace Sensors	0603203F	215
Advanced Communications Systems	0207423F	1,147
Advanced Cruise Missile	0101120F	1,015
Advanced Materials for Weapon Systems	0603112F	199
Advanced Medium Range Air-to-Air Missile	0207163F	1,095
Advanced Sensor Integration	0603253F	265
Advanced Spacecraft Technology	0603401F	297
Advanced Weapons Technology	0603605F	337
Aeromedical Systems Development	0604703F	785
Aerospace Flight Dynamics	0602201F	57
Aerospace Info Tech Sys Integration	0603726F	359
Aerospace Propulsion	0602203F	93
Aerospace Propulsion and Power Technology	0603216F	237
Aerospace Propulsion Subsystems Integration	0603202F	211
Aerospace Sensors	0602204F	111
Aerospace Structures	0603211F	233
Agile Combat Support	0604617F	773
Air Cargo Materiel Handling (463-L)	0401214F	1,607
AIR FORCE COMMUNICATIONS	0303112F	1,247
Air Force TENCAP	0207247F	1,101
Air Force/National Program Cooperation (AFNPC)	0603856F	571
Air Launched Cruise Missile	0101122F	1,021
Air Space Command & Control Agency	0207027F	1,047
Air Traffic Control/Approach/Landing System (ATCALS)	0305114F	1,339
Airborne Laser Technology	0603319F	413
Airborne Reconnaissance Systems	0305206F	1,453
Airborne Warning and Control System (AWACS)	0207417F	1,141
Aircraft Engine Component Improvement Program (CIP)	0207268F	1,111
Armament/Ordnance Development	0604602F	753

ALPHABETICAL LISTING

Program Element Title	PE	PAGE
B-1B	0604226F	647
B-2 Advanced Technology Bomber	0604240F	689
B-52 SQUADRONS	0101113F	995
Ballistic Missile Technology	0603311F	293
Battlespace C2 Technology	0603728F	369
C-130 AIRLIFT SQUADRONS	0401115F	1,573
C-17 Aircraft	0401130F	1,595
C3I Advanced Development	0603789F	377
C-5 Airlift Squadrons	0401119F	1,583
Civil, Fire, Environmental, Shelter	0604708F	799
Civilian Compensation Program	0901218F	1,675
Combat Identification Technology	0603742F	475
COMBAT INTELLIGENCE SYSTEM	0207414F	1,135
Combat Survivor Evader Locator	0305176F	603
Combat Training Ranges	0604735F	813
Command Control and Communication Applications	0603617F	451
Command Control and Communications	0602702F	175
Commercial Operations and Support Savings Initiative	0604805F	871
Common Low Observable Verification Sys	0604762F	853
Communications Security	0303401F	1,295
Compass Call	0207253F	1,107
Computer Resources Support Improvement Program	0708612F	1,669
Conventional Munitions	0602602F	161
Conventional Weapons Technology	0603601F	327
Crew Systems and Personnel Protection Technology	0603231F	253
Defense Meteorological Satellite Program	0305160F	1,385
Defense Research Sciences	0601102F	1
Defense Satellite Communications System	0303110F	1,241
Defense Support Program	0305911F	1,535
Depot Maintenance (Non-IF)	0702207F	1,629
Development Planning	0605808F	969

ALPHABETICAL LISTING

Program Element Title	PE	PAGE
DIRECTED ENERGY TECHNOLOGY	0602605F	169
Distributed Common Ground Systems	0305208F	1,487
Distributed Mission Training (DMT)	0604227F	655
Dragon U-2 (JMIP)	0305202F	1,419
Dual Use Science & Technology	0602805F	191
E-4B NATIONAL AIRBORNE OPERATIONS CENTER	0302015F	1,235
Electronic Combat Technology	0603270F	271
Endurance Unmanned Aerial Vehicles	0305205F	1,427
Environmental Engineering Technology	0603723F	355
Evolved Expendable Launch Vehicle - EMD	0604853F	901
EW Development	0604270F	695
F-117A Squadron	0207141F	1,081
F-15E SQUADRONS	0207134F	1,067
F-16 Squadrons	0207133F	1,059
F-22 EMD	0604239F	675
Flight Vehicle Technology	0603205F	227
Flight Vehicle Technology Integration	0603245F	261
Global Air Traffic Management (GATM)	0305099F	1,307
Global Combat Support System (GCSS)	0303141F	1,283
Hardened Target Munitions	0604327F	593
Human Effectiveness Applied Research	0602202F	73
Hypersonic Technology Program	0602269F	133
ICBM - DEM/VAL	0603851F	523
ICBM - EMD	0604851F	877
Industrial Preparedness	0708011F	1,635
Inert Upper Stage (IUS)	0305138F	1,369
Information Operations Technology	0603690F	471
Information Systems Security Program	0303140F	1,267
Information Warfare Support	0208021F	1,211
Initial Operational Test & Evaluation	0605712F	947
Integrated Avionics Planning and Development	0604201F	615

ALPHABETICAL LISTING

Program Element Title	PE	PAGE
Integrated Broadcast Service (DEM/VAL)	0603850F	517
Integrated Command & Control Applications	0604740F	821
Intelligence Advanced Development	0603260F	395
Intelligence Equipment	0604750F	831
International Activities	1001004F	987
Joint Air-to-Surface Standoff Missile (JASSM)	0207325F	1,123
Joint Direct Attack Munition	0604618F	779
Joint Helmet Mounted Cueing System (JHMCS)	0604012F	609
Joint Interoperability of Tactical Command/Control	0604779F	859
Joint Logistics Program - Ammunition System	0708071F	1,647
Joint Precision Approach and Landing Systems - Dem/Val	0603860F	583
Joint Standoff Weapons Systems	0604727F	807
JOINT STARS	0207581F	1,177
Joint Strike Fighter	0603800F	505
Joint Strike Fighter EMD	0604800F	865
Joint Surveillance System	0102325F	1,029
Joint Tactical Information Distribution System	0604754F	839
KC-10S	0401219F	1,617
KC-135s	0401218F	1,611
Life Support Systems	0604706F	791
Logistics Systems Technology	0603106F	195
Major T&E Investment	0604759F	929
Manned Destructive Suppression	0207136F	1,075
Manned Reconnaissance System	0305207F	1,475
Materials	0602102F	43
MAUI SPACE SURVEILLANCE SYSTEMS	0603444F	325
Medium Launch Vehicles	0305119F	1,351
MILSATCOM Terminals	0303601F	1,301
MILSTAR LDR/MDR Sat Comm	0604479F	739
Minimum Essential Emergency Communications Network (MEECN)	0303131F	1,251
Mission Planning Systems	0208006F	1,203

ALPHABETICAL LISTING

Program Element Title	PE	PAGE
Modeling and Simulation Support	0308601F	1,559
Munitions Dispenser Development	0604600F	747
National Airspace System	0305137F	1,363
National Polar-Orbiting Operational Environmental Satellite System (NPOESS)	0603434F	431
NATO AGS	1001018F	1,679
NATO Cooperative R&D	0603790F	483
NAVSTAR Global Positioning System (User EQ) Space)	0305164F	1,393
NAVSTAR GPS (Space)	0305165F	1,403
NCMC - TW/AA System	0305906F	1,499
North Atlantic Defense System	0102411F	1,041
Nuclear Weapons Support	0604222F	627
NUDET Detection System (Space)	0305913F	1,547
Personnel Training and Simulation Technology	0603227F	247
Polar MILSATCOM (Space)	0603432F	425
Pollution Prevention	0603859F	577
Pollution Prevention	0605854F	973
Precision Attack Systems	0207249F	599
Productivity, Reliability, Availability, Maintainability Program	0708026F	1,641
Ranch Hand II Epidemiology Study	0605306F	943
RAND Project Air Force	0605101F	939
RDT&E For Aging Aircraft	0605011F	907
Region/ Sector Operations Control Center	0102326F	1,035
Rocket Systems Launch Program (RSLP)	0605860F	977
Satellite Control Network	0305110F	1,325
Security And Investigative Activities	0305128F	1,357
Seek Eagle	0207590F	1,185
Sensor Fuzed Weapon (SFW)	0207320F	1,117
Shared Early Warning System	0308699F	1,567
Space and Missile Rocket Propulsion	0603302F	281
Space Architect	0305917F	1,553
Space Based Infrared Systems (SBIRS) High EMD	0604441F	727

ALPHABETICAL LISTING

Program Element Title	PE	PAGE
Space Based Infrared Systems (SBIRS) Low	0604442F	733
Space Based IR Arch (Dem Val)(Space)	0603441F	445
Space Based Laser	0603876F	389
Space Control Technology	0603438F	439
Space Systems Environmental Interactions Technology	0603410F	321
Space Technology	0602601F	137
Space Test Program	0605864F	981
Spacelift Range System	0305182F	1,411
SPACETRACK	0305910F	1,519
Special Operations Forces	0404011F	1,623
Specialized Undergraduate Pilot Training	0604233F	659
Submunitions	0604604F	767
Support Systems Development	0708611F	1,653
Tactical AIM Missiles	0207161F	1,087
Tactical Terminals	0305158F	1,381
Target Systems Development	0604258F	925
Test and Evaluation Support	0605807F	957
Theater Air Control Systems	0207412F	1,129
Theater Battle Management (TBM) C4I	0207438F	1,157
Theater Missile Defenses	0208060F	1,223
Threat Simulator Development	0604256F	913
Titan Space Launch Vehicles	0305144F	1,375
USAF Modeling and Simulation	0207601F	1,191
Variable Stability In-Flight Simulation Test Aircraft	0604237F	589
Wargaming and Simulation Centers	0207605F	1,199
Weather Service	0305111F	1,333
Weather Systems Technology	0603707F	353
Wideband MILSATCOM (Space)	0603854F	551
WRM-EQUIPMENT/SECONDARY ITEMS	0208031F	1,217
WWMCCS/GLOBAL COMMAND & CONTROL SYSTEM	0303150F	1,289

UNCLASSIFIED

**Fiscal Year 2001 Budget Estimate Submission
RDT&E Descriptive Summaries, Volume II
February 2000**

INTRODUCTION AND EXPLANATION OF CONTENTS

1. (U) GENERAL. This document has been prepared to provide information on the United States Air Force (USAF) Research, Development, Test and Evaluation (RDT&E) program elements and projects in the FY2001 President's Budget Submission (PB). All formats in this document are in accordance with the guidelines of the DoD Financial Management Regulation, Volume 2B, Chapter 5 with the exception of the R-3 exhibit. The Air Force could not support the format matrix because our programs do not track their programs in the manner required to complete the exhibit.

- a. Contents: Exhibits R-2, R-2a and R-3 provide narrative information for all RDT&E program elements and projects within the USAF FY 2001 RDT&E program except the classified program elements. The formats and contents of this document are in accordance with the guidelines and requirement of the Congressional committees insofar as possible. The F-22 "P-5" budget exhibit directed by the Authorization Conference Report number 106-371 has been inserted behind the R-3 exhibit for program element 0604239F.
- b. The "Other Program Funding Summary" portion of the R-2 includes, in addition to RDT&E funds, Procurement funds and quantities, Military Construction appropriation funds on specific development programs, Operations and Maintenance appropriation funds where they are essential to the development effort described, and where appropriate, Department of Energy (DOE) costs.
- c. The Justification book has been assembled in accordance with DoD Financial Management Regulation 7000.14, Vol. 2B Cpt 5, Sec 050302 with the exception of the R-1; Project Funding Listing which was distributed under a separate cover due to classification.

2. (U) CLASSIFICATION.

- a. All exhibits contained in Volumes I, II and III are UNCLASSIFIED. Classified exhibits are not included in the submission due to the level of security classification and necessity of special security clearances.

PROGRAM ELEMENT COMPARISON SUMMARY

INTRODUCTION AND EXPLANATION OF CONTENTS

Program Element	Remarks
BUDGET ACTIVITY 1: BASIC RESEARCH	
BUDGET ACTIVITY 2: APPLIED RESEARCH	
0602202F, Human Effectiveness Applied Research	Project 6219 was terminated after FY 1999, but Congress added funding in FY 2000.
0602269F, Hypersonic Technology Program	Project 1025 funding for this program in FY01 is contained in PEs 0602203F Aerospace Propulsion, 0603203F Aerospace Propulsion Subsystems Integration and 0603216F Aerospace Propulsion and Power Technology.
0602601F, Space Technology	Project 1011 all rocket propulsion efforts will be transferred to 0602203F, Project 4847. Project 3326 all lasers and imaging efforts will be transferred to PE 0602605F, Projects 4866 and 4867.
0602605F, Directed Energy Technology	Projects 4866 and 4867 were transferred from PE 0602601F.
0602702F, Command, Control and Communications	Project 4506, Surveillance Technology will be transferred to Project 4594, PE 0602702F and Project 7622, PE 0602204F beginning in FY01.
BUDGET ACTIVITY 3: ADVANCED TECHNOLOGY DEVELOPMENT	
0603726F, Aerospace Information Technology Systems Integration	In FY 2001, the efforts in Project 632863, Integrated Photonics, will be conducted in PE 0603203F, Project 63665A. Prior to FY 2001, the efforts in Project 634850, Collaborative C2, were performed in PE 0603253F, Projects 632735 and 63666A.
BUDGET ACTIVITY 4: DEMONSTRATION AND VALIDATION	
0603441F, Space Based IR Arch (Dem/Val)	SBIRS Low efforts performed in Project 0007 will be transferred to PE 0604442F, Project 4598 in FY00 and 01.
0603800F, Joint Strike Fighter	Project 2025 will complete in FY01.

PROGRAM ELEMENT COMPARISON SUMMARY

INTRODUCTION AND EXPLANATION OF CONTENTS

Program Element	Remarks
BUDGET ACTIVITY 4: DEMONSTRATION AND VALIDATION Continued	
0603854F, Wideband Milsatcom	Project 4870 is a FY01 new start.
0603856F, Air Force/NRO Partnership	Project 4782, the Air Force/National Program Cooperation (AFNPC) effort is a FY01 new start.
0603859F, Pollution Prevention	Project 4852, Pollution Prevention will be transferred from PE 0605854F, previously in Budget Activity 6 beginning in FY01.
BUDGET ACTIVITY 5: ENGINEERING AND MANUFACTURING DEVELOPMENT	
0207249F, Precision Attack Systems Procurement	Project 2693 is a FY01 new start.
0604012F, Joint Helmet Mounted Cueing System	Project 4789 the Joint Helmet Mounted Cueing Systems effort is a FY01 new start.
0604201F, Integrated Avionics Planning and Development	Project 2257 will complete in FY01.
0604270F, EW Development	Project 8462 is a FY01 new start.
0604602F, Armament Ordnance Development	Project 3133 will complete in FY01.
0604327F, Hardened Target Munitions	Project 4641 will complete in FY00.
0604617F, Agile Combat Support	Project 2895 will complete in FY01.
0604706F, Life Support System	Project 412A, the K-36/3.5A Ejection Seat effort is a FY01 new start.
0604754F, Joint Tacital Information Distribution System	Project 4749, the Air Defense System Integrator effort is a FY01 new start
0604851F, ICBM	Project 4210 completes in FY00.
BUDGET ACTIVITY 6: MANAGEMENT AND SUPPORT	
0604256F, Threat Simulator Development	Project 3321, Joint Modeling and Simulation System (JMASS) funding and responsibility transferred in FY00 to PE 0207601F.

PROGRAM ELEMENT COMPARISON SUMMARY

INTRODUCTION AND EXPLANATION OF CONTENTS

Program Element	Remarks
BUDGET ACTIVITY 6: MANAGEMENT AND SUPPORT Continued	
0604256F, Threat Simulator Development	Project 7500, Foreign Materiel Acquisition and Exploitation (FMA/E) established a funding line in FY00.
0605808F, Development Planning	PE terminated in FY00.
0604759F, Major T&E Investment	Project 4759, two I&M projects started in FY00: Modeling & Simulation T&E Resources (MASTER); and Seeker T&E.
0604759F, Major T&E Investment	Project 4759, the Advanced Range Telemetry Integration (ARTM) was developed by CTEIP (OSD PE 0604940D). The ARTM I&S (Integration and Support) funding in this PE begins in FY01. Integrates the OSD developed ARTM into the Edwards AFB range.
0605854F, Pollution Prevention	Program moved into Budget Activity 4, to PE 0603859F beginning in FY01.
BUDGET ACTIVITY 7: OPERATIONAL SYSTEM DEVELOPMENT	
0101120F, Advanced Cruise Missile	Project 4798, the AGM-129A Advanced Cruise Missile Service Life Extension Program effort is a FY01 new start.
0207133F, F-16 Squadrons	Project 2671, the Automated Ground Collision Avoidance system, Falcon Star, and Targeting Pod/HARM Targeting Systems efforts are FY01 new starts.
0207141F, F-117A Squadrons	Project 3956, the F-117 Enhanced GBU-27 effort is a FY01 new start.
0303140F, Information Systems Security Program	Project 4585, Cryptologic 2020, will be funded under PE 33401F, Comm Sec, Project 4861, Cryptologic 2020, beginning in FY01.
0303601F, Milsatcom Terminals	Project 2487, the Airborne Wideband Terminal and Ground Multiband Terminal effort are a FY01 new start.
0305205F, Endurance Unmanned Aerial Vehicles	Project 4883 is a FY01 new start. Project 4816 will merge into 4799 in FY00.

PROGRAM ELEMENT COMPARISON SUMMARY

INTRODUCTION AND EXPLANATION OF CONTENTS

Program Element	Remarks
BUDGET ACTIVITY 7: OPERATIONAL SYSTEM DEVELOPMENT Continued	
0305206F, Airborne Reconnaissance System	Project 4882 is a FY01 new start.
0305207F, Manned Reconnaissance system	Project 4820 will be transferred to PE 0305202F beginning in FY01.
0305910F, Spacetrack	Project 4791, the Ground-Based Electro-Optical Deep Space Surveillance Sustainment effort is a FY00 new start.
0401115F, C-130 Airlift Squadrons	Project 4885 is a FY01 new start.
0401130F, C-17 Aircraft	Project 4886 is a FY01 new start.
0404011F, Special Operations Forces	Project 4860 is a FY01 new start.
0708612F, Computer Resources Support Improvement Program	FY01 funding was moved to this PE from PE 0708611F, Project 67309.
1001018F, NATO Joint Stars	Project 0002, the Project Definition of NATO Advanced Trans Atlantic Radar Project effort is a FY01 new start pending Congressional approval.

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0207249F Precision Attack Systems								652693	
	COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
652693	Lantirn	0	0	3,965	5,950	0	0	0	9,915	9,915	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	
(U)	A. Mission Description The primary mission of the Low Altitude Navigation and Targeting Infrared for Night (LANTIRN) targeting and navigation pods is to execute surgical strike operations under various conditions. The targeting pod is the core of the Combat Air Forces (CAF) precision guided munitions (PGM) capability, the heart of F-15E and F-16Blk40 operations. A suite of support equipment provides maintenance analysis for organic pod repair. The mission capable rate of the pods is directly related to the availability of the support equipment. This equipment utilizes early 1980's technology and is in serious decline. Operators experience excessive down-time due to obsolete parts and ever decreasing repair capability. The System Program Office has developed a plan to upgrade the support equipment, replacing obsolete parts with commercial off-the-shelf components, increasing throughput by 70 percent, and facilitating AEF-tailored, small footprint, rapid deployment capability. Without this upgrade, support equipment sustainability and thus, pod operability, are questionable after FY01.										
(U)	FY 1999 (\$ in Thousands) No Activity Total										
(U)	FY 2000 (\$ in Thousands) No Activity Total										
(U)	FY 2001 (\$ in Thousands) Required development and engineering for upgrade of LANTIRN support equipment, and development of associated technical data and drawings. Total										
(U)	B. Budget Activity Justification The LANTIRN SE upgrade program is in budget activity 5 - Engineering and Manufacturing Development because it is in engineering and manufacturing development and has not received full-rate production approval.										

Project 652693

Page 1 of 3 Pages

Exhibit R-2 (PE 0207249F)

599

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development	0207249F Precision Attack Systems	652693	
(U) <u>C. Program Change Summary (\$ in Thousands)</u>			
(U) Previous President's Budget (FY 2000 PBR)		FY 2001	Total Cost
(U) Appropriated Value		3,965	9,915
(U) Adjustments to Appropriated Value			
a. Congressional/General Reductions			
b. Small Business Innovative Research			
c. Omnibus or Other Above Threshold Reprogram			
d. Below Threshold Reprogram			
e. Rescissions			
f. Other			
(U) Adjustments to Budget Years Since FY 2000 PBR			
(U) Current Budget Submit/FY 2001 PBR		3,965	9,915
(U) <u>Significant Program Changes:</u>			
(U) <u>D. Other Program Funding Summary (\$ in Thousands)</u>			
		FY 2001	Total Cost
		Estimate	
		FY 2002	
		Estimate	
		FY 2003	
		Estimate	
		FY 2004	
		Estimate	
		FY 2005	
		Estimate	
		Cost to Complete	
(U) AF RDT&E			
(U) Other APPN			
(U) <u>E. Acquisition Strategy</u>			
The majority of engineering and development of the upgrade to the LANTIRN Intermediate Automatic Test Equipment (LIATE) and Electro-Optical Test Set (EOTS) will be completed under the Commercial Operations and Support Savings Initiative (COSSI), a DoD-funded program. Additional required engineering for the LIATE and EOTS or for the remaining support equipment will be contracted. Contract development of the associated technical data and drawings for the upgraded equipment will also be required.			
(U) <u>F. Schedule Profile</u>			
		FY 1999	FY 2001
		1 2 3 4	1 2 3 4
(U) Develop LANTIRN SE upgrade and tech data			X
Project 652693	Page 2 of 3 Pages	Exhibit R-2 (PE 0207249F)	

600

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 2000	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT		
05 - Engineering and Manufacturing Development		0207249F Precision Attack Systems		652693		
(U)	<u>A. Project Cost Breakdown (\$ in Thousands)</u>					
	Develop LANTIRN SE upgrade and tech data					
(U)	Total			FY 1999	FY 2000	FY 2001
						3,965
						3,965
(U)	<u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>					
(U)	<u>Performing Organizations:</u>					
	<u>Contract or</u>	<u>Contract</u>	<u>Performing</u>	<u>Project</u>	<u>Budget</u>	<u>Budget to</u>
	<u>Government</u>	<u>Method/Type</u>	<u>Activity</u>	<u>Office</u>	<u>FY 2001</u>	<u>Complete</u>
	<u>Performing</u>	<u>or Funding</u>	<u>EAC</u>	<u>EAC</u>	<u>FY 2000</u>	<u>Program</u>
	<u>Activity</u>	<u>Vehicle</u>				
	Lockheed Martin Space and				3,965	5,950
	Missiles					9,915
	Product Development Organizations					
	Support and Management Organizations					
	Test and Evaluation Organizations					
	<u>Subtotals</u>			<u>Total Prior</u>	<u>Budget</u>	<u>Total</u>
				<u>to FY 1999</u>	<u>FY 2000</u>	<u>Program</u>
					3,965	5,950
	Subtotal Product Development					
	Subtotal Support and Management					
	Subtotal Test and Evaluation					
	Total Project				3,965	9,915
Project 652693		Page 3 of 3 Pages		Exhibit R-3 (PE 0207249F)		

601

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0305176F Combat Survivor Evader Locator								654522	
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
654522	CSAR EMD	3,977	13,212	10,842	3,471	0	0	0	0	74,396	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	
(U) A. Mission Description											
(U) The Combat Survivor Evader Locator (CSEL) is a joint program, with the Air Force as lead Service, that will provide enhanced Combat Search and Rescue (CSAR) communications and location capability by replacing antiquated survivor radios (PRC-90/112) with current and emerging technologies in a new end-to-end system. The CSEL system will be used by all the Services and DoD, and potentially non-DoD government agencies. CSEL system features include a new hand held radio which incorporates two-way, secure over-the-horizon (OTH) messaging, line-of-sight (LOS) voice, near real-time geopositioning, verification of evader identity and condition, low probability of intercept/detection (LPI/LPD), and the potential integration of commercial satellite systems capabilities.											
(U) FY 1999 (\$ in Thousands)											
(U)	\$3,362	CSEL Engineering and Manufacturing Development									
(U)	\$615	Other Government Support									
(U)	\$3,977	Total									
Note 1: The AF reprogrammed \$3.999M into the CSEL program in FY99 to continue development of the CSEL system.											
(U) FY 2000 (\$ in Thousands)											
(U)	\$11,524	CSEL Engineering and Manufacturing Development									
(U)	\$90	Government Test and Operational Assessment									
(U)	\$1,598	Other Government Support									
(U)	\$13,212	Total									
(U) FY 2001 (\$ in Thousands)											
(U)	\$8,478	CSEL Engineering and Manufacturing Development									
(U)	\$196	Government Test and Operational Assessment									
(U)	\$2,168	Other Government Support									
(U)	\$10,842	Total									

Project 654522

Page 1 of 5 Pages

Exhibit R-2 (PE 0305176F)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development	0305176F Combat Survivor Evader Locator	654522	
(U) B. Budget Activity Justification			
This program is in Budget Activity (BA) 5, Engineering and Manufacturing Development (EMD) because it is in engineering and manufacturing development and has not received full-rate production approval.			
(U) C. Program Change Summary (\$ in Thousands)			
		<u>FY 1999</u>	<u>FY 2000</u>
			<u>FY 2001</u>
			<u>Total Cost</u>
(U) Previous President's Budget (FY 2000 PBR)		0	13,412
(U) Appropriated Value		0	13,412
(U) Adjustments to Appropriated Value			
a. Congressional/General Reductions			-6
b. Small Business Innovative Research			-90
c. Omnibus or Other Above Threshold Reprogram		3,999	
d. Below Threshold Reprogram		-22	-104
e. Rescissions			
f. Other			
(U) Adjustments to Budget Years Since FY 2000 PBR			-97
(U) Current Budget Submit/FY 2001 PBR		3,977	13,212
			10,842
			74,396
(U) Significant Program Changes:			
(U) FY 1999 Below Threshold Reprogramming required to continue the development at a reduced level until funding could be appropriated in FY 2000. FY 2001 reduction for higher priority DoD programs.			
(U) D. Other Program Funding Summary (\$ in Thousands)			
		<u>FY 1999</u>	<u>FY 2000</u>
		<u>Actual</u>	<u>Estimate</u>
(U) Other Procurement, Air Force (PE 0305176F) (BA 63, P-70)		2,916	836
			<u>FY 2001</u>
		<u>Estimate</u>	<u>Estimate</u>
		<u>FY 2002</u>	<u>FY 2003</u>
		<u>Estimate</u>	<u>Estimate</u>
		<u>FY 2004</u>	<u>FY 2005</u>
		<u>Estimate</u>	<u>Estimate</u>
		5,956	6,064
			<u>Cost to Complete</u>
			Continuing
			<u>Total Cost</u>
			TBD
(U) E. Acquisition Strategy			
All major contracts within this Program Element were awarded after full and open competition.			
(U) F. Schedule Profile			
		<u>FY 1999</u>	<u>FY 2000</u>
			<u>FY 2001</u>
Project 654522			
Page 2 of 5 Pages			
Exhibit R-2 (PE 0305176F)			

604

UNCLASSIFIED

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

February 2000

PE NUMBER AND TITLE

0305176F Combat Survivor Evader Locator

654522

X = planned event

Exhibit R-2 (PE 0305176F)

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT			654522
05 - Engineering and Manufacturing Development	0305176F Combat Survivor Evader Locator				
(U) A. Project Cost Breakdown (\$ in Thousands)					
		FY 1999	FY 2000	FY 2001	FY 2001
(U) CSEL Engineering and Manufacturing Development		3,362	11,524	8,478	8,478
(U) Government Test and Operational Assessment		0	90	0	196
(U) Program Office Support					
(U) SPAWAR (US Navy Ground Station Integration and Support		99	232		832
(U) PRC/ARINC Contractor Support		245	475		481
(U) FFRDC (MITRE/Aerospace) Support		218	740		755
(U) Space and Missile Center		53	151		100
(U) Total		3,977	13,212		10,842
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)					
(U) Performing Organizations:					
Contract or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Program
Product Development Organizations					
Boeing	CPAF	23 Feb 96	55,036	55,036	55,036
SMC (COBRA)	Multiple	Multiple	4,000	4,000	4,000
Support and Management Organizations					
Program Support					
Test and Evaluation Organizations					
AFOTEC			615	1,598	12,681
746TS			0	40	100
SPAWAR			0	0	0
Joint Spectrum Center			0	50	200
			0	0	46
Project 654522					Exhibit R-3 (PE 0305176F)

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 2000		
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT	
05 - Engineering and Manufacturing Development		0305176F Combat Survivor Evader Locator		654522	
<u>Subtotals</u>		<u>Total Prior</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
		<u>to FY 1999</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>Complete</u>
Subtotal Product Development		34,056	3,362	11,524	1,616
Subtotal Support and Management		6,545	615	1,598	1,755
Subtotal Test and Evaluation		2,293	0	90	100
Total Project		42,894	3,977	13,212	3,471
					74,396

Project 654522

Page 5 of 5 Pages

Exhibit R-3 (PE 0305176F)

Page 5 of 5 Pages

Exhibit R-3 (PE 0305176F)

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

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

DATE _____

February 2000

BUDGET ACTIVITY

PE NUMBER AND TITLE

05 - Engineering and Manufacturing Development

0604012F Joint Helmet Mounted Cueing System

PROJECT

654789

COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
654789	Joint Helmet Mounted Cueing System (JHMCS)	0	2,931	1,312	2,926	2,944	3,004	3,063	0	16,179
	Quantity of RDT&E Articles	0	22	0	0	0	0	0	0	22

A. Mission Description

In FY00, JHMCS was extracted from PE 0604201F Integrated Avionics Planning and Development and transitioned into its own separate program element. This Joint program with the United States Navy (USN) will develop a helmet display system, capable of depicting aircraft heading data, pilot's viewing perspective, target indication graphics and digital information. Consolidating this information on the pilot's visor allows the pilot to quickly align sensors and weapons on targets and engage threats using high off-boresight angle weapons such as the AIM-9X. The JHMCS includes a helmet with a mounted visor display capability, a helmet-vehicle interface cable, and several other components.

(U) FY 1999 (\$ in Thousands)

(U)	\$0	Activity reported in PE 0604201F Integrated Avionics Planning and Development

Total \$0

(U) FY 2000 (\$ in Thousands)

(U)	\$2,231	Continue JHMCS Engineering and Manufacturing Development (EMD) Contract

(U)	\$278	Continue Air Force Flight Test Center (AFFTC) Test Support

Continue Program Management Support	(U)	\$422

	Total
(U)	\$2,931

(U) FY 2001 (\$ in Thousands)

(U)	\$919	Initiate Pre-Planned Product Improvement Air to Ground Enhancements

Continue Program Management Support	\$393

Total \$1.312

B. Budget Activity Justification

This program is in budget activity 5 - EMD, Phase II, Research Category 6.4 because of the development nature of this program.

Project 654789

Page 1 of 5 Pages

Exhibit R-2 (PE 0604012F)

609

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)				DATE	February 2000					
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT						
05 - Engineering and Manufacturing Development		0604012F Joint Helmet Mounted Cueing System (JHMCS)		654789						
(U)	<u>C. Program Change Summary (\$ in Thousands)</u>									
(U)	Previous President's Budget (FY 2000 PBR)	FY 1999	FY 2000	FY 2001	Total Cost					
(U)	Appropriated Value	0	2,970	1,325	16,345					
(U)	Adjustments to Appropriated Value		2,970							
	a. Congressional/General Reductions									
	b. Small Business Innovative Research									
	c. Omnibus or Other Above Threshold Reprogram		-20							
	d. Below Threshold Reprogram									
	e. Rescissions		-19							
	f. Other									
(U)	Adjustments to Budget Years Since FY 2000 PBR			-13						
(U)	Current Budget Submit/FY 2001 PBR		2,931	1,312	16,179					
(U)	<u>Significant Program Changes:</u>									
	* FY 1998 and FY 1999 program funding are described in PE 0604201F Integrated Avionics Planning and Development.									
(U)	<u>D. Other Program Funding Summary (\$ in Thousands)</u>									
		FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
	Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
(U)	RDT&E, BA 5, PE 0604201F, Integrated Avionics Planning and Development	9,356	0	0	0	0	0	0	0	9,356
(U)	<u>E. Acquisition Strategy</u>									
	JHMCS is an ACAT III joint USAF/USN program (USAF - executive service). The contract structure is a Cost Plus Award Fee (CPAF) contract awarded in a competitive source selection environment. The CPAF contract is through Boeing - St. Louis for integration into the F-15 and F/A-18. Lockheed Martin will integrate JHMCS into the F-16 and F-22. Boeing has subcontracted to Vision Systems International (VSI) to provide JHMCS subsystems hardware/software. VSI is a partnership between Elbit (an Israeli company based in Ft Worth, TX) and Kaiser Electronics. The Joint Program Office is using a unique approach of developing common hardware as Contractor Furnished Equipment (CFE) to minimize platform integration risk. Milestone III Production Decision is scheduled for Sep 00.									

Project 654789

Page 2 of 5 Pages

Exhibit R-2 (PE 0604012F)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)						
BUDGET ACTIVITY	DATE	PE NUMBER AND TITLE	FY 1999	FY 2000	FY 2001	PROJECT
05 - Engineering and Manufacturing Development		0604012F Joint Helmet Mounted Cueing System (JHMCS)				654789
(U) F. Schedule Profile						
(U) Production Decision	1					
(U) Pre-Planned Product Improvement						
X - Planned event						
* - Completed event						
Note - Efforts in FY 1999 and earlier are described in PE 0604201F						

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE	February 2000
BUDGET ACTIVITY						PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development						0604012F Joint Helmet Mounted Cueing System (JHMCS)	654789	
(U) A. Project Cost Breakdown (\$ in Thousands)								
(U)	EMD Effort	FY 1999	FY 2000	FY 2001				
(U)	Pre-Planned Product Improvement	0	2,231	0				
(U)	Test Support (AFFTC)	0	0	919				
(U)	Program Management Support	0	278	0				
(U)	Total	0	422	393				
(U)	* These costs are described in PE 0604201F	0	2,931	1,312				
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)								
(U)	Performing Organizations:							
	Contract or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1999	Budget FY 1999 Budget FY 2000 Budget FY 2001 Total Program	
	Product Development Organizations MDA/LMTAS CPAF	2/97	14,416	14,416	14,416	0	2,231 919 11,102 14,252	
	Support and Management Organizations Various	2/97	1,651	1,651	1,651	0	422 393 834 1,649	
	Test and Evaluation Organizations Various	2/97	278	278	278	0	278 0 0 278	
(U)	Government Furnished Property:							
	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001 Total Program	
	Item Description Product Development Property Support and Management Property Test and Evaluation Property							

Exhibit R-3 (PE 0604012F)
 Page 4 of 5 Pages
 Project 654789

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE		February 2000									
BUDGET ACTIVITY				PROJECT											
05 - Engineering and Manufacturing Development				654789											
PE NUMBER AND TITLE				0604012F Joint Helmet Mounted Cueing System (JHMCS)											
				Total Prior to FY 1999		Budget FY 1999		Budget FY 2000		Budget FY 2001		Budget to Complete		Total Program	
Subtotals				0		0		2,231		919		11,102		14,252	
Subtotal Product Development				0		0		422		393		834		1,649	
Subtotal Support and Management				0		0		278		0		0		278	
Subtotal Test and Evaluation				0		0		2,931		1,312		11,936		16,179	
Total Project															

Project 654789

Page 5 of 5 Pages

Exhibit R-3 (PE 0604012F)

613

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

PE NUMBER: 0604201F

UNCLASSIFIED

PE TITLE: Integrated Avionics Planning and Development

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 2000	
BUDGET ACTIVITY		PE NUMBER AND TITLE 0604201F Integrated Avionics Planning and Development									
05 - Engineering and Manufacturing Development		Development									
	COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
	Total Program Element (PE) Cost	9,775	712	712	0	0	0	0	0	65,032	
652050	Joint Helmet Mounted Cueing System (JHMCS)	9,356	0	0	0	0	0	0	0	45,352	
652257	Standard Avionics & JSRC Initiatives	419	712	712	0	0	0	0	0	19,680	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	
Note - Project 2050 was realigned under new PE 0604012F Joint Helmet-Mounted Cueing System (JHMCS). Total costs for JHMCS through FY 99 are shown here and costs for FY 00 and later are shown in PE 0604012F.											
* Total Air Force Cost											
PE 0604201F: 45,352											
PE 0604012F: 16,179											
(U) A. Mission Description											
This program element explores and develops integrated avionics architectures and components which will reduce acquisition and support costs, increase weapon system performance and availability, and foster weapons system interoperability with standard interfaces. This program element is devoted to the demonstration and Engineering and Manufacturing Development (EMD) of integrated avionics architectures and open systems. The scope is both domestic and international. Cost of ownership, Reliability and Maintainability (R&M) and deployment footprint play a major role in the identification of specific development efforts within this element. Joint avionics development efforts are pursued through participation in and support of the Joint Service Review Committee (JSRC).											
(U) B. Budget Activity Justification											
This is budget activity 5 - EMD, Research Category 6.4 because of the development nature of the effort.											
Exhibit R-2 (PE 0604201F)											

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)						DATE
BUDGET ACTIVITY		PE NUMBER AND TITLE				
05 - Engineering and Manufacturing Development		0604201F Integrated Avionics Planning and Development				
(U)	C. Program Change Summary (\$ in Thousands)				Total Cost	
(U)	Previous President's Budget (FY 2000 PBR)	FY 1999	FY 2000	FY 2001	69,360	
(U)	Appropriated Value	10,643	723	718		
(U)	Adjustments to Appropriated Value	10,762	723			
	a. Congressional/General Reductions	-89	-6			
	b. Small Business Innovative Research	-348				
	c. Omnibus or Other Above Threshold Reprogram	-5				
	d. Below Threshold Reprogram	-465				
	e. Rescissions	-85				
	f. Other					
(U)	Adjustments to Budget Years Since FY 2000 PBR			-6		
(U)	Current Budget Submit/FY 2001 PBR	9,775	712	712	65,032	
(U)	Significant Program Changes:					

Page 2 of 11 Pages
 Exhibit R-2 (PE 0604201F)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE									PROJECT
05 - Engineering and Manufacturing Development		0604201F Integrated Avionics Planning and Development									652050
	COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
652050	Joint Helmet Mounted Cueing System (JHMCS)	9,356	0	0	0	0	0	0	0	45,352	
Note - Project 2050 was realigned under new PE 0604012F Joint Helmet-Mounted Cueing System (JHMCS). Total costs for JHMCS through FY 99 are shown here and costs for FY 00 and later are shown in PE 0604012F. * Total Air Force Cost PE 0604201F: 45,352 (JHMCS) PE 0604012F: 16,179 (U) A. Mission Description This Joint program with the USN will develop a helmet display system, capable of depicting aircraft heading data, pilot's viewing perspective, target indication graphics and digital information. Consolidating this information on the pilot's visor allows the pilot to quickly align sensors and weapons on targets and engage threats using high off-boresight angle weapons such as the AIM-9X. The JHMCS includes a helmet with a mounted visor display capability, a helmet-vehicle interface cable, and several other components. JHMCS is currently in Phase II, Engineering & Manufacturing Development (EMD). (U) <u>FY 1999 (\$ in Thousands)</u> (U) \$7,424 Continued JHMCS EMD contract (U) \$978 Continued Test Support (AFFTC) (U) \$954 Continued Program Management Support (U) \$9,356 Total (U) <u>FY 2000 (\$ in Thousands)</u> (U) \$0 No activity in the PE (U) \$0 Total (U) <u>FY 2001 (\$ in Thousands)</u> (U) \$0 No activity in the PE (U) \$0 Total											

Project 652050

Page 3 of 11 Pages

Exhibit R-2A (PE 0604201F)

617

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE	February 2000																																																		
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																																																			
05 - Engineering and Manufacturing Development	0604201F Integrated Avionics Planning and Development	652050																																																			
(U) B. Project Change Summary Funding: FY 2000: Funding realigned to establish new Joint Helmet Mounted Cueing System (JHMCS) PE 0604012F. FY 2001: Funding realigned to JHMCS PE 0604012F.																																																					
(U) C. Other Program Funding Summary (\$ in Thousands) <table border="1"> <thead> <tr> <th></th> <th>FY 1992</th> <th>FY 2000</th> <th>FY 2001</th> <th>FY 2002</th> <th>FY 2003</th> <th>FY 2004</th> <th>FY 2005</th> <th>Cost to Complete</th> <th>Total Cost</th> </tr> </thead> <tbody> <tr> <td>Actual</td> <td></td> <td>2,931</td> <td>1,312</td> <td>2,926</td> <td>2,944</td> <td>3,004</td> <td>3,063</td> <td>0</td> <td>16,180</td> </tr> <tr> <td>RDT&E, BA 5, PE 0604012F, JHMCS</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>					FY 1992	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost	Actual		2,931	1,312	2,926	2,944	3,004	3,063	0	16,180	RDT&E, BA 5, PE 0604012F, JHMCS																													
	FY 1992	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost																																												
Actual		2,931	1,312	2,926	2,944	3,004	3,063	0	16,180																																												
RDT&E, BA 5, PE 0604012F, JHMCS																																																					
(U) D. Acquisition Strategy JHMCS is an ACAT III joint USAF/USN program (USAF - executive service). The contract structure is a Cost Plus Award Fee (CPAF) contract awarded in a competitive source selection environment. The CPAF contract is through Boeing - St. Louis for integration into the F-15 and F/A-18. Lockheed Martin will integrate JHMCS into the F-16 and F-22. Boeing has subcontracted to Vision Systems International (VSI) to provide JHMCS subsystems hardware/software. VSI is a partnership between Elbit (an Israeli company based in Ft Worth, TX) and Kaiser Electronics. The Joint Program Office is using a unique approach of developing common hardware as Contractor Furnished Equipment (CFE) to minimize platform integration risk. Milestone III Production Decision is scheduled for Sep 00.																																																					
(U) E. Schedule Profile <table border="1"> <thead> <tr> <th></th> <th colspan="3">FY 1999</th> <th colspan="3">FY 2000</th> <th colspan="3">FY 2001</th> </tr> <tr> <th></th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>1</th> </tr> </thead> <tbody> <tr> <td>Start Operational Assessment (F-15/F-18)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Functional Configuration Audit /Physical Configuration Audit</td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>*</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>					FY 1999			FY 2000			FY 2001				1	2	3	4	1	2	3	4	1	Start Operational Assessment (F-15/F-18)										Functional Configuration Audit /Physical Configuration Audit					X									*					
	FY 1999			FY 2000			FY 2001																																														
	1	2	3	4	1	2	3	4	1																																												
Start Operational Assessment (F-15/F-18)																																																					
Functional Configuration Audit /Physical Configuration Audit					X																																																
				*																																																	
* = Completed event X = Planned event																																																					
Note - Efforts in FY00 and later are described in PE 0604012F																																																					
Project 652050		Exhibit R-2A (PE 0604201F)																																																			

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 2000	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE		0604201F Integrated Avionics Planning and Development		
05 - Engineering and Manufacturing Development						
(U)	A. Project Cost Breakdown (\$ in Thousands)			FY 1999	FY 2000	FY 2001
(U)	EMD Effort			7,424		
(U)	Test Support (AFFTC)			978		
(U)	Program Management Support			954		
(U)	Total			9,356		
* Program funding for FY 2000 and later is described in PE 0604012F						
(U)	B. Budget Acquisition History and Planning Information (\$ in Thousands)					
(U)	Performing Organizations:					
	Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Program
	Product Development Organizations					
	MDA/LMTAS	CPAF	2/97	39,097	39,097	31,696
	Support and Management Organizations					
	Various	Various	2/97	2,593	2,593	1,929
	Test and Evaluation Organizations					
	Various	Various	2/97	3,473	3,473	2,371
(U)	Government Furnished Property:					
	Contract	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1999	Budget FY 1999
	Item Description					
	Product Development Property					
	Not Applicable					
	Support and Management Property					
	Not Applicable					
Project 652050				Exhibit R-3 (PE 0604201F)		

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 2000	
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT
05 - Engineering and Manufacturing Development		0604201F Integrated Avionics Planning and Development		652050
(U) <u>Government Furnished Property Continued:</u>				
<u>Test and Evaluation Property</u>				
Not Applicable				
<u>Subtotals</u>				
Subtotal Product Development		<u>Budget</u> FY 1999	<u>Budget</u> FY 2000	<u>Budget to</u> Complete
		31,696	0	0
Subtotal Support and Management		1,929	0	0
Subtotal Test and Evaluation		2,371	0	0
Total Project		35,996	0	0
* Funding for FY00 and later described in PE 0604012F				
				<u>Total</u> Program
				39,120
				2,883
				3,349
				45,352

Project 652050

Page 6 of 11 Pages

Exhibit R-3 (PE 0604201F)

Page 6 of 11 Pages

Exhibit R-3 (PE 0604201F)

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604201F Integrated Avionics Planning and Development								652257	
			FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
652257	Standard Avionics & JSRC Initiatives		419	712	712	0	0	0	0	0	19,680
(U) A. Mission Description This project identifies, demonstrates and/or develops candidate architecture standards and open system modular components for the Air Force and other services. Maintains/updates the common avionics database as a widely used avionics interoperability/standardization planning tool. Supports international avionics initiatives and standardization activities such as Global Air Traffic Management (GATM) Integrated Product Team. Develops an opportunity matrix for tactical and airlift programs to identify opportunities to leverage investments for aging avionics, parts obsolescence and avionics modernization. Common Avionics Modernization Planning is a pre-EMD project that explores candidate avionics systems and designs for potential developmental efforts and aircraft interoperability initiatives. The Joint Service Review Committee (JSRC) coordinates avionics standardization projects between the Air Force, Army and Navy.											
(U)	FY 1999 (\$ in Thousands)										
(U)	\$159	Continued Avionics Planning Baseline									
(U)	\$55	Continued Logistics/Initiative Planning & Support									
(U)	\$8	High-Speed Open Architecture--BUS Protocol									
(U)	\$197	Continued Program Management Support									
(U)	\$419	Total									
(U)	FY 2000 (\$ in Thousands)										
(U)	\$100	Continue Avionics Planning Baseline									
(U)	\$130	Continue Logistics/Initiative Planning & Support									
(U)	\$244	High-Speed Open Architecture--BUS Protocol									
(U)	\$238	Continue Program Management Support									
(U)	\$712	Total									

Project 652257

Page 7 of 11 Pages

Exhibit R-2A (PE 0604201F)

621

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604201F Integrated Avionics Planning and Development								652257	
(U)	<u>A. Mission Description Continued</u>										
(U)	FY 2001 (\$ in Thousands)										
(U)	\$160	Update Horizontal Avionics Modernization Planning									
(U)	\$92	Continue Avionics Planning Baseline									
(U)	\$140	Continue Logistics/Initiative Planning & Support									
(U)	\$25	Update Tri-Service Standardization / JSRC									
(U)	\$50	High-Speed Open Architecture--BUS Protocol									
(U)	\$245	Continue Program Management Support									
(U)	\$712	Total									
(U)	<u>B. Project Change Summary</u>										
	Funding:										
	FY 1999: Tri-Service Standardization / JSRC and HAMP were not approved requirements.										
	FY 2000: Tri-Service Standardization / JSRC and HAMP were not approved requirements.										
(U)	<u>C. Other Program Funding Summary (\$ in Thousands)</u>										
	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to	Total Cost		
	Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Complete			
(U)	Not Applicable										
(U)	<u>D. Acquisition Strategy</u>										
	These projects are in acquisition development and are accomplished through various prime contractors. The contracts are awarded competitively and follow the most recent DoD acquisition guidelines using the integrated product development philosophy.										
(U)	<u>E. Schedule Profile</u>										
	FY 1999		FY 2000		FY 2001						
	1	2	3	4	1	2	3	4			
(U)	Horizontal Avionics Modernization Planning										
(U)	*	*	*	*	*	*	*	*			
(U)	Avionics Planning Baseline										
(U)	*	*	*	*	*	*	*	*			
(U)	Logistics/Initiative Planning										
(U)	*	*	*	*	*	*	*	*			
(U)	Tri-Service Standardization										

Project 652257

Page 8 of 11 Pages

Exhibit R-2A (PE 0604201F)

Page 8 of 11 Pages

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE	February 2000																																				
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																																					
05 - Engineering and Manufacturing Development	0604201F Integrated Avionics Planning and Development	652257																																					
(U) <u>E. Schedule Profile Continued</u> <table border="1"> <thead> <tr> <th></th> <th colspan="2">FY 1999</th> <th colspan="2">FY 2000</th> <th colspan="2">FY 2001</th> </tr> <tr> <th></th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>1</th> <th>2</th> </tr> </thead> <tbody> <tr> <td>(U) High-Speed Open Architecture--BUS Protocol</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) * = Completed event</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) X = Planned event</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>						FY 1999		FY 2000		FY 2001			1	2	3	4	1	2	(U) High-Speed Open Architecture--BUS Protocol							(U) * = Completed event							(U) X = Planned event						
	FY 1999		FY 2000		FY 2001																																		
	1	2	3	4	1	2																																	
(U) High-Speed Open Architecture--BUS Protocol																																							
(U) * = Completed event																																							
(U) X = Planned event																																							

Project 652257

Page 9 of 11 Pages

Exhibit R-2A (PE 0604201F)

623

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE		February 2000		PROJECT	
BUDGET ACTIVITY				PE NUMBER AND TITLE		0604201F Integrated Avionics Planning and Development		652257	
05 - Engineering and Manufacturing Development									
(U)	<u>A. Project Cost Breakdown (\$ in Thousands)</u>			FY 1999	FY 2000	FY 2001			
(U)	Avionics Planning Baseline			159	100	92			
(U)	Horizontal Avionics Modernization Planning			0	0	160			
(U)	Tri-Service Standardization			0	0	25			
(U)	Logistics / Initiative Planning and Support			55	130	140			
(U)	High-Speed Open Architecture--BUS Protocol			8	244	50			
(U)	Program Management Support			197	238	245			
(U)	Total			419	712	712			
(U)	<u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>								
(U)	<u>Performing Organizations:</u>								
	Contractor or	Contract							
	Government	Method/Type							
	Performing	or Funding							
	Activity	Vehicle							
	Product Development Organizations								
	Project EMD Contracts	Various							
		Annual 1		14,591	14,591	14,399	222	474	0
		Oct							15,302
	Support and Management Organizations								
	Program Mgmt Admin	Various							
		Annual 1		4,044	4,044	3,698	197	238	0
		Oct							4,378
	Test and Evaluation Organizations								
	Not Applicable								
(U)	<u>Government Furnished Property:</u>								
		Contract							
		Method/Type							
		or Funding							
		Vehicle							
	Item	Award or							
	Description	Obligation							
		Date							
		Delivery							
		Date							
		Total Prior							
		to FY 1999							
		Budget							
		FY 1999							
		Budget							
		FY 2000							
		Budget							
		FY 2001							
		Budget to							
		Complete							
		Total							
		Program							
Project 652257				Exhibit R-3 (PE 0604201F)					

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									
BUDGET ACTIVITY		PE NUMBER AND TITLE		DATE	PROJECT				
05 - Engineering and Manufacturing Development		0604201F Integrated Avionics Planning and Development		February 2000	652257				
(U) Government Furnished Property Continued:									
Contract									
Item	Method/Type	Award or	Delivery						
	or Funding	Obligation	Date						
	Vehicle								
Product Development Property									
Not Applicable									
Support and Management Property									
Not Applicable									
Test and Evaluation Property									
Not Applicable									
Subtotals									
Subtotal Product Development				Total Prior to FY 1999	Budget FY 1999	Budget to Complete			
				14,139	222	474			
Subtotal Support and Management				3,698	197	238			
Subtotal Test and Evaluation									
Total Project				17,837	419	712			
						0			
						0			
						15,302			
						4,378			
						19,680			

Project 652257

Page 11 of 11 Pages

Exhibit R-3 (PE 0604201F)

Page 11 of 11 Pages

Exhibit R-3 (PE 0604201F)

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE									
05 - Engineering and Manufacturing Development		0604222F Nuclear Weapons Support									
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		6,915	8,397	10,133	12,745	13,063	13,686	13,829	Continuing	TBD	
654236	Engineering Analysis	2,669	1,236	1,238	2,122	2,106	2,123	2,150	Continuing	TBD	
654807	Agent Defeat Weapons	0	2,980	3,965	5,454	5,551	6,042	6,035	Continuing	TBD	
655708	Nuclear Weapons Support	4,246	4,181	4,930	5,169	5,406	5,521	5,644	Continuing	TBD	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	
(U) A. Mission Description Provides funds for maintaining core USAF nuclear weapon system expertise. Includes in-house technical capabilities, contractual efforts, supplies and equipment, travel and salaries of the USAF Nuclear Weapons Product Support Center and the USAF Nuclear Weapons and Counterproliferation Agency civilian and military nuclear weapon and counterproliferation specialists at Kirtland Air Force Base. Provides technical and programmatic guidance for continued and improved weapons capability, interoperability, safety, surety, security, development, stockpile management and retirement, and counterproliferation assessments. Customers are: DoD (Air Force, Navy, Nuclear CINCs, Joint Staff, OSD and Defense Threat Reduction Agency [DTRA]), DOE and NATO. Supports US Strategic Command and Air Combat Command Required Operational Capability 16-71 (Peacekeeper), 12-76 (Air Launched Cruise Missile), 6-76 (B61 Strategic Bomb), 6-69 (B83 Modern Strategic Bomb), and SAC System Operational Requirements Document 13-82-III (Advanced Cruise Missile). Air Force representative for development and implementation of the Joint DoD-DOE Surety Plan, DOE Stockpile Stewardship Plan, DoD/DOE Long Range Planning Assessment and the DoD/DOE Annual Certification. These plans document nuclear weapon issues which benefit from the application of risk assessment, data collection, model development and effectiveness analysis. This work is tied to the DOE nuclear weapons development process independent of the DoD acquisition system. Weapons are continuously undergoing some form of RDT&E to assure safety, reliability and operational readiness as the DoD restructures the nation's nuclear stockpile. Therefore, USAF platforms require continuing engineering development and analysis to ensure compatibility and safety of nuclear systems. Counterproliferation efforts include identifying, evaluating and assessing current and projected counterproliferation systems operating in joint environments. Funding this element is essential to maintaining current safety and reliability levels in the US nuclear stockpile as well as assessing current and future USAF counterproliferation needs.											

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)				DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE			
05 - Engineering and Manufacturing Development		0604222F Nuclear Weapons Support			
(U)	B. Budget Activity Justification The USAF Nuclear Weapons Product Support Center and the USAF Nuclear Weapons and Counterproliferation Agency are responsible for all USAF nuclear weapons program management, development, systems engineering, nuclear surety engineering, engineering analyses and weapons support procedure changes. These efforts place this project in RDT&E research category/budget activity 5, Engineering and Manufacturing Development.				
(U)	C. Program Change Summary (\$ in Thousands)				
(U)	Previous President's Budget (FY 2000 PBR)	FY 1999	FY 2000	FY 2001	Total Cost
(U)	Appropriated Value	4,963	8,489	9,175	TBD
(U)	Adjustments to Appropriated Value	4,977	8,489		
	a. Congressional/General Reductions	-14			
	b. Small Business Innovative Research	-3			
	c. Omnibus or Other Above Threshold Reprogram		-38		
	d. Below Threshold Reprogram	1,994			
	e. Rescissions	-39	-54		
	f. Other				TBD
(U)	Adjustments to Budget Years Since FY 2000 PBR			958	
(U)	Current Budget Submit/FY 2001 PBR	6,915	8,397	10,133	TBD
(U)	Significant Program Changes: Reprogramming in FY1999 reflects increase for Phase 0 Agent Defeat Weapon program, development testing required for the DOE Common Radar for the B61 Bombs and ALT 349 for the B61 Mod 11. Change in FY2001 reflects return of Nuclear Weapons & Counterproliferation personnel from PE 91212F and civilian pay/non-pay inflation.				

Page 2 of 19 Pages

Exhibit R-2 (PE 0604222F)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)									
BUDGET ACTIVITY		PE NUMBER AND TITLE							DATE
05 - Engineering and Manufacturing Development		0604222F Nuclear Weapons Support							February 2000
									PROJECT 654236
	COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Total Cost
654236	Engineering Analysis	2,669	1,236	1,238	2,122	2,106	2,123	2,150	TBD
(U)	A. Mission Description								
	Funds the engineering analysis performed on contract for all USAF nuclear weapons, delivery systems and counterproliferation (CP) counterforce efforts. Contractors provide technical expertise unavailable through organic resources in critical areas of nuclear weapons safety and security, nuclear operations and counterproliferation. Includes Agent Defeat Phase 0/I and CP related analyses and assessments.								
(U)	FY 1999 (\$ in Thousands)								
(U)	\$75	Nuclear Weapons/System Assessments. Provided technical assessments and support on nuclear safety analyses and limited special studies. Provided preliminary safety assessment of weapons in storage in Weapon Storage and Security Systems when subjected to conventional explosives. Assessed blast door hinge design for Kirtland Underground Munitions Maintenance Storage Complex.							
(U)	\$110	Nuclear Aircraft System Support. Edited/published technical orders and associated checklists for F-15E, F-16C/D, B-2A, B-52H, C-17, C-141 and NATO PA-200 aircraft governing loading, weapons mate/demate, strategic nuclear airlift, aircrew acceptance procedures, and aircraft nuclear certification; provided Explosive Ordnance Disposal (EOD) technical support to DoD/DOE agencies; provided computer programming support to upgrade the Nuclear Hardness Database computer system; provided safe escape data for mission profiles to strategic bomber aircrews; completed analysis, design, and installation of lightning protection modification for weapons maintenance truck; provided technical support for design of pallet used for certification of nuclear weapons handling; developed test procedures for PA-200, F-16C/D, B-52H, and B-2A aircraft; calibrated and performed maintenance on WE-1841 surveillance Tester; provided engineering support for surveillance testing of PA-200 and F-16C/D aircraft; prepared test reports for PA-200, F-16, and F-15E Aircraft Surveillance Tests; prepared B-2A test program to be installed on the WE-1841 Surveillance Tester; supporting B61 vibration fly-around tests for B61 on F-15 and F-16 with high grade engines.							
(U)	\$760	Nuclear Weapons Program Support. Provided technical expertise to support development, fielding and updates of nuclear Military Characteristics (MC) and Stockpile to Target Sequence (STS) documents; documented and supported all weapons safety analyses, program actions, and agreements; conducted special studies on stockpile related matters; providing technical analyses to support life extension options for W87 and W80 warheads, W80 6.2/6.2A Study, inactive stockpile issues, use control, long term storage, and dismantlement issues to weapon Lead Project Officers; analyzed models for control and activation of nuclear critical signals from F-16 Mid-Life Update software; provided initial Nuclear Weapon Management System and associated Knowledge Base system design; updated Electromagnetic Radiation/Interference (EMR/I) STS references for B61, B83, and W80; initiating EMR/I tests at aircraft sites.							
(U)	\$1,724	Counterproliferation Assessments. Increased FY99 technical support for ADW AoA (Phase 0) efforts to include Level II detailed effectiveness							
Project 654236		Page 3 of 19 Pages							Exhibit R-2A (PE 0604222F)

629

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)			DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE			
05 - Engineering and Manufacturing Development	0604222F Nuclear Weapons Support		February 2000	654236
(U) A. Mission Description Continued				
(U) FY 1999 (\$ in Thousands) Continued				
	assessments of eight distinct warhead technology areas to include nuclear, conventional and advanced technology systems against chemical and biological targets; enhanced and provided final documentation of Empirical Lethality Model (ELM); modified Level I codes to address new technologies; began Intelligence Support Plan (ISP) efforts and SPO planning; addressing target uncertainty concerns and full weaponization along with campaign level assessments.			
(U) \$2,669	Total			
(U) FY 2000 (\$ in Thousands)				
(U) \$95	Nuclear Weapons/System Assessments. Provide technical assessments and support on nuclear safety analyses and limited special studies.			
(U) \$180	Nuclear Aircraft System Support. Revise and verify nuclear weapons loading, delivery, warhead mate and demate, and EOD technical orders; provide EOD technical support to DoD/DOE agencies; provide support on the nuclear hardness database, perform aircraft software analysis; provide technical expertise for continued nuclear weapons integration on US and non-US aircraft systems; provide B61 and B83 Static Ejection test support with new ejector cartridges; and provide logistics analysis as required.			
(U) \$530	Nuclear Weapons Program Support. Complete Nuclear Weapon Management System and associated Knowledge Base System design and continue incorporating data; provide technical expertise to support development, fielding and updates of nuclear weapon MC and STS documents; document and support all weapons safety analyses, program actions, and agreements; conduct special studies on stockpile related matters; provide technical analysis to support life extension options for B83, B61, W80 and ICBM warheads, inactive stockpile issues, use control, long term storage, and dismantlement issues to weapon Lead Project Officers.			
(U) \$431	Counterproliferation Assessments. Provide continued technical support for counterproliferation assessments and technical expertise in the areas of nuclear, advanced technology and conventional systems identified as possible counterforce technologies; battle damage assessment platforms; and target intelligence platforms. Support efforts in fuzing, mission planning, counterforce technologies and intelligence requirements for developing concepts of operations and operational requirements. Provide technical and programmatic support on counterproliferation matters to the Air Force Nuclear Weapons and Counterproliferation Agency (AFNWSA) and Headquarters USAF.			
(U) \$1,236	Total			
(U) FY 2001 (\$ in Thousands)				
(U) \$100	Nuclear Weapons/System Assessments. Provide technical assessments and support on nuclear safety analyses and limited special studies.			
(U) \$200	Nuclear Aircraft System Support. Revise and verify nuclear weapons loading, delivery, warhead mate and demate, and EOD technical orders; provide support on the nuclear hardness database, perform aircraft software analysis; provide technical expertise for continued nuclear weapons integration on US and non-US aircraft systems; provide test support to ensure compatibility of improved aircraft racks and launchers; and			
Project 654236			Page 4 of 19 Pages	Exhibit R-2A (PE 0604222F)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development	0604222F Nuclear Weapons Support	654236	
(U) A. Mission Description Continued			
(U) FY 2001 (\$ in Thousands) Continued			
(U) \$500	provide logistics analysis and EOD technical support, as required.		
	Nuclear Weapons Program Support. Provide technical expertise to support development, fielding and updates of nuclear weapon MC and STS documents; document and support all weapons safety analyses, program actions, and agreements; update the Nuclear Weapon Management System and Knowledge Base System; conduct special studies on stockpile related matters; provide technical analysis to support life extension options for B83, B61, W80 and ICBM warheads, inactive stockpile issues, use control, long term storage, and dismantlement issues to weapon Lead Project Officers.		
(U) \$438	Counterproliferation Assessments. Provide continued technical support for counterproliferation assessments and technical expertise in the areas of nuclear, advanced technology and conventional systems identified as possible counterforce technologies; battle damage assessment platforms; and target intelligence platforms. Support efforts in fuzing, mission planning, counterforce technologies and intelligence requirements for developing concepts of operations and operational requirements. Provide technical and programmatic support on counterproliferation matters to AFN/WCA and Headquarters USAF.		
(U) \$1,238	Total		
(U) B. Project Change Summary			
All funding associated with ADW Phase 0/1 Program moved to Project 654807 beginning FY2000. Increase in funding for FY1999 due to reprogramming for Phase 0 Agent Defeat Weapon program and development testing required for the DOE Common Radar for B61 Bombs and ALT 349 for the B61 Mod 11 program.			
(U) C. Other Program Funding Summary (\$ in Thousands)			
	FY 1999	FY 2000	FY 2001
	Actual	Estimate	Estimate
(U) Not Applicable			
(U) D. Acquisition Strategy	Multiple small, firm fixed price contracts for contractors and MIPRs to government labs for technical analyses and technical support in safety, operations and counterproliferation assessments.		
(U) E. Schedule Profile	FY 1999	FY 2000	FY 2001
Project 654236 Page 5 of 19 Pages Exhibit R-2A (PE 0604222F)			

631

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)							DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE						PROJECT	
05 - Engineering and Manufacturing Development	0604222F Nuclear Weapons Support						654236	
(U) E. Schedule Profile Continued								
(U) Nuc Wpm Mgmt Sys	1	FY 1999 2	3	4	1	FY 2000 2	FY 2001 3	
(U) - Initiate design, collect data				*			4	
(U) - Complete design					X			
(U) - Enhance design/ data management						X	X	
(U) B61 Vibration Fly-around				*	*	X	X	
(U) ADW AoA (Phase 0) (continuing effort through 4th Qtr FY 2000)	*	*	*	*	*	X	X	
* - Completed Event X - Planned Event								

Project 654236
Page 6 of 19 Pages
Exhibit R-2A (PE 0604222F)

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604222F Nuclear Weapons Support								654236	
(U)	<u>A. Project Cost Breakdown (\$ in Thousands)</u>										
(U)	Contractor Engineering Support										
(U)	Total										
(U)	<u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>										
(U)	<u>Performing Organizations:</u>										
	<u>Contractor or Government</u>	<u>Contract Method/Type or Funding Vehicle</u>	<u>Award or Obligation Date</u>	<u>Performing Activity</u>	<u>Project Office</u>	<u>Total Prior to FY 1999</u>	<u>Budget FY 1999</u>	<u>Budget FY 2000</u>	<u>Budget FY 2001</u>	<u>Budget to Complete</u>	<u>Total Program</u>
	<u>Product Development Organizations</u>										
	Miscellaneous	MIPR/FFP	2Q FY00	N/A	N/A		1,824	911	893	Continuing	TBD
	- DOE/Albuquerque Ops, Albuquerque, NM										
	- Orion Intl, Albuquerque, NM										
	- Naval Air Warfare Center, Indianapolis, IN										
	- Silicon Graphics, Albuquerque, NM										
	- ITT Systems, Colorado Springs, CO										
	- 46 OG OGML, Eglin AFB, FL										
	- Defense Threat Reduction Agency, Dulles, VA										

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 2000	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE				
05 - Engineering and Manufacturing Development		0604222F Nuclear Weapons Support				
(U) Performing Organizations Continued:						
Support and Management Organizations						
Miscellaneous	MIPR/FFP	1Q FY00	N/A	N/A	345	Continuing
- GTE Govt Serv Corp,					325	
Needham Heights, MA					345	
- Albuquerque Logistics,					345	
Albuquerque, NM					345	
- TECH REPS, Inc.,					345	
Albuquerque, NM					345	
Test and Evaluation Organizations					345	
AFMC Test Centers	MIPR	4Q FY99	500	500	0	0
(U) Government Furnished Property:						
Contract						
Method/Type						
Award or						
Obligation						
Date						
Delivery						
Date						
Total Prior						
to FY 1999						
Budget						
FY 1999						
Budget						
FY 2000						
Budget						
FY 2001						
Budget to						
Complete						
Total						
Program						
Product Development Property						
None						
Support and Management Property						
None						
Test and Evaluation Property						
None						
Subtotals						
Subtotal Product Development						
Subtotal Support and Management						
Subtotal Test and Evaluation						
Total Project						
Project 654236						
Page 8 of 19 Pages						
Exhibit R-3 (PE 0604222F)						

Project 654236

Page 8 of 19 Pages

634

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604222F Nuclear Weapons Support								654807	
	COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
654807	Agent Defeat Weapons	0	2,980	3,985	5,454	5,551	6,042	6,035	Continuing	TBD	
(U)	A. Mission Description										
	Funds engineering analyses for the Agent Defeat Weapon (ADW) Phase 0, Concept Exploration, System Program Office documentation and early Phase I, Program Definition and Risk Reduction activities (beginning in FY2001).										
(U)	<u>FY 1999 (\$ in Thousands)</u>										
(U)	\$0	No Activity- Previously funded in Project 654236.									
(U)	\$0	Total									
(U)	<u>FY 2000 (\$ in Thousands)</u>										
(U)	\$2,000	Completion of AoA Phase 0 analytical efforts to include: warhead effectiveness, concept weaponization, campaign assessments, incorporating Agent Release Model (ARM), Internal Dispersion and Venting (IDV) model, Empirical Lethality Model (ELM) and the Hot Effluent Rise Model (HER) into an integrated analytical code - Simulated Environment and Response Program Execution Nesting Tool (SERPENT); and initial Validation, Verification and Accreditation (VV&A) of the individual codes and models used during Phase 0 for incorporation in USAF/DoD target planning tools. Provide expanded campaign analyses to include Rules of Engagement, concept of Operations and Blue-on-Red and Red-on-Blue assessments.									
(U)	\$280	DoD pre-Phase I and/or DOE Phase 1 Efforts. Provide pre-Milestone I research, development and assessments of conceptual designs, approaches, and/or parallel technologies of ADW prototypes identified during the Phase 0, Concept Exploration Phase.									
(U)	\$700	Technical support for transitioning the ADW Phase 0 approved recommendations to the Phase I effort. Includes development of the Operational Requirements Documents (ORD), Test & Evaluation Master Plan (TEMP), Capstone Requirements Document (CRD), C4-Intelligence Support Plan (C4ISP), and other required Milestone I documentation.									
(U)	\$2,980	Total									
(U)	<u>FY 2001 (\$ in Thousands)</u>										
(U)	\$900	DOE Phase 1 and 2 Efforts. Begin Phase I assessments of concept designs, approaches and/or parallel technologies of ADW prototypes and development of operational assessments; continue development and evaluation of model uncertainty of empirical models for agent lethality. Prepare test plans for DOE Phase 1 and 2 efforts.									
(U)	\$1,165	DoD Phase I Efforts. Begin Phase I research, development and assessments of concept designs, approaches, and/or parallel technologies of ADW prototypes and development of operational assessments; develop analytical weaponizing tools to support technology employment;									
Project 654807		Page 9 of 19 Pages								Exhibit R-2A (PE 0604222F)	

635

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE	PROJECT																																																																																
BUDGET ACTIVITY	PE NUMBER AND TITLE																																																																																		
05 - Engineering and Manufacturing Development	0604222F Nuclear Weapons Support	February 2000	654807																																																																																
(U) <u>A. Mission Description Continued</u>																																																																																			
(U) <u>FY 2001 (\$ in Thousands) Continued</u>	provide support for VV&A of Phase 0 codes and models. Prepare test plans for Phase I efforts.																																																																																		
(U) \$1,900	SPO Efforts. Standup of the ADW System Program Office (SPO) and activities for Milestone I decision and new program start. Includes mandatory documentation preparation and assessments to include: the Request for Proposal (RFP) - SPO, Operational Requirements Document (ORD) - HQ ACC/SPO, Test and Evaluation Master Plan (TEMP) - SPO, System Engineering Master Plan (SEMP- SPO, System Threat Assessment (STA) - 4971G, Command-Control-Computers-Communication and Intelligence (C4I) Support Plan - 4971G, SPO High Fidelity Life Cycle Cost (LCC) Estimates and Program Milestone I acquisition decision review requirements.																																																																																		
(U) \$3,965	Total																																																																																		
(U) <u>B. Project Change Summary</u>																																																																																			
	All funds associated with ADW Phase I program moved from Project 654236 beginning FY2000. Expanded Analysis of Alternatives effort to include weaponization and full campaign assessment required Milestone I decision move to 2001.																																																																																		
(U) <u>C. Other Program Funding Summary (\$ in Thousands)</u>																																																																																			
	<table border="1"> <thead> <tr> <th>FY 1999</th> <th>FY 2000</th> <th>FY 2001</th> <th>FY 2002</th> <th>FY 2003</th> <th>FY 2004</th> <th>FY 2005</th> <th>Cost to</th> <th>Total Cost</th> </tr> <tr> <th>Actual</th> <th>Estimate</th> <th>Estimate</th> <th>Estimate</th> <th>Estimate</th> <th>Estimate</th> <th>Estimate</th> <th>Complete</th> <th></th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to	Total Cost	Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Complete																																																																	
FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to	Total Cost																																																																											
Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Complete																																																																												
(U) Not Applicable																																																																																			
(U) <u>D. Acquisition Strategy</u>																																																																																			
	ADW Phase 0/I activities are planning several firm/fixed price contracts and MIPRs to government labs for advanced analyses and development of selected Agent Defeat concepts.																																																																																		
(U) <u>E. Schedule Profile</u>																																																																																			
	<table border="1"> <thead> <tr> <th></th> <th colspan="3">FY 1999</th> <th colspan="3">FY 2000</th> <th colspan="3">FY 2001</th> </tr> <tr> <th></th> <th>1</th> <th>2</th> <th>3</th> <th>1</th> <th>2</th> <th>3</th> <th>1</th> <th>2</th> <th>3</th> </tr> </thead> <tbody> <tr> <td>(U) ADW AoA, Phase 0 (see Proj 654236)</td> <td>*</td> <td>*</td> <td>*</td> <td>*</td> <td>*</td> <td>*</td> <td>*</td> <td>*</td> <td>*</td> </tr> <tr> <td>(U) ADW SPO Documentation</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) ADW Milestone I</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) ADW Phase I</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>* - Completed Event</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>X - Planned Event</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		FY 1999			FY 2000			FY 2001				1	2	3	1	2	3	1	2	3	(U) ADW AoA, Phase 0 (see Proj 654236)	*	*	*	*	*	*	*	*	*	(U) ADW SPO Documentation										(U) ADW Milestone I										(U) ADW Phase I										* - Completed Event										X - Planned Event											
	FY 1999			FY 2000			FY 2001																																																																												
	1	2	3	1	2	3	1	2	3																																																																										
(U) ADW AoA, Phase 0 (see Proj 654236)	*	*	*	*	*	*	*	*	*																																																																										
(U) ADW SPO Documentation																																																																																			
(U) ADW Milestone I																																																																																			
(U) ADW Phase I																																																																																			
* - Completed Event																																																																																			
X - Planned Event																																																																																			
Project 654807		Exhibit R-2A (PE 0604222F)																																																																																	

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 2000
BUDGET ACTIVITY			PE NUMBER AND TITLE				PROJECT				
05 - Engineering and Manufacturing Development			0604222F Nuclear Weapons Support				654807				
(U)	A. Project Cost Breakdown (\$ in Thousands)										
(U)	Hardware Development									FY 2001	2,865
(U)	Software Development									FY 2000	800
(U)	Program Management Support										300
(U)	Miscellaneous										0
(U)	Total										3,965
(U)	B. Budget Acquisition History and Planning Information (\$ in Thousands)										
(U)	Performing Organizations:										
	Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program
	Product Development Organizations										
	Miscellaneous	MIPR/FFP	1Q FY00	N/A	N/A	0	0	2,680	3,665	Continuing	TBD
	Support and Management Organizations										
	Orion Int'l, Albuquerque, NM FFP		1Q FY00	TBD	TBD	0	0	300	300	Continuing	TBD
	Test and Evaluation Organizations										
(U)	Government Furnished Property:										
	Contract	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date		Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program
	Item Description										
	Product Development Property										
	None										
	Support and Management Property										
	None										
	Test and Evaluation Property										
	None										

Project 654807

Page 11 of 19 Pages

Exhibit R-3 (PE 0604222F)

637

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development	0604222F Nuclear Weapons Support	654807	
Subtotals	Total Prior to FY 1999	Budget FY 1999	Total Program
Subtotal Product Development	0	0	TBD
Subtotal Support and Management	0	0	TBD
Subtotal Test and Evaluation	0	0	TBD
Total Project	0	0	TBD
		Budget FY 2000	Budget to Complete
		2,680	3,665
		300	300
		2,980	3,965

Project 654807

Page 12 of 19 Pages

Exhibit R-3 (PE 0604222F)

638

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)									
BUDGET ACTIVITY		PE NUMBER AND TITLE						DATE	PROJECT
05 - Engineering and Manufacturing Development		0604222F Nuclear Weapons Support						February 2000	655708
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Total Cost
655708	Nuclear Weapons Support	4,246	4,181	4,930	5,169	5,406	5,521	5,644	TBD
(U)	A. Mission Description Funds Air Force Nuclear Weapons Product Support Center (NWPSC) and the Air Force Nuclear Weapons & Counterproliferation Agency (AFNWSA) civilians at Kirtland AFB, New Mexico providing technical and engineering support for all USAF nuclear weapon systems and counterproliferation technical efforts.								
(U)	FY 1999 (\$ in Thousands) Nuclear Aircraft System Support. Supported the US Strategic Command's nuclear safe escape effort; updated/expanded nuclear hardness database; conducted nuclear aircraft weapon system surveillance tests on the F-16A/B/C/D, F-15E, B-52H and PA-200 aircraft; provided technical advisors and the AFMC voting member for the USAF Nuclear Weapon System Safety Group (NWSWG) Operational Safety Reviews of the Non-US NATO F-16A/B and the B-2A weapon systems; supported design, development, standardization and procurement of stores management systems for nuclear weapons command and control; provided nuclear surety and compatibility design criteria, standards, specifications and related requirements documents for all USAF nuclear capable aircraft weapon systems; chaired/managed Nuclear Airlift Project Officer Groups (POGs) and nuclear certification of the B-52H, F-15E, F-16C, B-2A, PA-200 and NATO aircraft; performed independent engineering evaluations for nuclear safety design certification of nuclear weapon system modifications and nuclear weapon compatibility certification; provided changes and updates to nuclear weapons technical guidance of all Air Force nuclear technical orders supported through the Joint Nuclear Weapons Publication System; furnished specific guidance to MAJCOMs on Explosive Ordnance disposal and issues affected by systems hardware/software changes; chaired Technical Order conferences; furnished all nuclear-capable MAJCOMs with administrative/technical oversight of the Unsatisfactory Reporting (UR) system.								
(U)	\$731	Nuclear Ground-Launched Missile (ICBM) Support. Provided nuclear surety design guidance to intercontinental ballistic missile system (ICBM) program office/contractors for weapon system modifications and upgrade programs (Minuteman III re-entry System Test Set, Minuteman III propulsion replacement program, ICBM Wing Code Processing System); performed independent nuclear surety analyses for nuclear safety design certification of weapon system modifications; provided nuclear certification support to the Air Force Safety Center and the ICBM SPO; conducted nuclear safety analysis for nuclear safety design certification of the Minuteman III Guidance Replacement Program (GRP) program; provided technical support required by NWSWG action items; conducted independent Technical Nuclear Safety Analysis of the Minuteman III Unauthorized Launch Study for Phase IV of the ICBM Operational Safety Study; and provided member to the ICBM Nuclear Surety Working Group.							
(U)	\$740	Nuclear Weapons/Systems Assessments. Continued application of joint DoD/DOE nuclear surety assessment methodology to abnormal nuclear							
Project 655708		Page 13 of 19 Pages						Exhibit R-2A (PE 0604222F)	

639

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development	0604222F Nuclear Weapons Support	655708	
(U) <u>A. Mission Description Continued</u>			
(U) <u>FY 1999 (\$ in Thousands) Continued</u>			
	environment analyses; conducted fault tree analyses of nuclear weapons and weapon systems; continued technical/engineering support for Kirtland Underground Munitions Storage Center; continued support for weapon and weapon system POGs; performed nuclear surety assessment and/or studies of weapon and weapon systems in both normal and abnormal environments; completed the analysis, design, and installation for weapons maintenance truck lightning protection modification; developed methodologies to enhance assessments and studies; and provided logistics analysis and EOD technical support		
(U) \$1,238	Nuclear Weapons Program Support. Accomplished nuclear weapon safety, reliability, mission analysis and compatibility studies; completed annual certification statements for all weapons in support of President's directive; directed B61 Vibration Fly Around (VFA) tests for Common Radar, B61-11 static ejection tests, and B61-11 flight and pull down tests; completing proof testing of ALT 349, new bomb preflight subassembly; supported initial planning for transfer of W80 to Livermore Labs; supporting W80 6.2 study; initiated W78 Life Extension Program (LEP) to support DOE 6.2/6.2A activities, initiated B83 LEP; continued support to USAF, DoD and other agencies on all issues affecting the nuclear weapons stockpile.		
(U) \$354	Counterproliferation Assessments. Provided technical guidance and support for the ADW AoA Phase 0 Study leading to a Milestone I decision third quarter FY2000; provided overall program guidance and technical expertise in the evaluation of nuclear, conventional, advanced weapon technologies for CP efforts.		
(U) \$4,246	Total		
(U) <u>FY 2000 (\$ in Thousands)</u>			
(U) \$1,220	Nuclear Aircraft System Support. Continue FY 1999 level of effort: support the US Strategic Command's nuclear safe escape effort; incorporate user-friendly commercial-off-the-shelf software to update primary computer systems used to support the Nuclear Hardened Database Center; conduct nuclear aircraft weapon system surveillance test programs; provide technical support required by NWSSG action items, Special Safety Studies and Operational Safety Reviews (OSRs); support design, development, standardization and procurement of stores management systems for nuclear weapon command and control; provide nuclear surety and compatibility design criteria, standards, specifications, and related requirements documents for all USAF nuclear capable aircraft weapon systems; chair/manage Nuclear Airlift POGs and nuclear certification of the B-52H, F-15E, F-16C, B-2A, PA-200 and NATO aircraft; perform independent engineering evaluations for nuclear safety design certification of weapon system modifications and weapon compatibility certification; provide changes and updates to general nuclear weapons technical guidance of all Air Force nuclear technical orders; furnish specific guidance to MAJCOMs on Explosive Ordnance Disposal and issues affected by systems hardware/software; chair Technical Order review and technical content conferences.		
(U) \$800	Nuclear Ground-Launched Missile (ICBM) Support. Continue FY 1999 level of effort: provide nuclear surety design criteria, standards, specifications, and related requirements documents for all USAF ICBM systems; provide nuclear surety design guidance to ICBM program		
Project 655708		Page 14 of 19 Pages	
		Exhibit R-2A (PE 0604222F)	

640

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development	0604222F Nuclear Weapons Support	655708	
(U) <u>A. Mission Description Continued</u>			
(U) <u>FY 2000 (\$ in Thousands) Continued</u>			
	office/contractors for weapon system modifications and upgrade programs; perform independent nuclear surety analyses for nuclear safety design certification of weapon system modifications; provide nuclear certification and logistics support; and support NWSSG action items and Special Safety Studies as required.		
(U) \$800	Nuclear Weapons/Systems Assessments. Continue FY 1999 level of effort: continue application of joint DoD/DOE nuclear surety assessment methodology to abnormal nuclear environment analyses; conduct fault tree analyses of nuclear weapons and weapon systems; provide other assessments as required.		
(U) \$1,010	Nuclear Weapons Program Support. Continue FY 1999 level of effort: accomplish nuclear weapon safety, reliability, mission analysis and compatibility studies; support USAF nuclear weapon stockpile activities including completion of B61 Common Radar testing and full certification of B61-11, weapon use control analyses, and environmental and intrinsic radiation studies; continue to develop, plan, analyze, schedule and execute nuclear weapon life extension programs for B61, B83, W80 and ICBM warheads; continue support to USAF, DoD, and other agencies on all issues affecting management of the nuclear weapons stockpile; support the validation and verification to the lightning protection tester for Protective Aircraft Shelter lighting characterizations in USAFE.		
(U) \$351	Counterproliferation Assessments. Continue FY 1999 level of effort: Provide technical guidance, analysis and support for the ADW Phase 0/1 Study; provide overall program guidance and technical expertise in the evaluation of nuclear, conventional and advanced weapon technologies for CP programs; provide technical direction and support for current, proposed and future counterproliferation efforts of interest to the USAF.		
(U) \$4,181	Total		
(U) <u>FY 2001 (\$ in Thousands)</u>			
(U) \$1,414	Nuclear Aircraft System Support. Continue FY 2000 level of effort: support the US Strategic Command's nuclear safe escape effort; update/expand nuclear hardness database; conduct nuclear aircraft weapon system surveillance test programs; provide technical support required by NWSSG action items, Special Safety Studies and OSRs; support design, development, standardization and procurement of stores management systems for nuclear weapon command and control; provide nuclear surety and compatibility design criteria, standards, specifications, and related requirements documents for all USAF nuclear capable aircraft weapon systems; furnish specific guidance to MAJCOMs on Explosive Ordnance Disposal and issues affecting systems hardware/software changes; perform independent engineering evaluations for nuclear safety design certification of nuclear weapon system modifications and weapon compatibility certification; provide revisions, changes and updates to nuclear weapon Technical Orders; chair Technical Order review and technical content conferences.		
(U) \$1,060	Nuclear Ground-Launched Missile (ICBM) Support. Continue FY 2000 level of effort: provide nuclear surety design criteria, standards, specifications, and related requirements documents for all USAF ICBM systems; provide nuclear surety design guidance to ICBM program office/contractors for weapon system modifications and upgrade programs; perform independent nuclear surety analyses for nuclear safety design		
Project 655708	Page 15 of 19 Pages	Exhibit R-2A (PE 0604222F)	

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development	0604222F Nuclear Weapons Support	655708	
(U) A. Mission Description Continued			
(U) FY 2001 (\$ in Thousands) Continued	certification of weapon system modifications; provide nuclear certification and logistics support; and support NWSSG action items and Special Safety Studies as required.		
(U) \$958	Nuclear Weapons/Systems Assessments. Continue FY 2000 level of effort: continue application of joint DoD/DOE nuclear surety assessment methodology to abnormal nuclear environment analyses; conduct fault tree analyses of nuclear weapons and weapon systems; provide other assessments as capable.		
(U) \$1,026	Nuclear Weapons Program Support. Continue FY 2000 level of effort: accomplish nuclear weapon safety, reliability, mission analysis and compatibility studies; support USAF nuclear weapon stockpile activities, weapon use control analyses, and environmental and intrinsic radiation studies; continue to develop, plan, analyze, schedule and execute nuclear weapon life extension programs for B61, B83, W80 and ICBM warheads; and continue support to USAF, DoD and other agencies in all facets of the nuclear arsenal.		
(U) \$472	Counterproliferation Assessments. Continue FY 2000 level of effort: provide technical guidance, analysis and support for the ADW Phase I effort and counterproliferation (CP) related Intelligence, Surveillance & Reconnaissance (ISR) efforts; provide program guidance, analysis and expertise in the evaluation of nuclear, conventional and advanced weapon technologies and CP related ISR and Battle-Damage-Assessment (BDA) technologies.		
(U) \$4,930	Total		
(U) B. Project Change Summary	Increase in funding beginning in FY01 due to transfer USAF Nuclear Weapons and Counterproliferation Agency civilian personnel back to PE 64222F from PE 91212F.		
(U) C. Other Program Funding Summary (\$ in Thousands)			
	FY 1999	FY 2000	FY 2001
	Actual	Estimate	Estimate
(U) Not Applicable			
(U) D. Acquisition Strategy	RDT&E funds primarily provide for Air Force technical civilian personnel providing nuclear weapon and weapon system management and development and CP related nuclear, conventional, advanced weapon technology, ISR and BDA guidance, direction, analysis and development. These scientists and engineers interface with Headquarters USAF, Air Force nuclear weapon System Program Offices, operational commands and the Department of Energy, performing engineering development and analysis to ensure continued and improved weapon system safety, security, reliability and compatibility and managing/developing counterproliferation counterforce capabilities.		
Project 655708		Exhibit R-2A (PE 0604222F)	

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000
BUDGET ACTIVITY										PROJECT	
05 - Engineering and Manufacturing Development										655708	
PE NUMBER AND TITLE										0604222F Nuclear Weapons Support	
E. Schedule Profile											
(U)	B61	Vibration Fly-Around Tests									
(U)	B61-11	Design Review and Acceptance Group									
(U)	B61	Common Radar Retrofit Program Mgmt									
(U)	W80	6.2 Study Program Mgmt									
(U)		Annual Certification									
(U)	W87	Life Extension Program Program Mgmt									
* - Completed Event X - Planned Event											

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT	
05 - Engineering and Manufacturing Development		0604222F Nuclear Weapons Support		655708	
(U)	A. Project Cost Breakdown (\$ in Thousands)				
(U)	Program Management Personnel	FY 1999	FY 2000	FY 2001	FY 2001
(U)	Research Personnel	240	245	250	250
(U)	Travel	3,014	2,950	3,220	3,220
(U)	Training Development	400	370	400	400
(U)	Research Support Equipment Acquisition	150	175	175	175
(U)	Miscellaneous	125	200	200	200
(U)	Total	317	241	685	685
(U)		4,246	4,181	4,930	4,930
(U)	B. Budget Acquisition History and Planning Information (\$ in Thousands)				
(U)	Performing Organizations:				
	Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC
	Product Development Organizations				
	AAC/WN (NWPSC)	N/A	N/A	N/A	N/A
	AFNWCA	N/A	N/A	N/A	N/A
	Support and Management Organizations				
	None				
	Test and Evaluation Organizations				
	None				
(U)	Government Furnished Property:				
	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Budget FY 1999	Budget to Complete
	Item Description			Budget FY 2000	Budget to Complete
	Product Development Property				
	None				
	</				

644

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)						DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE					PROJECT	
05 - Engineering and Manufacturing Development	0604222F Nuclear Weapons Support					655708	
(U) Government Furnished Property Continued:							
Support and Management Property							
None							
<u>Test and Evaluation Property</u>							
None							
Subtotals	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program	
Subtotal Product Development		4,246	4,181	4,930	TBD	TBD	
Subtotal Support and Management							
Subtotal Test and Evaluation							
Total Project		4,246	4,181	4,930	TBD	TBD	

Project 655708
Page 19 of 19 Pages
Exhibit R-3 (PE 0604222F)

Project 655708

Page 19 of 19 Pages

Exhibit R-3 (PE 0604222F)

645

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604226F B-1B								654596	
	COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
654596	Conventional Mission Upgrades	175,686	176,218	188,122	135,677	44,820	15,795	0	0	1,491,938	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	
(U) A. Mission Description (U) This Program Element provides RDT&E funding for the B-1B Conventional Mission Upgrade Program (CMUP). The purpose of this program is to improve the B-1's effectiveness and survivability. Funding in the FYDP includes integration of advanced conventional weapons such as the Joint Direct Attack Munition (JDAM), Wind Corrected Munitions Dispenser (WCMD), Joint Stand-Off Weapon (JSOW), and Joint Air to Surface Stand-Off Missile (JASSM). Funding for upgrades to the Electronic Counter Measures (ECM) suite is also in the FYDP. Additional efforts include an upgrade to the avionics computers to enable simultaneous carriage of multiple weapon types (one type per bay), provide growth capability, and reduce support costs; development of an interface to the Air Force Mission Support System (AFMSS) for more effective employment of the B-1 in a theater scenario; and upgrades to the air crew and maintenance training systems to keep them concurrent with the aircraft's configuration. Funding is also provided for preliminary engineering and planning studies for potential future weapon system enhancements (weapons, sensors, and avionics); and weapon system operational/safety, supportability, maintainability, reliability, and Total Ownership Cost (TOC) support improvements.											
(U)	FY 1999 (\$ in Thousands)										
(U)	\$149,870	Continued Conventional Mission Upgrade Program (CMUP) contractual efforts									
(U)	\$465	Government Furnished Equipment (GFE)									
(U)	\$16,047	Government flight test, Live Fire Test & Evaluation and General Test Support									
(U)	\$3,729	Advisory and Assistance Services (A&AS)									
(U)	\$2,515	Modeling & Simulation / Studies & Analyses									
(U)	\$3,060	Program Management & Administration (PMA)									
(U)	\$175,686	Total									
(U)	FY 2000 (\$ in Thousands)										
(U)	\$140,751	Continued Conventional Mission Upgrade Program (CMUP) contractual efforts									
(U)	\$1,173	Government Furnished Equipment (GFE)									
(U)	\$24,121	Government flight test, Live Fire Test & Evaluation and General Test Support									
(U)	\$3,898	Advisory and Assistance Services (A&AS)									
(U)	\$2,000	Modeling & Simulation / Studies & Analyses									

Project 654596

Page 1 of 8 Pages

Exhibit R-2 (PE 0604226F)

647

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE			PROJECT
05 - Engineering and Manufacturing Development	0604226F B-1B			654596
(U) A. Mission Description Continued				
(U) FY 2000 (\$ in Thousands) Continued				
(U) \$4,275	Program Management & Administration (PMA)			
(U) \$176,218	Total			
(U) FY 2001 (\$ in Thousands)				
(U) \$121,662	Continued Conventional Mission Upgrade Program (CMUP) contractual efforts			
(U) \$632	Government Furnished Equipment (GFE)			
(U) \$37,562	Government flight test, Live Fire Test & Evaluation and General Test Support			
(U) \$3,484	Advisory and Assistance Services (A&AS)			
(U) \$1,236	Modeling & Simulation / Studies & Analyses			
(U) \$3,546	Program Management & Administration (PMA)			
(U) \$168,122	Total			
(U) B. Budget Activity Justification				
(U) The B-1 CMUP program is included in Budget Activity 5, Engineering and Manufacturing Development. The CMUP program provides new capabilities to the B-1B weapon system, including GPS, Near-Precision Weapons, enhanced computers and upgraded ECM. These capabilities require significant software development and testing.				
(U) C. Program Change Summary (\$ in Thousands)				
(U) Previous President's Budget (FY 2000 PBR)		FY 1999	FY 2000	FY 2001
(U) Appropriated Value		194,549	203,544	143,911
(U) Adjustments to Appropriated Value		195,385	178,544	
a. Congressional/General Reductions		-284	-20	
b. Small Business Innovative Research		-9,621		
c. Omnibus or Other Above Threshold Reprogram		-4,639	-1,194	
d. Below Threshold Reprogram		-5,155	-1,112	
e. Rescissions				
f. Other				
(U) Adjustments to Budget Years Since FY 2000 PBR				173,919
(U) Current Budget Submit/FY 2001 PBR		175,686	176,218	168,122
Project 654596	Page 2 of 8 Pages	Exhibit R-2 (PE 0604226F)		

648

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604226F B-1B								654596	
(U)	C. Program Change Summary (\$ in Thousands) Continued										
(U)	Significant Program Changes:										
	(U) FY99: (-\$1,895) of Below Threshold Reprogramming for Cancelled bills and (-\$4,603) for Rescissions.										
	(U) Adjustments to FY02 - FY04: ZBTs from production to the EMD program for the restructure of the Computer/WCMD/JSOW/JASSM and Defensive System Upgrade Programs (FY01 +\$24,211; FY02: +\$96,822; FY03: +\$40,148; FY04: +\$15,948).										
(U)	D. Other Program Funding Summary (\$ in Thousands)										
		FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to	Total Cost	
		Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Complete		
(U)	Appn 10, PE 0101126F, B-1B, Aircraft Procurement BP11, Mods	82,920	125,543	48,793	86,539	80,658	102,222	69,930	381,134	1,304,928	
(U)	Appn 10, PE 0101126F, B-1B, Aircraft Procurement BP16, Initial Spares	24,345	32,187	14,628	4,571	7,587	11,747	11,643	0	146,504	
(U)	Appn 10, PE 0207442F, B-1B, EW Production (TDS/IDECM) BP11, Mods (CMUP-related only) Related RDT&E:	0	0	0	2,107	0	4,884	7,707	49,965	105,820	
	(U) Program Element 0205164F, Global Positioning System (GPS)										
	(U) Program Element 0207325F, Joint Air to Surface Standoff Missile (JASSM)										
	(U) Program Element 0604618F/N, Joint Direct Attack Munition (JDAM)										
	(U) Program Element 0604727F/N, Joint Stand-Off Weapon (JSOW)										
	(U) Program Element 0604754F, Joint Tactical Information Distribution System (JTIDS)										
	(U) Program Element 0604600F, Wind Corrected Munitions Dispenser (WCMD)										
	(U) Program Element 0208006F, Air Force Mission Support System (AFMSS)										
	(U) Program Element 0604270F, Electronic Warfare (EW) Development										

Project 654596

Page 3 of 8 Pages

Exhibit R-2 (PE 0604226F)

Project 654596

Page 3 of 8 Pages

Exhibit R-2 (PE 0604226F)

649

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)					DATE		February 2000		PROJECT		
BUDGET ACTIVITY		PE NUMBER AND TITLE								654596	
05 - Engineering and Manufacturing Development		0604226F B-1B									
E. Acquisition Strategy		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
F. Schedule Profile		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to the integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations.									
		(U) Key elements of the overall CMUP acquisition strategy include: use of a sole source contract with a prime/integrating contractor; assignment of Total System Installed Performance Responsibility (TSIPR) to									

650

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY					DATE				
05 - Engineering and Manufacturing Development					PROJECT				
PE NUMBER AND TITLE					654596				
06042226F B-1B									
<u>F. Schedule Profile Continued</u>									
(U)	Acquisition Milestones								
(U)	- JDAM/1760 MS III								
(U)	- GPS/Comm/JDAM/1760 RAA								
(U)	- JSOW/IASSM MS II								
(U)	Engineering Milestones								
(U)	- JSOW/IASSM CDR								
(U)	T&E Milestones								
(U)	- Start Computer/WCMD Flight Test								
(U)	- Start JSOW/IASSM Ground Test								
(U)	Contract Milestones								
(U)	- JSOW/IASSM EMD								

Project 654596

Page 5 of 8 Pages

Exhibit R-2 (PE 06042226F)

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 2000
BUDGET ACTIVITY										PROJECT	654596
05 - Engineering and Manufacturing Development										PE NUMBER AND TITLE 0604226F B-1B	
(U)	<u>A. Project Cost Breakdown (\$ in Thousands)</u>										
(U)	CMUP contractual efforts									FY 1999	FY 2000
(U)	Government flight test									149,870	140,751
(U)	Government Furnished Equipment									16,047	24,121
(U)	Advisory and Assistance Services (A&AS)									465	1,173
(U)	Modeling & Simulation / Studies & Analyses									3,729	3,898
(U)	Program Management & Administration (PMA)									2,515	2,000
(U)	Total									3,060	4,275
(U)										175,686	176,218
(U)	<u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>										
(U)	<u>Performing Organizations:</u>										
	Contract or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program
<u>Product Development Organizations</u>											
(U)	DSUP										
(U)	BNA	SS/CPAF	May 93	30,228	30,228	30,228	0	0	0	0	30,228
(U)	BNA	SS/CPAF	June 97	337,666	337,666	83,743	60,002	62,945	50,026	80,950	337,666
(U)	Mission Planning System										
(U)	Lockheed-Sanders	C/CPAF	Aug 94	1,311	1,311	489	252	188	190	192	1,311
(U)	Logicon	CPAF	Dec 95	49,807	49,807	29,560	9,460	8,562	2,033	192	49,807
(U)	Training Systems										
(U)	Lockheed-Martin	C/CPAF	Jun 94	13,284	13,284	13,284	0	0	0	0	13,284
(U)	Intelx	C/CPAF	Jun 99	56,961	56,961	1,257	5,348	12,280	9,153	28,923	56,961
(U)	Weapons										
(U)	BNA - CBU's	SS/CPFF	Mar 93	4,960	4,960	4,960	0	0	0	0	4,960
(U)	BNA - CBU's	SS/CPFF	Jan 94	16,314	16,314	16,314	0	0	0	0	16,314
(U)	BNA - FWEP	SS/T&M	Sep 98	3,275	3,275	2,501	774	0	0	0	3,275
(U)	BNA - EFX	SS/T&M	Feb 98	5,359	5,359	5,359	0	0	0	0	5,359
Project 654596										Exhibit R-3 (PE 0604226F)	

Page 6 of 8 Pages

652

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE		PROJECT	
BUDGET ACTIVITY		PE NUMBER AND TITLE		DATE		PROJECT	
05 - Engineering and Manufacturing Development		0604226F B-1B		February 2000		654596	
(U)	Performing Organizations Continued:						
	Product Development Organizations						
(U)	BNA- JDAM/GPS SS/CPFF	Aug 93	72,223	72,223	0	0	72,223
	Pre-EMD						
(U)	BNA- JDAM/ GPS SS/CPAF	Mar 95	270,717	270,083	634	0	270,717
	EMD						
(U)	BNA-ACBM SS/CPAF	Mar 98	1,900	1,900	0	0	1,900
(U)	BNA-Wing Sweep SS/T&M	Jul 97	1,089	853	236	0	1,089
(U)	BNA- Computer SS/CPAF	May96/Jan 97	219,095	93,003	48,875	29,787	219,095
(U)	BNA-WCMD SS/CPAF	May96/Jan 97	57,975	19,550	13,842	9,558	57,975
(U)	Lockheed-Martin - SS/CPAF	Jan 97	2,775	825	50	1,000	2,775
	WCMD						
(U)	BNA- JSOW/ JASSM SS/CPAF	Mar 99	60,190	2,090	6,485	7,306	60,190
(U)	Lockheed- Martin - SS/T&M	Jan 99	12,461	3,360	3,462	2,093	12,461
	JASSM						
(U)	Raytheon -JSOW SS/T&M	Jan 99	4,250	900	450	1,160	4,250
(U)	TBD - Future CMUP TBD	TBD	400	0	0	100	400
	Related EMD						
	Support and Management Organizations						
(U)	A&AS Various	Annual	35,033	19,367	3,729	3,898	35,033
(U)	Studies & Analyses / Various	Various	26,155	17,526	2,515	2,000	24,177
	Modeling & Sim						
(U)	Program Mgmt & Admin Various	Various	34,124	23,465	3,060	4,275	36,102
	Test and Evaluation Organizations						
(U)	DSUP						
(U)	AFFTC P.O.	Various	61,488	4,082	6,003	23,224	61,488
(U)	Weapons						
(U)	AFFTC P.O.	Various	106,031	54,433	10,044	14,338	106,031
Project 654596		Page 7 of 8 Pages		Exhibit R-3 (PE 0604226F)			

653

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	February 2000	PROJECT
BUDGET ACTIVITY					PE NUMBER AND TITLE		654596
05 - Engineering and Manufacturing Development					0604226F B-1B		
(U) Government Furnished Property:							
Contract							
Method/Type							
or Funding							
Vehicle							
Award or							
Obligation							
Date							
Delivery							
Date							
Product Development Property							
(U) DSUP							
(U) Various		Various	Various	Various	3,105	70	300
(U) Weapons							
(U) Various		Various	Various	Various	1,160	395	432
Support and Management Property							
Test and Evaluation Property							
Subtotals							
Subtotal Product Development							
Subtotal Support and Management							
Subtotal Test and Evaluation							
Total Project							
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24,121
					775,620	175,686	176,218
					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
					656,747	150,335	141,924
					60,358	9,304	10,173
					58,515	16,047	24

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604227F Distributed Mission Training (DMT)								654673	
COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost		
654673 Distributed Mission Training (DMT)	2,180	3,781	3,782	3,762	3,737	3,813	3,888	Continuing	TBD		
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		
(U) A. Mission Description Distributed Mission Training (DMT) is revolutionizing aerospace team training by implementing a 'train the way we fight' philosophy -- as a team. The DMT program provides a shared synthetic environment of geographically separated aircraft simulators and will link real time to C3I assets and other battlefield systems in a synthetic battlefield environment. This will allow the Air Force to conduct mission rehearsal and combat mission training, which today can only be done to a limited extent because of constraints on flying hours, platform and airspace availability, as well as environmental constraints. DMT is funded principally with Operations and Maintenance funds. Engineering development efforts focus on development, demonstration, and transitioning of enhancements of critical functions associated with the DMT network and linked simulators. Areas of emphasis include development and demonstration of network architectures, common databases and database interfaces, improved simulator fidelity, and integration with constructive simulations for C3I. The ultimate objective of the program is for DMT to be able to conduct full joint and combined forces mission rehearsals.											
(U) <u>FY 1999 (\$ in Thousands)</u> (U) \$1,758 Develop and implement the DMT network including standards development, multilevel security and latency management approaches. (U) \$213 Develop and demonstrate a common environmental, terrain, and threat databases. (U) \$209 Develop and demonstrate visual database interfaces to improve image-generation fidelity. (U) \$2,180 Total											
(U) <u>FY 2000 (\$ in Thousands)</u> (U) \$1,590 Continued development, demonstration and insertion of common network standards, multilevel security and latency management approaches. (U) \$1,784 Continued development, demonstration and insertion of common environmental, terrain, and threat databases. (U) \$407 Continued development, demonstration and insertion of visual database interfaces to improve image-generation fidelity. (U) \$3,781 Total											

Project 654673

Page 1 of 4 Pages

Exhibit R-2 (PE 0604227F)

655

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development		0604227F Distributed Mission Training (DMT)	654673	
(U)	<u>A. Mission Description Continued</u>			
(U)	FY 2001 (\$ in Thousands)			
(U)	\$1,092	Complete development, demonstration and insertion of common network standards		
(U)	\$2,236	Continued development, demonstration and insertion of common environmental, terrain and threat databases		
(U)	\$454	Continued development, demonstration and insertion of visual database interfaces to improve image-generation fidelity		
(U)	\$3,782	Total		
(U)	<u>B. Budget Activity Justification</u>			
	This program element is included in Budget Activity 5 - Engineering and Manufacturing Development (EMD) as it supports development, demonstration and insertion of Distributed Mission Training applications.			
(U)	<u>C. Program Change Summary (\$ in Thousands)</u>			
(U)	Previous President's Budget (FY 2000 PBR)	FY 1999	FY 2000	FY 2001
(U)	Appropriated Value	1,896	3,835	3,816
(U)	Adjustments to Appropriated Value	1,961	3,835	
	a. Congressional/General Reductions	-65	-30	
	b. Small Business Innovative Research	-13		
	c. Omnibus or Other Above Threshold Reprogram	0		
	d. Below Threshold Reprogram	309		
	e. Rescissions	-12	-24	
	f. Other			
(U)	Adjustments to Budget Years Since FY 2000 PBR			-34
(U)	Current Budget Submit/FY 2001 PBR	2,180	3,781	3,782
(U)	<u>Significant Program Changes:</u>			
	Not Applicable			
				TBD
				TBD

Project 654673

Page 2 of 4 Pages

Exhibit R-2 (PE 0604227F)

656

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		PE NUMBER AND TITLE						DATE	PROJECT
05 - Engineering and Manufacturing Development		0604227F Distributed Mission Training (DMT)						February 2000	654673
(U)	<u>D. Other Program Funding Summary (\$ in Thousands)</u>								Total Cost
		FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	
	Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Cost to
(U)	PE 0207130F, F-15	261	33,997	28,416	29,308	39,362	40,210	40,979	Complete
	Squadrons Appropriation:								Continuing
	O&M, AF								
(U)	PE 0207417F, AWACS	186	3,695	3,695	3,696	3,788	3,864	3,942	Continuing
	Squadron								
(U)	Appropriation: O&M, AF (U)	123	14,822	20,541	14,144	12,862	5,050	3,398	Continuing
	PE 0207133F, O&M, F-16								
	Squadron								
(U)	<u>E. Acquisition Strategy</u>								
	An innovative acquisition strategy is being employed for some weapon systems in conjunction with DMT. Termed Commercial Training Simulation Service (CTSS), this strategy differs significantly from previous AF simulator procurements. It shifts from govt-procured simulators to a contractor-provided service. The contractor owns and provides the simulator equipment, maintains simulator concurrency with the weapons system, and has incentives to keep his equipment abreast with the latest simulator and network technologies. CTSS contracts are currently in place for F-15C, F-16, AWACS, and Phase I of the overall Operations and Integration Contract.								
(U)	<u>F. Schedule Profile</u>								
		FY 1999	FY 2000	FY 2001					
		1	2	3	4	1	2	3	4
	F-15 Four Ship Operations began at Eglin AFB		*						
(U)	F-15 Four Ship Operations began at Langley AFB								
(U)	DMT Operations & Integration begin						X		
(U)	AWACS ops begin :Tinker AFB, OK							X	
	* = completed event X = planned event								

[illegible]

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE									
05 - Engineering and Manufacturing Development		0604233F Specialized Undergraduate Pilot Training									
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		56,371	40,805	23,853	1,883	1,974	2,012	2,053	0	339,800	
654102	Joint Primary Aircraft Training System (JPATS)	38,444	33,272	21,672	1,883	1,974	2,012	2,053	0	259,617	
654228	T-3A Enhanced Flight Screener (EFS)	0	1,560	0	0	0	0	0	0	1,560	
654376	T-38 Avionics Upgrade Program (AUP)	17,927	5,973	2,181	0	0	0	0	0	78,623	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	8	
Note: The cost of the RDT&E test articles shown above includes the JPATS test aircraft (T-1) funded with FY95 through FY00 funds and Ground Based Training System (GBTS) Aircrew Training Devices (ATD), conversion software, and Training Integration Management System (TIMS) components funded with FY97 through FY01 funds (\$161,571 thousand total). It also includes two T-38C (AUP equipped) test aircraft and two ATDs (\$37,693 thousand total).											
(U) A. Mission Description Supports Air Education and Training Command's (AETC) implementation of Specialized Undergraduate Pilot Training (SUPT) and the Department of Defense initiative for joint pilot training. The Joint Primary Aircraft Training System (JPATS) is a joint USAF/USN venture to replace the Services' fleets of primary trainer aircraft (T-37 and T-34 respectively) and associated Ground Based Training Systems (GBTS). The Air Force is the Executive Service. The T-3A Enhanced Flight Screener (EFS) effort was originally intended to test a Ballistic Recovery System (BRS) on T-3A aircraft. This effort was directed by the Chief of Staff of the Air Force and was subsequently cancelled with all T-3A efforts. The funds are being reprogrammed to the T-38 Avionics Upgrade Program (AUP) to cover increased development and test costs. The T-38 AUP is an integrated modernization of the T-38A and AT-38B cockpits to support mission ready fighter and bomber training. Additionally, there are funds in this project for Phase I testing of propulsion enhancements for the T-38 aircraft.											
(U) B. Budget Activity Justification This program element is in Budget Activity 5, Engineering and Manufacturing Development (EMD) because it primarily involves the missionization of commercial derivative aircraft, equipment, and components.											

Exhibit R-2 (PE 0604233F)

Page 1 of 15 Pages

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 2000	
BUDGET ACTIVITY		PE NUMBER AND TITLE			
05 - Engineering and Manufacturing Development		0604233F Specialized Undergraduate Pilot Training			
(U)	C. Program Change Summary (\$ in Thousands)	FY 1999	FY 2000	FY 2001	Total Cost
(U)	Previous President's Budget (FY 2000 PBR)	55,030	38,656	21,864	336,666
(U)	Appropriated Value	55,563	41,156		
(U)	Adjustments to Appropriated Value				
	a. Congressional/General Reductions	-533	-303		
	b. Small Business Innovative Research	-1,710			
	c. Omnibus or Other Above Threshold Reprogram				
	d. Below Threshold Reprogram	3,366			
	e. Rescissions	-315	-48		
	f. Other				
(U)	Adjustments to Budget Years Since FY 2000 PBR			1,989	
(U)	Current Budget Submit/FY 2001 PBR	56,371	40,805	23,853	339,800
(U)	Significant Program Changes:	FY1999 and FY2000 include Congressional and general reductions, rescissions, and Small Business Innovative Research reductions. FY1999 includes reprogrammings to the T-38 AUP to correct deficiencies found during Developmental Test and Evaluation (DT&E). FY2001 includes additional funds to update T-38 AUP software based on changes stemming from the T-38 Propulsion Modernization Program (PMP).			

Page 2 of 15 Pages

Exhibit R-2 (PE 0604233F)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE							
BUDGET ACTIVITY		February 2000							
05 - Engineering and Manufacturing Development		PROJECT							
PE NUMBER AND TITLE		0604233F Specialized Undergraduate Pilot Training 654102							
COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
654102 Joint Primary Aircraft Training System (JPATS)	38,444	33,272	21,672	1,883	1,974	2,012	2,053	0	259,617
A. Mission Description									
The Joint Primary Aircraft Training System (JPATS) is a joint USAF/USN venture to replace the Services' fleets of primary trainer aircraft (T-37 and T-34, respectively) and associated Ground Based Training Systems (GBTS). The aircraft and GBTS will be used to train entry-level student aviators in the fundamentals of flying so they can transition into advanced training tracks leading to qualification as military pilots, navigators, and naval flight officers. The program includes the purchase of aircraft, simulators, and other associated ground-based training devices, Training Integration Management System (TIMS), instructional courseware, and logistics support.									
(U) FY 1999 (\$ in Thousands)									
(U) \$5,983	Completed assembly and test of the Manufacturing Development aircraft (T-1)								
(U) \$28,019	Continued GBTS management and development of TIMS, ATDs, and Administration and Conversion Courseware; completed GBTS Critical Design Review (CDR)								
(U) \$180	Complete DT&E flight test program								
(U) \$4,262	Mission Support and Government Test								
(U) \$38,444	Total								
(U) FY 2000 (\$ in Thousands)									
(U) \$1,900	Complete air vehicle related items for data, completion of Aircraft Structural Integrity Program (ASIP), and Technical Manuals								
(U) \$28,269	Continue GBTS management and development of TIMS, ATDs, and Administration and Conversion Courseware								
(U) \$3,103	Mission Support and Government Test								
(U) \$33,272	Total								
(U) FY 2001 (\$ in Thousands)									
(U) \$20,473	Complete GBTS development								
(U) \$1,199	Mission Support and Government Test								
(U) \$21,672	Total								
(U) B. Project Change Summary									
JPATS funding beyond FY01 increased due to potential GBTS outyear requirements.									
Project 654102		Page 3 of 15 Pages		661		Exhibit R-2A (PE 0604233F)			

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE									PROJECT
05 - Engineering and Manufacturing Development		0604233F Specialized Undergraduate Pilot Training									654102
(U)	C. Other Program Funding Summary (\$ in Thousands)										
	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost		
(U)	AF RDT&E	38,444	33,272	21,672	1,883	1,974	2,053	0	259,617		
(U)	Other APPN										
(U)	Aircraft Procurement, Air Force, BA-3										
(U)	JPATS	108,174	111,370	113,825	216,389	240,158	234,000	242,200	1,721,478		
(U)	JPATS, BA-6	0	0	0	0	60,801	24,353	25,200	133,982		
(U)	Military Construction, Air Force										
(U)	PE 0804741F, JPATS	0	3,200	0	0	3,200	0	4,100	16,588		
(U)	RDT&E, Navy, BA-7										
(U)	PE 0603208N, Training System Aircraft, H1150, JPATS	685	311	0	0	0	0	0	11,581		
(U)	Aircraft Procurement, Navy, BA-3										
(U)	JPATS	0	55,539	74,372	104,329	99,927	107,539	1,195,705	1,736,043		
(U)	APN 6 Spares	0	0	0	0	15,307	5,890	42,933	70,706		
(U)	Military Construction, Navy	0	6,240	5,200	600	0	0	11,617	25,057		
(U)	D. Acquisition Strategy										
	Each acquisition was competitively awarded with the intent of maximizing the use of commercially available equipment and best commercial practices. The JPATS Program competitively awarded two contracts: a Firm Fixed Price Contractor Logistics Support (CLS) contract and a Fixed Price Incentive Firm manufacturing development (MD)/production contract with seven options.										
(U)	E. Schedule Profile										
					FY 1999		FY 2000		FY 2001		

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE		February 2000		PROJECT	
BUDGET ACTIVITY		PE NUMBER AND TITLE								0604233F Specialized Undergraduate Pilot Training		654102			
05 - Engineering and Manufacturing Development															
(U) E. Schedule Profile Continued															
		FY 1999		FY 2000		FY 2001									
		1 2 3 4		1 2 3 4		1 2 3 4									
		*													
(U)	Activate Contractor Operation and Maintenance Base Supply (COMBS) at Randol														
(U)	FAA Type and Production Certification			*											
(U)	Delivery of Aircraft P-1			*											
(U)	GBTS CDR			*											
(U)	Delivery of Aircraft T-1														
(U)	Begin Multi-Service OT&E														
(U)	Multi-Service OT&E Complete														
(U)	Planning for Rate Review														
(U)	Milestone III														
(U)	TIMS, ATD, Courseware Delivery to Randolph AFB TX														
(U)	Reliability, Maintainability and Availability (RM&A) Verification														
	Complete														
(U)	IOC Air Force														
(U)	System Level Formative Eval Complete														
(U)	IOC Navy														
	* Denotes completed milestone														
	X Denotes planned milestone														

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT					
05 - Engineering and Manufacturing Development		0604233F Specialized Undergraduate Pilot Training				654102					
(U)	A. <u>Project Cost Breakdown (\$ in Thousands)</u>										
		FY 1999	FY 2000								FY 2001
(U)	Aircraft Missionization/Test and Evaluation	6,163	3,623								0
(U)	Ground Based Training System (GBTS)	28,019	28,269								20,473
(U)	Other Government Costs (OGC)	4,262	1,380								1,199
(U)	Total	38,444	33,272								21,672
(U)	B. <u>Budget Acquisition History and Planning Information (\$ in Thousands)</u>										
(U)	C. <u>Performing Organizations:</u>										
	<u>Contractor or</u>	<u>Contract</u>	<u>Performing</u>	<u>Award or</u>	<u>Project</u>	<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
	<u>Government</u>	<u>Method/Type</u>	<u>Activity</u>	<u>Obligation</u>	<u>Office</u>	<u>to FY 1999</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>Complete</u>	<u>Program</u>
	<u>Performing</u>	<u>or Funding</u>	<u>EAC</u>	<u>Date</u>	<u>EAC</u>						
	<u>Activity</u>	<u>Vehicle</u>									
	<u>Product Development Organizations</u>										
	Raytheon Aircraft Company C/FPI		182,444	5 Feb 96	180,483	105,625	6,163	3,623	0	0	115,411
	(RAC)										
	Flight Safety Services Corp. N/A**		N/A	26 Sep 97	N/A	28,575	28,019	28,269	20,473	7,922	113,258
	* RAC contract Total Program includes contract value, 'to ceiling,' Engineering Change Order (ECO), and Award Fee										
	** Subcontract to RAC										
	*** RAC EAC includes subcontracted GBTS effort, which is not individually reported										
	<u>Support and Management Organizations</u>										
	Various	Various	N/A		N/A	24,107	4,262	1,380	1,199	0	30,948
	<u>Test and Evaluation Organizations</u>										
	<u>Subtotals</u>										
	Subtotal Product Development										
	Subtotal Support and Management										
	Subtotal Test and Evaluation										
	Total Project					158,307	38,444	33,272	21,672	7,922	259,617

Project 654102

Page 6 of 15 Pages

Exhibit R-3 (PE 0604233F)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604233F Specialized Undergraduate Pilot Training								654228	
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
654228	T-3A Enhanced Flight Screener (EFS)	0	1,560	0	0	0	0	0	0	1,560	
(U)	A. Mission Description										
	The T-3A EFS was used at the United States Air Force Academy (USAF A) CO and Hondo Field TX to conduct flight screening prior to entry in USAF Specialized Undergraduate Pilot Training (SUPT). The Chief of Staff of the Air Force directed that a Ballistic Recovery System (BRS) be added to the T-3A for enhanced safety; however, the effort was subsequently cancelled. These funds are being reprogrammed to the T-38 Avionics Upgrade Program (AUP) to cover increased development and test costs.										
(U)	FY 1999 (\$ in Thousands)										
(U)	\$0	No Activity									
(U)	\$0	Total									
(U)	FY 2000 (\$ in Thousands)										
(U)	\$1,560	Reprogram to T-38 AUP									
(U)	\$1,560	Total									
(U)	FY 2001 (\$ in Thousands)										
(U)	\$0	No Activity									
(U)	\$0	Total									
(U)	B. Project Change Summary										
	This was a single year, new start effort for FY2000. It was determined that a Ballistic Recovery System (BRS) was not practical for the T-3A. The funds are being reprogrammed to Project 4376, T-38 AUP.										
(U)	C. Other Program Funding Summary (\$ in Thousands)										
	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost		
(U)	AF RDT&E										
(U)	Other APPN										

Project 654228

Page 7 of 15 Pages

Exhibit R-2A (PE 0604233F)

665

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT					
05 - Engineering and Manufacturing Development		0604233F Specialized Undergraduate Pilot Training				654228					
(U)	<u>D. Acquisition Strategy</u>	Funds are being reprogrammed to Project 4376, T-38 Avionics Upgrade Program (AUP).									
(U)	<u>E. Schedule Profile</u>										
(U)	N/A										

Project 654228

Page 8 of 15 Pages

Exhibit R-2A (PE 0604233F)

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									
BUDGET ACTIVITY					DATE		PROJECT		
05 - Engineering and Manufacturing Development					0604233F		Specialized Undergraduate Pilot Training		
A. Project Cost Breakdown (\$ in Thousands)					FY 1999		FY 2000		
(U)	Reprogram to T-38 AUP				0		1,560		0
(U)	Total				0		1,560		0
B. Budget Acquisition History and Planning Information (\$ in Thousands)									
(U)	Performing Organizations:								
	Contract or	Contract	Performing	Project	Budget	Budget	Budget	Budget to	Total
	Government	Method/Type	Activity	Office	FY 1999	FY 2000	FY 2001	Complete	Program
	Performing	or Funding	EAC	EAC					
	Activity	Vehicle							
	Product Development Organizations								
	Not Applicable				1,560				1,560
	Reprogram to Project 4376, T-38								
	Support and Management Organizations								
	Not Applicable								
	Test and Evaluation Organizations								
	Not Applicable								
(U)	Government Furnished Property:								
	Contract	Contract	Delivery		Budget	Budget	Budget	Budget to	Total
	Method/Type	Award or	Date		FY 1999	FY 2000	FY 2001	Complete	Program
	or Funding	Obligation							
	Vehicle	Date							
	Product Development Property								
	Not Applicable								
	Support and Management Property								
	Not Applicable								
	Test and Evaluation Property								
	Not Applicable								

Project 654228

Page 9 of 15 Pages

Exhibit R-3 (PE 0604233F)

667

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT	
05 - Engineering and Manufacturing Development		0604233F Specialized Undergraduate Pilot Training		654228	
		Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget to Complete
<u>Subtotals</u>					Total
Subtotal Product Development					Program
Subtotal Support and Management					1,560
Subtotal Test and Evaluation					
Total Project				1,560	0
				1,560	0

Project 654228

Page 10 of 15 Pages

Exhibit R-3 (PE 0604233F)

UNCLASSIFIED

BUDGET ACTIVITY		RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)						DATE	February 2000	
05 - Engineering and Manufacturing Development		PE NUMBER AND TITLE						PROJECT		
		0604233F Specialized Undergraduate Pilot Training						654376		
	COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
654376	T-38 Avionics Upgrade Program (AUP)	17,927	5,973	2,181	0	0	0	0	0	78,623
(U)	A. Mission Description									
	The T-38 Avionics Upgrade Program (AUP) is an integrated modernization of the T-38A and AT-38B cockpits to support mission-ready fighter training. The modernized digital cockpit will include Global Positioning System (GPS), Head-Up Display (HUD), Inertial Navigation System (INS), Multi-Function Displays (MFDs), Up-Front Control Panel (UFCP), Data Transfer System (DTS), No-Drop Bombing System (NDBS), and Hands-On Throttle and Stick (HOTAS) switchology. HUD symbology will be the new USAF standard recently certified as a primary flight reference. Also included is the acquisition of two types of Aircrew Training Devices (ATDs) to replace the existing T-51 simulators. The program includes the design, integration, test, and installation of the cockpit prototype in aircraft, ATDs, and other training devices, as well as engineering services, studies, analysis and support to determine the feasibility of incorporating changes for purposes of making informed life-cycle cost business decisions. Additionally, funds are included in FY2000 and FY2001 for Phase I testing of engine operability/suitability for the T-38 Propulsion Modernization Program (PMP) and to update T-38 AUP software for changes brought about by the T-38 PMP.									
(U)	FY 1999 (\$ in Thousands)									
(U)	\$15,340	Completed DT&E and Phase I IOT&E, conducted Functional Configuration Audit (FCA); conducted Production Readiness Review (PRR); obtained Low Rate Initial Production approval; continued Aircrew Training Device (ATD) Contractor Logistics Support (CLS) and Avionics Support (AVS) Contracts; integrate and begin contractor test on two ATDs								
(U)	\$962	Complete Government flight test								
(U)	\$1,625	Other Government Costs								
(U)	\$17,927	Total								
(U)	FY 2000 (\$ in Thousands)									
(U)	\$2,700	Complete ATD testing and ATD delivery; complete maintenance and ground support equipment; deliver final technical orders and drawings; complete Build 5 and 6 hardware and software upgrade and Phase II DT&E and IOT&E								
(U)	\$750	Conduct Phase I testing and analysis of the integrated ejector/inlet portion of T-38 PMP								
(U)	\$900	Conduct Government PMP flight test								
(U)	\$650	Complete Government AUP Phase II flight test								
(U)	\$973	Other Government Costs								
(U)	\$5,973	Total								
Project 654376		Page 11 of 15 Pages						Exhibit R-2A (PE 0604233F)		

669

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE									
05 - Engineering and Manufacturing Development		0604233F Specialized Undergraduate Pilot Training									654376
(U)	A. Mission Description Continued										
(U)	FY 2001 (\$ in Thousands)										
(U)	\$2,181	Update T-38 AUP aircraft and Aircrew Training Device (ATD) software for changes brought about by the T-38 PMP									
(U)	\$2,181	Total									
(U)	B. Project Change Summary										
Funds reprogrammed to FY1999 and FY2000 to correct deficiencies discovered during Developmental Test and Evaluation (DT&E). Funding added to FY 2001 to develop T-38 AUP software changes brought about by the T-38 PMP. Additional funds are required in FY2000 to complete Phase II of IOT&E and obtain a Full Rate Production (FRP) decision. These funds are being reprogrammed from Project 4228 of this program element.											
(U)	C. Other Program Funding Summary (\$ in Thousands)										
		<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>Cost to</u>	<u>Total Cost</u>	
		Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Complete		
(U)	AF RDT&E	17,927	5,973	2,181	0	0	0	0	0	78,623	
(U)	Other APPN										
(U)	PE 0804741F, T-38 Avionics Upgrade, BP 1100	16,655	30,979	80,973	78,428	97,792	99,516	53,081	123,772	581,196	
(U)	PE 0804741F, T-38 Avionics Upgrade, BP 1600	0	0	3,574	3,193	4,076	5,673	2,014	0	18,530	
(U)	PE 0804741F, Propulsion Modification, BP 1100	0	0	31,258	59,109	65,492	68,053	65,055	452,140	741,107	
(U)	PE 0804741F, Propulsion Engine Modification, BP 1600	0	0	4,710	4,699	4,708	4,745	4,745	34,257	57,864	
(U)	D. Acquisition Strategy										
The T-38 AUP competitively awarded three contracts to a single prime: a) a cost plus award fee EMD contract with six firm fixed price production options; b) a firm fixed price CLS contract for avionics including Contractor Owned and Maintained Base Supply (COMBS); and c) a fixed price award fee maintenance contract for the current and new Aircrew Training Devices (ATDs). The T-38 PMP will be comprised of four contractual efforts: a. J85-5 engine modification and ejector nozzle will be sole source additions to a current contract with General Electric, b. the inlet/former/bulkhead kits will be a competitive award; c. a task order will be established on the existing Contractor Field Team (CFT) contract for kit installation; and d. the T-38 software changes required by the PMP will be added to the existing Boeing contract for the AUP.											
Project 654376											
Page 12 of 15 Pages											
Exhibit R-2A (PE 0604233F)											

Project 654376

Page 12 of 15 Pages

Exhibit R-2A (PE 0604233F)

670

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)						DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE						
05 - Engineering and Manufacturing Development	0604233F Specialized Undergraduate Pilot Training 654376						
(U) E. Schedule Profile	FY 1999	FY 2000	FY 2001				
	1	2	3	4	1	2	3
(U) DT&E Complete				*			
(U) Low Rate Initial Production Decision				*			
(U) IOT&E Phase I Complete				*			
(U) Final Functional Configuration Audit (FCA)		X					
(U) First Production ATD Delivered			X				
(U) IOT&E Phase II Complete				X			
(U) Full Rate Production Decision				X			
(U) Phase I Testing of PMP Complete				X			
(U) First Production Aircraft Delivered				X			
(U) Initiate Modification of Software on AUP					X		
(U) Initial Operational Capability (IOC)						X	
* Denotes completed milestone							
X Denotes planned milestone							

Project 654376
 Page 13 of 15 Pages
 Exhibit R-2A (PE 0604233F)

Page 13 of 15 Pages

Exhibit R-2A (PE 0604233F)

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 2000	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE		0604233F Specialized Undergraduate Pilot Training 654376		
05 - Engineering and Manufacturing Development						
A. Project Cost Breakdown (\$ in Thousands)						
(U)		FY 1999	FY 2000	FY 2001		
(U)	Avionics System Upgrade	7,263	1,571	0		
(U)	Aircrew Training Devices	4,369	829	0		
(U)	System Engineering/Program Management	1,254	300	0		
(U)	System Test and Evaluation	1,405	0	0		
(U)	Training	95	0	0		
(U)	EMD Data	234	0	0		
(U)	Award Fee	720	0	0		
(U)	Other Government Costs	2,587	1,623	0		
(U)	Propulsion Modernization Program	0	1,650	2,181		
(U)	Total	17,927	5,973	2,181		
B. Budget Acquisition History and Planning Information (\$ in Thousands)						
(U)	Performing Organizations:					
	Contract or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1999
	Product Development Organizations					
	The Boeing Corporation	C/CPAF	31 Jul 96	64,919	65,142	43,521
	St. Louis MO					
	ASC/YT WPAFB OH	Various	Annual	N/A	N/A	7,624
	GE, Lynn MA	CPFF	Jan 00	750	750	0
	ASC/LP, WPAFB OH	Various	Annual	N/A	N/A	0
	Support and Management Organizations					
	SA-ALC/LF Kelly AFB TX	Various	Quarterly	N/A	N/A	43
	AETC Randolph AFB TX	Various	Quarterly	N/A	N/A	52
	OO-ALC/LIR Ogden AFB	Various	Quarterly	N/A	N/A	227
	UT					
				Budget FY 1999	Budget FY 2000	Budget to Complete
				15,340	2,700	0
				2,181	0	63,742
				1,459	548	0
				0	750	0
				0	200	0
				98	75	0
				50	50	0
				18	100	0
						216
						152
						345
Project 654376				Exhibit R-3 (PE 0604233F)		
				Page 14 of 15 Pages		

Project 654376

Page 14 of 15 Pages

672

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)											
BUDGET ACTIVITY		PE NUMBER AND TITLE		DATE	PROJECT						
05 - Engineering and Manufacturing Development		0604233F Specialized Undergraduate Pilot Training		February 2000	654376						
(U) Performing Organizations Continued:											
Test and Evaluation Organizations											
445	FLTS Edwards AFB CA	PO	Annual	N/A	N/A	1,021	831	1,350	0	0	3,202
AFOTEC	Kirtland AFB NM	PO	Annual	N/A	N/A	54	131	200	0	0	385
Subtotals											
Subtotal Product Development						Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program
						51,145	16,799	4,198	2,181	0	74,323
Subtotal Support and Management						322	166	225	0	0	713
Subtotal Test and Evaluation						1,075	962	1,550	0	0	3,587
Total Project						52,542	17,927	5,973	2,181	0	78,623

Project 654376

Page 15 of 15 Pages

Exhibit R-3 (PE 0604233F)

Page 15 of 15 Pages

Exhibit R-3 (PE 0604233F)

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

PE NUMBER: 0604239F
PE TITLE: F-22 EMD

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE									
05 - Engineering and Manufacturing Development		0604239F F-22 EMD									
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		1,561,786	1,945,138	1,411,786	860,676	318,511	0	0	0	23,925,670	
654069	Advanced Tactical Fighter FSD	1,561,786	1,222,232	1,007,748	712,622	318,511	0	0	0	22,650,672	
654874	PRTVII AIRCRAFT ACQUISITION	0	722,906	404,038	148,054	0	0	0	0	1,274,998	
Quantity of RDT&E Articles		0	3	4	4	2	0	0	0	0	
(U)	A. Mission Description The F-22 is designed to penetrate enemy airspace and achieve a first look, first kill capability against multiple targets. The F-22 is characterized by a low observable, highly maneuverable airframe, advanced integrated avionics, and aerodynamic performance that allows supersonic cruise without the use of afterburner. The F-22 is currently in the Engineering and Manufacturing Development (EMD) phase of acquisition.										
(U)	B. Budget Activity Justification This program is in Budget Activity 5, Engineering and Manufacturing Development, because the F-22 Program is developing the next-generation air superiority fighter for the USAF to counter emerging worldwide threats.										
(U)	C. Program Change Summary (\$ in Thousands)										
(U)	Previous President's Budget (FY 2000 PBR)										Total Cost
(U)	Appropriated Value										22,628,536
(U)	Adjustments to Appropriated Value										
	a. Congressional/General Reductions										
	b. Small Business Innovative Research										
	c. Omnibus or Other Above Threshold Reprogram										
	d. Below Threshold Reprogram										
	e. Rescissions										
	f. Other										
(U)	Adjustments to Budget Years Since FY 2000 PBR										
				722,906	-449						
					-13,182						
									435,185		
										Exhibit R-2 (PE 0604239F)	

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE		
05 - Engineering and Manufacturing Development	0604239F F-22 EMD		
(U) C. Program Change Summary (\$ in Thousands) Continued			
(U) Current Budget Submit/FY 2001 PBR			
(U) Significant Program Changes:			
FY00 - Does not include \$300M appropriated for F-22 termination liability or for other F-22 program contractual requirements in lieu of termination liability obligations in the OSD transition account. However, FY01 and FY02 budgets are based on receipt of these funds for the F-22.			
FY01- \$31,300 adjustment offsets past year program reductions. Program remains \$4.287M under the Congressionally mandated cost cap.			
		FY 1999	FY 2000
		1,561,786	1,945,138
			1,411,786
			Total Cost
			23,925,670

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000	
BUDGET ACTIVITY			PE NUMBER AND TITLE					PROJECT				
05 - Engineering and Manufacturing Development			0604239F F-22 EMD					654069				
COST (\$ in Thousands)			FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
654069	Advanced Tactical Fighter FSD		1,561,786	1,222,232	1,007,748	712,622	318,511	0	0	0	22,650,672	
Unit cost of RDT&E articles not separately priced (NSP).												
* Total Cost includes \$3,779,811,000 of Demonstration and Validation funding prior to FY 1992 funded in PE 0603230F.												
** Quantity of RDT&E Articles includes one EMD flight test aircraft delivered in FY 1997.												
*** FY99 is understated by \$4.448M. BTR not reflected in cost table above. Cost breakout below reflects correct program amounts.												
(U) A. Mission Description												
The EMD phase effort includes delivery of nine flight test vehicles and two ground test vehicles (static and fatigue); delivery of 26 flight qualified engines; integration and test of the EMD avionics suite including air-to-surface provision; development and test of the F-22 weapons system support and training system; and updating the YF-22 Avionics Flying Laboratory with EMD assets and software to become an avionics integration Flying Test Bed (FTB).												
(U) FY 1999 (\$ in Thousands)												
(U) \$739,301 Air Vehicle												
- Continued assembly of EMD aircraft #3-6. (NSP)												
- Initiated assembly of EMD aircraft #7-9. (NSP)												
- Initiated static test. (NSP)												
- Completed full scale pole model testing (Radar Cross Section) (NSP)												
- Continued flight test and flight test support (NSP)												
(U) \$557,888 Avionics												
- Initiated AIL integration in preparation of Block 2 integration testing (NSP)												
- Initiated delivery and installation of avionics hardware on the first avionics test aircraft (NSP)												
- Continued flight testing avionics on the FTB (NSP)												
- Completed (AIL) Block 1.0 integration (NSP)												
- Continued DMS redesign, requalification and retesting activities (NSP)												
(U) \$172,520 Engine												
- Continued to deliver and support six additional flight test engines (13 total). (NSP)												
- Continued full flight release (FFR) milestone. (NSP)												
- Continued verification of engine support system products (NSP)												
Project 654069												
Page 3 of 14 Pages												
Exhibit R-2A (PE 0604239F)												

677

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development	0604239F F-22 EMD	654069	
(U) A. Mission Description Continued			
(U) FY 1999 (\$ in Thousands) Continued			
	- Continued building and test additional flight test engines (NSP)		
	- Continued production engine configuration development testing (NSP)		
	- Initiated Initial Service Release (ISR) milestone activities		
(U) \$96,525	Other Government Cost		
	- Continued flight test and flight test support at Edwards AFB		
	- Continued support of engine testing		
	- Continued aperture measurements at Rome Labs		
	- Continued avionics ground testing at various government facilities		
	- Mission support of the SPO; travel, computer costs, misc contracts, etc.		
	- Procurement of required GFE		
	- Completed sled test program at Holloman AFB		
	- Continued live fire testing at Air Force Research Labs		
	- Continued stores separation testing at AEDC		
(U) \$1,566,234	Total		
(U) FY 2000 (\$ in Thousands)			
(U) \$594,897	Air Vehicle		
	- Complete static test (NSP)		
	- Initiate fatigue test (NSP)		
	- Conduct First Flight Readiness Review for aircraft #4. (NSP)		
	- Complete assembly of EMD aircraft #3-6 (NSP)		
	- Continue assembly of EMD aircraft #7-9 (NSP)		
	- Complete final production readiness review (NSP)		
	- Continue flight test and flight test support (NSP)		
	- Complete full scale pole model testing (RCS). (NSP)		
	- Complete first lifetime fatigue test (NSP)		
(U) \$368,124	Avionics		
	- First flight of the first avionics test aircraft (NSP)		
	- Initiate AIL Block 3 integration (NSP)		
Project 654069		Page 4 of 14 Pages	Exhibit R-2A (PE 0604239F)

678

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)			DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT		
05 - Engineering and Manufacturing Development	0604239F F-22 EMD	654069		
(U) A. Mission Description Continued				
(U) FY 2000 (\$ in Thousands) Continued				
	- Continue incorporating avionics software/hardware into the FTB (NSP)			
	- Continue DMS redesign activities for production incorporation (NSP)			
	- Initiate avionics software Block 3S flight testing (NSP)			
	- Initiate Block 3 FTB testing (NSP)			
(U) \$140,111	Engine			
	- Continue production engine configuration development testing (NSP)			
	- Continue to deliver and support twelve additional flight test engines (25 total) (NSP)			
	- Continue verification of engine support system products (NSP)			
	- Continue to build and test additional flight test engines (NSP)			
	- Continue Initial Service Release (ISR) milestone activities			
(U) \$119,100	Other Government Cost			
	- Continue flight test and flight test support at Edwards AFB			
	- Continue support of engine testing at AEDC			
	- Continue aperture measurements at Rome Labs			
	- Continue avionics ground testing at various government facilities			
	- Mission support of the SPO; travel, computer costs, misc contracts, etc.			
	- Procurement of required GFE			
	- Continue live fire testing at Air Force Research Labs			
(U) \$1,222,232	Total			
(U) FY 2001 (\$ in Thousands)				
(U) \$537,397	Air Vehicle			
	- Complete assembly of EMD aircraft #7-9. (NSP)			
	- Continue flight test and flight test support. (NSP)			
	- Complete second lifetime fatigue test. (NSP)			
(U) \$271,176	Avionics			
	- Initiate AIL Block 3.1 integration. (NSP)			
	- Complete flight testing on the Block 3.1 FTB. (NSP)			
	- Complete AIL Block 3.0 and 3.1 integration. (NSP)			
Project 654069			Page 5 of 14 Pages	
			Exhibit R-2A (PE 0604239F)	

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)			DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT		
05 - Engineering and Manufacturing Development	0604239F F-22 EMD	654069		
(U) A. Mission Description Continued				
(U) FY 2001 (\$ in Thousands) Continued				
(U) \$56,875	- Continue DMS redesign, requalification and retesting activities. (NSP)			
	Engine			
	- Continue production engine configuration development testing. (NSP)			
	- Continue verification of engine support system products. (NSP)			
	- Continue to test flight test engines. (NSP)			
	- Complete Initial Service Release (ISR) milestones (NSP)			
	- Initiate Operational Capability Release (OCR) activities			
(U) \$142,300	Other Government Cost			
	- Continue flight test and flight test support at Edwards AFB			
	- Continue engine testing at AEDC			
	- Continue avionics ground testing at various government facilities			
	- Mission support of the SPO; travel, computer costs, misc contracts, etc.			
	- Procurement of required GFE			
	- Continue live fire testing at Air Force Research Labs			
(U) \$1,007,748	Total			
(U) B. Project Change Summary				
FY01 - \$31,300 adjustment of offsets past year program reductions. Program remains \$4.287M under the Congressionally mandated cost cap.				
(U) C. Other Program Funding Summary (\$ in Thousands)				
	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>
		722,906	404,038	148,054
(U) PRTV II (6)				
(U) (U) F-22 Squadrons (PE				
0207138F)				
(U) (U) Military Construction (PE	0	18,600	0	0
0604239F)				
(U) (U) Military Construction (PE	0	0	25,300	51,600
				17,400
				16,800
				13,200
				137,900
				262,200
Project 654069				
	Page 6 of 14 Pages			
	680			
	Exhibit R-2A (PE 0604239F)			

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)									
BUDGET ACTIVITY		PE NUMBER AND TITLE					DATE		
05 - Engineering and Manufacturing Development		0604239F F-22 EMD					February 2000		
PROJECT							654069		
<u>C. Other Program Funding Summary (\$ in Thousands)</u>									
		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete
									Total Cost
(U)	0207219F)								
(U)	(U) Aircraft Procurement (PE 0207219F) Advanced Tactical Fighter, P-1 Line Item #003 *	797,798	283,043	2,553,559	3,023,600	4,330,648	3,993,482	3,591,287	19,422,998
(U)	(U) Munitions Procurement (PE 0207219F)	449	1,425	2,721	4,297	6,384	9,479	9,431	38,077,187
PE 0207138F includes manpower authorizations, peculiar and common support equipment, necessary facilities and the associated costs specifically identified and measurable to the following: Operation, maintenance, and logistical support of the F-22 fighter									
* NOTE: Includes BP 10, BP 19, and Advance Buy									
<u>D. Acquisition Strategy</u>									
The EMD contract is Cost Plus Award Fee with Lockheed Martin Aeronautical Systems (LMAS) to produce the F-22 air vehicle and Pratt & Whitney (P&W) to produce the F119 engines. The engines are provided to LMAS as GFE.									
<u>E. Schedule Profile</u>									
(U)	(U) Aircraft Delivered (EMD Test Article)								
(U)	Program Milestones								
(U)	- Program Review, PRTV Award, PRTV II (6) LL								
(U)	- DAB MS III, 4QFY03								
(U)	Engineering Milestones								
(U)	- Final PRR								
(U)	- First Avionics Flight								
(U)	T&E Milestones								
(U)	- Dedicated IOT&E, 4QFY02								
EMD = Engineering and Manufacturing Development, DAB = Defense Acquisition Board LRIP = Low Rate Initial Production, LL = Long Lead, MS = Milestone, DT&E = Developmental Test & Evaluation, IOT&E = Initial Operational Test & Evaluation									
Project 654069		Page 7 of 14 Pages					Exhibit R-2A (PE 0604239F)		

681

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE			PROJECT	
05 - Engineering and Manufacturing Development		0604239F F-22 EMD			654069	
(U)	A. Project Cost Breakdown (\$ in Thousands)					
(U)	Air Vehicle/Avionics	FY 1999	FY 2000	FY 2001		FY 2001
(U)	Engine	1,293,289	963,021	808,573		808,573
(U)	Government Cost	171,972	140,111	56,875		56,875
(U)	- Government Test	77,825	99,600	126,200		126,200
(U)	- Mission Support	11,600	12,600	11,500		11,500
(U)	- HAZMAT	300	100	100		100
(U)	- GFE	6,800	6,800	4,500		4,500
(U)	Total	1,561,786	1,222,232	1,007,748		1,007,748
(U)	B. Budget Acquisition History and Planning Information (\$ in Thousands)					
(U)	Performing Organizations:					
	Contractor or Government	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total
	Lockheed (Air Veh)	C/CPAF	Aug 91	12,992,163	15,325,739	11,541,006
	Pratt & Whitney	C/CPAF	Aug 91	2,224,000	2,473,848	2,037,556
	Support and Management Organizations					
	Support Contracts	Various	Various	N/A	N/A	12,402
	In House Support	Various	Various	N/A	N/A	81,498
	Test and Evaluation Organizations					
	AEDC	PO	Various	N/A	N/A	155,008
	AFTC	PO	Various	N/A	N/A	148,508
	All Other Tests	Various	Various	N/A	N/A	31,184
Note: The Project Office EAC includes the following items not included in the Performing Activity (i.e., Contractor) EAC - Base Fee, Award Fee, SPO Planned CCPs not yet on contract, and other adjustments based on results of the restructured program.						
Project 654069		Page 8 of 14 Pages		Exhibit R-3 (PE 0604239F)		

682

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)						DATE	February 2000	PROJECT	
BUDGET ACTIVITY		PE NUMBER AND TITLE				654069			
05 - Engineering and Manufacturing Development									
(U) Government Furnished Property:									
Item Description	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program
Product Development Property	Various	Various	Various	40,800	6,800	6,800	4,500	0	58,900
GFE									
Support and Management Property									
Not Applicable									
Test and Evaluation Property									
Not Applicable									
Subtotals				Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program
Subtotal Product Development				13,619,362	1,472,061	1,109,932	869,948	787,633	17,858,936
Subtotal Support and Management				93,900	11,900	12,700	11,600	19,000	149,100
Subtotal Test and Evaluation				334,700	77,825	99,600	126,200	224,500	862,825
Total Project				14,047,962	1,561,786	1,222,232	1,007,748	1,031,133	18,870,861
NOTE: Total program cost for Engineering and Manufacturing Development only. Does not include \$3,779,811,000 of Demonstration and Validation funding prior to FY92									

Project 654069

Page 9 of 14 Pages

Exhibit R-3 (PE 0604239F)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604239F F-22 EMD								654874	
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
654874	PRTV/II AIRCRAFT ACQUISITION	0	722,906	404,038	148,054	0	0	0	0	1,274,998	
(U)	A. Mission Description										
	The F-22 is designed to penetrate enemy airspace and achieve a first look, first kill capability against multiple targets. The F-22 is characterized by a low observable, highly maneuverable airframe, advanced integrated avionics, and aerodynamic performance that allows supersonic cruise without the use of afterburner. The F-22 is currently in the Engineering and Manufacturing Development (EMD) phase of acquisition.										
	Complete test aircraft to support continued F-22 development and production. The PRTV II (6) Full Contract Award (Dec 99) criteria, approved by OUSD (A&T) on 23 Dec 98, required the program to demonstrate maturity prior to a contract award.										
	Following successful completion of all CY99 DAE criteria, the Air Force awarded contracts for PRTV II (6) aircraft on 30 Dec 99.										
(U)	<u>FY 1999 (\$ in Thousands)</u>										
(U)	\$0	No Activity									
(U)	\$0	Total									
	* See Note Below										
(U)	<u>FY 2000 (\$ in Thousands)</u>										
(U)	\$647,366	Air Vehicle									
(U)	\$60,000	Engine									
(U)	\$15,540	Other Government Cost									
(U)	\$722,906	Total									
	* See Note Below										
(U)	<u>FY 2001 (\$ in Thousands)</u>										
(U)	\$302,429	Air Vehicle									
(U)	\$90,100	Engine									
(U)	\$11,509	Other Government Cost									
(U)	\$404,038	Total									
	*FY00 - Does not include \$300M appropriated for F-22 termination liability or for other F-22 program contractual requirements in lieu of termination liability										
Project 654874		Page 10 of 14 Pages								Exhibit R-2A (PE 0604239F)	

684

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604239F F-22 EMD								654874	
(U)	<u>A. Mission Description Continued</u>										
(U)	<u>FY 2001 (\$ in Thousands) Continued</u> obligations. However, FY01 and FY02 budgets are based on receipt of these funds for the F-22.										
(U)	<u>B. Project Change Summary</u> N/A										
(U)	<u>C. Other Program Funding Summary (\$ in Thousands)</u>										
		<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>Cost to</u>	<u>Total Cost</u>	
		<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>		
(U)	AF RDT&E	1,561,786	1,222,232	1,007,748	712,622	318,511	83,061	82,963		22,650,672	
(U)	F-22 Squadrons (PE									166,024	
	0207138F)										
(U)	Military Construction (PE	0	18,600	0	0	0	0	0	0	18,600	
	0604239F)										
(U)	Military Construction (PE	0	0	25,300	51,600	17,400	16,800	13,200	137,900	262,200	
	0207219F)										
(U)	Aircraft Procurement (PE	797,798	283,043	2,553,559	3,023,600	4,330,648	3,993,482	3,591,287	19,422,998	38,077,187	
	0207219F) Advanced Tactical										
	Fighter, P-1 Line Item #003										
(U)	Munitions Procurement (PE	449	1,425	2,721	4,297	6,384	9,479	9,431	56,510	90,662	
	0207219F)										
(U)	Other APPN										
	PE 0207138F includes manpower authorizations, peculiar and common support equipment, necessary facilities and the associated costs specifically identified and measurable to the following: Operation, maintenance, and logistical support of the F-22 fighter										
(U)	<u>D. Acquisition Strategy</u> The PRTV II contract is Firm Fixed Price with Lockheed Martin Aeronautical Systems (LMAS) to produce the F-22 air vehicle and Pratt & Whitney (P&W) to produce the F119 engines. The engines are provided to LMAS as GFE.										
(U)	<u>E. Schedule Profile</u>										
					<u>FY 1999</u>		<u>FY 2000</u>		<u>FY 2001</u>		

Project 654874

Page 11 of 14 Pages

Exhibit R-2A (PE 0604239F)

Project 654874

Page 11 of 14 Pages

685

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)				DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT	
05 - Engineering and Manufacturing Development		0604239F F-22 EMD		654874	
<u>E. Schedule Profile Continued</u>					
(U)	Aircraft Delivered (PRTV II Test Article)	1	2	3	4
			FY 1999	FY 2000	FY 2001
			1	2	3
			4	1	2
			3	4	1
			2	3	4
			1	2	3
			4	1	2
			3	4	1
			2	3	4
			1	2	3
			4	1	2
			3	4	1
			2	3	4
			1	2	3
			4	1	2
			3	4	1
			2	3	4
			1	2	3
			4	1	2
			3	4	1
			2	3	4
			1	2	3
			4	1	2
			3	4	1
			2	3	4
			1	2	3
			4	1	2
			3	4	1
			2	3	4
			1	2	3
			4	1	2
			3	4	1
			2	3	4
			1	2	3
			4	1	2
			3	4	1
			2	3	4
			1	2	3
			4	1	2
			3	4	1
			2	3	4
			1	2	3
			4	1	2
			3	4	1
			2	3	4
			1	2	3
			4	1	2
			3	4	1
			2	3	4
			1	2	3
			4	1	2
			3	4	1
			2	3	4
			1	2	3
			4	1	2
			3	4	1
			2	3	4
			1	2	3
			4	1	2
			3	4	1
			2	3	4
			1	2	3
			4	1	2
			3	4	1
			2	3	4
			1	2	3
			4	1	2
			3	4	1
			2	3	4
			1	2	3
			4	1	2
			3	4	1
			2	3	4
			1	2	3
			4	1	2
			3	4	1
			2	3	4
			1	2	3
			4	1	2
			3	4	1
			2	3	4
			1	2	3
			4	1	2
			3	4	1
			2	3	4
			1	2	3
			4	1	2
			3	4	1
			2	3	4

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT					
05 - Engineering and Manufacturing Development		0604239F F-22 EMD				654874					
(U)	<u>A. Project Cost Breakdown (\$ in Thousands)</u>										
	FY 1999	FY 2000	FY 2001								
(U)	Air Vehicle	647,366	302,429								
(U)	Engine	60,000	90,100								
(U)	Other Government Cost	15,540	11,509								
(U)	Total	722,906	404,038								
(U)	<u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>										
(U)	<u>Performing Organizations:</u>										
	Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program
	<u>Product Development Organizations</u>										
	Lockheed (Air Veh)	FFP	Dec 99	1,344,132	1,344,132			647,366	302,429	124,337	1,074,132
	Pratt & Whitney	FFP	Dec 99	180,402	180,402			60,000	90,100	302	150,402
	<u>Support and Management Organizations</u>										
	N/A	N/A	N/A	N/A	N/A						
	<u>Test and Evaluation Organizations</u>										
	N/A	N/A	N/A	N/A	N/A						
(U)	<u>Government Furnished Property:</u>										
	Contract	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program	
	<u>Product Development Property</u>										
	GFE	Various	Various	Various			15,540	11,509	23,415	50,464	
	<u>Support and Management Property</u>										
	Not Applicable	N/A	N/A	N/A							

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE				
05 - Engineering and Manufacturing Development		0604239F F-22 EMD				654874
(U)	Government Furnished Property Continued:					
	Test and Evaluation Property					
	Not Applicable	N/A	N/A	N/A		
	Subtotals					
	Subtotal Product Development				Budget FY 2000	Budget to Complete
	Subtotal Support and Management				722,906	148,054
	Subtotal Test and Evaluation				404,038	148,054
	Total Project				722,906	1,274,998

Project 654874

Page 14 of 14 Pages

Exhibit R-3 (PE 0604239F)

Page 14 of 14 Pages

UNCLASSIFIED

Exhibit R-3 (PE 0604239F)

UNCLASSIFIED

02/18/2000 13:01 - PEM

Exhibit P-5, Weapon System Cost Analysis

Date: February 2000

Appropriation (Treasury) Code/CC/BA/BSA/Item Control Number

P-1 Line Item Nomenclature

Aircraft Procurement, Air Force, Budget Activity 01, Combat Aircraft, Item No.**F-22 RDT&E Procurement**

Manufacturer's Name/Plant City/State Location

Subline Item

Weapon System Cost Elements	Ident Code	Total Cost In Millions of Dollars					
		FY 1999			FY 2000		
		Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost
Airframe Flyaway (TPC & PSAS)	A				6		458.480
Installed Engines	A						21.340
Airframe Term Liability	A						407.200
Engine Term Liability	A						58.943
Avionics	A						
Armament	A						
Software	A						
Other Government Furnished Equipment (GFE)	A						
Engineering Change Orders (ECO)	A						
Nonrecurring Costs	A						
Other Costs	A						
FLYAWAY COST SUBTOTAL	A						945.963
Airframe Peculiar Ground Support Equipment (PGSE)	A						
Airframe Support	A						51.686
Engine Support	A						9.717
OGC	A						15.540
Engine PGSE	A						
Peculiar Training Equipment	A						
Publications/Technical Data	A						
ECOs	A						
Other	A						
SUPPORT COST SUBTOTAL	A						76.943
TOTAL PROGRAM							1022.906

Comments

FY 00 includes the \$300M appropriated for termination liability. The funding is required to fully fund the PRTV II acquisition and currently resides in the OSD transfer account. The PRTV II requires an additional \$148M in FY 02.

P-1 Shopping List Item No.

Weapon System Cost Analysis
Exhibit P-5, page 1 of 1

UNCLASSIFIED PAGE 688A

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE							PROJECT		
05 - Engineering and Manufacturing Development		0604240F B-2 Advanced Technology Bomber							653843		
	COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
653843	B-2 Advanced Technology Bomber	108,620	297,854	48,313	33,397	13,057	13,358	13,618	Continuing	TBD	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	
(U)	<u>A. Mission Description</u> The B-2 SPIRIT is America's most advanced long-range strike aircraft. This all-wing two crew member aircraft has twin weapons bays of over 20,000 pounds capacity each and employs a wide array of signature reduction technologies to greatly enhance both its ability to penetrate enemy defenses and its ability to survive in a highly defended target environment. The B-2 provides global force projection capability and the ability to influence an enemy regardless of the location of enemy assets or the availability of forward basing.										
(U)	<u>FY 1999 (\$ in Thousands)</u>										
(U)	\$4,446	Continued Developmental Test and Evaluation (Maintain minimal flight test infrastructure at Edwards AFB)									
(U)	\$13,523	Continued support for Air Force Mission Support System (AFMSS)									
(U)	\$18,535	Continued support for Labs and Facilities									
(U)	\$72,116	Continued support for modification of EMD Aircraft; begin Joint Air-to-Surface Standoff Missile (JASSM) integration; contractor support of flight test base of operations.									
(U)	\$108,620	Total									
(U)	<u>FY 2000 (\$ in Thousands)</u>										
(U)	\$11,900	Continue Developmental Test and Evaluation (Maintain minimal flight test infrastructure at Edwards AFB)									
(U)	\$6,650	Continue support for Air Force Mission Support System (AFMSS)									
(U)	\$15,263	Continue support for Labs and Facilities									
(U)	\$122,441	Continue support for modification of EMD Aircraft; continue JASSM integration; contractor support of flight test base of operations; conduct B-2 EHF risk reduction study.									
(U)	\$141,600	Congressional Plus-Up (Link 16/Center Instrument Display, EGBU-28, In-flight Replanning, Stealth Enhancement, Next Generation Bomber Study, Classified Program/efforts)									
(U)	\$297,854	Total									
Project 653843		Page 1 of 6 Pages							Exhibit R-2 (PE 0604240F)		

689

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development		0604240F B-2 Advanced Technology Bomber	653843	
(U)	<u>A. Mission Description Continued</u>			
(U)	<u>FY 2001 (\$ in Thousands)</u>			
(U)	\$15,425	Continue Developmental Test and Evaluation (Maintain minimal flight test infrastructure at Edwards AFB; JASSM flight test)		
(U)	\$4,556	Continue support for Air Force Mission Support System (AFMSS)		
(U)	\$15,034	Continue support for Labs and Facilities		
(U)	\$13,298	Continue support for modification of EMD Aircraft; continue JASSM integration; continue contractor support of flight test base of operations; continue classified efforts; continue integration studies, reports, and analyses.		
(U)	\$48,313	Total		
(U)	<u>B. Budget Activity Justification</u>			
	This program is in budget activity 5 - Engineering and Manufacturing Development - because of concurrency in developing, testing, producing, and deploying the B-2.			
(U)	<u>C. Program Change Summary (\$ in Thousands)</u>			
(U)	Previous President's Budget (FY 2000 PBR)	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
(U)	Appropriated Value	131,038	201,765	72,443
(U)	Adjustments to Appropriated Value	131,247	301,765	
	a. Congressional/General Reductions	-209	-12	
	b. Small Business Innovative Research	-6,981		
	c. Omnibus or Other Above Threshold Reprogram	-7,419	-2,019	
	d. Below Threshold Reprogram	-8,018	-1,880	
	e. Rescissions			
	f. Other			
(U)	Adjustments to Budget Years Since FY 2000 PBR			-24,130
(U)	Current Budget Submit/FY 2001 PBR	108,620	297,854	48,313
(U)	<u>Significant Program Changes:</u>			
	FY99: Reprogrammed \$10.12 million for numerous low level requirements. Congress rescinded \$7 million due to JASSM integration savings.			
	FY00: Congress appropriated an additional \$100 million for B-2 RDT&E (Added \$141.6 million for classified program, Link 16/CID, EGBU-28, Inflight Replanning, Stealth Enhancement, and Next Generation Bomber Study; Reduced RDT&E by \$10 million due to delay of AV-3 modifications and reduced RDT&E by \$31.6 million due to JASSM integration savings.)			
	FY01: Realigned \$14.7 million of JASSM integration savings to a higher priority program. Realigned \$9.0 million to FY02 based on the rephased upgrade of Air			
Project 653843		Exhibit R-2 (PE 0604240F)		
		Page 2 of 6 Pages		

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development	0604240F B-2 Advanced Technology Bomber	653843	
(U) C. Program Change Summary (\$ in Thousands) Continued			
(U) Significant Program Changes Continued: Vehicle 3 to the Block 30 configuration. The AV-3 upgrade, originally scheduled for completion in FY00, was delayed to FY02 to meet flight test requirements for JASSM, LO maintenance improvements, and SATCOM/DAMA. Inflation/miscellaneous adjustments -\$430K.			
(U) D. Other Program Funding Summary (\$ in Thousands)			
		<u>FY 2000</u>	<u>FY 2001</u>
		<u>Estimate</u>	<u>Estimate</u>
		<u>0</u>	<u>0</u>
(U) A/C Proc, AF, Combat			
A/C/BA07/B-2A			
(U) A/C Proc, AF, Post Prod			
Support/BA07			
(U) A/C Proc, AF,			
Modifications/BA05/B-2A			
(U) A/C Prod, AF, ICS			
(U) A/C Proc, AF, Cmn Spt			
Eq/BA07/Items<\$2M			
(U) A/C Proc, AF, A/C Initial			
Spares/BA06/B-2A			
(U) Proc (Other), AF/BA 02,03,			
04/B-2A			
(U) Military Construction/BA01			
(U) E. Acquisition Strategy			
Key elements of the overall acquisition strategy include: use of sole source contract with a prime/integrating contractor; use of cost plus award fee (CPAF) development contracts; and combining developmental upgrades with software sustainment blocks to minimize the number of software releases, aircraft downtime and differences in fielded configurations			
(U) F. Schedule Profile			
		<u>FY 1999</u>	<u>FY 2000</u>
		<u>0</u>	<u>0</u>
		<u>12,050</u>	<u>0</u>
		<u>6,098</u>	<u>7,604</u>
		<u>7,579</u>	<u>29,820</u>
		<u>34,188</u>	<u>22,798</u>
		<u>424</u>	<u>475</u>
		<u>3,000</u>	<u>474</u>
		<u>428</u>	<u>0</u>
		<u>3,311</u>	<u>7,402</u>
		<u>6,539</u>	<u>10,156</u>
		<u>18,603</u>	<u>7,593</u>
		<u>21,723</u>	<u>0</u>
		<u>42,700</u>	<u>0</u>
		<u>443</u>	<u>0</u>
		<u>46,467</u>	<u>0</u>
		<u>448</u>	<u>0</u>
		<u>19,821</u>	<u>0</u>
		<u>243,442</u>	<u>0</u>
		<u>0</u>	<u>0</u>
		<u>0</u>	<u>0</u>
		<u>54,312</u>	<u>0</u>
		<u>5,919</u>	<u>0</u>
		<u>60,841</u>	<u>0</u>
		<u>37,298</u>	<u>0</u>
		<u>24,206</u>	<u>0</u>
		<u>29,820</u>	<u>0</u>
		<u>7,604</u>	<u>0</u>
		<u>7,761</u>	<u>0</u>
		<u>7,925</u>	<u>0</u>
		<u>22,798</u>	<u>0</u>
		<u>474</u>	<u>0</u>
		<u>0</u>	<u>0</u>
		<u>7,593</u>	<u>0</u>
		<u>10,156</u>	<u>0</u>
		<u>Cost to Complete</u>	<u>Total Cost</u>

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

DATE _____

February 2000

BUDGET ACTIVITY

PE NUMBER AND TITLE

05 - Engineering and Manufacturing Development

0604240F B-2 Advanced Technology Bomber

PROJECT

653843

(U) **F. Schedule Profile Continued**

(U) JSOW/GWIS Flight Test Complete

(U) A/V 5 Block 30 Upgrade Complete

(U) 20th Block 30 Air Vehicle Delivery

(U) LO Verification Flight Test Complete

(U) SATCOM/DAMA Flight Test Complete

(U) JASSM Flight Test Complete

* = Completed event

x = Planned event

x = Planned event

1	2	<u>FY 1999</u>	3

FY 2000

Key

4

3

2

1

X

X

X

X

X

Project 653843

Page 4 of 6 Pages

692

UNCLASSIFIED

Exhibit R-2 (PE 0604240F)

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604240F B-2 Advanced Technology Bomber								653843	
(U)	A. Project Cost Breakdown (\$ in Thousands)										
(U)	Equipment Development & Evaluation		FY 1999	FY 2000						FY 2001	
(U)			85,639	270,691						17,854	
(U)	Government Test		4,446	11,900						15,425	
(U)	Other Government Costs (OGC)		12,819	8,087						10,479	
(U)	Other		5,716	7,176						4,555	
(U)	Total		108,620	297,854						48,313	
(U)	B. Budget Acquisition History and Planning Information (\$ in Thousands)										
(U)	Performing Organizations:										
	Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program
	<u>Product Development Organizations</u>										
	Air Vehicle - NG	CPIF/AF	Nov 1981	21,064,500	21,494,145	21,108,823	72,003	263,359	13,298	36,662	21,494,145
	Aircrew Training	CPIF	Jul 1985	561,348	561,348	561,348	0	0	0	0	561,348
	Mission Planning	Multiple	Multiple	350,861	350,861	324,132	13,523	6,650	4,556	2,000	350,861
	<u>Support and Management Organizations</u>										
	Other Govt Costs	N/A		994,594	994,594	956,931	18,535	15,263	15,034	496	1,006,259
	<u>Test and Evaluation Organizations</u>										
	Govt Test	N/A	N/A	851,769	851,769	785,826	4,446	11,900	15,425	Continuing	TBD
(U)	Government Furnished Property:										
		Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date		Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program
	Item Description										
	<u>Product Development Property</u>										
	Engines G.E.	Multiple	Multiple	N/A		566,343	0	0	0	0	566,343
	AARL Boeing	FPIF	FPIF	Jun 88		125,575	113	682	0	100	126,470

Project 653843

Page 5 of 6 Pages

Exhibit R-3 (PE 0604240F)

693

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development	0604240F B-2 Advanced Technology Bomber	653843	
(U) <u>Government Furnished Property Continued:</u>			
Support and Management Property			
Test and Evaluation Property			
Subtotals			
Subtotal Product Development			
Subtotal Support and Management			
Subtotal Test and Evaluation			
Total Project			
	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000
	22,686,221	85,639	270,691
	956,931	18,535	15,263
	785,826	4,446	11,900
	24,428,978	108,620	297,854
		Budget FY 2001	Budget to Complete
		17,854	38,762
		15,034	496
		15,425	TBD
		48,313	TBD
			Total Program
			23,099,167
			1,006,259
			TBD
			TBD

Project 653843

Page 6 of 6 Pages

Exhibit R-3 (PE 0604240F)

694

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE									
05 - Engineering and Manufacturing Development		0604270F EW Development									
	COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
	Total Program Element (PE) Cost	89,862	87,187	58,198	53,655	50,876	52,662	50,498	Continuing	TBD	
651011	Joint Service Electronic Combat Systems Tester	9,063	2,920	2,964	0	0	0	0	0	45,239	
652462	Compass Call (CC)	1,262	744	820	2,554	2,581	2,633	2,685	Continuing	TBD	
653891	Advanced IR Counter Measures (AIRCIM)	36,293	54,595	24,207	15,809	14,265	14,492	14,733	Continuing	TBD	
653945	RF Towed Decoy Systems	39,074	17,428	26,208	35,292	34,030	35,537	33,080	Continuing	TBD	
654832	Precision Location and Identification (PLAID)	4,170	11,500	0	0	0	0	0	0	15,670	
658462	MALD	0	0	3,999	0	0	0	0	0	3,999	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	
AIRCIM includes four subprojects: Common Missile Warning System (CMWS), Advanced Strategic and Tactical Infrared Expendables (ASTE), Large Aircraft IRCM (LAIRCIM), and software upgrade to AAR-47.											
(U) A. Mission Description This program element (PE) consolidates engineering development efforts related to Air Force Electronic Warfare (EW) requirements. It centralizes USAF funding and management of common EW systems development. These funds transition EW technologies to an installed operational capability. This PE executes projects to provide capabilities to deter, detect, deceive and counter enemy acquisition and tracking of DoD operational platforms plus enemy Radio Frequency (RF) information operations worldwide. These projects include Infrared (IR), RF and laser situational awareness and self protection systems, command and control warfare (C2W) electronic attack systems, and the test equipment needed to support them.											
(U) B. Budget Activity Justification A key criterion for the included projects in this program element is the need for engineering and manufacturing developmental activities, therefore these programs are in Budget Activity 5 - Engineering and Manufacturing Development (EMD).											
Exhibit R-2 (PE 0604270F)											

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 2000	
BUDGET ACTIVITY		PE NUMBER AND TITLE			
05 - Engineering and Manufacturing Development		0604270F EW Development			
(U)	C. Program Change Summary (\$ in Thousands)	FY 1999	FY 2000	FY 2001	Total Cost
(U)	Previous President's Budget (FY 2000 PBR)	97,990	90,347	55,314	TBD
(U)	Appropriated Value	111,126	86,847		
(U)	Adjustments to Appropriated Value				
	a. Congressional/General Reductions	-462	-28		
	b. Small Business Innovative Research	-5,002			
	c. Omnibus or Other Above Threshold Reprogram	-11,959	-591		
	d. Below Threshold Reprogram	-3,023			
	e. Rescissions	-818	-541		
	f. Other				TBD
(U)	Adjustments to Budget Years Since FY 2000 PBR		1,500	2,884	
(U)	Current Budget Submit/FY 2001 PBR	89,862	87,187	58,198	TBD
	\$1100 of FY99 Below Threshold Reprogramming was used for Canceled Bills.				
(U)	Significant Program Changes:				
	\$4.5M was added in FY99 appropriation to transition Precision Location and Identification (PLAID) to EMD.				
	\$0.523M of FY99 Below Threshold Reprogramming (BTR) to PE 63270f to support Large Aircraft Infrared countermeasures (LAIRCM) efforts at Air Force Research Laboratory.				
	\$11.959M FY99 Above Threshold Reprogramming to support the Compass Call program.				
	\$1.5M was added in FY00 to Integrated Defensive Countermeasures (IDECM) to payback funds needed during Kosovo operations.				
	\$11.5M was added in FY00 appropriation for PLAID EMD.				
	\$15M was reduced in the FY00 appropriation due to IDECM development delay.				
	\$3.999M was added in FY01 for Miniature Air Launched Decoy (MALD) transition.				
	\$5.0M was transferred in FY01 from IDECM production to IDECM development.				
	\$1.0M was transferred in FY01 from various platform PEs to this PE for AAR-47 software development and upgrade. (PBD 732)				
	\$6.6M was removed from FY01 due to IDECM program delays and resultant F-15 integration delays.				

Exhibit R-2 (PE 0604270F)

Page 2 of 32 Pages

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604270F EW Development								651011	
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
651011	Joint Service Electronic Combat Systems Tester	9,063	2,920	2,964	0	0	0	0	0	45,142	
(U)	A. Mission Description The Joint Service Electronic Combat Systems Tester (JSECST) fills a combined Air Force and Navy operational requirement for a small, adaptable, and highly mobile tester capable of verifying the system level performance of installed electronic countermeasures systems. The JSECST provides an Organizational-level (O-level) flight line capability for verifying operational status of aircraft-installed electronic combat (EC) systems including Group A antennas and transmission lines. The JSECST will fill a void in current Air Force end-to-end testing capability. The JSECST system consists of core test sets (CTS), AN/USM-670, test program sets (TPS), and software development stations (SDS). The CTS provides the stimulus, measurement, operator-interface, analysis and control functions common across all applications. The SDS provides the necessary computer resources for developing and maintaining the CTS software and TPS software. The TPSs provide aircraft specific hardware interfaces and software packages to employ the CTS. Program content also includes the use of government testing. The objective of the Follow-on Test Program Set (FOTPS) program is to design, develop, assemble, integrate, test, and deliver TPSs for use with the AN/USM-670 for additional aircraft. These TPSs will provide end-to-end (ETE) functional testing to determine the status of Electronic Combat (EC) systems installed on Air Force and Navy operational aircraft. The follow-on Air Force platforms include the F-15 C/E, F-16 (Blocks 25/30/32/40/42/50/52), OA/A-10, C-130 E/H. Navy platforms include the AV-8B, F/A-18 A/B and the F-14 B/D. (Navy platforms will be funded by the Navy.) JSECST is intended to meet the organizational level support equipment requirements of electronic combat systems for service through a 20-year life cycle.										
(U)	FY 1999 (\$ in Thousands) Continued Core Test Set (CTS) Development Continued SPO Support Continued Test Program Set (TPS) Lab Support Continued Government Test Total										
(U)	FY 2000 (\$ in Thousands) Initiate TPS Engineering Manufacturing Development (EMD) Contract Continue CTS Development Continue SPO Support Continue Government Test Continue TPS Lab Support										

Project 651011

Page 3 of 32 Pages

Exhibit R-2A (PE 0604270F)

697

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE		
05 - Engineering and Manufacturing Development	0604270F EW Development	February 2000 651011	
(U) A. Mission Description Continued			
(U) FY 2000 (\$ in Thousands) Continued			
(U) Total			
(U) FY 2001 (\$ in Thousands)			
(U) \$2,222 Continue TPS Development Contract			
(U) \$377 Continue SPO Support			
(U) \$185 Continue Government Test			
(U) \$78 Continue TPS Lab Support			
(U) \$102 Complete CTS Development			
(U) \$2,964 Total			
(U) B. Project Change Summary			
Due to developmental delays Milestone III was delayed one year. JSECST production will start in FY01.			
(U) C. Other Program Funding Summary (\$ in Thousands)			
	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate
(U) AF RDT&E			
(U) Other APPN			
(U) Aircraft Procurement, AF PE 27442F (Common ECM Equipment), In Service Direct Ground Support Equipment, BP-12	0	17,247	31,205
		0	0
		0	0
			48,452
(U) D. Acquisition Strategy			
The acquisition strategy is competitive, cost-plus contracts for Core Test Set (CTS) development. FOTPS acquisition strategy is a sole source, cost-plus contract.			
(U) E. Schedule Profile			
	FY 1999	FY 2000	FY 2001
Project 651011		Exhibit R-2A (PE 0604270F)	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)						DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE					PROJECT
05 - Engineering and Manufacturing Development		0604270F EW Development					651011
(U)	<u>E. Schedule Profile Continued</u>						
		FY 1999			FY 2000		FY 2001
		1	2	3	4	1	2
	*						
(U)	Test Readiness Review						
(U)	Developmental Test & Evaluation						
(U)	Functional Configuration Audit				X		
(U)	Initial Operational T&E				X		
(U)	Functional Configuration Audit					X	
(U)	Milestone III (Apr-01)						X
(U)	Production Lots award (Apr-01)						X
	* - Denotes a completed event						
	X - Denotes a planned event						

Project 651011
Page 5 of 32 Pages
Exhibit R-2A (PE 0604270F)

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									
BUDGET ACTIVITY					PE NUMBER AND TITLE		DATE		PROJECT
05 - Engineering and Manufacturing Development					0604270F EW Development		February 2000		651011
(U)	A. Project Cost Breakdown (\$ in Thousands)				FY 1999	FY 2000	FY 2001	FY 2000	FY 2001
(U)	EMD Contract				6,716	2,127	2,324	2,127	2,324
(U)	SPO Support				337	604	377	604	377
(U)	Government Test				716	150	185	150	185
(U)	TPS Lab Support				1,294	39	78	39	78
(U)	Total				9,063	2,920	2,964	2,920	2,964
(U)	B. Budget Acquisition History and Planning Information (\$ in Thousands)								
(U)	Performing Organizations:								
	Contractor or	Contract							
	Government	Method/Type							
	Performing	or Funding	Award or	Performing	Project				
	Activity	Vehicle	Obligation	Activity	Office				
			Date	EAC	EAC				
	Product Development Organizations				Total Prior	Budget	Budget	Budget	Total
	AAI	CPAF	Mar 96	28,340	to FY 1999	FY 1999	FY 2000	FY 2001	Program
	Follow on TPS Contractor	TBD	Apr 01	3,684	0	6,716	874	102	28,082
	Support and Management Organizations					0	1,253	2,222	3,475
	ASC/SMNT, NAVAIR,	Various			9,433	1,631	643	455	12,162
	Wright Labs								
	Test and Evaluation Organizations								
	AFDTC, Eglin AFB FL								
					Total Prior	Budget	Budget	Budget	Total
					to FY 1999	FY 1999	FY 2000	FY 2001	Program
	Subtotals				372	716	150	185	1,423
	Subtotal Product Development				20,390	6,716	2,127	2,324	31,557
	Subtotal Support and Management				9,433	1,631	643	455	12,162
	Subtotal Test and Evaluation				372	716	150	185	1,423
	Total Project				30,195	9,063	2,920	2,964	45,142
Project 651011					Page 6 of 32 Pages		Exhibit R-3 (PE 0604270F)		

700

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604270F EW Development								652462	
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
652462	Compass Call (CC)	1,262	744	820	2,554	2,581	2,633	2,685	Continuing	TBD	
(U) A. Mission Description COMPASS CALL is the USAF's only non-lethal Suppression of Enemy Air Defense (SEAD) platform. It denies, disrupts, degrades and deceives adversary voice and data communications, disrupting his ability to effectively command and control his forces in the field. It is also DOD's airborne wide area coverage offensive counter information system. The Tactical Radio Acquisition and Countermeasures Subsystem (TRACS) replaces the aging compressive receiver suite responsible for acquiring target systems with a digital, reprogrammable receiver system that will enable COMPASS CALL to remain viable in countering the next generation of deployed threats. Additionally, new target (class 6) countermeasures capability is under development. This effort funds the non-recurring efforts associated with TRACS development for COMPASS CALL. Production funding for TRACS is in PE 27253.											
(U)	<u>FY 1999 (\$ in Thousands)</u>										
(U)	\$250	Conducted TRACS-Basic prototype flight testing									
(U)	\$912	Continued new target class countermeasures development									
(U)	\$100	Conducted new target class countermeasures initial flight assessment (including range costs)									
(U)	\$1,262	Total									
(U)	<u>FY 2000 (\$ in Thousands)</u>										
(U)	\$444	Continue New target class countermeasures development									
(U)	\$150	Initiate Block 30 threat signal update									
(U)	\$150	Initiate Block 30 waveform update									
(U)	\$744	Total									
(U)	<u>FY 2001 (\$ in Thousands)</u>										
(U)	\$320	Continue New target class countermeasures development									
(U)	\$250	Continue New target class countermeasures operational flight test									
(U)	\$125	Continue Block 30 threat signal update									
(U)	\$125	Continue Block 30 waveform update									
(U)	\$820	Total									

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000
BUDGET ACTIVITY			PE NUMBER AND TITLE					PROJECT			
05 - Engineering and Manufacturing Development			0604270F EW Development					652462			
(U)	B. Project Change Summary										
	Congress added \$12.5M in FY99 for the Compass Call TRACS program. This increase has been applied to AF PE 27253F.										
(U)	C. Other Program Funding Summary (\$ in Thousands)										
	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to	Total Cost		
	Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Complete			
(U)	AF RDT&E										
(U)	Other APPN										
(U)	Compass Call (RDT&E), AF PE 27253F	11,892	12,837	5,834	3,886	3,879	3,870	0	Continuing		
									Continuing		
(U)	D. Acquisition Strategy										
	CPIC/AF contracting will be employed for all activities.										
(U)	E. Schedule Profile										
	FY 1999			FY 2000			FY 2001				
	1	2	3	4	1	2	3	4			
(U)	TRACS Flight Test			*							
(U)	TRACS PDR				*						
(U)	New Countermeasures#	*			*	X	X	X	X		
(U)	New CM Flt Test				*	X	X	X	X		
(U)	Block 30 Signals Update#					X	X	X	X		
(U)	Block 30 Waveform Update#					X	X	X	X		
	# - New countermeasures development and Block 30 signals/waveform updates are a continuing effort to improve the existing system's ability to effectively counter emerging threats. Due to the dynamic nature of this platform's mission, this effort is a continuous activity.										
	Due to Kosovo operations, Block 30 updates have been delayed one quarter.										
	* - Denotes a completed event										
	X - Denotes a planned event										
Project 652462			Page 8 of 32 Pages			Exhibit R-2A (PE 0604270F)					

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									
BUDGET ACTIVITY					DATE		PROJECT		
05 - Engineering and Manufacturing Development					February 2000		652462		
PE NUMBER AND TITLE					0604270F EW Development				
(U)	A. Project Cost Breakdown (\$ in Thousands)				FY 1999	FY 2000	FY 2001		
(U)	TRACS-Basic				250	0	0		
(U)	New Threat (class 6) CM Development				1,012	444	570		
(U)	Block 30 Signals Update Development				0	150	125		
(U)	Block 30 Waveform Update Development				0	150	125		
(U)	Total				1,262	744	820		
(U)	B. Budget Acquisition History and Planning Information (\$ in Thousands)								
(U)	Performing Organizations:								
	Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget to Complete
	Product Development Organizations								Total Program
	Sanders	SS/CPIF	1QFY99		TBD	27,099	912	519	Continuing
	Raytheon Ft Wayne	SS/CPIF	N/A		23,543	23,535	0	0	0
	GTE	SS/CPIF	N/A		8,875	8,875	0	0	0
	Support and Management Organizations								
	Misc (SPO, Labs)	Various	N/A			3,172	0	25	Continuing
	Test and Evaluation Organizations								
	EPG, Ft. Huachuca NM	MIPR	2QFY99			500	250	125	Continuing
	WTR	616	2QFY99			500	100	75	Continuing
(U)	Government Furnished Property:								
	Contract	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget to Complete	Total Program
	Item Description								
	Product Development Property								
	Misc				1,594				Continuing
									TBD
Project 652462					Exhibit R-3 (PE 0604270F)				
					Page 9 of 32 Pages				

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 2000		
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT				
05 - Engineering and Manufacturing Development		0604270F EW Development	652462				
(U) <u>Government Furnished Property Continued:</u>							
Support and Management Property							
Test and Evaluation Property							
Subtotals							
Subtotal Product Development		Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program
		61,103	912	519	570	TBD	TBD
Subtotal Support and Management		3,172	0	25	25	TBD	TBD
Subtotal Test and Evaluation		1,000	350	200	225	TBD	TBD
Total Project		65,275	1,262	744	820	TBD	TBD

Project 652462

Page 10 of 32 Pages

Exhibit R-3 (PE 0604270F)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT		
05 - Engineering and Manufacturing Development		0604270F EW Development								653891		
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost		
653891	Advanced IR Counter Measures (AIRCMM)	36,293	54,595	24,207	15,809	14,265	14,492	14,733	Continuing	TBD		
AIRCMM includes four subprojects: Common Missile Warning System (CMWS), Advanced Strategic and Tactical Infrared Expendables (ASTE), Large Aircraft IRCM (LAIRCMM), and software upgrade to AAR-47.												
(U) A. Mission Description												
The Advanced IR Countermeasure (AIRCMM) project contains related aircraft self-protection efforts aimed at increasing aircraft survivability against the increasing threat of sophisticated surface to air (SAM) and air to air missiles (AAM), which may employ such features as next-generation electro-optics or dual infrared and radio frequency seekers. AIRCM consists of four efforts, the tri-service Common Missile Warning System (CMWS), USAF/USN Advanced Strategic and Tactical Infrared Expendable (ASTE), USAF Large Aircraft IRCM (LAIRCMM), and USAF/USN AAR-47 software upgrade. CMWS will provide timely warning of a threat missile attack and cue expendable countermeasures. ASTE will provide advanced IR expendable countermeasures. LAIRCMM will demonstrate an advanced directed laser countermeasures suite for large signature aircraft as EMD risk reduction. The LAIRCMM effort and funding was transferred to PE 63270F in FY99 to support ongoing study at Wright Lab. The software upgrade to the AAR-47 is aimed at decreasing its false alarm rate. The CMWS program was formed in FY96 by combining the FY95 USA Advanced Threat Infrared Countermeasures (ATIRCMM) program with the USAF/USN Advanced Missile Warning program. USAF CMWS installation is planned for the A-10 aircraft. ASTE flares will be functionally compatible with existing ALE-40, 45, and 47 dispenser systems and will be employed across multiple USAF and USN weapon systems. This project, managed as a consolidated AIRCM effort, is an integral part of a Joint Service IRCM program that will maximize commonality across Air Force, Navy, and Army aircraft.												
(U) FY 1999 (\$ in Thousands)												
(U)	\$15,771	CMWS Joint Program Costs										
(U)	\$9,221	CMWS Continued F-16 aircraft (Group A) EMD integration										
(U)	\$1,742	CMWS Continued A-10 aircraft (Group A) EMD integration										
(U)	\$3,184	CMWS Continued Test and Evaluation (AF only)										
(U)	\$360	CMWS Continued Military Worth Study (formerly called AOA)										
(U)	\$323	CMWS Continued Mission Support										
(U)	\$1,500	ASTE Continued C-17 Development										
(U)	\$1,200	ASTE Continued Test and Evaluation										
(U)	\$300	ASTE Continued Verification and Validation										
(U)	\$750	ASTE Continued Modeling and Analysis										
Project 653891		Page 11 of 32 Pages									Exhibit R-2A (PE 0604270F)	

705

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)			DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development		0604270F EW Development	653891	
(U)	A. Mission Description Continued			
(U)	FY 1999 (\$ in Thousands) Continued			
(U)	\$1,112	ASTE Continued Mission Support		
(U)	\$198	LAIRCM Initiated Mission Support		
(U)	\$191	AAR-47 Initiated Data Collection (V21.2)		
(U)	\$441	AAR-47 Initiated Modeling and Analysis Study (V21.2)		
(U)	\$36,293	Total		
(U)	FY 2000 (\$ in Thousands)			
(U)	\$35,700	CMWS (Common Missile Warning System) Joint Program Costs		
(U)	\$6,000	CMWS Continue F-16 aircraft (Group A) EMD integration		
(U)	\$3,000	CMWS Continue A-10 aircraft (Group A) EMD integration		
(U)	\$3,499	CMWS Continue Test and Evaluation (AF only)		
(U)	\$0	CMWS Continue and complete Military Worth Study (formerly called AOA)		
(U)	\$400	CMWS Continue Mission Support		
(U)	\$767	ASTE Continue C-17 Development		
(U)	\$920	ASTE Continue Test and Evaluation		
(U)	\$130	ASTE Continue Verification and Validation		
(U)	\$0	ASTE Continue Modeling and Analysis		
(U)	\$470	ASTE Continue Mission Support		
(U)	\$400	LAIRCM Complete Flight Testbed Design		
(U)	\$100	LAIRCM Initiate Affordability Study		
(U)	\$1,720	LAIRCM Initiate and Complete Testbed Fabrication		
(U)	\$200	LAIRCM Continue Modeling & Simulation		
(U)	\$137	LAIRCM Continue Mission Support		
(U)	\$400	LAIRCM Initiate Flight Test Support		
(U)	\$200	AAR-47 Complete Modeling & Analysis		
(U)	\$280	AAR-47 Conduct and complete Algorithm Development		
(U)	\$272	AAR-47 Conduct and complete Verification & Validation		
(U)	\$54,595	Total		
Project 653891		Page 12 of 32 Pages	Exhibit R-2A (PE 0604270F)	

706

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)			DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development		0604270F EW Development	653891	
(U)	A. Mission Description Continued			
(U)	FY 2001 (\$ in Thousands)			
(U)	\$3,500	CMWS Common Missile Warning System Joint Program Costs		
(U)	\$2,000	CMWS Continue F-16 aircraft (Group A) EMD integration		
(U)	\$7,541	CMWS Continue A-10 aircraft (Group A) EMD integration		
(U)	\$6,339	CMWS Continue Test and Evaluation (AF only)		
(U)	\$504	CMWS Continue Mission Support		
(U)	\$501	ASTE Continue C-17 Flare Development		
(U)	\$850	ASTE Continue Test & Evaluation		
(U)	\$100	ASTE Continue Verification and Validation		
(U)	\$200	ASTE Continue Modeling & Simulation		
(U)	\$680	ASTE Continue Mission Support		
(U)	\$250	LAIRCM Initiate Testbed Integration		
(U)	\$100	LAIRCM Conduct Acceptance Tests		
(U)	\$410	LAIRCM Continue Flight Test Support		
(U)	\$50	LAIRCM Continue Modeling and Simulation		
(U)	\$100	LAIRCM Conduct reporting activities		
(U)	\$91	LAIRCM Continue Mission Support		
(U)	\$567	AAR-47 Initiate Data Collection for upgraded hardware and software (V22)		
(U)	\$424	AAR-47 Initiate Modeling and Analysis for upgraded hardware and software (V22)		
(U)	\$24,207	Total		
(U)	B. Project Change Summary			
	\$523 (FY99 appropriation) transferred to PE63270f to support LAIRCM efforts. Estimated Joint program obligations are funded.			

Project 653891

Page 13 of 32 Pages

Exhibit R-2A (PE 0604270F)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)						DATE	February 2000		
BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT			
05 - Engineering and Manufacturing Development		0604270F EW Development				653891			
(U) C. Other Program Funding Summary (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
(U) AF RDT&E									
(U) Other APPN									
(U) Procurement of Ammunition, AF, PE 28030F, ASTE flares, BA-1, Appn 3011	4,847	4,835	4,828	4,815	4,806	4,767	4,873	Continuing	Continuing
(U) RDT&E, AF, PE 63270F, EO/IR Warning & Countermeasures, BA-3, BPAC 69IX, Funds multiple EO/IR Science and Technology projects	10,664	10,497	10,419	10,467	10,683	11,057	11,337	Continuing	Continuing
(U) Aircraft Procurement, AF PE 27442F, Mods (Other Aircraft A-10), BP-11	0	0	0	40,017	41,023	37,123	40,946	Continuing	Continuing
(U) D. Acquisition Strategy	The planned acquisition strategy is competitive cost-plus award fee. LAIRCM will use existing Laser Infrared Flyout Experiment (LIFE) contract option which is cost-plus fixed fee.								
(U) E. Schedule Profile									
(U) CMWS Contr Qual Test Start (3Q98)	1	2	3	4	1	2	3	4	
(U) CMWS Platform Integration	*								
(U) CMWS DT&E							X		
(U) CMWS IOT&E(May 03)									
(U) CMWS MSIII (Jul 03)									
(U) ASTE DT&E - Fighter									
(U) ASTE DT&E - Covert (4Q98)									

Project 653891 Page 14 of 32 Pages Exhibit R-2A (PE 0604270F)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604270F EW Development								653891	
(U)	<u>E. Schedule Profile Continued</u>										
(U)	ASTE OT&E - Fighter										
(U)	ASTE OT&E - Covert										
(U)	ASTE MS III - Fighter										
(U)	ASTE MS III - Covert										
(U)	ASTE PDR - Transport										
(U)	ASTE CDR - Transport										
(U)	ASTE DT&E-Transport										
(U)	ASTE OT&E -Transport (1Q02)										
(U)	LAIRCM Dev Acq Strategy										
(U)	LAIRCM MS II Documentation										
(U)	LAIRCM RFP										
(U)	AAR-47 SW Upgrade Contract (V21.2)										
(U)	AAR-47 Collect/Validate Data (V21.2)										
(U)	AAR-47 Analyze Data (V21.2)										
(U)	AAR-47 SW Upgrade Contract (V22)										
(U)	AAR-47 Collect/Validate Data (V22)										
	* - Denotes a completed event X - Denotes a planned event										
NOTE: CMWS Program recently rebaselined. Schedule milestones shown are previous projections for the Joint Program. ASTE Fighter flare development has been delayed 18 months due to performance issues relating to the development of the kinematic flare. Issues identified resolution anticipated in FY00.											

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 2000	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE				653891
05 - Engineering and Manufacturing Development	0604270F EW Development				
(U) A. Project Cost Breakdown (\$ in Thousands)			FY 1999	FY 2000	FY 2001
(U) CMWS Program					
(U) CMWS Joint Program Costs			15,771	35,700	3,500
(U) CMWS F-16 aircraft (Group A) EMD integration			9,221	6,000	2,000
(U) CMWS A-10 aircraft (Group A) EMD integration			1,742	3,000	7,541
(U) CMWS Test and Evaluation (AF only)			3,184	3,499	6,339
(U) CMWS Military Worth Study (formerly called AOA)			360	0	0
(U) CMWS Mission Support			323	400	504
(U) ASTE Prime Contract Costs			1,500	767	501
(U) ASTE Government Test & Evaluation			1,200	920	850
(U) ASTE Verification & Validation			300	130	100
(U) ASTE Modeling and Analysis			750	0	200
(U) ASTE Mission Support			1,112	470	680
(U) LAIRCM Modeling and Simulation			0	200	50
(U) LAIRCM Mission Support			198	137	91
(U) LAIRCM Flight Testbed Design			0	400	0
(U) LAIRCM Affordability Analysis			0	100	0
(U) LAIRCM Testbed Fabrication			0	1,720	0
(U) LAIRCM Flight Test Support			0	400	410
(U) LAIRCM Testbed Integration			0	0	250
(U) LAIRCM Acceptance Tests			0	0	100
(U) LAIRCM Reporting			0	0	100
(U) AAR-47 Data Collection			191	0	567
(U) AAR-47 Modeling & Analysis			441	200	424
(U) AAR-47 Algorithm Development			0	280	0
(U) AAR-47 Verification & Validation			0	272	0
(U) Total			36,293	54,595	24,207
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)					
(U) Performing Organizations:					
Project 653891			Exhibit R-3 (PE 0604270F)		

Page 16 of 32 Pages

710

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 2000	PROJECT
BUDGET ACTIVITY				PE NUMBER AND TITLE								
05 - Engineering and Manufacturing Development				0604270F EW Development								
(U) Performing Organizations Continued:												
Contractor or Government	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office EAC	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program		
Product Development Organizations												
CMWS Sanders	CAAF/CPFF	Sep 95	60,099	60,099	34,699	11,780	14,700	0	0	61,179		
CMWS Integration	CPAF	Various	52,259	52,259	24,497	10,963	9,000	9,541	0	54,001		
ASTE - BAE	CPAF	Nov 95	8,324	8,324	16,640	1,500	767	501	Continuing	TBD		
LAIRCM - Lockheed Martin	CPFF	TBD	3,400	0	0	0	2,420	500	0	2,920		
Akron OH												
AAR-47 - GTRI (V21.2)	TBD	2Q99	0	0	0	632	752	0	Continuing	TBD		
AAR-47 - GTRI (V22)	TBD	1Q01	0	0	0	0	0	991	Continuing	TBD		
Support and Management Organizations												
CMWS - CAS INC	CPFF	Sept 95		28,619	19,028	3,991	3,600	3,500	0	30,119		
CMWS - MWS	T&M	Jun 97		13,144	9,524	360	2,906	0	0	12,790		
CMWS - Mod & Sim	Various			4,116	2,596	0	1,520	0	0	4,116		
CMWS - Misc	Various			38,330	8,199	323	13,374	504	Continuing	TBD		
ASTE M&A - SAIC	PR	Various		2,554	1,454	750	0	200	0	2,404		
ASTE V&V - Mac B	PR	Various		789	359	300	130	100	0	889		
ASTE - Misc	Various	Various		Continuing	36,304	1,112	470	680	Continuing	TBD		
LAIRCM Flight A/C Support	TBD	June 99		1,416	0	0	537	501	Continuing	TBD		
- contractor TBD												
LAIRCM - Misc					0	198	0	0	0	198		
Test and Evaluation Organizations												
ASTE - 46TW	Various	Various		2,897	897	1,200	920	850	Continuing	TBD		
ASTE - Misc	Various	Various		Continuing	282	0	0	0	Continuing	TBD		
46TW/AFFTC/ Sanders	Various	Various		30,114	17,092	3,184	3,499	6,339	Continuing	TBD		
Support												
Project 653891										Page 17 of 32 Pages		
										Exhibit R-3 (PE 0604270F)		

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 2000	
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT		
05 - Engineering and Manufacturing Development		0604270F EW Development		653891		
Subtotals		Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget to Complete	Total Program
Subtotal Product Development		75,836	24,875	27,639	TBD	TBD
Subtotal Support and Management		77,464	7,034	22,537	TBD	TBD
Subtotal Test and Evaluation		18,271	4,384	4,419	TBD	TBD
Total Project		171,571	36,293	54,595	24,207	TBD

Project 653891

Page 18 of 32 Pages

Exhibit R-3 (PE 0604270F)

712

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604270F EW Development								653945	
	COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
653945	RF Towed Decoy Systems	39,074	17,428	26,208	35,292	34,030	35,537	33,080	Continuing	TBD	
Note: RDT&E funds are used for integration, lab, and test assets. Hardware is purchased by component, not as a complete upgrade kit, therefore aircraft funding does not completely portray the ALE-50/IDECM Programs. (U) A. Mission Description This project develops, integrates and tests radio frequency (RF) towed decoy systems. RF towed decoys are low cost RF countermeasures that provide increased survivability against monopulse, semi-active, and active RF missile threats during the terminal portion of an engagement. The Air Force is participating in the Navy-led Integrated Defense Electronic Countermeasures (IDECM) program to jointly develop a common techniques generator (TG) and a Fiber Optic Towed Decoy (FOTD). Air Force funding pays for unique Air Force development costs under IDECM as well as integration and test on the F-15 and alternative FOTDs, as well as IDECM RFCM test support on the host platforms. The Defensive Systems Upgrade Program (DSUP) program will fund integration and test of IDECM hardware on the B-1B. (U) <u>FY 1999 (\$ in Thousands)</u> (U) \$20,086 IDECM Common Hardware (U) \$17,657 Continued IDECM F-15 (U) \$1,331 Continued Mission and Test Support (U) \$39,074 Total (U) <u>FY 2000 (\$ in Thousands)</u> (U) \$9,989 IDECM Common (U) \$3,500 Continue IDECM F-15 (U) \$3,939 Continue Mission and Test Support (U) \$17,428 Total (U) <u>FY 2001 (\$ in Thousands)</u> (U) \$6,356 Integrated Defensive Electronic Countermeasures (IDECM) Common (U) \$14,150 Continue IDECM F-15 (U) \$5,702 Continue Mission and Test Support (U) \$26,208 Total											

Project 653945

Page 19 of 32 Pages

Exhibit R-2A (PE 0604270F)

713

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	653945
05 - Engineering and Manufacturing Development		0604270F EW Development									
(U)	<u>B. Project Change Summary</u> The IDECM program was restructured in June 98 and July 99 due to significant contract cost overruns. Impact to the USAF is a \$31M increase in contract cost share. This increase was sourced from F-15 integration. As a result, the F-15 program has been rephased in FY00 - FY04 to comply with budget constraints. Due to F-15 delays, \$6.6M was removed from FY01 RDT&E funding. An October 1999 IDECM Congressional budget cut of \$15M (FY00) was also sourced from the F-15 integration. As a result, the F-15 program is now in the process of rephasing in FY00-FY05 to comply with the additional budget constraints.										
(U)	<u>C. Other Program Funding Summary (\$ in Thousands)</u>										
		FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to	Total Cost	
		Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Complete	Complete	
(U)	AF RDT&E										
(U)	Other APPN										
(U)	Aircraft Procurement, AF PE 27442F, War Consumable (decoys), BP-17	65,564	103,900	32,264	32,876	71,817	95,014	97,119	Continuing	Continuing	
(U)	Aircraft Procurement, AF PE 27442F, Mods (B-1B), BP-11	0	0	0	2,107	0	4,884	7,707	Continuing	Continuing	
(U)	Aircraft Procurement, AF PE 27442F, Mods (F-15), BP-11	0	0	0	32	21,069	21,713	22,193	Continuing	Continuing	
(U)	<u>D. Acquisition Strategy</u> The acquisition strategy for IDECM RDT&E was competitive, cost-plus. The production contract will be sole source for first two lots with full and open competition in lots three and beyond.										
(U)	<u>E. Schedule Profile</u>										
		FY 1999			FY 2000			FY 2001			
		1	2	3	4	1	2	3	4		
(U)	1x 4 Dual Compatible Launcher Production Decision				*						
(U)	Integrated Multi Platform Launch Controller Joint Program Review				*						
(U)	F-15/Fiber Optic Towed Decoy (FOTD) Integration Decision MSII(1Q98)				*						
(U)	F-15/FOTD Integration Contract Award										
(U)	USN Operational Assessment Developmental Test & Evaluation						X				
Project 653945		Page 20 of 32 Pages						Exhibit R-2A (PE 0604270F)			

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)						DATE	February 2000	
BUDGET ACTIVITY	PE NUMBER AND TITLE 0604270F EW Development							PROJECT 653945
(U) E. Schedule Profile Continued								
(T&E) Start	1	2	3	4	1	2	3	4
USN IDECM DT&E Assist Start							FY 2001	
First USAF Subsystem Delivery (IDECM)			*			X		
F-15/FOTD Preliminary Design Review (PDR) (Group A Hardware)				*				
B-1B Defensive Systems Upgrade Program (DSUP) Flight Test Ready Review						X		
F-15 FOTD Critical Design Review (CDR) (Group A Hardware)					*			
F-15 FOTD PDR (Software)						X		X
F-15 FOTD CDR (Software)								
F-15/FOTD TRR (2Q04)								
B-1B DSUP Developmental/Operational T&E								
F-15/FOTD DT/OT&E (2Q04)						X		
USN IDECM Operations Evaluation (DT&E)								X
USN IDECM Low Rate Initial Production								
USN IDECM Milestone III (2Q02)								
Note: See Change Summary								
* - Denotes a completed event								
X - Denotes a planned event								

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									
BUDGET ACTIVITY					DATE		PROJECT		
05 - Engineering and Manufacturing Development					0604270F EW Development		February 2000		
PE NUMBER AND TITLE					653945				
(U)	A. Project Cost Breakdown (\$ in Thousands)								
(U)	Integrated Defensive Electronic Countermeasures (IDECM) Common								
(U)	IDECM F-15								
(U)	Mission and Test Support								
(U)	Total								
					FY 1999	FY 2000	FY 2001		FY 2001
					20,086	9,989	6,356		6,356
					17,657	3,500	14,150		14,150
					1,331	3,939	5,702		5,702
					39,074	17,428	26,208		26,208
(U)	B. Budget Acquisition History and Planning Information (\$ in Thousands)								
(U)	Performing Organizations:								
	Contractor or Government	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001
	Performing Activity								
	Product Development Organizations								
	USAF IDECM: DevelopmentCPAF								
	Sanders								
	Development E-Systems, CPIF								
	Goleta (ESGD)								
	F-15 IDECM Integration-CPFF								
	McAir/Northrop/Lockheed								
	Martin								
	IDECM Misc Development Misc								
	Contracts								
	Support and Management Organizations								
	ASC/SM/YF - IDECM Misc								
	Test and Evaluation Organizations								
	AFOTEC								
	Edwards								
	Eglin								
	* The funding prior to FY98 includes only FY97. The funding prior to FY97 was transferred from a classified PE. The total program and EACs include funding from FY97 and out because of the classified PE in FY96 and prior.								

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 2000		
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT			
05 - Engineering and Manufacturing Development		0604270F EW Development		653945			
		Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program
Subtotals							
Subtotal Product Development		37,274	37,743	13,595	20,779	TBD	TBD
Subtotal Support and Management		2,342	1,331	2,583	4,679	TBD	TBD
Subtotal Test and Evaluation		1,756	0	1,250	750	0	3,756
Total Project		41,372	39,074	17,428	26,208	TBD	TBD

Project 653945

Page 23 of 32 Pages

Exhibit R-3 (PE 0604270F)

717

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604270F EW Development								654832	
	COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
654832	Precision Location and Identification (PLAID)	4,170	11,500	0	0	0	0	0	0	15,670	
(U) A. Mission Description Precision Location and Identification (PLAID) will enhance aircrew situational awareness by providing accurate ground emitter location and identification. Even without firing, threat systems can disrupt or negate operational missions by requiring aircrew reactions that affect mission objectives. Improved threat information from a modernized Radar Warning Receiver (RWR) will assist the aircrews in determining precise threat range/directions and provide option responses short of mission abort or violent aircraft maneuvering. Threat location refinements will help an enroute aircrew respond 'real-time' to previously unknown threats by providing sufficiently accurate information to allow the aircrews to reroute around hostile areas. PLAID will use existing aircraft RWR antennas and wiring (Group A hardware). PLAID development is currently focused on the ALR-69 RWR but PLAID technology can also be applied to other RWRs. PLAID has been identified as a critical technology for Joint Strike Fighter, Unmanned Combat Air Vehicles, and advanced Suppression of Enemy Air Defense platforms.											
(U)	FY 1999 (\$ in Thousands)										
(U)	\$281	Establish Program Office									
(U)	\$2,689	Continued Lab Risk Reduction Efforts (Refine PLAID hardware and software risk reduction activities, develop system specification)									
(U)	\$700	Military Worth Study (formerly called Analysis of Alternatives)									
(U)	\$500	Performance Specification Development									
(U)	\$4,170	Total									
(U)	FY 2000 (\$ in Thousands)										
(U)	\$235	Program Office Support									
(U)	\$200	System Engineering Support									
(U)	\$11,065	Engineering and Manufacturing Development, Hardware/Software design/development/test									
(U)	\$11,500	Total									
(U)	FY 2001 (\$ in Thousands)										
(U)	\$0	No Activity									
(U)	\$0	Total									

Project 654832

Page 24 of 32 Pages

Exhibit R-2A (PE 0604270F)

718

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	654832
05 - Engineering and Manufacturing Development	0604270F EW Development		

Funding: In response to a Congressionally directed increase, \$4.5M was added to this program element to transition the program from an Advanced Technology Demonstrator (ATD) into a Engineering and Manufacturing Development (EMD) program.

Schedule: This program transitioned from Advanced Development to EMD in FY99. The first Doppler ranging flight demonstration was conducted in May 1995. An F-15 Precision Location and Identification (PLAID) hardware, identification and ranging demonstration was successfully completed in April 1998. The final PLAID demonstration of the real-time location algorithms was completed in Mar 99. A Milestone II Acquisition Decision Memorandum was approved by the Designated Acquisition Commander (WR-ALC/CC) on 24 Nov 1999. A detailed schedule and Acquisition Strategy is being developed to accomplish EMD.

Technical: Perform risk reduction activities to transition the PLAID system from a 6.3 advanced development to the EMD.

[illegible]

The above funding (PE 0404011F) is for AFSOC AN/ALR-69 RWR installation only.

An acquisition to design/develop, test, and integrate hardware/software to provide earth coordinate location and detailed identification of lethal threat radars. Acquisition will be accomplished through full and open competitive procedures using source selection processes for award of contract. Contract award is projected for Nov 00.

		FY 1999			FY 2000			FY 2001					
		1	2	3	4	1	2	3	4	1	2	3	4
(U)	Precision Location and Identification Demonstration												
(U)	Program Management Directive Approval												
(U)	Establish Program Office		*				X						
(U)	Begin Management Transition												
(U)	Milestone II decision			*		*							
(U)	Acquisition Strategy Approved						X						

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000	
BUDGET ACTIVITY		PE NUMBER AND TITLE										PROJECT
05 - Engineering and Manufacturing Development		0604270F EW Development										654832
(U)	<u>E. Schedule Profile Continued</u>											
(U)	Request for Proposal release	1										
(U)	Source Selection Process											
(U)	Contract award											
(U)												
	* - Denotes a completed event											
	X - Denotes a planned event											

Project 654832

Page 26 of 32 Pages

Exhibit R-2A (PE 0604270F)

Project 654832

Page 26 of 32 Pages

Exhibit R-2A (PE 0604270F)

720

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 2000	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT		
05 - Engineering and Manufacturing Development		0604270F EW Development		654832		
(U)	<u>A. Project Cost Breakdown (\$ in Thousands)</u>					
(U)	Program Office Support			FY 1999	FY 2000	FY 2001
(U)	Establish Program Office				235	
(U)	Continue Lab Risk Reduction Efforts (Refine Precision Location and Identification hardware and software risk reduction activities, develop system specification)			281	0	0
(U)	Military Worth Study (formerly called Analysis of Alternatives)			2,689	0	0
(U)	Systems Analysis			700	0	0
(U)	System Engineering Support			500	0	0
(U)	Engineering and Manufacturing Development, Hardware/Software design/development/test			200	11,065	
(U)	Total			4,170	11,500	0
(U)	<u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>					
(U)	<u>Performing Organizations:</u>					
	<u>Contractor or</u>	<u>Contract</u>	<u>Performing</u>	<u>Project</u>	<u>Budget</u>	<u>Budget to</u>
	<u>Government</u>	<u>Method/Type</u>	<u>Activity</u>	<u>Office</u>	<u>FY 2000</u>	<u>Complete</u>
	<u>Performing</u>	<u>Award or</u>	<u>EAC</u>	<u>EAC</u>	<u>FY 1999</u>	<u>Budget to</u>
	<u>Activity</u>	<u>Obligation</u>	<u>Date</u>	<u>to FY 1999</u>	<u>FY 2000</u>	<u>Complete</u>
	<u>Product Development Organizations</u>	<u>Vehicle</u>				<u>Program</u>
	Warner Robins-Air Logistics	TBD	TBD	0	11,500	11,781
	Center/LNRC	Nov 00				
	<u>Support and Management Organizations</u>					
	Air Force Research			0	2,689	2,689
	Laboratory					
	McCauley Brown			0	1,200	1,200
	<u>Test and Evaluation Organizations</u>					
	Not Applicable					
Project 654832		Page 27 of 32 Pages		Exhibit R-3 (PE 0604270F)		

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE			PROJECT	
05 - Engineering and Manufacturing Development		0604270F EW Development			654832	
(U) Government Furnished Property:						
Contract						
Method/Type						
or Funding						
Vehicle						
Product Development Property						
TBD						
Support and Management Property						
NONE						
Test and Evaluation Property						
TBD						
Subtotals						
Subtotal Product Development		Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget to Complete	Total Program
Subtotal Support and Management		0	281	11,500		11,781
Subtotal Test and Evaluation		0	3,889			3,889
Total Project		0	4,170	11,500		15,670

Project 654832

Page 28 of 32 Pages

Exhibit R-3 (PE 0604270F)

Project 654832

Page 28 of 32 Pages

Exhibit R-3 (PE 0604270F)

722

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT		
05 - Engineering and Manufacturing Development		0604270F EW Development								658462		
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost		
658462	MALD	0	0	3,999	0	0	0	0	0	3,999		
(U) A. Mission Description Miniature Air Launched Decoy (MALD) is a low cost decoy intended to stimulate enemy integrated air defenses for lethal and non-lethal suppression of enemy air defenses. MALD will simulate friendly ingressing aircraft. This allows the Joint Forces Commander to locate enemy air defense for the purposes of avoidance or targeting. Currently, manned aircraft are used to stimulate the enemy air defenses. The DARPA/Air Force MALD Advanced Concept Technology Demonstration (ACTD) ended in December 1999. This project partially funds MALD transition from ACTD to EMD. MALD has many potential for uses beyond SEAD. (U) FY 1999 (\$ in Thousands) \$0 All activity is part of ACTD \$0 Total (U) FY 2000 (\$ in Thousands) \$0 No activity currently planned \$0 Total (U) FY 2001 (\$ in Thousands) \$1,350 Retrofit ACTD vehicles \$1,350 Production enhancements \$700 Upgrade ACTD engine systems \$500 Support Air Force Mission Support System (AFMSS) upgrade \$99 SPO support \$3,999 Total (U) B. Project Change Summary \$3,999M was added for MALD for minimal transition activities from ACTD to EMD and production.												

Project 658462

Page 29 of 32 Pages

Exhibit R-2A (PE 0604270F)

723

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604270F EW Development								658462	
(U)	<u>C. Other Program Funding Summary (\$ in Thousands)</u>										
		FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to	Total Cost	
		Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Complete		
(U)	AF RDT&E										
(U)	Other APPN										
	No other funding programmed for MALD EMD or production.										
(U)	<u>D. Acquisition Strategy</u>										
	Acquisition strategy will be determined during transition.										
(U)	<u>E. Schedule Profile</u>										
		FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2001		
		1	2	3	4	1	2	3	4		
					*						
(U)	MALD ORD Signed										
(U)	Contract Signed										
(U)	Complete Systems Requirements Review								X		

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 2000
BUDGET ACTIVITY					PE NUMBER AND TITLE					PROJECT	
05 - Engineering and Manufacturing Development					0604270F EW Development					658462	
(U) A. Project Cost Breakdown (\$ in Thousands)											
(U)	Retrofit ACTD vehicles				FY 1999	FY 2000	FY 2001	FY 2001			
(U)	Production enhancements				0	0	0	1,350			
(U)	Upgrade ACTD engine systems				0	0	0	1,350			
(U)	Support AFMSS upgrade				0	0	0	700			
(U)	SPO support				0	0	0	500			
(U)	Total				0	0	0	99			
(U)	Total				0	0	0	3,999			
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)											
(U) Performing Organizations:											
Contractor or Government Performing Activity		Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program
Product Development Organizations											
Northrop Grumman - RAC		TBD	TBD	TBD	TBD	0	0	0	1,350	0	1,350
Northrop Grumman - RM		TBD	TBD	TBD	TBD	0	0	0	1,350	0	1,350
Sundstrand		TBD	TBD	TBD	TBD	0	0	0	700	0	700
Marconi		TBD	TBD	TBD	TBD	0	0	0	500	0	500
Support and Management Organizations											
AAC/WMS						0	0	0	99		99
Test and Evaluation Organizations											
TBD						0	0	0	0	0	0
(U) Government Furnished Property:											
Contract Method/Type or Funding Vehicle		Award or Obligation Date	Delivery Date	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program		
Product Development Property											
Project 658462											
Page 31 of 32 Pages											
Exhibit R-3 (PE 0604270F)											

Project 658462

Page 31 of 32 Pages

Exhibit R-3 (PE 0604270F)

725

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE			PROJECT	
05 - Engineering and Manufacturing Development		0604270F EW Development			658462	
(U) Government Furnished Property Continued:						
Support and Management Property						
Test and Evaluation Property						
Subtotals						
Subtotal Product Development		Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete
		0	0	0	3,900	0
Subtotal Support and Management		0	0	0	99	0
Subtotal Test and Evaluation		0	0	0	0	0
Total Project		0	0	0	3,999	0
						</

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604441F Space Based Infrared Systems (SBIRS)								653616	
		High EMD									
		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
653616	SBIRS High Element EMD	508,473	420,476	569,188	389,879	196,841	128,871	100,856	349,072	3,492,030	
	Quantity of RDT&E Articles	0	0	0	1	1	1	1	0	4	
(U) A. Mission Description (U) The Space-Based Infrared System's (SBIRS) primary mission is to provide initial warning of a ballistic missile attack on the US, its deployed forces or its allies. SBIRS will incorporate new technologies to enhance detection; improve reporting of intercontinental ballistic missiles, submarine launched ballistic missiles, and tactical ballistic missiles; and provide critical mid-course tracking and discrimination data for national and theater missile defense. This will provide increased performance in order to meet requirements in US Space Command's Capstone Requirements Document and Operations Requirements Document. SBIRS will consist of satellites in Geosynchronous Orbits (GEO), Highly Elliptical Orbits (HEO) and Low Earth Orbits (LEO) and an integrated centralized ground station serving all SBIRS space elements and Defense Support Program (DSP) satellites. This Program Element funds the GEO & HEO portions of SBIRS with their associated ground elements. (U) FY 1999 (\$ in Thousands) (U) \$493,873 Continued Engineering and Manufacturing Development (EMD) contracts for Space and Ground segment development (U) \$3,470 Continued System Program Office Support (U) \$11,130 Technical analysis and independent verification and validation of contractor by FFRDC (U) \$508,473 Total (U) FY 2000 (\$ in Thousands) (U) \$383,115 Continue EMD contracts for Space and Ground segment development (U) \$5,631 Continue System Program Office Support (U) \$13,230 Technical analysis and independent verification and validation of contractor by FFRDC (U) \$18,500 Being reclassified by DD 1415 to Operations & Maintenance appropriation to field SBIRS High Increment 1 ground system (U) \$420,476 Total											

Project 653616

Page 1 of 6 Pages

Exhibit R-2 (PE 0604441F)

727

UNCLASSIFIED

UNCLASSIFIED

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

DATE

February 2000

BUDGET ACTIVITY

PE NUMBER AND TITLE

05 - Engineering and Manufacturing Development

0604441F Space Based Infrared Systems (SBIRS)

PROJECT

653616

High EMD

(U) A. Mission Description Continued(U) FY 2001 (\$ in Thousands)

(U) \$534,870 Continue EMD contracts for Space and Ground segment development

(U) \$17,000 Integrated Training Suite (part of EMD contract)

(U) \$2,912 Continue System Program Office Support

(U) \$14,406 Technical analysis and independent verification and validation of contractor by FFRDC

(U) \$569,188 Total

(U) B. Budget Activity Justification

(U) This program is assigned to Budget Activity 5, Engineering and Manufacturing Development because it funds the EMD activities for the SBIRS High program.

(U) C. Program Change Summary (\$ in Thousands)

(U) Previous President's Budget (FY 2000 PBR)

(U) Appropriated Value

(U) Adjustments to Appropriated Value

- a. Congressional/General Reductions
- b. Small Business Innovative Research
- c. Omnibus or Other Above Threshold Reprogram
- d. Below Threshold Reprogram
- e. Rescissions
- f. Other

(U) Adjustments to Budget Years Since FY 2000 PBR

(U) Current Budget Submit/FY 2001 PBR

(U) Significant Program Changes:

Funding: FY01-FY05 funding adjustments were made as a result of the SBIRS High program restructure. \$92M was added to the appropriation in FY00 by Congress, however, \$18.5M is being reclassified to Operations and Maintenance (O&M) appropriation to field SBIRS High Increment 1 ground system. FY99 Below Threshold Reprogrammings to support other Air Force priorities.

(U) The program restructure was based on recommendations from the Joint Estimating Team commissioned by the Secretary of Defense to do an independent evaluation

Project 653616

Page 2 of 6 Pages

Exhibit R-2 (PE 0604441F)

728

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)				DATE	February 2000					
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT						
05 - Engineering and Manufacturing Development		0604441F Space Based Infrared Systems (SBIRS)		653616						
		High EMD								
(U)	C. Program Change Summary (\$ in Thousands) Continued									
(U)	Significant Program Changes Continued: of the SBIRS High acquisition strategy and cost.									
	(U) SBIRS Increment 1, consolidation of existing DSP ground stations into a single CONUS ground station, is currently scheduled for 1QFY01. This schedule reflects a year delay to the current Acquisition Program Baseline. Additional \$21M of O&M funds required to continue legacy DSP systems is being requested in the FY2001 President's Budget.									
	(U) The FY01 request represents an increase above the FY00 appropriation required to support the restructured program and FY04 first launch date.									
(U)	D. Other Program Funding Summary (\$ in Thousands)									
		FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
		Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate		
(U)	Missile Procurement (PE 0305915F, BA-45)	0	0	0	94,000	371,631	0	7,212	11,900	484,743
(U)	Other Procurement (PE 0305915F, BA-45)	0	0	0	54,174	0	0	0	0	54,174
(U)	Related RDT&E:									
(U)	PE 603441F - SBIRS Dem/Val	144,723	0	0	0	0	0	0	0	1,154,120
(U)	PE 305911F - DSP	13,971	7,361	11,462	6,418	6,697	0	0	0	1,923,990
(U)	PE 604442F - SBIRS Low EMD	36,627	225,566	241,021	306,530	617,662	763,362	486,840	513,647	3,191,255
(U)	E. Acquisition Strategy									
	SBIRS is a lead program for acquisition streamlining. The pre-EMD contracts were competed in full and open competition. Two contracts were awarded to Lockheed/Loral/Aerojet and Hughes/TRW in 1994 for the pre-EMD phase. A single contract was awarded to Lockheed Martin in 1996 for the EMD phase.									
(U)	F. Schedule Profile									
		FY 1999	FY 2000	FY 2001						
					FY 2001					
Project 653616		Exhibit R-2 (PE 0604441F)								
		Page 3 of 6 Pages								

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)						DATE	February 2000	PROJECT 653616
BUDGET ACTIVITY	PE NUMBER AND TITLE							
05 - Engineering and Manufacturing Development	0604441F Space Based Infrared Systems (SBIRS) High EMD							
(U) F. Schedule Profile Continued	FY 1999						FY 2000	FY 2001
	1	2	3	4	1	2	3	4
			*			X		
(U) Ground Inc-2 Preliminary Design Review (Mobiles)								
(U) Payload Critical Design Review						X		
(U) Ground Inc-1 - Consolidated DSP Stations							X	
(U) Ground Inc.-2 Critical Design Review								X
(U) HEO Payload #1 Delivery (FY02)								
(U) HEO Payload #2 Delivery (FY03)								
(U) GEO Satellite #1 Delivery (FY04)								
(U) GEO Satellite #2 Delivery (FY05)								
*-Completed Event								
X-Planned Event								

Project 653616 Page 4 of 6 Pages Exhibit R-2 (PE 0604441F)

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									
BUDGET ACTIVITY					DATE		PROJECT		
05 - Engineering and Manufacturing Development					February 2000		653616		
					PE NUMBER AND TITLE		0604441F Space Based Infrared Systems (SBIRS)		
					High EMD				
(U)	<u>A. Project Cost Breakdown (\$ in Thousands)</u>				FY 1999	FY 2000	FY 2001		FY 2001
(U)	EMD Contract				493,873	401,615	551,870		551,870
(U)	System Program Office Support				3,470	5,631			2,912
(U)	Aerospace Corp				11,130	13,230			14,406
(U)	Total				508,473	420,476			569,188
(U)	<u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>								
(U)	<u>Performing Organizations:</u>								
	Contractor or	Contract							
	Government	Method/Type	Award or	Performing	Project				
	Performing	or Funding	Obligation	Activity	Office				
	Activity	Vehicle	Date	EAC	EAC				
	<u>Product Development Organizations</u>				Total Prior	Budget	Budget	Budget to	Total
					to FY 1999	FY 1999	FY 2000	Complete	Program
	LMMS & TRW (Pre-EMD)	C/CPFF	Jul 95	217,880	217,880	0	401,615	0	217,880
	LMMS/Other (EMD)	C/CPAF	Nov 96	494,161	494,161	493,873	551,870	972,909	2,914,428
	SBIRS Pre-EMD Contract				4,780				4,780
	Adjustment								
	Technology	Various	Sep 95	11,600	11,600	0		0	11,600
	Phenomenology	Various	Sep 95	17,350	17,350	0		0	17,350
	Sandia Natl Lab (Cobra Brass)	Various	Sep 95	10,000	10,000	0		0	10,000
	<u>Support and Management Organizations</u>								
	Aerospace Corp	MORD	Sep 95	N/A	N/A	11,130	13,230	156,958	235,324
	Prgm Mgmt Supt	Various	Sep 95	N/A	N/A	3,470	5,631	43,055	80,668
	<u>Test and Evaluation Organizations</u>								
	Not Applicable								
Project 653616					Page 5 of 6 Pages		Exhibit R-3 (PE 0604441F)		

731

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)						DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT	
05 - Engineering and Manufacturing Development		0604441F Space Based Infrared Systems (SBIRS)				653616	
		High EMD					
(U) Government Furnished Property:							
	<u>Contract</u>						
	<u>Method/Type</u>	<u>Award or</u>					
	<u>or Funding</u>	<u>Obligation</u>	<u>Delivery</u>				
	<u>Vehicle</u>	<u>Date</u>	<u>Date</u>				
	<u>Description</u>						
	Product Development Property			Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget to Complete
	Not Applicable						Total Program
	Support and Management Property						
	Test and Evaluation Property						
	Subtotals			Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget to Complete
	Subtotal Product Development			755,771	493,873	401,615	972,909
	Subtotal Support and Management			65,200	14,600	18,861	200,013
	Subtotal Test and Evaluation						315,992
	Total Project			820,971	508,473	420,476	1,172,922
							3,492,030

Project 653616
Page 6 of 6 Pages
Exhibit R-3 (PE 0604441F)

Page 6 of 6 Pages

UNCLASSIFIED

Exhibit R-3 (PE 0604441F)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 2000						
BUDGET ACTIVITY		PROJECT							
05 - Engineering and Manufacturing Development		654598							
PE NUMBER AND TITLE		0604442F Space Based Infrared Systems (SBIRS)							
Low									
COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
654598 SBIRS Low Element EMD	36,627	225,566	241,021	306,530	617,662	763,362	486,840	513,647	3,191,255
Quantity of RDT&E Articles	0	0	0	0	0	0	0	3	3
A. Mission Description (U) The Space-Based Infrared System's (SBIRS) primary mission is to provide initial warning of a ballistic missile attack on the US, its deployed forces or its allies. SBIRS will incorporate new technologies to enhance detection; improve reporting of ICBM, SLBM and tactical ballistic missiles; and provide critical mid-course tracking and discrimination data for national and theater missile defense. This system will provide increased performance in order to meet requirements in US Space Command's Capstone Requirements Document and Operations Requirements Document. SBIRS will consist of satellites in Geosynchronous Orbits (GEO), Highly Elliptical Orbits (HEO) and Low Earth Orbits (LEO) and an integrated centralized ground station serving all SBIRS space elements and Defense Support Program (DSP) satellites. This PE funds the SBIRS Low Program Definition Risk Reduction (PDRR) activities and leads to Engineering, Manufacturing and Development (EMD). SBIRS Low is the LEO component of SBIRS. (U) FY 1999 (\$ in Thousands) (U) \$32,000 PDRR (U) \$4,535 Radiation Hardened Parts (U) \$92 Program Office Activities (U) \$36,627 Total (U) FY 2000 (\$ in Thousands) (U) \$162,000 PDRR (U) \$27,401 Program Definition Support (Includes studies, integration into SBIRS Increment System-of-Systems and modeling and simulation) (U) \$15,565 Other risk reduction activities (Includes cryocoolers, batteries, and phenomenology(ie. physics behind target signatures)) (U) \$16,500 Program Office activities (U) \$3,000 Radiation Hardened Parts (U) \$1,100 Reprogrammed to PE 35911F to support DSP Flight-23 EELV Integration (not yet reflected in database) (U) \$225,566 Total									

Project 654598

Page 1 of 5 Pages

Exhibit R-2 (PE 0604442F)

733

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT	
05 - Engineering and Manufacturing Development	0604442F Space Based Infrared Systems (SBIRS)		654598	
	Low			
(U)	<u>A. Mission Description Continued</u>			
(U)	<u>FY 2001 (\$ in Thousands)</u>			
(U)	\$172,000	PDRR		
(U)	\$34,651	Program Definition Support (Includes studies, integration into SBIRS Increment 3 System-of-Systems and modeling and simulation)		
(U)	\$3,000	Radiation Hardened Parts		
(U)	\$12,370	Other Risk Reduction Activities (Includes cryocoolers, batteries and phenomenology)		
(U)	\$19,000	Program Office Activities		
(U)	\$241,021	Total		
(U)	<u>B. Budget Activity Justification</u>			
	(U) This Program Element is in Budget Activity 5, EMD because it funds Program Definition efforts including initial system design and EMD activities for the LEO portion of the SBIRS program			
(U)	<u>C. Program Change Summary (\$ in Thousands)</u>			
(U)		FY 1999	FY 2000	FY 2001
(U)	Previous President's Budget (FY 2000 PBR)	33,218	77,651	147,933
(U)	Appropriated Value	33,328	229,029	
(U)	Adjustments to Appropriated Value			
	a. Congressional/General Reductions	-110	-150	
	b. Small Business Innovative Research	-1,020		
	c. Omnibus or Other Above Threshold Reprogram		-1,529	
	d. Below Threshold Reprogram	4,634		
	e. Rescissions	-205	-1,784	
	f. Other			
(U)	Adjustments to Budget Years Since FY 2000 PBR			93,088
(U)	Current Budget Submit/FY 2001 PBR	36,627	225,566	241,021
(U)	<u>Significant Program Changes:</u>			
	The Air Force terminated the SBIRS Low Flight demonstration programs in PE 63441F on 5 Feb 99. The funding originally intended for these efforts in FY00 and FY01 was transferred to PE 64442F to finance an expanded SBIRS Low PDRR effort leading to EMD. FY99 BTR for same purpose.			
Project 654598		Page 2 of 5 Pages		Exhibit R-2 (PE 0604442F)

734

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										
BUDGET ACTIVITY		PE NUMBER AND TITLE				DATE		PROJECT		
05 - Engineering and Manufacturing Development		0604442F Space Based Infrared Systems (SBIRS)				February 2000		654598		
		Low								
(U)	D. Other Program Funding Summary (\$ in Thousands)									
		FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to	Total Cost
		Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Complete	
(U)	PE 35922F - SBIRS Low	0	0	0	0	33,100	101,400	325,105	Continuing	TBD
	Production									
(U)	PE 63441F - SBIRS Low	144,723	0	0	0	0	0	0	0	1,154,120
	DEM/VAL									
(U)	PE 64441 SBIRS High	508,473	420,476	569,188	389,879	196,841	128,871	100,856	356,475	3,492,030
(U)	PE 35915 - SBIRS	0	0	0	94,000	371,631	0	7,212	11,900	484,743
(U)	PE 35911 - DSP	13,971	7,361	11,462	6,418	6,697	0	0	0	1,923,990
(U)	E. Acquisition Strategy									
	The SBIRS program is managed through a single consolidated System Program Office (SPO) at the Space and Missile Systems Center, Los Angeles Air Force Base, CA. SBIRS Low began PDRR activities in August 1999 with the award of two firm fixed price contracts. PDRR will be followed by a competitive contract award for EMD scheduled for award in the first quarter of FY03 with the deployment of the SBIRS Low satellites beginning in the fourth quarter of FY06.									
(U)	F. Schedule Profile									
		FY 1999		FY 2000		FY 2001				
		1	2	3	4	1	2	3	4	
(U)	Program Definition Contract Award				*					
(U)	System Requirements Review									
(U)	Preliminary Design Review (2QFY02)									
(U)	EMD Contract Award (1QFY03)							X		
(U)	EMD Critical Design Review (3QFY03)									
(U)	SBIRS Low First Launch (4QFY06)									

Project 654598

Page 3 of 5 Pages

Exhibit R-2 (PE 0604442F)

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT		PROJECT			
05 - Engineering and Manufacturing Development		0604442F Space Based Infrared Systems (SBIRS)				654598		654598			
		Low									
(U)	<u>A. Project Cost Breakdown (\$ in Thousands)</u>										
(U)	Program Definition	FY 1999	FY 2000	FY 2001							
(U)	Radiation Hardened Parts	32,000	162,000	172,000							
(U)	Program Definition Support	4,535	3,000	3,000							
(U)	Program Office Activities (FY99 funded in PE 63441F)	0	28,501	34,651							
(U)	Other Risk Reduction Activities	92	16,500	19,000							
(U)		0	15,565	12,370							
(U)	Total	36,627	225,566	241,021							
(U)	<u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>										
(U)	<u>Performing Organizations:</u>										
	Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program
	<u>Product Development Organizations</u>										
	TRW	FFP	Aug 99			0	16,000	81,000	86,000	92,000	275,000
	Spectrum Astro	FFP	Aug 99			0	16,000	81,000	86,000	92,000	275,000
	EMD					0	0	0	0	1,885,850	1,885,850
	PDRR Support	Various	Various			0	0	28,501	34,651	432,371	495,523
	Other Risk Reduction Act	Various	Various			0	0	15,565	12,370	11,240	39,175
	Rad Hard Parts	Various	Aug 99			0	4,535	3,000	3,000	6,000	16,535
	<u>Support and Management Organizations</u>										
	Program Support	Various	Various		N/A	0	92	16,500	19,000	168,580	204,172
	Test and Evaluation Organizations										
	Not Applicable										

Project 654598
Page 4 of 5 Pages
Exhibit R-3 (PE 0604442F)

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)						DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE						PROJECT
05 - Engineering and Manufacturing Development	0604442F Space Based Infrared Systems (SBIRS)						654598
	Low						
(U) Government Furnished Property:							
	Contract	Award or	Delivery	Total Prior	Budget	Budget	Total
	Method/Type	Obligation	Date	to FY 1999	FY 2000	FY 2001	Program
	Description	Vehicle				Complete	
Product Development Property							
Not Applicable							
Support and Management Property							
Not Applicable							
Test and Evaluation Property							
Not Applicable							
Subtotals							
BTR to 35911F							
Subtotal Product Development				0	36,535	222,021	2,987,083
Subtotal Support and Management				0	92	19,000	204,172
Subtotal Test and Evaluation							
Total Project				0	36,627	241,021	3,191,255

Project 654598
Page 5 of 5 Pages
Exhibit R-3 (PE 0604442F)

Page 5 of 5 Pages

737

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT	
05 - Engineering and Manufacturing Development			0604479F MILSTAR LDR/MDR Sat Comm							655010	
COST (\$ in Thousands)			FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
655010	Milstar Sat Comm Sys		513,960	357,235	236,841	135,781	72,790	1,452	1,449	0	9,562,236
Quantity of RDT&E Articles			1	1	1	1	0	0	0	0	6
(U) A. Mission Description											
Milstar is a joint service program to develop and acquire extremely high frequency (EHF) satellites; a satellite mission control segment; and new or modified Army, Navy, and Air Force communication terminals for survivable, jam-resistant, worldwide, secure communications to strategic and tactical warfighters. Milstar I Satellites 1 and 2 have a low data rate (LDR) payload that supports strategic and tactical forces with emphasis on highly survivable, minimum essential communications. Milstar II Satellites 3M-6 have both LDR and medium data rate (MDR) payloads with increased tactical capabilities, including higher data rates to mobile forces and 'nulling' that will neutralize close-in enemy jammers. (Satellite 3M was originally a Milstar I satellite, but was retrofitted with an MDR payload to function as a Milstar II satellite.) Satellite 3M was launched 30 April 1999 on a Titan IVB, but did not reach its proper orbit due to a Centaur upper stage failure. The Satellite was placed in its final non-interference orbit, shutdown and the mission ended on 10 May 1999. The Air Force is evaluating alternatives to mitigate constellation risk due to the loss of the Milstar 3 satellite. Milstar Terminals are funded under Program Element 0303601F.											
(U) FY 1999 (\$ in Thousands)											
Milstar II											
Satellite 3M launch											
Completed Satellite 4 integration and test											
Completed satellite 5 LDR and MDR payload integration and test, and started satellite integration and test											
Continued Satellite 6 LDR and MDR Payload and bus manufacturing											
Milstar I/II Satellite Engineering											
Satellites 3 and 4 technical launch and pre-launch support											
Continued Satellites 1 and 2 on-orbit operations support											
Continued LDR and MDR technical support											
Automated Communications Management System (ACMS)											
Completed software build 1, increment 3											
Continued software build 2 development											
Basic Program Office support											
Total											
Project 655010											
										Page 1 of 7 Pages	
										Exhibit R-2 (PE 0604479F)	

739

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development	0604479F MILSTAR LDR/MDR Sat Comm	655010	
(U) A. Mission Description Continued			
(U) FY 2000 (\$ in Thousands)			
(U) \$283,723	Milstar II		
(U) \$0	Complete Satellite 4 delivery		
(U) \$0	Satellite 4 launch, perform on-orbit checkout and begin on-orbit testing		
(U) \$0	Complete Satellite 5 integration, test, and deliver		
(U) \$0	Complete satellite 6 LDR and MDR payload integration and test, and start satellite integration and test		
(U) \$27,000	Milstar I/II Satellite Engineering		
(U) \$0	Satellites 4 and 5 technical launch and pre-launch support		
(U) \$0	Continue Satellites 1, 2 and 4 on-orbit operations support		
(U) \$0	Continue LDR and MDR technical support		
(U) \$17,579	Automated Communications Management System (ACMS)		
(U) \$0	Continue software build 2 development		
(U) \$0	Continue maintenance of fielded software build 1		
(U) \$28,933	Basic Program Office support		
(U) \$357,235	Total		
(U) FY 2001 (\$ in Thousands)			
(U) \$170,401	Milstar II		
(U) \$0	Satellite 5 launch, perform on-orbit checkout and begin on-orbit testing		
(U) \$0	Complete Satellite 6 integration, test, and deliver		
(U) \$0	Continue Milstar component integration support		
(U) \$0	Implement ECPs as needed based on operational requirements		
(U) \$38,200	Milstar I/II Satellite Engineering		
(U) \$0	Satellites 5 and 6 technical launch and pre-launch support		
(U) \$0	Continue Satellites 1, 2, 4 and 5 on-orbit operations support		
(U) \$0	Continue LDR and MDR technical support		
(U) \$14,230	Automated Communications Management System (ACMS)		
(U) \$0	Continue software build 2 development		
(U) \$0	Continue maintenance of fielded software build 1		
(U) \$14,010	Basic Program Office support		
Project 655010		Page 2 of 7 Pages	
		Exhibit R-2 (PE 0604479F)	

740

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT		
05 - Engineering and Manufacturing Development	0604479F MILSTAR LDR/MDR Sat Comm	655010		
(U) A. Mission Description Continued				
(U) FY 2001 (\$ in Thousands) Continued				
(U) \$236,841 Total				
(U) B. Budget Activity Justification				
This program is in Budget Activity 5, Engineering and Manufacturing Development since it funds Milstar II development.				
(U) C. Program Change Summary (\$ in Thousands)				
(U) Previous President's Budget (FY 2000 PBR)		<u>FY 2000</u>	<u>FY 2001</u>	<u>Total Cost</u>
(U) Appropriated Value		546,509	361,308	9,500,914
(U) Adjustments to Appropriated Value		550,940	362,808	
a. Congressional/General Reductions		-4,431	-324	
b. Small Business Innovative Research		-20,629		
c. Omnibus or Other Above Threshold Reprogram		-2,422		
d. Below Threshold Reprogram		-9,045		
e. Rescissions		-2,875		
f. Other				
(U) Adjustments to Budget Years Since FY 2000 PBR			11,084	
(U) Current Budget Submit/FY 2001 PBR			236,841	9,562,236
Significant Program Changes:				
(U) Significant Program Changes:				
The funding increase in FY01 finances satellite sustaining engineering. FY99 reprogramming funded higher priority Air Force requirements. Funds were realigned from Milstar II to ACMS in FY01 due to ACMS Build 2 schedule slips. Flight 3 failure caused a schedule breach for MDR IOT&E and IOC II, and a performance breach of FOC. Program Deviation Report was sent to the Defense Acquisition Executive and final Acquisition Program Baseline update is being prepared.				

Project 655010

Page 3 of 7 Pages

Exhibit R-2 (PE 0604479F)

741

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY					DATE		February 2000		
05 - Engineering and Manufacturing Development					PE NUMBER AND TITLE		PROJECT		
					0604479F MILSTAR LDR/MDR Sat Comm		655010		
(U) <u>D. Other Program Funding Summary (\$ in Thousands)</u>									
		FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Total Cost
		Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Complete
(U) AF Wideband 3080		0	0	4,852	5,411	5,503	8,115	2,209	0
Procurement (CCS-C)									
(U) AF Wideband 3600, PE		0	0	11,500	13,300	24,400	46,600	25,900	0
63854F, BPAC 836780									
(CCS-C)									
(U) Other Procurement, BP 83,									
Electronics and									
Telecommunications									
Equipment, Line Item P-69*									
(U) Related RDT&E:									
(U) PE 0303601F,									
MILSATCOM Terminals									
(U) PE 0603430F, Advanced									
MILSATCOM									
(U) PE 0604577N, EHF									
Satellite Communications									
(U) PE 0603432F, Polar									
Satellite Communications									
Program (Polar Adjunct)									
(U) <u>E. Acquisition Strategy</u>									
Lockheed Martin was awarded a sole source contract to develop 6 Milstar protected communication satellites. The first two LDR satellites were launched in FY94 and FY95. Satellite 3 launch in FY99 was to provide the first LDR/MDR on-orbit capability, but the satellite did not reach its proper orbit due to a Centaur upper stage failure. The last 3 LDR/MDR satellites 4-6 will be launched in FY00, 01, and 02.									
(U) <u>F. Schedule Profile</u>									
					FY 1999		FY 2000		FY 2001
Project 655010					Page 4 of 7 Pages		Exhibit R-2 (PE 0604479F)		

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604479F MILSTAR LDR/MDR Sat Comm								655010	
(U)	<u>F. Schedule Profile Continued</u>										
(U)	Milstar II (LDR/MDR)										
(U)	Complete Sat 3M Integ and Test										
(U)	Deliver ACMS Build 1, Inc 2										
(U)	Satellite 3M Launch										
(U)	Satellite 4 Launch										
(U)	MDR IOT&E										
(U)	IOC II										
(U)	Satellite 5 Launch										
(U)	Satellite 6 Launch - 3QFY02										
(U)	FOC- 1QFY05										
	*=completed event										
	x=planned event										
Note: Current Milestones - Flight 3 failure caused a breach to the current MDR IOT&E, IOC II, and FOC milestones. Milestones will be up-dated when SAR is approved.											

Project 655010

Page 5 of 7 Pages

Exhibit R-2 (PE 0604479F)

743

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604479F MILSTAR LDR/MDR Sat Comm								655010	
(U)	A. Project Cost Breakdown (\$ in Thousands)										
(U)	Milstar II	FY 1999	FY 2000							FY 2001	
(U)	Milstar I/II Satellite Engineering	426,847	283,723							170,401	
(U)	Automated Communications Management System	28,032	27,000							38,200	
(U)	Basic Program Office Support	30,266	17,579							14,230	
(U)	Total	28,815	28,933							14,010	
(U)		513,960	357,235							236,841	
(U)	B. Budget Acquisition History and Planning Information (\$ in Thousands)										
(U)	Performing Organizations:										
	Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program
	<u>Product Development Organizations</u>										
	LMSC (Milstar I) Sats	C/CPAF	Jun 83	2,181,587	2,818,587	4,727,752	0	0	0	0	4,727,752
	1,2,3LJ										
	LMSC (Milstar II) [Sats 3M, 4, 5, 6]	SS/CPAF	Oct 92/Nov 94	3,774,361	3,774,361	2,892,786	396,248	259,423	152,009	73,383	3,773,849
	LMSC (Satellite Engineering)	SS/CPAF	Sep 97	210,783	210,783	27,222	28,032	27,000	38,200	89,230	209,684
	SPAWAR(ACMS)	SS/MIPR	Various			75,382	30,266	17,579	14,230	8,326	145,783
	LINCOM	SS/CPAF	Various			22,814	4,055	4,084	1,721	3,133	35,807
	Lincoln Lab	SS/MIPR	Various			24,489	2,680	2,550	2,050	4,000	35,769
	Miscellaneous	Various	Various			194,495	23,865	17,666	14,621	12,955	263,602
	<u>Support and Management Organizations</u>										
	Aerospace	SS/CPFF/AF	Various			134,559	20,882	20,025	10,297	16,743	202,506
	Miscellaneous	Various	Various			143,229	7,932	8,908	3,713	3,702	167,484
	<u>Test and Evaluation Organizations</u>										
	None.										

Project 655010

Page 6 of 7 Pages

Exhibit R-3 (PE 0604479F)

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT	
05 - Engineering and Manufacturing Development		0604479F MILSTAR LDR/MDR Sat Comm		655010	
(U) Government Furnished Property:					
Contract					
Method/Type		Award or			
Item	or Funding	Obligation	Delivery		
Description	Vehicle	Date	Date		
Product Development Property					
None.					
Support and Management Property					
None.					
Test and Evaluation Property					
None.					
Subtotals					
Subtotal Product Development					
Subtotal Support and Management					
Subtotal Test and Evaluation					
Total Project					
		Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001
		7,964,940	485,146	328,302	222,831
		277,788	28,814	28,933	14,010
		8,242,728	513,960	357,235	236,841
					211,472
					9,562,236
					Total Program
					9,192,246
					369,990
					20,445
					191,027
					Complete
					Budget to
					Complete
					Total Program

Project 655010

Page 7 of 7 Pages

Exhibit R-3 (PE 0604479F)

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604600F Munitions Dispenser Development								651015	
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
651015	Wind Corrected Munitions Dispenser (WCMD) Kit	11,334	3,850	0	0	0	0	0	0	152,018	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	173	
(U)	A. Mission Description										
	This project develops an inertially guided tail kit for CBU-87B, CBU-89B, and CBU-97B dispensers to provide corrections for the effects of wind transients and ballistic errors caused by wind when these munitions are released from medium to high altitudes. Wind Corrected Munitions Dispenser (WCMD) kit fitted weapons will improve effectiveness of both bombers and fighters and significantly contribute to Air Force war fighting capabilities. WCMD kit fitted CBU-97's dropped from bombers are key to stopping enemy armored forces.										
(U)	FY 1999 (\$ in Thousands)										
(U)	\$7,622	Conducted system level design verification testing to include contractor flight test mission									
(U)	\$117	Conducted Development Testing/Operational Testing									
(U)	\$1,295	Program management support; includes travel, program office supplies and equipment, training, and technical engineering support									
(U)	\$2,300	Completed integration on F-16 (Block 50)									
(U)	\$11,334	Total									
(U)	FY 2000 (\$ in Thousands)										
(U)	\$2,900	Complete system level design verification testing to include contractor flight test mission									
(U)	\$950	Complete Development Testing/Operational Testing									
(U)	\$3,850	Total									
(U)	FY 2001 (\$ in Thousands)										
(U)	\$0	No Activity									
(U)	\$0	Total									
(U)	B. Budget Activity Justification										
	This is funded in BA 5, Engineering and Manufacturing Development because it develops a weapon system.										

Project 651015

Page 1 of 5 Pages

Exhibit R-2 (PE 0604600F)

747

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT		
05 - Engineering and Manufacturing Development	0604600F Munitions Dispenser Development	651015		
(U) C. Program Change Summary (\$ in Thousands)				
(U) Previous President's Budget (FY 2000 PBR)		FY 1999	FY 2000	FY 2001
(U) Appropriated Value		7,315	0	0
(U) Adjustments to Appropriated Value		7,559	3,900	
(U) a. Congressional/General Reductions		-244		
b. Small Business Innovative Research		-187		
c. Omnibus or Other Above Threshold Reprogram			-26	
d. Below Threshold Reprogram		4,269		
e. Rescissions		-63	-24	
f. Other				
(U) Adjustments to Budget Years Since FY 2000 PBR		11,334	3,850	0
(U) Current Budget Submit/FY 2001 PBR				152,018
(U) Significant Program Changes:				
In FY99, added \$4,269 by below threshold reprogramming (BTR) to fix the problem with the fin lock mechanism (i, e., pin-puller). In FY00, Congress appropriated \$3,900 to complete WCMD development.				
(U) D. Other Program Funding Summary (\$ in Thousands)				
		FY 1999	FY 2000	FY 2001
		Actual	Estimate	Estimate
(U) Procurement of *		14,943	48,624	104,046
Ammunition, AF				
P-1 Line Item 23				
			FY 2002	FY 2003
			Estimate	Estimate
			111,264	80,785
			FY 2004	FY 2005
			Estimate	Estimate
			80,508	72,421
			Cost to	Total Cost
			Complete	
			0	524,081
* FY 04 includes \$134 to procure WCMD units for SEEK EAGLE testing				
(U) E. Acquisition Strategy				
A full and open competition in FY 1995 led to dual awards for a competitive development effort that included a competitive fly-off. The downselect to one contractor occurred in Jan 1997. The Cost-Plus Award Fee (CPAF) Pilot Production contract awarded to Lockheed-Martin includes production options for five years on a Firm Fixed Price (FFP) basis.				
Project 651015		Page 2 of 5 Pages		Exhibit R-2 (PE 0604600F)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)						DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE						
	0604600F Munitions Dispenser Development						
	FY 1999			FY 2000			FY 2001
	1	2	3	4	1	2	3
(U) E. Schedule Profile							
(U) DT/OT							
(U) LRIP 2 Award							
(U) LRIP 3 Award							
(U) IOT&E					X		
(U) Milestone III							
(U) FRP 1 Award						X	
Note:							
* = Actual events							
X = Planned Events							

Project 651015
 Page 3 of 5 Pages
 Exhibit R-2 (PE 0604600F)

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 2000	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE				
05 - Engineering and Manufacturing Development		0604600F Munitions Dispenser Development		651015		
(U)	A. Project Cost Breakdown (\$ in Thousands)					
(U)	Major Contracts	FY 1999	FY 2000	FY 2001	FY 2001	
(U)	Support Contracts	7,622	2,900	0	0	
(U)	Program Office Support	768	0	0	0	
(U)	Test And Evaluation	527	0	0	0	
(U)	Aircraft Integration	117	950	0	0	
(U)	Total	2,300	0	0	0	
(U)		11,334	3,850			
(U)	B. Budget Acquisition History and Planning Information (\$ in Thousands)					
(U)	Performing Organizations:					
	Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Program
	Product Development Organizations					
	Lockheed Martin	C/CPAF	Feb 00	88,686	7,622	78,164
	Support and Management Organizations					
	ASC/YH	N/A	various	N/A	N/A	N/A
	Support Contracts	various	Oct 98	N/A	N/A	N/A
	Test and Evaluation Organizations					
	46 OG/OGML	REO	Feb 00	N/A	117	8,266
	Aircraft Integration	AF 616	Feb 99	N/A	2,300	29,920
	Boeing	AF 616	Feb 00	N/A	0	0
(U)	Government Furnished Property:					
	Contract	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Budget FY 1999	Total Program
	Item Description				Budget FY 2000	Budget to Complete
					Budget FY 2001	Budget to Complete
						Total Program

Project 651015

Page 4 of 5 Pages

Exhibit R-3 (PE 0604600F)

Project 651015

Page 4 of 5 Pages

Exhibit R-3 (PE 0604600F)

750

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	February 2000	PROJECT	
BUDGET ACTIVITY		PE NUMBER AND TITLE			651015			
05 - Engineering and Manufacturing Development		0604600F Munitions Dispenser Development			651015			
(U) Government Furnished Property Continued:								
Contract								
Item	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget to Complete	Total Program
Product Development Property								
SFW/Combined Effects	FPIF	Apr 96	N/A	4,203	0	0	0	4,203
Munition (CEM)/Seek Eagle (SE)								
Common Munitions	CPAF	Jul 97	N/A	4,371	0	0	0	4,371
Built-in-Test Reprogramming Equipment (CMBRE)								
Support and Management Property								
Not Applicable								
Test and Evaluation Property								
Not Applicable								
Subtotals								
Subtotal Product Development				86,738	7,622	2,900	0	97,260
Subtotal Support and Management				11,910	1,295	0	0	13,205
Subtotal Test and Evaluation				38,186	2,417	950	0	41,553
Total Project				136,834	11,334	3,850	0	152,018

Project 651015

Page 5 of 5 Pages

Exhibit R-3 (PE 0604600F)

751

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

PE NUMBER: 0604602F

UNCLASSIFIED

PE TITLE: Armament/Ordnance Development

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE									
05 - Engineering and Manufacturing Development		0604602F Armament/Ordnance Development									
	COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
	Total Program Element (PE) Cost	11,215	23,567	8,876	1,355	1,388	1,415	1,442	Continuing	TBD	
653133	Bombs & Fuzes	9,935	22,257	7,551	0	0	0	0	Continuing	TBD	
654696	Armament Standardization Program	1,151	1,176	1,194	1,223	1,253	1,275	1,298	Continuing	TBD	
655613	Containers	129	134	131	132	135	140	144	Continuing	TBD	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	Continuing	TBD	
(U)	A. Mission Description The Armament Ordnance Development program provides for initial and continuing development of munition equipment for support and operational use. Armament Standardization/Control/Munitions Material Handling Equipment (MMHE): This continuing project develops and improves the standardization and commonality of munitions handling and armament equipment to preclude duplication. This project's efforts are limited to the study, design, and development, of MMHE and armament control systems. Procurement will be performed and funded by the applicable weapons system project. Bombs and Fuzes: This project develops and improves conventional bombs and fuzes. It currently includes the development of the Hard Target Smart Fuze (HTSF). Miniaturized Munitions Capability (MMC) continues the Concept Exploration phase in this project. Initial MMC funding will be used to explore concepts to meet CAF MNS 304-97, 'Miniaturized Munitions Capability'. Containers: This project funds the operation of the tri-service Container Design Retrieval System (CDRS). This maintains a container database to preclude proliferation and duplication of munitions containers. It also supports organic container design, acquisition transportation, prototyping, testing capabilities, as well as the Joint Ordnance Commander's Working Group (JOCG) for Packaging, Handling, and Loading.										
(U)	B. Budget Activity Justification This program is in budget activity 5 - Engineering and Manufacturing Development because the projects support the EMD phase of several munitions related items and functions.										

Exhibit R-2 (PE 0604602F)

Page 1 of 14 Pages

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)					
BUDGET ACTIVITY				DATE	
				PE NUMBER AND TITLE	
05 - Engineering and Manufacturing Development				0604602F Armament/Ordnance Development	February 2000
(U)	<u>C. Program Change Summary (\$ in Thousands)</u>				
(U)	Previous President's Budget (FY 2000 PBR)	FY 1999	FY 2000	FY 2001	Total Cost
(U)	Appropriated Value	11,823	8,887	8,956	TBD
(U)	Adjustments to Appropriated Value	12,037	23,887		TBD
	a. Congressional/General Reductions	-181	-11		TBD
	b. Small Business Innovative Research	-401			TBD
	c. Omnibus or Other Above Threshold Reprogram	-144	-160		TBD
	d. Below Threshold Reprogram	-96	-149		TBD
	e. Rescissions				TBD
	f. Other				TBD
(U)	Adjustments to Budget Years Since FY 2000 PBR			-80	
(U)	Current Budget Submit/FY 2001 PBR	11,215	23,567	8,876	TBD
(U)	<u>Significant Program Changes:</u>				
	A congressional add of \$15 million was appropriated for '...risk reduction efforts, determined appropriate by MMC system program officials, to accelerate development of a capability addressing both fixed and relocatable targets.'				

Page 2 of 14 Pages
 Exhibit R-2 (PE 0604602F)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										
BUDGET ACTIVITY		PE NUMBER AND TITLE					DATE			
05 - Engineering and Manufacturing Development		0604602F Armament/Ordnance Development					February 2000			
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
653133	Bombs & Fuzes	9,935	22,257	7,551	0	0	0	0	Continuing	TBD
(U)	A. Mission Description									
	Bombs and Fuzes: This project develops and improves conventional bombs and fuzes including the development of the Hard Target Smart Fuze (HTSF). The HTSF is a layer counting and void sensing fuze that will be used with air-to-ground penetrator weapons. Miniaturized Munitions Capability (MMC) continues the Concept Exploration phase in this project.									
(U)	<u>FY 1999 (\$ in Thousands)</u>									
(U)	\$685	Conducted and completed HTSF System Requirements Review (SRR)								
(U)	\$734	Conducted and completed HTSF Preliminary Design Review (PDR)								
(U)	\$3,858	Completing HTSF Detailed Design								
(U)	\$333	Initiated HTSF contractor test and evaluation (CT&E)								
(U)	\$2,961	Conducted MMC AOA Modeling and Analysis								
(U)	\$1,000	Conducted MMC Concept Exploration Contracts								
(U)	\$364	Program Office Support								
(U)	\$9,935	Total								
(U)	<u>FY 2000 (\$ in Thousands)</u>									
(U)	\$4,531	Conduct HTSF contractor test and evaluation (CT&E)								
(U)	\$3,030	Initiate HTSF combined developmental and initial operational test and evaluation (DT/IOT&E)								
(U)	\$5,200	Conduct and complete MMC Concept Exploration Contracts								
(U)	\$3,741	Conduct and complete MMC AOA Modeling and Analysis								
(U)	\$755	Program Office Support								
(U)	\$5,000	Fixed Target MMC Risk Reduction								
(U)	\$22,257	Total								

Project 653133

Page 3 of 14 Pages

Exhibit R-2A (PE 0604602F)

755

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development	0604602F Armament/Ordnance Development	653133	
(U) A. Mission Description Continued			
(U) FY 2001 (\$ in Thousands)			
(U) \$1,786	Complete Hard Target Smart Fuze (HTSF) Functional Configuration Audit		
(U) \$5,308	Complete combined HTSF developmental and initial operational test and evaluation (DT/IOT&E)		
(U) \$457	Support HTSF dedicated initial operational testing and evaluation (IOT&E)		
(U) \$7,551	Total		
(U) B. Project Change Summary			
\$15M FY00 Congressional add will be used 'for risk reduction efforts, determined most appropriate by MMC system program officials, to accelerate development of a capability addressing both fixed and relocatable targets.'			
(U) C. Other Program Funding Summary (\$ in Thousands)			
	FY 1999	FY 2000	FY 2001
	Actual	Estimate	Estimate
(U) Procurement of Ammunition, Air Force, P-1 Line Item; Fuzes			
(U) PE 28030 WRM-Ammo	5,299	9,342	29,405
(U) Hard Target Smart Fuze (HTSF) procurement funded by Defense Threat Reduction Agency (DTRA)		3,000	26,621
		6,000	12,000
</			

756

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE		February 2000		PROJECT	
BUDGET ACTIVITY		PE NUMBER AND TITLE										0604602F Armament/Ordnance Development		653133	
05 - Engineering and Manufacturing Development															
<u>E. Schedule Profile Continued</u>															
		FY 1999				FY 2000				FY 2001					
		1	2	3	4	1	2	3	4	1	2	3	4		
(U)	Hard Target Smart Fuze (HTSF)														
(U)	Start HTSF Detailed Design														
(U)	System Requirement Review (SRR)	*													
(U)	Preliminary Design Review (PDR)														
(U)	Start HTSF CT&E														
(U)	Complete HTSF Detailed Design														
(U)	Complete CT&E														
(U)	Start DT&E/IOT&E														
(U)	Complete FCA														
(U)	Complete Combined DT&E/IOT&E														
(U)	Start/Complete Dedicated IOT&E														
(U)	Miniaturized Munitions Capability														
(U)	Start Concept Exploration/AoA	*													
(U)	Complete Concept Exploration/Analysis														
* = Event occurred															
X = Event planned															

757

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT					
05 - Engineering and Manufacturing Development		0604602F Armament/Ordnance Development				653133					
(U)	<u>A. Project Cost Breakdown (\$ in Thousands)</u>										
(U)	A. Contractor Total										
(U)	b. Government										
(U)	Testing										
(U)	Contractor support										
(U)	Management support										
(U)	Total										
(U)	<u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>										
(U)	<u>Performing Organizations:</u>										
	Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program
	<u>Product Development Organizations</u>										
	Motorola (JPF)	CPAF	Jul 93	21,357	21,357	21,357	0	0	0	0	21,357
	Alliant (HTSF)	C/CPIF	Aug 98	16,010	16,010	1,100	4,474	4,180	1,506	Continuing	TBD
	Boeing (MMC)	FPP	Jan 99	250	250	0	250	1,300	0	0	1,550
	Lockheed (MMC)	FPP	Jan 99	250	250	0	250	1,300	0	0	1,550
	Raytheon (MMC)	FPP	Jan 99	250	250	0	250	1,300	0	0	1,550
	Northrup (MMC)	FPP	Jan 99	250	250	0	250	1,300	0	0	1,550
	<u>Support and Management Organizations</u>										
	HTSF TEAS/ TEAMS	Various	Various	N/A	N/A	559	612	480	500	Continuing	TBD
	MMC TEAS/ TEAMS	Various	Various	N/A	N/A	0	424	3,741	0	0	4,165
	JPF TEAS/TEAMS	Various	Various	N/A	N/A	512	0	0	0	0	512
	ASC/WG (HTSF)	Various	Various	N/A	N/A	1,174	165	1,076	1,637	Continuing	TBD
	ASC/WMX (MMC)	Various	Various	N/A	N/A	0	1,620	2,150	0	0	3,770
	Other MMC	Various	Various	N/A	N/A	0	1,050	0	0	0	1,050

Project 653133

Page 6 of 14 Pages

Exhibit R-3 (PE 0604602F)

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE									
05 - Engineering and Manufacturing Development		0604602F Armament/Ordnance Development									653133
(U) Performing Organizations Continued:											
Test and Evaluation Organizations											
46th Test HTSF	Various	Mar 94	N/A	N/A	0	590	1,430	3,908	Continuing	TBD	
46th test JPF	Various	Mar 94	N/A	N/A	3,315	0	0	0	0	3,315	
MMC Test					0	0	4,000	0	0	4,000	
<u>Subtotals</u>					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program	
Subtotal Product Development					22,457	5,474	9,380	1,506	TBD	TBD	
Subtotal Support and Management					2,245	3,871	7,447	2,137	TBD	TBD	
Subtotal Test and Evaluation					3,315	590	5,430	3,908	TBD	TBD	
Total Project					28,017	9,935	22,257	7,551	TBD	TBD	

Project 653133

Page 7 of 14 Pages

Exhibit R-3 (PE 0604602F)

Page 7 of 14 Pages

Exhibit R-3 (PE 0604602F)

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)									
BUDGET ACTIVITY		PE NUMBER AND TITLE						DATE	PROJECT
05 - Engineering and Manufacturing Development		0604602F Armament/Ordnance Development						February 2000	654696
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Total Cost
654696	Armament Standardization Program	1,151	1,176	1,194	1,223	1,253	1,275	1,298	TBD
(U) A. Mission Description									
Armament Standardization/Control/Munitions Material Handling Equipment (MMHE): This continuing project develops and improves the standardization and commonality of improved munitions handling and armament equipment to preclude duplication. This project's efforts are limited to the study, design, and development, of MMHE and armament control systems. Procurement will be performed and funded by the applicable weapons system project.									
(U)	FY 1999 (\$ in Thousands)								
(U)	\$592	Designed, prototyped, and tested various MMHE projects, i.e. T-2 Pallet Lock Device, B-52 Loading Adapter, AGM-84 Loading Adapter, M61 Gun Firing Stand, All-Up-Round-Container (AURC) Dolly, MJ-1 Platform, Trailer Stabilizer Jack, Flare Squibbing Fixture, B-1B Practice Bomb Rack Adapter, Missile Dislodge Tools, Alternate Mission Equipment (AME) Maintenance Stand, and ADU-537 Loading Adapter Upgrade.							
(U)	\$265	Completed development of B-52 Yoke Handling Fixture, B-52 Pylon Transport Adapter, MHU-83 Remote Control Upgrade, MJ-40 Hydraulics Upgrade, Tire Liner Inserts, Ammo Loader Forklift Adapter, AIM-9X Lifting Bar, ALA-17 Flare Assembly Fixture and AURC Lift Adapter.							
(U)	\$98	Continued design and testing of Aluminum Rail Set and evaluation of Next Generation Munitions Handler.							
(U)	\$98	Initiated design, prototype and test of ALE-50 Flare Transport Module (Kosovo war effort)							
(U)	\$98	Completed evaluation of B-1B Rotary Launcher Adapter.							
(U)	\$1,151	Initiated design of MHU-110 Trailer Upgrade.							
(U)		Total							
(U)	FY 2000 (\$ in Thousands)								
(U)	\$585	Design, prototype, and test various MMHE projects, i.e., Flightline Service Cart, F-16 Pylon Load Adapter, B-52 Loading Adapter, AGM-84 Loading Adapter, Practice Bomb Transport Module and ADU-537 Upgrade. Complete development of T-2 Pallet Lock Device, M61 Gun Firing Stand, AURC) Dolly, MJ-1 Platform, Trailer Stabilizer Jack, Flare Squibbing Fixture, AME Maintenance Stand, B-1B Practice Bomb Rack Adapter and Missile Dislodge Tools.							
(U)	\$295	Complete development of Aluminum Rail Set and continue evaluation of Next Generation Munitions Handler.							
(U)	\$74	Complete development of ALE-50 Flare Transport Module.							
(U)	\$49	Complete development of B-1B Rotary Launcher Adapter.							
(U)	\$73	Complete development of Joint JASSM Handling Adapters.							
(U)	\$100	Initiate development of Next Generation Munitions Handling Trailer.							
Project 654696		Page 8 of 14 Pages						Exhibit R-2A (PE 0604602F)	

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development	0604602F Armament/Ordnance Development	654696	
(U) A. Mission Description Continued			
(U) <u>FY 2000 (\$ in Thousands) Continued</u>			
(U) \$1,176	Total		
(U) <u>FY 2001 (\$ in Thousands)</u>			
(U) \$449	Design, prototype, and test various MMHE projects, i.e., MJ-1 Table Modification, Triple Ejector Rack (TER) Storage Stand, AME Mobility Rack, Chaff/Flare Transport Module and Practice Bomb Transport Module. Complete development ADU-537 Upgrade, Flightline Service Cart, F-16 Pylon Load Adapter, B-52 Loading Adapter, AGM-84 Loading Adapter, and Missile Dislodge Tools.		
(U) \$220	Continue evaluation of Next Generation Munitions Handler.		
(U) \$100	Continue evaluation of a MHU-110 Trailer Upgrade		
(U) \$25	Continue evaluation of a Mobile Bomb Renovation Plant		
(U) \$150	Initiate development of ISO Munitions Pallet.		
(U) \$250	Continue development of Next Generation Munitions Handling Trailer.		
(U) \$1,194	Total		
(U) B. Project Change Summary			
(U) C. Other Program Funding Summary (\$ in Thousands)			
		<u>FY 1999</u>	<u>FY 2000</u>
		Actual	Estimate
(U) AF RDT&E			
(U) Other APPN			
(U) D. Acquisition Strategy			
	MMHE is a continuing effort program with activities contracted through Military Interdepartmental Purchase Requests (MIPR). Procurement will be performed and funded by the applicable equipment project.		
(U) E. Schedule Profile			
		<u>FY 1999</u>	<u>FY 2000</u>
		1	2
		3	4
		1	2
		3	4
(U) N/A	Not Applicable. MMHE does not execute in accordance with standard acquisition milestones. Project activities are performed on a continuing basis		
Project 654696		Exhibit R-2A (PE 0604602F)	

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE									
05 - Engineering and Manufacturing Development		0604602F Armament/Ordnance Development									February 2000
(U)	<u>A. Project Cost Breakdown (\$ in Thousands)</u>										
(U)	Various MMHE Projects	FY 1999	FY 2000	FY 2001							
(U)	Aluminum Rail Set	486	431	449							
(U)	Next Generation Munitions Handler	75	75	0							
(U)	Next Generation Munitions Handling Trailer	190	220	220							
(U)	ISO Munitions Pallet	0	100	250							
(U)	B-1B Rotary Launcher Adapter	0	0	150							
(U)	MHU-110 Trailer Upgrade	100	50	0							
(U)	MHU-83 Upgrade	100	50	25							
(U)	MJ-40 Upgrade	0	0	0							
(U)	Mobile Bomb Renovation Plant	0	0	0							
(U)	ALE-50 Transport Module	100	75	0							
(U)	JASSM Handling Adapters	100	75	0							
(U)	Total	1,151	1,176	1,194							
(U)	<u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>										
(U)	<u>Performing Organizations:</u>										
	Contractor or	Contract									
	Government	Method/Type	Award or	Performing	Project						
	Performing	or Funding	Obligation	Activity	Office	Budget	Budget	Budget	Budget to	Total	
	Activity	Vehicle	Date	EAC	EAC	FY 1999	FY 2000	FY 2001	Complete	Program	
	<u>Product Development Organizations</u>										
	Dept. of Energy/NASA	MIPR				560	190	224	Continuing	TBD	
	<u>Support and Management Organizations</u>										
	TEAS/TAMS	MIPR	Oct 99	N/A	N/A	935	615	612	Continuing	TBD	
	AFDTC/FM	MIPR	Oct 99	N/A	N/A	240	125	125	Continuing	TBD	
	64SSUPS/LGS	MIPR	Cont.	N/A	N/A	100	46	40	Continuing	TBD	
	WLMN	MIPR	Cont.	N/A	N/A	80	25	25	Continuing	TBD	
	<u>Test and Evaluation Organizations</u>										
	46th Test Wing	MIPR	Cont.	N/A	N/A	250	150	150	Continuing	TBD	
Project 654696											
Page 10 of 14 Pages											
Exhibit R-3 (PE 0604602F)											

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT		654696			
05 - Engineering and Manufacturing Development		0604602F Armament/Ordnance Development									
(U) Government Furnished Property:											
Contract											
Method/Type Award or											
or Funding Obligation Delivery											
Vehicle Date Date											
Product Development Property											
N/A											
Support and Management Property											
Test and Evaluation Property											
Subtotals											
Subtotal Product Development											
Subtotal Support and Management											
Subtotal Test and Evaluation											
Total Project											
		Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program				
		560	190	224	220	TBD	TBD				
		1,355	811	802	824	TBD	TBD				
		250	150	150	150	TBD	TBD				
		2,165	1,151	1,176	1,194	TBD	TBD				

Project 654696

Page 11 of 14 Pages

Exhibit R-3 (PE 0604602F)

Page 11 of 14 Pages

Exhibit R-3 (PE 0604602F)

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)									
BUDGET ACTIVITY		DATE							
05 - Engineering and Manufacturing Development		February 2000							
PE NUMBER AND TITLE		PROJECT							
0604602F Armament/Ordnance Development		655613							
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Total Cost
655613 Containers		129	134	131	132	135	140	144	TBD
(U) A. Mission Description									
Containers: This project funds the operation of the tri-service Container Design Retrieval System (CDRS). This system includes the maintenance of a container database to preclude proliferation and duplication of munitions containers. It also supports organic container design, prototyping, testing capabilities, as well as the Joint Ordnance Commander's Working Group (JOCG) for Packaging, Handling, and Loading. This project's efforts are limited to study, design, and development of container systems. The project also provides world wide acquisition transportation support and participates in Tri-Service groups and organizations for packaging, handling, logistic and transportation. Any procurement will be performed and funded by the applicable weapons system project.									
(U) FY 1999 (\$ in Thousands)									
(U) \$5	Initiated/continued/completed design/development of various CDRS projects, including a modular mobility container system, and special projects.								
(U) \$5	Provided container design expertise, management, and technical support to programs such as AIM-9X, JASSM, AMRAAM, AGM-142, JDAM, AGM-130, and WCMD.								
(U) \$119	Managed and operate the CDRS data base and support service.								
(U) \$129	Total								
(U) FY 2000 (\$ in Thousands)									
(U) \$5	Initiate/continue/complete design/development of various CDRS projects, including a modular mobility container system, and special projects.								
(U) \$5	Provide container design expertise, management, and technical support to programs such as AIM-9X, JASSM, AMRAAM, AGM-142, JDAM, AGM-130, and WCMD.								
(U) \$124	Manage and operate the CDRS data base and support service.								
(U) \$134	Total								
(U) FY 2001 (\$ in Thousands)									
(U) \$5	Initiate/continue/complete design/development of various CDRS projects, including a modular mobility container system, and special projects.								
(U) \$5	Provide container design expertise, management, and technical support to programs such as AIM-9X, JASSM, AMRAAM, AGM-142, JDAM, AGM-130, and WCMD.								
(U) \$121	Manage and operate the CDRS data base and support service.								
(U) \$131	Total								
Project 655613		Exhibit R-2A (PE 0604602F)							

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604602F Armament/Ordinance Development								655613	
(U)	<u>B. Project Change Summary</u> No significant program changes.										
(U)	<u>C. Other Program Funding Summary (\$ in Thousands)</u>										
		<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>Cost to</u>	<u>Total Cost</u>	
		<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>		
(U)	Not Applicable										
(U)	<u>D. Acquisition Strategy</u> Not Applicable										
(U)	<u>E. Schedule Profile</u>										
					<u>FY 1999</u>		<u>FY 2000</u>		<u>FY 2001</u>		
				1	2	3	4	1	2	3	
										4	
(U)	Not Applicable. Not Applicable. The Containers project does not execute in accordance with standard acquisition milestones. Design and support efforts are performed on a continuing basis.										

Project 655613

Page 13 of 14 Pages

Exhibit R-2A (PE 0604602F)

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									
BUDGET ACTIVITY					DATE		PROJECT		
05 - Engineering and Manufacturing Development					0604602F Armament/Ordnance Development		655613		
A. Project Cost Breakdown (\$ in Thousands)					FY 1999		FY 2000		FY 2001
(U)	Travel/Transportation				70		72		70
(U)	Supplies/Equipment				49		52		51
(U)	Mission Support				10		10		10
(U)	Total				129		134		131
B. Budget Acquisition History and Planning Information (\$ in Thousands)									
(U)	Performing Organizations:								
	Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001
	Product Development Organizations								
	Not Applicable								
	Support and Management Organizations								
	Sverdrup (TEAS)	Various	Oct 93	N/A	N/A	1,455	0	0	Continuing
	ASC/YHS	Various	Various	N/A	N/A	578	10	10	Continuing
	Other	Various	Various	N/A	N/A	569	119	124	Continuing
	Test and Evaluation Organizations								
	46th Test Wing	Various	Various	N/A	N/A	190	0	0	Continuing
	Subtotals					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001
	Subtotal Product Development					2,602	129	134	TBD
	Subtotal Support and Management					190	0	0	TBD
	Subtotal Test and Evaluation					2,792	129	134	TBD
	Total Project								TBD
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total Program									
Total									

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604604F Submunitions								653166	
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
653166	Joint Smart Munitions Test and Evaluation	4,477	7,698	4,775	4,782	4,720	4,815	4,911	Continuing	TBD	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	
(U)	A. Mission Description This PE provides support for smart munitions and related technologies test and evaluation (T&E) activities, including T&E support for programs in engineering and manufacturing development. Project 3166 is a joint US Air Force/US Army project which provides RDT&E support for developmental smart munitions acquisition programs. Project 3166 (project Chicken Little) evaluates developmental smart munitions and related emerging technology with applications against vehicle targets and Theater Air Defense units by determining performance against actual foreign targets in realistic environments and in the presence of countermeasures. Data gathered is used to meet developmental decision points requiring highly reliable, realistic performance data. The project is a major focal point for joint Air Force and Army target signature collection and dissemination for development and exploitation purposes. Phase IV (FY96-98) emphasized providing best value test and evaluation support for submunition development and weaponization studies and Phase V (FY99-01) will provide modeling and simulation capabilities to augment a limited number of measurement and open air tests of smart weapons and related technologies.										
(U)	FY 1999 (\$ in Thousands)										
(U)	\$1,158	Initiated Phase V of the weapon effectiveness evaluation									
(U)	\$480	Developed and validated improved models and simulation for assessment of alternatives and force-on-force studies									
(U)	\$480	Increased utility of lethality/vulnerability and signature database through conversion to migration system and addition of new threat system data									
(U)	\$1,149	Conducted captive carry flight tests and signature collection for seeker/sensor evaluations and algorithm development									
(U)	\$580	Characterized performance of advanced and programmable warheads to access potential for increasing lethality of weapons									
(U)	\$630	Performed vulnerability analysis of upgraded/advanced Suppression of Enemy Air Defense (SEAD) and Theater Missile Defense (TMD) targets									
(U)	\$4,477	Total									
(U)	FY 2000 (\$ in Thousands)										
(U)	\$882	Continue Phase V of the weapon effectiveness evaluation									
(U)	\$491	Develop, validate, and accredit improved models and simulation for assessment of alternatives and force on force studies									
(U)	\$491	Increase utility of lethality/vulnerability and signature database through addition of modern threat systems and secure datalink									
(U)	\$1,325	Plan and conduct captive carry flight tests and signature collection for seeker/sensor evaluations and algorithm development									
(U)	\$723	Characterize performance of advanced and programmable warheads to access potential for increasing lethality of weapons									
Project 653166		Page 1 of 5 Pages									
		Exhibit R-2 (PE 0604604F)									

767

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT		
05 - Engineering and Manufacturing Development	0604604F Submunitions	653166		
(U) A. Mission Description Continued				
(U) FY 2000 (\$ in Thousands) Continued				
(U) \$786 Perform vulnerability analysis of upgraded/advanced Suppression of Enemy Air Defense (SEAD) and Theater Missile Defense (TMD) targets				
(U) \$3,000 Develop, procure, install and test an imaging infrared (IIR) instrumentation for multiobject target space position information for accurate tracking of smart weapon submunitions required for precise analysis of weapons test data				
(U) \$7,698 Total				
(U) FY 2001 (\$ in Thousands)				
(U) \$938 Continue Phase V of the weapon effectiveness evaluation				
(U) \$490 Develop, validate, and accredit improved models and simulation for assessment of alternatives and force on force studies				
(U) \$490 Increase utility of lethality/vulnerability and signature database through addition of modern threat systems and secure datalink				
(U) \$1,345 Plan and conduct captive carry flight tests and signature collection for seeker/sensor evaluations and algorithm development				
(U) \$726 Characterize performance of advanced and programmable warheads to access potential for increasing lethality of weapons				
(U) \$786 Perform vulnerability analysis of upgraded/advanced Suppression of Enemy Air Defense (SEAD) and Theater Missile Defense (TMD) targets				
(U) \$4,775 Total				
(U) B. Budget Activity Justification				
This program is funded in BA 5 - Engineering and Manufacturing Development because this program supports development programs prior to production decision.				
(U) C. Program Change Summary (\$ in Thousands)				
(U) Previous President's Budget (FY 2000 PBR)	FY 1999	FY 2000	FY 2001	Total Cost
(U) Appropriated Value	4,791	4,798	4,817	TBD
(U) Adjustments to Appropriated Value	4,805	7,798		
a. Congressional/General Reductions	-230			
b. Small Business Innovative Research		-52		
c. Omnibus or Other Above Threshold Reprogram	-59			
d. Below Threshold Reprogram	-39	-48		
e. Rescissions				
f. Other			-42	
(U) Adjustments to Budget Years Since FY 2000 PBR				
(U) Current Budget Submit/FY 2001 PBR	4,477	7,698	4,775	TBD
Project 653166			Exhibit R-2 (PE 0604604F)	

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE		
05 - Engineering and Manufacturing Development	0604604F Submunitions		653166
(U) C. Program Change Summary (\$ in Thousands) Continued			
(U) Significant Program Changes:			
In FY00, Congress added \$3,000 to develop, procure, install and test an imaging infrared (IIR) instrumentation for multiobject target space position information for accurate tracking of smart weapon submunitions required for precise analysis of weapons test data			
(U) D. Other Program Funding Summary (\$ in Thousands)			
	FY 1999	FY 2000	FY 2001
	Actual	Estimate	Estimate
(U) Not Applicable.			
(U) E. Acquisition Strategy			
Funds are executed organically in support of test and evaluation activities including studies, analyses, flight tests, model building and simulation. There are several small contracts supporting the program office.			
(U) F. Schedule Profile			
	FY 1999	FY 2000	FY 2001
	1	2	3
(U)			
Project 3166, Joint Smart Munition Test and Evaluation Program (Project Chicken Little) does not execute in accordance with established acquisition milestones. Chicken Little is a continuing test effort (target/warhead evaluation/analysis, signature tests, captive carry flight tests, are ongoing throughout the year and continue through the FYDP). This project is also funded by the Army and other Services on a case by case basis. The type of activities is given in Section A but the timing, duration and level of effort is decided at the semi-annual Steering Committee meetings.			
Project 653166		Exhibit R-2 (PE 0604604F)	

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT					
05 - Engineering and Manufacturing Development		0604604F Submunitions				653166					
(U)	<u>A. Project Cost Breakdown (\$ in Thousands)</u>										
(U)	Program Support	FY 1999	FY 2000	FY 2001							
(U)	Target Support	1,108	1,032	1,095							
(U)	Warhead Range Operations	420	468	470							
(U)	Captive Flight Tests	292	313	313							
(U)	Database Support (MILES)	570	595	596							
(U)	Vulnerability/Effectiveness Analysis	257	270	271							
(U)	Warhead Evaluation	600	632	638							
(U)	Target Signature Tests	296	342	342							
(U)	Models and Simulation Tools	470	580	582							
(U)	Develop and Install Imaging Infrared Instrumentation	464	466	468							
(U)	Total	0	3,000	0							
(U)		4,477	7,698	4,775							
(U)	<u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>										
(U)	<u>Performing Organizations:</u>										
	Contractor or Government	Contract Method/Type	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program
	Product Development Organizations										
	USArmy (Msl Command)	TBD	Mar 00	6,000	6,000	0	0	3,000	0	3,000	6,000
	Support and Management Organizations										
	Sverdrup	C/CPIF	Jun 96	N/A	N/A	7,825	1,266	1,317	1,320	Continuing	TBD
	ANSTEC	C/FFP	Apr 96	N/A	N/A	1,035	192	201	204	Continuing	TBD
	46 OG/OGML	N/A	Annual	N/A	N/A	4,766	589	610	618	Continuing	TBD
	Test and Evaluation Organizations										
	46 OG/OGML		Annual	N/A	N/A	64,816	2,430	2,570	2,633	Continuing	TBD

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	February 2000	PROJECT		
BUDGET ACTIVITY					PE NUMBER AND TITLE				
05 - Engineering and Manufacturing Development					0604604F Submunitions				
(U) Government Furnished Property:									
Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program
Product Development Property									
Not Applicable	N/A	N/A	N/A	0	0	0	0	0	0
Support and Management Property									
Not Applicable	N/A	N/A	N/A	0	0	0	0	0	0
Test and Evaluation Property									
Not Applicable	N/A	N/A	N/A	0	0	0	0	0	0
Subtotals									
Subtotal Product Development				13,626	2,047	2,128	2,142	TBD	TBD
Subtotal Support and Management				64,816	2,430	2,570	2,633	TBD	TBD
Subtotal Test and Evaluation				78,442	4,477	7,698	4,775	TBD	TBD
Total Project									

Project 653166

Page 5 of 5 Pages

Exhibit R-3 (PE 0604604F)

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604617F Agile Combat Support								652895	
	COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
652895	Air Base Operability	2,332	0	668	0	0	0	0	Continuing	TBD	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	
Congress eliminated FY00 funding. The Air Force is in the process of consolidating three small dollar Civil Engineer (CE) readiness R&D programs (PE64617F - Agile Combat Support; PE64708F - Civil, Fire, Environmental, Shelters; and the 3600 portion of PE28031F - War Reserve Material) under PE 64617. This will meet the intent of the House action to eliminate smaller PEs and provide a more cohesive, manageable CE Readiness modernization effort.											
(U) A. Mission Description This Program Element provides capabilities to rapidly deploy, defend and sustain airfield operations and command and control activities to ensure readiness. These activities are prerequisites to establishing air superiority. These systems provide beddown for aircraft, support equipment, and forces at both main operating bases and contingency operating locations, which may have only a runway and a water source. They also offer crucial utilities, runway stabilization and repair, explosive ordnance disposal (EOD), and security and reconnaissance capabilities to support aircraft deployment, launch, recovery and regeneration. Lighter-weight, rapidly deployable equipment has become essential in supporting numerous global contingencies such as DESERT SHIELD/DESERT STORM, Provide Comfort, Restore Hope, and Joint Endeavor for security, base defense, relief efforts, and special operations throughout the world. Agile Combat Support capabilities being developed include: power generation and distribution systems to reduce airlift; medium shelters; systems to repair runway damage; and Joint Service (Army-led) test, evaluation and acquisition of protective vehicles to be used by Air Force EOD technicians for reconnaissance and mine clearing missions.											
(U)	FY 1999 (\$ in Thousands)										
(U)	\$667	Completed EMD for Medium Shelter Systems.									
(U)	\$349	Completed EMD for Deployable Power Generator and Distribution System (DPGDS).									
(U)	\$829	Initiated Commercial Item Performance Evaluation (CIPE) in support of EMD for All-purpose Remote Transport System (ARTS).									
(U)	\$487	Continued other technical support.									
(U)	\$2,332	Total									
(U)	FY 2000 (\$ in Thousands)										
(U)	\$0	No Activity									
(U)	\$0	Total									

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development		0604617F Agile Combat Support	652895	
(U)	<u>A. Mission Description Continued</u>			
(U)	<u>FY 2001 (\$ in Thousands)</u>			
(U)	\$310	Conduct EMD for EOD Support Equipment.		
(U)	\$310	Complete EMD for ARTS.		
(U)	\$48	Complete other technical support.		
(U)	\$668	Total		
(U)	<u>B. Budget Activity Justification</u>			
	The Air Base Operability program is in RDT&E budget activity 5 - Engineering and Manufacturing Development (EMD) because it conducts development, testing and evaluation of materials and equipment for contingency basing, detection and handling of explosive ordnance, and tactical shelters.			
(U)	<u>C. Program Change Summary (\$ in Thousands)</u>			
(U)	Previous President's Budget (FY 2000 PBR)	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
(U)	Appropriated Value	2,485	946	674
(U)	Adjustments to Appropriated Value	2,503	0	
	a. Congressional/General Reductions	-11		
	b. Small Business Innovative Research	-39		
	c. Omnibus or Other Above Threshold Reprogram	-101		
	d. Below Threshold Reprogram	-20		
	e. Rescissions			
	f. Other			
(U)	Adjustments to Budget Years Since FY 2000 PBR			-6
(U)	Current Budget Submit/FY 2001 PBR	2,332	0	668
(U)	<u>Significant Program Changes:</u>			
	Funding: FY00 funding eliminated. Reduction in FY01 made to fund higher priority AF programs - FY01 project scope reduced.			
				TBD

Project 652895

Page 2 of 6 Pages

Exhibit R-2 (PE 0604617F)

774

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE		February 2000		
BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT				
05 - Engineering and Manufacturing Development			0604617F Agile Combat Support							652895				
(U) D. Other Program Funding Summary (\$ in Thousands)														
	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to	Total Cost					
	Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Complete						
(U) Other Procurement, AF, Other														
Base Maintenance and														
Support Program:														
(U) Mobility Equipment	35,883	46,865	50,513	27,742	27,173	20,461	19,687	Continuing	TBD					
(0208031F) (WSC 845420)														
(U) Air Base Operability	5,309	4,378	1,838	0	0	0	0	0	TBD					
(0208028F) (WSC 845100)														
(U) E. Acquisition Strategy														
Many of the projects funded in the PE employ a streamlined acquisition approach, instead of traditional EMD. Whenever practical, commercial items are tested and evaluated as candidates for solutions to user needs. As a modified form of EMD, this approach uses Commercial Item Performance Evaluation (CIPE) to provide characterization, verification and qualification testing to ensure off-the-shelf equipment is properly adapted for military purposes. Initiation of the CIPE phase includes all 6.4 activities leading up to contract award and subsequent test and evaluation culminating in a Milestone III production decision.														
(U) F. Schedule Profile														
				FY 1999		FY 2000		FY 2001						
			1	2	3	4	1	2	3	4	1	2	3	4
(U) MEDIUM SHELTER SYSTEMS			*											
(U) CIPE Contract Award														
(U) Complete IOT&E					*									
(U) Milestone III Decision														
(U) Award Production Option (Production Funds)														
(U) DEPLOY POWER GEN & DISTRO SYS														
(U) Award Phase II Contract				*										
(U) ALL-PURPOSE REMOTE TRANSPORT SYSTEM II				*										
(U) Milestone I/II Decision														
(U) Directed Sole Source Contract Award for the FY99 Procurement														
(U) Award Production Option (Production Funds)														
(U) Complete test of FY01 ARTS tools														
Project 652895														
Page 3 of 6 Pages														
Exhibit R-2 (PE 0604617F)														

775

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development	0604617F Agile Combat Support	652895	
(U) <u>F. Schedule Profile Continued</u>			
	FY 1999	FY 2000	FY 2001
	1 2 3 4	1 2 3 4	1 2 3 4
(U) EOD SUPPORT EQUIPMENT			
(U) Initiate CIPE of FY01 Equipment		X	
(U) Complete CIPE of FY01 Equipment			X
Project 652895			
Page 4 of 6 Pages		Exhibit R-2 (PE 0604617F)	

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE			PROJECT			
05 - Engineering and Manufacturing Development		0604617F Agile Combat Support			652895			
(U)	A. Project Cost Breakdown (\$ in Thousands)	FY 1999	FY 2000	FY 2001				
(U)	Contracts	867	0	0				
(U)	Administrative and &Analytic Support (A&AS)	464	0	570				
(U)	Other Government Agencies	432	0	50				
(U)	Materials/Equipment	82	0	0				
(U)	Other Technical Support	487	0	48				
(U)	Total	2,332	0	668				
(U)	B. Budget Acquisition History and Planning Information (\$ in Thousands)							
(U)	Performing Organizations:							
	Contractor or	Method/Type	Award or	Performing	Project			
	Government	or Funding	Obligation	Activity	Office			
	Performing	Vehicle	Date	EAC	EAC			
	Activity							
	Product Development Organizations							
	Medium Shelter Systems - FFP	Feb 98	1,050	1,050	500	667	0	
	A&AS							
	Deployable Power - Radian	May 98	2,238	2,238	1,341	349	0	
	ARTS - A&AS	Feb 98	2,800	2,800	0	829	0	
	EOD Support Equipment - FFP	Feb 00				0	0	
	A&AS							
	Support and Management Organizations							
	Various	Various	N/A	N/A	798	487	0	
	Test and Evaluation Organizations							
(U)	Government Furnished Property:							
	Contract							
	Method/Type	Award or						
	or Funding	Obligation						
	Vehicle	Date						
	Description							
	Item							
	Total							
	Program							

Exhibit R-3 (PE 0604617F)
 Page 5 of 6 Pages
 Project 652895

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE									
05 - Engineering and Manufacturing Development		0604617F Agile Combat Support							February 2000		
(U) Government Furnished Property Continued:											
		Contract		Award or		Delivery					
Item	Method/Type	or Funding	Obligation	Date	Date						
Description	Vehicle										
Product Development Property									Total Prior	Budget	
None									to FY 1999	FY 1999	
Support and Management Property									Budget	Budget to	
None									FY 2000	Complete	
Test and Evaluation Property											
None											
Subtotals									Total Prior	Budget	
*									to FY 1999	FY 2000	
Subtotal Product Development									1,841	0	
Subtotal Support and Management									798	0	
Subtotal Test and Evaluation											
Total Project									2,639	0	
* Basket Program Element with 20+ years of projects, prior years breakout not available.											
Project 652895 Page 6 of 6 Pages Exhibit R-3 (PE 0604617F)											

Page 6 of 6 Pages

UNCLASSIFIED

Exhibit R-3 (PE 0604617F)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604618F Joint Direct Attack Munition								653890	
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
653890	Joint Direct Attack Munitions	11,516	6,299	1,157	1,564	0	0	0	0	297,034	
	Quantity of RDT&E Articles	38	8	0	0	0	0	0	0	517	
*Quantity of RDT&E Articles reflect assets by delivery year and cannot be reconciled to the dollar amounts (incremental funding) shown in any one year. (U) A. Mission Description Operation DESERT STORM confirmed the need for, and Operation ALLIED FORCE confirmed the utility of a more accurate weapon delivery capability in adverse weather conditions from medium/high altitudes. Failure to satisfy this requirement will allow the enemy to continue to take advantage of the sanctuary of weather and/or prevent US air power from prosecuting a conflict on its terms. The Joint Direct Attack Munition (JDAM) is a joint Air Force and Navy munitions program to correct these shortfalls, with the Air Force as the executive service. JDAM will upgrade the existing inventory of general purpose bombs (Mk-84, BLU-109, and Mk-83/BLU-110) by integrating them with a guidance kit consisting of a Global Position System aided Inertial Navigation System (INS/GPS). JDAM will provide an accurate (13 meters) adverse weather capability. JDAM threshold aircraft are B-52H, F-22, AV-8B and F/A-18C/D, and JDAM objective aircraft are B-2, B-1B, F-16, F-15E, and other aircraft. JDAM development is a two-phased Engineering and Manufacturing Development (EMD) effort. EMD Phase I emphasized competitive design and manufacturing processes. This phase completed 10 Oct 95. EMD Phase II emphasizes full scale hardware build and flight test to verify system performance and will support OT&E. JDAM is an Air Force Acquisition Category (ACAT) 1D program. JDAM Low Rate Initial Production (LRIP) began in FY97. (U) FY 1999 (\$ in Thousands) (U) \$4,086 Completed EMD prime contractor activities for F/A-18, B-1, B-52 aircraft. Completed operational test of baseline friction brake Mk-84 and BLU-109. Completed development and operational test of flight restriction-free tail assembly on Mk-84 and BLU-109. Continue development flight testing and integration of restriction-free tail assembly on Mk-83. Continued Mk-83 AV-8B integration and F-16 testing. (U) \$2,436 Continued support and management tasks to define and coordinate the program activities of the prime contractor and various government development and test organizations. (U) \$4,994 Continued F/A-18C/D and B-52 aircraft flight testing, and completed B-2 and B-1 aircraft flight testing. Continued operational test of baseline Mk-84 and BLU-109. Start development and operational test of restriction-free tail assembly for Mk-84 and BLU-109. Started development flight test of the Mk-83 with restriction-free tail assembly. Continued F-16 aircraft guided flight tests. (U) \$0 No Activity (U) \$11,516 Total											

Project 653890

Page 1 of 5 Pages

Exhibit R-2 (PE 0604618F)

779

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development		0604618F Joint Direct Attack Munition	653890	
(U)	<u>A. Mission Description Continued</u>			
(U)	<u>FY 2000 (\$ in Thousands)</u>			
(U)	\$874	Complete development and restriction-free tail assembly for Mk-84 and BLU-109. Complete Mk-83 development activities. Fabricate hardware for F-22 Integration. Start consolidation of multiple flight software packages as a result of parallel integration on F/A-18 C/D, B-52, B-1, F-16 and B-2.		
(U)	\$4,318	Provide test support for completion of operational test activities and flight software consolidation. Conduct JPF wind tunnel testing.		
(U)	\$1,107	Provide support and management tasks to coordinate the program activities of the prime contractor and various test and aircraft organizations.		
		Note: Includes \$1M for risk definition study to integrate 500 lb JDAM on the B-1 and B-2.		
(U)	\$6,299	Total		
(U)	<u>FY 2001 (\$ in Thousands)</u>			
(U)	\$789	Complete consolidation and test of flight software. Support F-22 integration analysis and testing.		
(U)	\$250	Provide flight test support for flight software consolidation. Support F-22 integration testing.		
(U)	\$118	Provide support and management tasks to coordinate the program activities of the prime contractor and various test and aircraft organizations.		
(U)	\$1,157	Total		
(U)	<u>B. Budget Activity Justification</u>			
	This program is funded in Budget Activity 5, EMD, due to its focus on devising an affordable design and manufacturing process.			
(U)	<u>C. Program Change Summary (\$ in Thousands)</u>			
(U)	Previous President's Budget (FY 2000 PBR)	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
(U)	Appropriated Value	11,954	1,385	1,169
(U)	Adjustments to Appropriated Value	12,204	6,385	
	a. Congressional/General Reductions	-216	-3	
	b. Small Business Innovative Research	-206		
	c. Omnibus or Other Above Threshold Reprogram	-43		
	d. Below Threshold Reprogram	-168		
	e. Rescissions	-98		
	f. Other			
(U)	Adjustments to Budget Years Since FY 2000 PBR			-12
(U)	Current Budget Submit/FY 2001 PBR	11,516	6,299	1,157
				297,034
Project 653890		Exhibit R-2 (PE 0604618F)		
		Page 2 of 5 Pages		

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604618F Joint Direct Attack Munition								653890	
(U)	<u>C. Program Change Summary (\$ in Thousands) Continued</u>										
(U)	<u>Significant Program Changes:</u>										
	\$5M FY00 congressional add. To be used to determine the cause and solution of the BLU-109 JDAM/Joint Programmable Fuze (JPF) high altitude release malfunction.										
(U)	<u>D. Other Program Funding Summary (\$ in Thousands)</u>										
		FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost	
		Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate			
		79,548	189,700	219,848	186,192	186,391	191,092	191,001	84,600	1,390,300	
(U)	(U) Procurement of Ammunition, Air Force, P-1 Line Item JDAM										
(U)	<u>E. Acquisition Strategy</u>										
	The JDAM contract for Engineering and Manufacturing Development (EMD) Phase II is Cost Plus Award Fee. Procurement Lots 3, 4, (LRIP) and 5 have a Production Price Commitment Curve agreement to ensure a low unit cost.										
(U)	<u>F. Schedule Profile</u>										
		1	2	3	4	1	2	3	4		
				*	*						
				*							
(U)	LRIP (Lot 2) Option										
(U)	LRIP (Lot 3)										
(U)	Milestone III (2000 lb)										
(U)	Milestone III (1000 lb)										
(U)	MK-84 Development and Operational Test (DT/OT) Start/Finish										
(U)	MK-84 Initial Operational Test & Eval (IOT&E) Start/Finish										
(U)	BLU-109 DT/OT Start/Finish										
(U)	BLU-109 IOT&E Start/Finish										
(U)	MK-83 DT Flight Tests Start/Finish										
(U)	MK-83 DT/OT Start/Finish										
(U)	MK-83 IOT&E Start/Finish										
(U)											
Project 653890		Page 3 of 5 Pages								Exhibit R-2 (PE 0604618F)	

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									
BUDGET ACTIVITY		PE NUMBER AND TITLE				DATE		PROJECT	
05 - Engineering and Manufacturing Development		0604618F Joint Direct Attack Munition				February 2000		653890	
(U)	A. Project Cost Breakdown (\$ in Thousands)								
(U)	Primary Hardware Development						FY 1999	FY 2000	FY 2001
(U)	Test & Evaluation						4,086	874	789
(U)	Engineering & Prog Mgt Support						4,994	4,318	250
(U)	Total						2,436	1,107	118
							11,516	6,299	1,157
(U)	B. Budget Acquisition History and Planning Information (\$ in Thousands)								
(U)	Performing Organizations:								
	Contract or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget to Complete
	Product Development Organizations								Total Program
	Prime Contractors Boeing (St C/CPAF Louis, MO) Lockheed Martin		Oct-95	167,113	167,113	160,436	4,086	874	928
	FY94/95 Only								167,113
	Conceptual Studies	Various		N/A	N/A	22,428	0	1,000	0
	Support and Management Organizations								
	Engineering Spt.	CPAF	Oct 96	12,837	12,837	11,977	860	0	0
	TAMS Contractor	CPAF	Oct 96	4,553	4,553	4,246	307	0	0
	Program Office	Various		N/A	N/A	15,862	1,269	150	384
	Test and Evaluation Organizations								
	Aircraft SPO/PMA Supt.	Various		N/A	N/A	12,711	100	207	250
	Flight Testing	Various		N/A	N/A	34,930	4,661		13,518
	Ground Testing	Various		N/A	N/A	9,575	233		39,591
	JPF Wind Tunnel Testing	TBD		N/A	N/A			4,068	9,808
	GFE	Various		N/A	N/A	4,335			4,068
									4,335

Project 653890

Page 4 of 5 Pages

Exhibit R-3 (PE 0604618F)

Project 653890

Page 4 of 5 Pages

Exhibit R-3 (PE 0604618F)

782

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 2000	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE				
05 - Engineering and Manufacturing Development		0604618F Joint Direct Attack Munition				
(U) Government Furnished Property:						
Contract						
Method/Type		Award or				
Item	or Funding	Obligation	Delivery			
Description	Vehicle	Date	Date			
Product Development Property						
Not Applicable						
Support and Management Property						
Test and Evaluation Property						
Subtotals						
Subtotal Product Development		Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete
		182,864	4,086	1,874	789	928
Subtotal Support and Management		32,085	2,436	150	118	384
Subtotal Test and Evaluation		61,551	4,994	4,275	250	250
Total Project		276,500	11,516	6,299	1,157	1,562
		</				

Project 653890

Page 5 of 5 Pages

Exhibit R-3 (PE 0604618F)

783

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604703F Aeromedical Systems Development								652866	
	COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
652866	Aeromedical/Casualty Care Systems Dev	3,338	7,027	5,929	2,040	2,036	2,225	2,317	Continuing	TBD	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	
(U) A. Mission Description The Program Element provides tactical, strategic aeromedical evacuation systems, automated information systems, and medical treatment equipment to meet unique Air Force medical readiness and operational requirements.											
(U)	FY 1999 (\$ in Thousands)										
(U)	\$759	Spinal Cord Injury Transport System (SCITS) - Continued DT&E and EMD.									
(U)	\$119	Chemical Hardened Air Transportable Hospital/Chemically Hardened Air Management Plant (CHATH/CHAMP) - Provided technical support for production and initial fielding to many bases world wide.									
(U)	\$704	Theater Medical Information Program-Air Force (TMIP-AF)-Awarded EMD integration contract to design and develop a prototype, and conducted development tests for the Expeditionary Medical Support (EMEDS) air transportable hospital.									
(U)	\$15	Patient Loading System (PLS) - Provided technical support for production, IOC, and FOC.									
(U)	\$424	Aeromedical Systems Analysis - Conducted foundational studies and analyses, requirements analyses, and product demonstrations to meet operational needs, and defined acquisition strategies and baselines for potential system solutions to Air Force Medical Service materiel needs identified through the Air Force Surgeon General's modernization planning process. Prepared RFP for Advanced Hybrid Oxygen System-Medical (AHOS-M).									
(U)	\$1,317	Provided support for the Human Systems Center, System Program Office, and Technical Engineering and Management Support contractor.									
(U)	\$3,338	Initiated transition from research and explored potential technologies for EMD of AHOS-M.									
(U)	Total										
(U)	FY 2000 (\$ in Thousands)										
(U)	\$500	SCITS - Complete DT&E, conduct OT&E, and continue EMD.									
(U)	\$344	CHATH/CHAMP - Technical support for production.									
(U)	\$717	TMIP-AF - Award EMD integration contract to design and develop a prototype, and conduct development and operational tests for the AF-TMIP Global AIS infrastructure, including communications and security upgrades. Integrate TMIP Program Management Office (PMO), an ACAT I program, software delivery and conduct OT&E in conjunction with the TMIP-PMO.									
Project 652866		Page 1 of 6 Pages								Exhibit R-2 (PE 0604703F)	

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development		0604703F Aeromedical Systems Development	652866	
(U)	A. Mission Description Continued			
(U)	FY 2000 (\$ in Thousands) Continued			
(U)	\$3,057	Deployable Oxygen System (DOS) -Conduct risk analysis and complete market analysis in preparation for RFP release 2nd Qtr FY00. Award EMD contract 4th Qtr.		
(U)	\$365	Aeromedical Systems Analysis - Conduct foundational studies and analyses, requirements analyses, and product demonstrations to meet operational needs, and define acquisition strategies and baselines for potential system solutions to Air Force Medical Service materiel needs.		
(U)	\$2,044	Provide support for the Human Systems Center, System Program Office, and Technical Engineering and Management Support contractor. Begin transition from research and explore potential technologies for future EMD efforts.		
(U)	\$7,027	Total		
(U)	FY 2001 (\$ in Thousands)			
(U)	\$65	SCITS - Complete EMD and support production.		
(U)	\$494	TMIP-AF - Support HQ USAF/SGXR and Air Force Medical Logistics Office (AFMLO) to execute medical information infrastructure deployment per user fielding plan. Integrate and test pre-planned product improvements relative to block releases of the DoD-Level system.		
(U)	\$2,971	DOS - Begin EMD activities; Construct prototypes; Conduct test and evaluation; Begin computer simulation.		
(U)	\$757	Aeromedical Systems Analysis - Conduct foundational studies and analyses, requirements analyses, and product demonstrations to meet operational needs, and define acquisition strategies and baselines for potential system solutions to Air Force Medical Service materiel needs.		
(U)	\$1,642	Provide support for the Human Systems Center, System Program Office, and Technical Engineering and Management Support contractor.		
(U)	\$5,929	Initiate transition from research and explore potential technologies for future EMD efforts.		
(U)	Total			
(U)	B. Budget Activity Justification			
This program is in budget activity 5 - Engineering and Manufacturing Development because it supports development of systems for treatment, evacuation, and prediction of wartime casualties in a conventional or non-conventional warfare environment.				
(U)	C. Program Change Summary (\$ in Thousands)			
(U)		FY 1999	FY 2000	FY 2001
(U)	Previous President's Budget (FY 2000 PBR)	3,104	7,135	5,982
(U)	Appropriated Value	3,336	7,135	
(U)	Adjustments to Appropriated Value			
	a. Congressional/General Reductions	-223	-15	
	b. Small Business Innovative Research	-75		
Total Cost				
TBD				
Project 652866				
Page 2 of 6 Pages				
Exhibit R-2 (PE 0604703F)				

786

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development	0604703F Aeromedical Systems Development	652866	
(U) C. Program Change Summary (\$ in Thousands) Continued			
	FY 1999	FY 2000	FY 2001
c. Omnibus or Other Above Threshold Reprogram		-48	
d. Below Threshold Reprogram	328		
e. Rescissions	-28	-45	
f. Other			
(U) Adjustments to Budget Years Since FY 2000 PBR			
(U) Current Budget Submit/FY 2001 PBR	3,338	7,027	-53
(U) Significant Program Changes:			
- Schedule: SCITS milestone III has slipped 3 months due to change in mission requirements.			
(U) D. Other Program Funding Summary (\$ in Thousands)			
	FY 1999	FY 2000	FY 2001
	Actual	Estimate	Estimate
(U) Other Procurement, AF, PE	8,681	14,331	14,087
28038F, Other Base and			
Maintenance Support,			
Medical/Dental Equipment			
(U) E. Acquisition Strategy			
All major projects within this Program Element are awarded under full and open competition.			
(U) F. Schedule Profile			
	FY 1999	FY 2000	FY 2001
	1	2	3
(U) SPINAL CORD INJURY TRANSPORT SYS			
(U) -Begin OT&E			
(U) -Milestone III Decision			
(U) -Begin Production			
(U) CHATH/CHAMP			
(U) -Complete OT&E			
(U) -Milestone III Decision			
Project 652866		Exhibit R-2 (PE 0604703F)	

Page 3 of 6 Pages

787

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)						DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT	
05 - Engineering and Manufacturing Development		0604703F Aeromedical Systems Development				652866	
(U)	<u>F. Schedule Profile Continued</u>						
		FY 1999	FY 2000	FY 2001			
		1 2 3 4	1 2 3	1 2 3	4	1	2 3 4
(U)	-Begin Production						
(U)	-Complete Production Support						
(U)	PATIENT LOADING SYSTEM (PLS)		X				
(U)	-IOC for PLS	*					
(U)	-FOC for PLS		*				
(U)	DEPLOYABLE OXYGEN SYSTEM (DOS)						
(U)	-Prepare RFP		X				
(U)	-Begin EMD						
(U)	-Conduct Test and Evaluation				X		X
(U)	TMIP-AF						
(U)	-Award EMEDS contract		*				
(U)	-Complete EMEDS DT/User Testing		*				
(U)	-Milestone II Decision		*				
(U)	-Award Global Design EMD contract			*			
(U)	-Complete DT&E/IOT&E					X	
(U)	-Conduct System Level OT&E					X	

Project 652866
Page 4 of 6 Pages
Exhibit R-2 (PE 0604703F)

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									
BUDGET ACTIVITY					DATE				
05 - Engineering and Manufacturing Development					February 2000				
PE NUMBER AND TITLE					PROJECT				
0604703F Aeromedical Systems Development					652866				
(U)	<u>A. Project Cost Breakdown (\$ in Thousands)</u>				FY 1999	FY 2000	FY 2001	FY 2000	FY 2001
(U)	Engineering and Manufacturing Development				1,646	4,274	3,733		
(U)	Development/Operational Test and Evaluation				78	642	370		
(U)	Contractor Engineering Support				1,302	1,500	1,635		
(U)	Miscellaneous (System Program Office Operations)				277	142	131		
(U)	Mission Support/Supplies				35	469	60		
(U)	Total				3,338	7,027	5,929		
(U)	<u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>								
(U)	<u>Performing Organizations:</u>								
	<u>Contractor or</u>	<u>Contract</u>	<u>Award or</u>	<u>Performing</u>	<u>Project</u>	<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Total</u>
	<u>Government</u>	<u>Method/Type</u>	<u>Obligation</u>	<u>Activity</u>	<u>Office</u>	<u>to FY 1999</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>Program</u>
	<u>Performing</u>	<u>or Funding</u>	<u>Date</u>	<u>EAC</u>	<u>EAC</u>				
	<u>Activity</u>	<u>Vehicle</u>							
<u>Product Development Organizations</u>									
	TBTC-A.D. Little	CPAF/FFP	Mar 91	11,033	13,289	13,134	0	0	13,134
	CHATH/CHAMP Ph	CPFF	Dec 94	2,989	2,989	2,989	0	0	2,989
	I-EASI/Guild								
	CHATH/CHAMP Phase	CPFF	Aug 95	3,853	3,853	3,609	119	0	3,728
	II-ERDEC								
	PLS(Powers Industrial)	CPFF	Nov 97			22	15		37
	SCITS	CPIF	Jul 98	2,350	2,800	400	759	466	1,690
	AHOS--M	TBD	TBD	TBD	TBD	0	35	2,793	6,846
	TMIP-AF	Various	Various	TBD	4,278	1,758	703	650	3,605
	THREAT-BDM	CPFF	Aug 94	1,453	1,453	1,308	0	0	1,308
	New Business-	Various	Various			17,477	0	365	TBD
	Mission Support	Various	Various			532	424	469	TBD

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 2000	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE		0604703F Aeromedical Systems Development 652866		
(U) Performing Organizations Continued:						
Support and Management Organizations						
TEAMS-OpTech, McDonald Delivery Order Various Tech, MTC		3,061	1,033	1,392	1,332	Continuing TBD
SPO Operations Various		3,767	250	250	250	Continuing TBD
Test and Evaluation Organizations						
Aberdeen Prov. Grnd		2	0	0	0	Continuing TBD
Other		138	0	642	0	Continuing TBD
(U) Government Furnished Property:						
Contract						
Method/Type						
Award or						
Obligation						
Date						
Delivery						
Date						
Item						
Description						
Vehicle						
Product Development Property						
None						
Support and Management Property						
None						
Test and Evaluation Property						
None						
Subtotals						
Subtotal Product Development						
Subtotal Support and Management						
Subtotal Test and Evaluation						
Total Project						
		Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete
		41,229	2,055	4,743	4,347	TBD
		6,828	1,283	1,642	1,582	TBD
		140	0	642	0	TBD
		48,197	3,338	7,027	5,929	TBD

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604706F Life Support Systems								65412A	
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
65412A	Life Support Systems	6,763	11,473	14,758	14,121	4,303	2,872	3,363	0	90,556	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	
(U)	A. Mission Description This program provides for Engineering and Manufacturing Development (EMD) of life support equipment and subsystems to satisfy operational command requirements for improved life support equipment. There are five main projects in this PE. The Advanced Concept Ejection Seat (ACES) II Cooperative Improvement Program develops modifications for ACES II to accommodate lightweight aircrew members and high speed ejection. The K-36/3.5A Qualification Program will expand the US industry base by introducing a new ejection seat manufacturer and improve aircrew safety during high speed ejections. The Inflatable Restraint (IR) project leverages inflatable bag technology to improve ejection safety. The Advanced Technology Anti-Gravity Suit (ATAGS) replaces the current G-suit, enabling aircrew members to endure the high G-forces of modern aircraft. The Laser Eye Protection (LEP) project will provide aircrews with eye protection against a variety of laser devices which could cause a permanent loss of vision. This PE also provides for the continuing development of life support items and subsystems such as the following: flight helmets, oxygen breathing equipment for aviators, survival radios, night vision devices, active/passive noise reduction devices, and parachute releases. Program management support includes tasks to assess deficiencies of currently fielded equipment, provide for the transition of new technology into EMD, and to support all current life support projects.										
(U)	FY 1999 (\$ in Thousands) Continued Advanced Concept Ejection Seat (ACES) II Cooperative Improvement Program (CIP) Engineering and Manufacturing Development Initiated EMD of ejection seat inflatable restraints using FY99 Congressional Add Initiated Laser Eye Protection EMD Continued Advanced Technology Anti-G Suit EMD Program Management/Technical Support/Travel/Test & Evaluation in support of potential AF Life Support Systems including, but not limited to: Anti-Exposure Suit, Joint Strike Fighter (JSF) program, Oxygen Generating Systems (OGS), Panoramic Night Vision Goggles Total										
(U)	\$3,414										
(U)	\$2,376										
(U)	\$900										
(U)	\$43										
(U)	\$30										
(U)	\$6,763										

Project 65412A

Page 1 of 7 Pages

Exhibit R-2 (PE 0604706F)

791

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development		0604706F Life Support Systems	65412A	
<u>A. Mission Description Continued</u>				
(U)	<u>FY 2000 (\$ in Thousands)</u>			
(U)	\$3,000	Congressional Add for the continuation of EMD for ejection seat inflatable restraints		
(U)	\$2,500	Congressional Add for Life Support Systems (will be used to continue EMD of ATAGS (\$1.4M) and produce Fixed Seat Standardization Study (\$1.1M))		
(U)	\$1,637	Continue Laser Eye Protection EMD		
(U)	\$4,129	Continue ACES II CIP EMD		
(U)	\$207	Program Management/Technical Support/Travel/Test & Evaluation in support of potential AF Life Support Systems including, but not limited to: Anti-Exposure Suit, Joint Strike Fighter (JSF) program, Oxygen Generating Systems (OGS), Panoramic Night Vision Goggles		
(U)	\$11,473	Total		
(U)	<u>FY 2001 (\$ in Thousands)</u>			
(U)	\$6,250	Initiate K-36/3.5A Ejection Seat Qualification Program		
(U)	\$3,127	Continue Laser Eye Protection EMD		
(U)	\$4,634	Complete ACES II CIP EMD		
(U)	\$146	Continue Inflatable Restraint EMD		
(U)	\$336	Complete ATAGS EMD and Production Support Costs		
(U)	\$265	Program Management/Technical Support/Travel/Test & Evaluation in support of potential AF Life Support Systems including, but not limited to: Anti-Exposure Suit, Joint Strike Fighter (JSF) program, Oxygen Generating Systems (OGS), Panoramic Night Vision Goggles		
(U)	\$14,758	Total		
(U)	<u>B. Budget Activity Justification</u>			
	Program is in Budget Activity 5 because several projects are in Acquisition Phase II, EMD			
(U)	<u>C. Program Change Summary (\$ in Thousands)</u>			
(U)	Previous President's Budget (FY 2000 PBR)	FY 1999	FY 2000	FY 2001
(U)	Appropriated Value	6,108	6,135	8,388
(U)	Adjustments to Appropriated Value	6,244	11,635	
	a. Congressional/General Reductions	-118	-11	
	b. Small Business Innovative Research	-164		
	c. Omnibus or Other Above Threshold Reprogram		-78	
	Total Cost			58,915
Project 65412A		Exhibit R-2 (PE 0604706F)		

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development	0604706F Life Support Systems	65412A	
(U) <u>C. Program Change Summary (\$ in Thousands) Continued</u>			Total Cost
d. Below Threshold Reprogram	FY 1999 857	FY 2000 -73	FY 2001
e. Rescissions	-56		
f. Other			
(U) Adjustments to Budget Years Since FY 2000 PBR			6,370
(U) Current Budget Submit/FY 2001 PBR	6,763	11,473	14,758
(U) <u>Significant Program Changes:</u>			
FY 1999 Laser Eye Protection Program Acceleration (\$900); Cancelled year bill (-\$43)			31,641
FY 2000 Congressional Add for EMD of ejections seat Inflatable Restraints (\$3M) and for Life Support Systems (\$2.5M)			90,556
FY 2001 OSD Add to initiate of K-36/3.5A Ejection Seat Qualification Program.			
(U) <u>D. Other Program Funding Summary (\$ in Thousands)</u>			Total Cost
	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate
(U) NATO Cooperative R&D PE	1,000	0	0
0603790F (AF funded) ACES			
II CIP			
(U) Item Less Than \$5M (Safety Equipment) PE 0702833F:			0
Advanced Technology Anti-G Suit (ATAGS)			
(U) Item Less Than \$5M (Safety Equipment) PE 0702833F:			0
Laser Eye Protection (LEP)			
FY00 Congressional Add for Laser Eye Protection (\$2400K)			
	2,400	2,800	3,920
		4,520	1,400
			16,240
Project 65412A		Exhibit R-2 (PE 0604706F)	

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE		February 2000	
BUDGET ACTIVITY					PE NUMBER AND TITLE					PROJECT			
05 - Engineering and Manufacturing Development					0604706F Life Support Systems					65412A			
(U) E. Acquisition Strategy													
Acquisition strategy is carried out at the project level. Advanced Concept Ejection Seat (ACES) II is a joint project between the US and Japan. The US is responsible for improved seat stability and Japan is responsible for improved limb restraints and accommodations for lightweight aircrew. The US contracts are Sole Source with the Enhanced Drogue Chute and seat modifications engineered by Boeing/MDA through a Cost Plus Fixed Fee Contract. The Engineering and Manufacturing Development (EMD) effort is to be performed by Boeing through a Cost Plus Fixed Fee contract and Cost Plus Incentive Fee Contract. The ATAGS project consists of three Sole Source contracts with KRUG, Mustang, and SRL, respectively. The first two are Firm Fixed Price contracts with a Cost Plus Fixed Fee contract for SRL to conduct Direct Testing and Evaluation (DT&E) Support. The acquisition strategy for the Inflatable Restraints program, Laser Eye Protection program, and the K-36/3.5A Qualification program has not been established.													
(U) F. Schedule Profile													
(U)	ACES II Complete detail design												
(U)	ACES II Sled Test Completion												
(U)	ACES II OT&E Completed												
(U)	Inflatable Restraint Contract Award												
(U)	Inflatable Restraint Study Completion												
(U)	Inflatable Restraint EMD Contract Award												
(U)	ATAGS Complete IOT&E												
(U)	ATAGS Production Award												
(U)	ATAGS First Production Delivery FY02												
(U)	LEP EMD Contract Award												
(U)	LEP CDR Phase I												
(U)	LEP Complete DT&E Phase I												
(U)	LEP Complete IOT&E Phase I												
(U)	LEP Production Award												
(U)	K-36/3.5A Ejection Seat Qualification Contract Award												
(U)	K-36/3.5A Ejection Seat Qualification Program Completion (FY05)												
* = completed event													
X = planned event													
Project 65412A					Page 4 of 7 Pages					Exhibit R-2 (PE 0604706F)			

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE		February 2000	
BUDGET ACTIVITY				PE NUMBER AND TITLE						PROJECT			
05 - Engineering and Manufacturing Development				0604706F Life Support Systems						65412A			
A. Project Cost Breakdown (\$ in Thousands)													
(U)	Contracts									FY 1999	FY 2000	FY 2001	
(U)	Technical Engineering Support									4,088	8,062	10,220	
(U)	Travel									780	1,006	1,010	
(U)	Government Testing									184	193	115	
(U)	Program Management/Technical Support and Misc.									1,355	1,573	2,823	
(U)	Total									356	639	590	
										6,763	11,473	14,758	
B. Budget Acquisition History and Planning Information (\$ in Thousands)													
Performing Organizations:													
(U)	Contractor or Government	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program		
Product Development Organizations													
	UPCO-Inflatable Rest	SS/CPAF	Aug 99	2,053	2,053	0	2,053	0	0	0	2,053		
	Entran Devices-ACES II	FFP	Sep 99	39	39	0	39	0	0	0	39		
	Boeing-ACES II Struc Def	SS/CPFF	Dec 99	200	200	0	0	200	0	0	200		
	ATA Sensors-ACES II	FFP	Mar 00	31	31	0	0	31	0	0	31		
	Gemini Elec Co-ACES II	FFP	May 99	9	9	0	9	0	0	0	9		
	Denton, Inc-ACES II	FFP	Sep 99	47	47	0	47	0	0	0	47		
	First Tech Sys-ACES II	FFP	Oct 99	393	393	0	193	200	0	0	393		
	Boeing-ACES II --Study	SS/CPFF	Aug 99	237	237	0	37	200	0	0	237		
	Pioneer Aerospace-ACESII	FFP	Jan 99	9	9	0	9	0	0	0	9		
	EME Corp-ACES II	FFP	Mar 00	244	244	0	0	244	0	0	244		
	ITT-NVS	C/CPFF	18 Jan 93	14,081	14,081	14,081	0	0	0	0	14,081		
	KRUG-ATAGS	SS/FFP	7 July 97	424	424	424	0	0	0	0	424		
	Mustang-ATAGS	SS/FFP	Sep 97	499	499	499	0	0	0	0	499		
	LEP - (AL/Navy)	C/CPFF	Jun 97	4,552	4,552	4,552	0	0	0	0	4,552		
	MDA-Enhanced Drogue	SS/CPFF	Jun 97	1,130	1,130	1,130	0	0	0	0	1,130		
Project 65412A												Exhibit R-3 (PE 0604706F)	

Page 5 of 7 Pages

795

UNCLASSIFIED

UNCLASSIFIED

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

DATE

February 2000

BUDGET ACTIVITY

05 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604706F Life Support Systems

PROJECT

65412A

(U) Performing Organizations Continued:

Product Development Organizations

MDA-ACES II Seats	SS/FFP	Sept 97	150	150	0	0	0	0	0	150
SRL-ATAGS DT&E Support	SS/CPFF	Dec 97	150	150	0	0	0	0	0	150
Boeing-ACES II Pre-EMD	SS/CPFF	Feb 98	250	250	0	0	0	0	0	250
Brooks AFB, Supply	Supply Reqt	Feb 98	311	301	10	0	0	0	0	311
Contax	SS/FFP	Apr 98	11	11	0	0	0	0	0	11
Boeing-ACES II EMD	SS/CPFF	Dec 98	5,004	5,004	1,659	1,567	1,700	0	0	4,926
Pax River	AF 185	Aug 99	147	0	27	120	0	0	0	147
Holloman AFB	AF 185	Nov 99	5	0	5	0	0	0	0	5
LEP, TBD	C/CPFF	Mar 00	6,835	0	0	0	2,270	4,565	0	6,835
K-36, TBD	TBD	TBD	23,750	0	0	0	6,250	17,000	0	23,250
Inflatable Restraints, TBD	C/CPFF	Sep 00	3,000	0	0	3,000	0	0	0	3,000
Life Support Systems, TBD	TBD	TBD	2,500	0	0	2,500	0	0	0	2,500
Support and Management Organizations										
Program Management			5,601	2,878	356	639	590	1,138	0	5,601
Support										
Travel										
Tech Eng & Acq			1,273	581	184	193	115	200	0	1,273
Test and Evaluation Organizations			6,941	3,058	780	1,006	1,010	1,087	0	6,941
Edwards Test Facility	AF 185		100	0	100					100
AFFTC	Proj		3,146	3,146	0	0	0	0	0	3,146
AL/CF	Ord-Variou									
Holloman	Various		179	179	0	0	0	0	0	179
AFRL (incl. Ejection Seat Effort)	Various		2,864	2,864	0	200	2,500	0	0	2,864
	Various		4,951	4,951	1,255	1,373	323	663	0	4,951

Project 65412A

Page 6 of 7 Pages

796

Exhibit R-3 (PE 0604706F)

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	February 2000	PROJECT		
BUDGET ACTIVITY		PE NUMBER AND TITLE							
05 - Engineering and Manufacturing Development		0604706F Life Support Systems							
(U) Government Furnished Property:									
Item Description	Contract	Award or Obligation Date	Delivery Date	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget to Complete	Total Program	
	Method/Type or Funding Vehicle								
Product Development Property									
LEP		TBD							
Support and Management Property									
Test and Evaluation Property									
Subtotals									
Subtotal Product Development									
Subtotal Support and Management									
Subtotal Test and Evaluation									
Total Project									

THIS PAGE INTENTIONALLY LEFT BLANK

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE									
05 - Engineering and Manufacturing Development		0604708F Civil, Fire, Environmental, Shelter									
COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost		
Total Program Element (PE) Cost	2,599	2,682	2,746	2,782	2,828	2,886	2,942	Continuing	TBD		
652505 Aircraft Firefighting Suppression And Rescue	2,484	2,503	2,561	2,596	2,639	2,693	2,746	Continuing	TBD		
652674 Tactical Shelters	115	179	185	186	189	193	196	Continuing	TBD		
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

The Air Force is in the process of consolidating three small dollar Civil Engineer (CE) readiness R&D programs (PE64617f - Agile Combat Support; PE64708f - Civil, Fire, Environmental, Shelters; and the 3600 portion of PE28031f - War Reserve Material) under PE 64617. This will meet the intent of the House action to eliminate smaller PEs and provide a more cohesive, manageable CE Readiness modernization effort.

(U) **A. Mission Description**

This program funds the development, testing and evaluation of materials, equipment and procedures in the following areas:

(1) Aircraft Fire Fighting, Suppression and Rescue and Civil Engineer (CE) Readiness/Force Protection (FP). CE readiness is supported by multimedia training systems for Fire Fighting, CE Readiness/FP, including Explosive Ordnance Disposal (EOD) by developing interactive training scenarios which simulate hazardous situations, allows both training and testing of response capabilities, and complements field training while reducing time, cost and direct exposure to hazards. Develops, tests and evaluates new concepts and technology applications for fire fighting, suppression and rescue and CE Readiness/FP to improve rapid deployment capabilities in support of bare base/Air Expeditionary Forces (AEF), contingency operating areas and main operating bases.

(2) Tactical Shelters is the USAF portion of a tri-service effort to develop standardized, low maintenance, highly survivable shelters and shelter accessories that are easily mobilized and compatible with air, sea and land transport systems. These products will effectively support high mobility aircraft support, command and control, communications, medical, and data processing units for the tactical and strategic forces. These shelters also optimize the latest enhancements of force protection technology.

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE			
05 - Engineering and Manufacturing Development	0604708F Civil, Fire, Environmental, Shelter			
(U) B. Budget Activity Justification This program is in budget activity five, Engineering and Manufacturing Development, because it takes emerging technologies and concepts and develops them for Air Force use.				
(U) C. Program Change Summary (\$ in Thousands)				
(U) Previous President's Budget (FY 2000 PBR)	FY 1999	FY 2000	FY 2001	Total Cost
(U) Appropriated Value	2,715	2,768	2,824	
(U) Adjustments to Appropriated Value	2,715	2,719		
a. Congressional/General Reductions	-33	-2		
b. Small Business Innovative Research	-68			
c. Omnibus or Other Above Threshold Reprogram		-18		
d. Below Threshold Reprogram				
e. Rescissions	-15	-17		
f. Other				
(U) Adjustments to Budget Years Since FY 2000 PBR			-78	
(U) Current Budget Submit/FY 2001 PBR	2,599	2,682	2,746	TBD
(U) Significant Program Changes:				

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604708F Civil, Fire, Environmental, Shelter								652505	
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
652505	Aircraft Firefighting Suppression And Rescue	2,484	2,503	2,561	2,596	2,639	2,693	2,746	Continuing	TBD	
(U) A. Mission Description Aircraft Fire Fighting, Suppression and Rescue and Civil Engineer (CE) Readiness/Force Protection (FP). CE readiness is supported by multimedia training systems for Fire Fighting, CE Readiness/FP, including (Explosive Ordnance Disposal (EOD) by developing interactive training scenarios which simulate hazardous situations, allows both training and testing of response capabilities, and complements field training while reducing time, cost and direct exposure to hazards. Develops, tests and evaluates new concepts and technology applications for fire fighting, suppression and rescue and CE Readiness/FP to improve rapid deployment capabilities in support of bare base/Air Expeditionary Force (AEF), contingency operating areas and main operating bases.											
(U)	FY 1999 (\$ in Thousands)										
(U)	\$1,962	Continued courseware development of CE/MTS.									
(U)	\$160	Continued commercial technology exploitation.									
(U)	\$362	Other technical support.									
(U)	\$2,484	Total									
(U)	FY 2000 (\$ in Thousands)										
(U)	\$1,974	Continued courseware development of CE/MTS.									
(U)	\$156	Continued commercial technology exploitation.									
(U)	\$373	Other technical support.									
(U)	\$2,503	Total									
(U)	FY 2001 (\$ in Thousands)										
(U)	\$2,004	Continued courseware development of CE/MTS (Civil Engineer/Multimedia Training Systems).									
(U)	\$150	Continued commercial technology exploitation.									
(U)	\$407	Other technical support.									
(U)	\$2,561	Total									
(U)	B. Project Change Summary										
	N/A										

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000	PROJECT	
BUDGET ACTIVITY										PE NUMBER AND TITLE			652505
05 - Engineering and Manufacturing Development										0604708F Civil, Fire, Environmental, Shelter			
(U)	C. Other Program Funding Summary (\$ in Thousands)												

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									
BUDGET ACTIVITY					DATE		PROJECT		
05 - Engineering and Manufacturing Development					0604708F Civil, Fire, Environmental, Shelter		February 2000		
					PE NUMBER AND TITLE		652505		
(U)	A. Project Cost Breakdown (\$ in Thousands)								
(U)	Contracts				FY 1999	FY 2000	FY 2001		
(U)	A&AS Support				1,450	1,402	1,462		
(U)	Other Government Agencies				271	302	303		
(U)	Materials/Equipment				401	411	375		
(U)	Other Technical Support				0	15	14		
(U)	Total				362	373	407		
(U)					2,484	2,503	2,561		
(U)	B. Budget Acquisition History and Planning Information (\$ in Thousands)								
(U)	Performing Organizations:								
	Contractor or	Contract							
	Government	Method/Type	Award or	Performing	Project				
	Performing	or Funding	Obligation	Activity	Office				
	Activity	Vehicle	Date	EAC	EAC				
	Product Development Organizations				Total Prior	Budget	Budget	Budget to	Total
	Multimedia Training Sys Mult		Cont	14,500	to FY 1999	FY 1999	FY 2000	FY 2001	Program
	Fire Commercial Technology Mult		Cont	1,500		1,962	1,974	2,004	
	Exploitation					160	156	150	
	Support and Management Organizations								
	Various			1,950		362	373	407	
	Test and Evaluation Organizations								
	Various			750		0	0	0	
					Total Prior	Budget	Budget	Budget to	Total
					to FY 1999	FY 1999	FY 2000	FY 2001	Program
	Subtotals					2,122	2,130	2,154	
	Subtotal Product Development				2,847	362	373	407	
	Subtotal Support and Management				442	0	0	0	
	Subtotal Test and Evaluation				70	2,484	2,503	2,561	
	Total Project				3,359				
Project 652505					Page 5 of 8 Pages		Exhibit R-3 (PE 0604708F)		

803

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604708F Civil, Fire, Environmental, Shelter								652674	
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
652674	Tactical Shelters	115	179	185	186	189	193	196	Continuing	TBD	
(U)	A. Mission Description										
	Provides reliable, cost effective tactical shelters required to ensure the success of Air Force missions, provides Air Force membership in the DOD Tactical Shelter Program, and provides technology insertion for shelter development.										
(U)	<u>FY 1999 (\$ in Thousands)</u>										
(U)	\$40										
(U)	\$65										
(U)	\$10										
(U)	\$115										
(U)	Total										
(U)	<u>FY 2000 (\$ in Thousands)</u>										
(U)	\$66										
(U)	\$102										
(U)	\$11										
(U)	\$179										
(U)	Total										
(U)	<u>FY 2001 (\$ in Thousands)</u>										
(U)	\$73										
(U)	\$102										
(U)	\$10										
(U)	\$185										
(U)	Total										
(U)	B. Project Change Summary										
(U)	N/A										
(U)	C. Other Program Funding Summary (\$ in Thousands)										
	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost		
(U)	N/A										

Project 652674

Page 6 of 8 Pages

Exhibit R-2A (PE 0604708F)

804

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)				DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT	
05 - Engineering and Manufacturing Development		0604708F Civil, Fire, Environmental, Shelter		652674	
(U)	<u>D. Acquisition Strategy</u>				
	Tactical shelters development will continue to support Initial Deployable Kitchen (IDK) Program				
(U)	<u>E. Schedule Profile</u>				
		FY 1999	FY 2000	FY 2001	
		1 2 3 4	1 2 3 4	1 2 3 4	
(U)	N/A				

Project 652674

Page 7 of 8 Pages

Exhibit R-2A (PE 0604708F)

Project 652674

Page 7 of 8 Pages

Exhibit R-2A (PE 0604708F)

805

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									
BUDGET ACTIVITY					DATE		PROJECT		
05 - Engineering and Manufacturing Development					0604708F Civil, Fire, Environmental, Shelter		February 2000 652674		
A. Project Cost Breakdown (\$ in Thousands)					FY 1999		FY 2000		
(U)	MERWS (modular extendible ridged wall shelter) program				40				73
(U)	Composite Shelter Development				0		66		102
(U)	Shelter design, performance and analysis				65		102		10
(U)	JOCOTAS program				10		11		185
(U)	Total				115		179		
B. Budget Acquisition History and Planning Information (\$ in Thousands)					FY 1999		FY 2000		
(U)	Performing Organizations:				Total Prior to FY 1999		Budget FY 2000		
	Contractor or Government	Method/Type or Funding	Award or Obligation Date	Performing Activity	Project Office EAC	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete
	Activity	Vehicle		EAC					Total Program
	Product Development Organizations								
	MERWS Pgm	Multiple	Multiple			40	0	0	40
	Composite Shelter Dev	Multiple	Multiple			0	66	73	TBD
	Shelter design, performance, and analysis	Multiple	Multiple			65	102	102	TBD
	JOCOTAS Pgm	Multiple	Multiple			10	11	10	TBD
	Support and Management Organizations								
	N/A					0	0	0	0
	Test and Evaluation Organizations								
	N/A					0	0	0	0
	Subtotals				Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete
	Subtotal Product Development					115	179	185	TBD
	Subtotal Support and Management					0	0	0	0
	Subtotal Test and Evaluation					0	0	0	0
	Total Project					115	179	185	TBD
Project 652674					Page 8 of 8 Pages		Exhibit R-3 (PE 0604708F)		

806

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604727F Joint Standoff Weapons Systems								651000	
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
651000	Joint Standoff Weapons Systems	17,177	10,150	1,498	0	0	0	0	Continuing	TBD	
	Quantity of RDT&E Articles	10	0	0	0	0	0	0	0	0	

(U) **A. Mission Description**

The Joint Standoff Weapon (JSOW) is an air-to-ground weapon designed to attack a variety of targets during day, night, and adverse weather conditions. JSOW will enhance aircraft survivability as compared to current interdiction weapon systems by providing the capability for launch aircraft to standoff outside the range of enemy point defenses. The JSOW accuracy and launch-and-leave capability will allow several target kills per aircraft sortie. Integration of the JSOW baseline weapon, the AGM-154A (BLU-97 Combined Effects Bomblets), and the JSOW anti-armor weapon, the AGM-154B (BLU-108 submunition), with the threshold F-16C/D Block 50 aircraft is also included. The program provides for development and test of a dispenser design for the AGM-154B variant which employs a Sensor Fuzed Weapon (SFW) BLU-108 submunition payload. Future integration (objective aircraft) is planned for the B-1B, F-16C/D Block 40/30, and F-15E. B-2 integration is complete. The program also includes the development of JSOW Common Munitions Built-In Test (BIT) Reprogramming Equipment (CMBRE) software. The JSOW mission planning module continues to be developed concurrently with Air Force Mission Support System (AFMSS) Aircraft/Weapons/Electronics (AWE) development. Starting in FY99 through FY01, primary efforts will include an AGM-154B cost-reduction initiative, continued Air Force Mission Support System (AFMSS) development/upgrades, testing and integrating the DoD-directed Selective Availability Anti-Spoofing Module (SAASM), JSOW air vehicle and support software improvements, and BRU-57 Smart Rack development. The Joint AF/Navy program office and contractor design-to-cost initiative will reduce the current cost of the AGM-154B BLU-108 dispenser system. SAASM integration will enable JSOW to handle new encryption protocols mandated to be operational by FY04. Although JSOW SAASM is Navy-led, AF unique SAASM integration issues will need to be funded. AFMSS will be enhanced for the new platforms (B-1B, F-15E) integrated with JSOW during this timeframe. JSOW software development and testing continues in order to be compatible with all JSOW variants and across all AF and Navy launch platforms. Finally, funds will continue development of the BRU-57 Smart Rack, the AF's first MIL-STD-1760 dual carriage smart weapon ejector rack. F-16C/Ds will be able to carry increased payloads of four JSOWs, 1000lb JDAMs, or WCMDs. The F-16 with BRU-57 is a JSOW objective requirement and will require operational flight program software modifications.

JSOW is a joint Air Force/Navy program. The Navy is the lead service with the Air Force having developmental responsibility for the AGM-154B. AGM-154A & B are ACAT I C programs. AGM-154C (Navy only) is ACAT ID.

Project 651000

Page 1 of 6 Pages

Exhibit R-2 (PE 0604727F)

807

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development	0604727F Joint Standoff Weapons Systems	651000	
(U)	A. Mission Description Continued		
(U)	FY 1999 (\$ in Thousands)		
(U)	\$8,315	Completed AGM-154B development; continued development and test of B-52 AFMSS module; continued integration and planning support for B-1B and F-15E; conducted design-to-cost initiatives to make AGM-154B more reliable/cost effective. Corrected B-1 and B-2 explosive atmosphere issue with JSOW missile and performed software maintenance.	
(U)	\$1,393	Telemetry instrumentation kits for Multi-Service Operational Test & Evaluation (MOT&E)	
(U)	\$2,824	Purchased MOT&E Assets	
(U)	\$2,269	Continued engineering support, program office support, and Navy technical support at China Lake, and other government support.	
(U)	\$1,877	Completed BRU-57 flight and ground tests; completed BRU-57 Engineering and Manufacturing Development (EMD); continued F-16 Operational Flight Program (OFF) software development.	
(U)	\$499	Conducted F-16/50T5 JSOW self-targeting, F-16 production OFF verification, Development/Operational & Testing (DT/OT).	
(U)	\$17,177	Total	
(U)	FY 2000 (\$ in Thousands)		
(U)	\$6,773	Continue design-to-cost initiatives; continue JSOW software improvements/upgrades; complete development/testing of AFMSS module for B-1B, F-15E, and F-16; AF-unique SAASM integration/mission planning.	
(U)	\$1,700	Complete F-16 OFF Smart Rack development.	
(U)	\$1,112	Continue engineering support, program office support, and other government support. Complete B-52 integration.	
(U)	\$565	Fund/continue AGM-154B tests, including P31 Improved BLU-108 (IBLU) test, F-16 DT/OT, and production verification flight tests.	
(U)	\$10,150	Total	
(U)	FY 2001 (\$ in Thousands)		
(U)	\$1,400	Close out/complete on-going aircraft integration, SAASM integration, AFMSS mission planning interface, and design-to-cost initiatives; continue software compatibility development.	
(U)	\$98	Complete engineering and program office support	
(U)	\$1,498	Total	
(U)	B. Budget Activity Justification		
The RDT&E program element is in Budget Activity 5, EMD, because it supports the development of Air Force JSOW and BRU-57 and associated software, flight testing, and other developmental efforts.			
Project 651000		Page 2 of 6 Pages	
		Exhibit R-2 (PE 0604727F)	

808

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)				DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT	
05 - Engineering and Manufacturing Development		0604727F Joint Standoff Weapons Systems		651000	
(U)	C. Program Change Summary (\$ in Thousands)				
(U)	Previous President's Budget (FY 2000 PBR)	FY 1999	FY 2000	FY 2001	Total Cost
(U)	Appropriated Value	14,756	10,307	1,512	193,771
(U)	Adjustments to Appropriated Value	15,134	10,307		
	a. Congressional/General Reductions	-335	-24		
	b. Small Business Innovative Research	-404			
	c. Omnibus or Other Above Threshold Reprogram		-69		
	d. Below Threshold Reprogram	2,921			
	e. Rescissions				
	f. Other	-139	-64		
(U)	Adjustments to Budget Years Since FY 2000 PBR			-14	
(U)	Current Budget Submit/FY 2001 PBR	17,177	10,150	1,498	196,021
(U)	Significant Program Changes:				
	FY99: \$3,200 reprogrammed to purchase 10 MOT&E assets				
(U)	D. Other Program Funding Summary (\$ in Thousands)				
		FY 1999	FY 2000	FY 2001	FY 2002
		Actual	Estimate	Estimate	Estimate
(U)	Missile Procurement, AF P-1				
	Line Item 5, JSOW				
(U)	JSOW	38,265	38,917	63,256	178,182
(U)	SEEK EAGLE	9,511	1,150	1,023	1,269
					Continuing
					1,793,402
					TBD
(U)	E. Acquisition Strategy				
	JSOW awarded a joint service contract to Raytheon for EMD. A Cost Plus Incentive Fee (CPIF) contract was awarded for AGM-154A Low Rate Initial Production (LRIP) I. For AGM-154A LRIP II, a Fixed Price Incentive Fee (FPIF) contract was awarded. Both LRIP contracts were conducted in a sole source environment. A sole source AGM-154A Full Rate Production (FRP) and AGM-154B LRIP contract (FFP) was awarded on Dec 98. A sole source AGM-154A FRP contract (FFP) was awarded on Dec 99.				
(U)	F. Schedule Profile				
		FY 1999	FY 2000	FY 2001	

809

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000		
BUDGET ACTIVITY		PE NUMBER AND TITLE										PROJECT	
05 - Engineering and Manufacturing Development		0604727F Joint Standoff Weapons Systems										651000	
(U)	F. Schedule Profile Continued												
		1	2	3	4	1	2	3	4	1	2	3	4
(U)	Acquisition Milestones												
(U)	BRU-57 Development/Testing Completion												
(U)	BRU-57 Production Contract Award		*										
(U)	AGM 154A/B Production Contract Award					*				X			
(U)	AGM-154A Milestone III/FRP												
(U)	AGM-154B LRIP Decision												
(U)	AGM-154B Milestone III/FRP												
(U)	T&E Milestones												
(U)	BRU-57 Qualification and Reliability (Comp)		*										
(U)	AGM-154B DT/OT					*							
(U)	AGM-154B BLU-108 P3I Test								X				
(U)	AGM-154B MOT&E (Start/Comp)								X				
	* = Completed Event												
	X = Planned Event												

Project 651000

Page 4 of 6 Pages

Exhibit R-2 (PE 0604727F)

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT		651000			
05 - Engineering and Manufacturing Development										0604727F Joint Standoff Weapons Systems	
(U)	<u>A. Project Cost Breakdown (\$ in Thousands)</u>										
(U)	Major Contracts	FY 1999	FY 2000	FY 2001							
(U)	Support Contracts	12,532	6,773	1,400							
(U)	Program Office Support/Other Government Support	127	18	0							
(U)	Test and Evaluation	2,142	1,094	98							
(U)	BRU-57	499	565	0							
(U)	Total	1,877	1,700	0							
(U)		17,177	10,150	1,498							
(U)	<u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>										
(U)	<u>Performing Organizations:</u>										
	Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget to FY 2001	Budget to Complete	Total Program
	<u>Product Development Organizations</u>										
	Raytheon Sys. Co.	SS/CPIF	Jun 95	136,902	136,902	116,197	12,532	6,773	1,400	0	136,902
	Lockheed	FP/CPIF	Feb 95	16,750	16,750	13,750	1,500	1,500	0	0	16,750
	M Tech	FP/CPIF	Oct 95	7,447	7,447	7,447	0	0	0	0	7,447
	<u>Support and Management Organizations</u>										
	China Lake NWC	MIPR		N/A	N/A	4,807	419		0	0	5,226
	AAC/YH & Other			N/A	N/A	14,550	1,850	1,112	98	0	17,610
	<u>Test and Evaluation Organizations</u>										
	AAC, Eglin AFB	REO		N/A	N/A	6,100	499	565	0	0	7,164
	BRU-57 Misc.	REO/Other		N/A	N/A	215	377	200	0	0	792
(U)	<u>Government Furnished Property:</u>										
	Contract										
	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date			Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget to FY 2001	Budget to Complete	Total Program
	Item Description										

Project 651000
Page 5 of 6 Pages
Exhibit R-3 (PE 0604727F)

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									
BUDGET ACTIVITY					DATE		PROJECT		
05 - Engineering and Manufacturing Development					0604727F Joint Standoff Weapons Systems		February 2000		
(U) Government Furnished Property Continued:					PE NUMBER AND TITLE		651000		
Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget to Complete	Total Program	
Product Development Property	FPIF	Mar 96	Various	4,130	0	0	0	4,130	
Textron									
Support and Management Property									
Test and Evaluation Property									
Subtotals				Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget to Complete	Total Program	
Subtotal Product Development				141,524	14,032	8,273	0	165,229	
Subtotal Support and Management				19,357	2,269	1,112	0	22,836	
Subtotal Test and Evaluation				6,315	876	765	0	7,956	
Total Project				167,196	17,177	10,150	1,498	196,021	

Project 651000

Page 6 of 6 Pages

Exhibit R-3 (PE 0604727F)

812

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604735F Combat Training Ranges								652286	
	COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
652286	Combat Training Range Equipment	13,141	11,828	12,559	13,124	13,172	14,820	15,113	Continuing	TBD	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	
(U)	A. Mission Description Air Combat Training Systems (ACTS) provide equipment for Air Force combat training ranges to support mission training/evaluation of aircrews, as well as the operational testing of weapons systems and tactics under simulated combat conditions. This program develops the electronic telecommunications, and instrumentation equipment/systems for the training ranges. ACTS are interoperable with Navy combat training ranges, and provide the capability to train aircrews in air-to-air combat, air-to-ground combat, and electronic warfare, while providing real-time monitoring and control of aircraft during large force exercises and recording events for post-mission debrief and analysis. Current plans call for continued development and fielding of the Joint Tactical Combat Training System (JTCTS), a significantly improved version of currently fielded ACTS. Another effort is to develop the advanced threat Mini-(MUTES) Multiple Threat Emitter System Modification Program (M3P) to satisfy Air Force Electronic Warfare training capability requirements. The required system modifications will enable Mini-MUTES to incorporate the latest, most lethal advanced surface-to-air threats. This program element also funds aircraft/pod interfaces, software interoperability among service ranges and the encryption of range/aircraft data links, specifically the Nellis Air Combat Training System (NACTS) which supports Red Flag, Green Flag and USAF Fighter Weapons School training.										
(U)	FY 1999 (\$ in Thousands)										
(U)	\$3,078	Continued Combat Training Ranges (CTR) basic operating support, and system acquisition and engineering support for range and threat systems									
(U)	\$1,710	Continued interoperability improvements with existing Air Force and Navy ranges to include software, upgrades, and weapons simulation development									
(U)	\$1,000	Continued Joint Tactical Combat Training System (JTCTS) development									
(U)	\$926	Continued development of aircraft interfaces with aircraft/Pod integration for range applications with aircraft program offices									
(U)	\$4,175	Continued Mini-(MUTES) Multiple Threat Emitter System Modification Program (M3P) Advanced Threats									
(U)	\$2,252	Continued ASSET [ACTS (Air Combat Training System) Software Support Evaluation and Test] efforts									
(U)	\$13,141	Total									

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development	0604735F Combat Training Ranges	652286	
(U) A. Mission Description Continued			
(U) FY 2000 (\$ in Thousands)			
(U) \$2,839	Continue CTR basic operating support, and system acquisition and engineering support for range and threat systems		
(U) \$620	Continue interoperability improvements with existing Air Force and Navy ranges to include software, upgrades, and weapons simulation development		
(U) \$3,000	Develop and integrate Advanced Message Oriented Data Security Module (AMODSM) encryption capability into NACTS Pods		
(U) \$4,764	Continued Mini-(MUTES) Multiple Threat Emitter System Modification Program (M3P)		
	Advanced Threats		
(U) \$505	Continue development of aircraft interfaces with aircraft/Pod integration for range applications with aircraft program office		
(U) \$100	Continue ASSET efforts		
(U) \$11,828	Total		
(U) FY 2001 (\$ in Thousands)			
(U) \$3,751	Continue CTR basic operating support, and system acquisition and engineering support for range and threat systems		
(U) \$2,692	Continue interoperability improvements with existing Air Force and Navy ranges to include software, upgrades, and weapons simulation development		
(U) \$2,007	Continue development of aircraft interfaces with aircraft/Pod integration for range applications with aircraft program office		
(U) \$2,764	Continue M3P Advanced Threats		
(U) \$1,200	Continue development of Multiple Threat Emitter System (MUTES) Computer Upgrade		
(U) \$145	Continue ASSET efforts		
(U) \$12,559	Total		
(U) B. Budget Activity Justification			
This program is in budget activity 5 - Engineering and Manufacturing Development because the Combat Training Ranges (CTR) Program directly contributes to the effectiveness and survivability of US combat forces by developing range instrumentation and training systems to increase the effectiveness of the training spectrum from individual aircrew skill training to large-scale exercises.			
Project 652286		Page 2 of 7 Pages	
		Exhibit R-2 (PE 0604735F)	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE		0604735F Combat Training Ranges				February 2000		652286	
05 - Engineering and Manufacturing Development											
(U)	<u>C. Program Change Summary (\$ in Thousands)</u>										
(U)	Previous President's Budget (FY 2000 PBR)		FY 1999	FY 2000	FY 2001	Total Cost		TBD			
(U)	Appropriated Value		13,999	6,220	12,670						
(U)	Adjustments to Appropriated Value		14,581	12,020							
(U)	a. Congressional/General Reductions		-541	-37							
(U)	b. Small Business Innovative Research		-463	-80							
(U)	c. Omnibus or Other Above Threshold Reprogram		-321	-75							
(U)	d. Below Threshold Reprogram		-115								
(U)	e. Rescissions										
(U)	f. Other										
(U)	Adjustments to Budget Years Since FY 2000 PBR				-111						
(U)	Current Budget Submit/FY 2001 PBR		13,141	11,828	12,559			TBD			
(U)	<u>Significant Program Changes:</u>										
(U)	FY99 Includes \$51,000 Cancelled Year Bill										
(U)	FY00 Includes \$5,800,000 Congressional Plus-Up to fund M3P disconnects and to begin development for Pod Encryption for NACTS										
(U)	<u>D. Other Program Funding Summary (\$ in Thousands)</u>										
(U)	FY 1999		FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost	
(U)	Actual		Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Continuing	TBD	
(U)	PE27429F: Appn: Other		18,767	45,023	26,003	27,625	26,824	33,667	32,096	TBD	
(U)	Procurement, AF (OPAF)										
(U)	Program Title: Combat										
(U)	Training Ranges										
(U)	Initial Spares		1,823	2,055	771	780	781	797	813	TBD	
(U)	Total OPAF		20,590	47,078	26,774	28,405	27,605	34,464	32,909	TBD	
(U)	PE27429F: Appn: Aircraft		413	16,736	18,107	18,010	18,176	18,721	19,135	TBD	
(U)	Procurement, AF (APAF),										
(U)	Program Title: Combat										
(U)	Training Ranges										
(U)	Initial Spares		37	265	1,256	1,368	1,393	1,429	1,463	TBD	
Project 652286											
Exhibit R-2 (PE 0604735F)											

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY						DATE		PROJECT	
05 - Engineering and Manufacturing Development						February 2000		652286	
PE NUMBER AND TITLE						COMBAT TRAINING RANGES			
D. Other Program Funding Summary (\$ in Thousands)									
	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to	Total Cost
	Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Complete	
(U) Total APAF	450	17,001	19,363	19,378	19,569	20,150	20,598	Continuing	TBD
E. Acquisition Strategy									
The acquisition strategy is competitive, with cost plus contracts.									
F. Schedule Profile									
(U) Nellis Air Combat Training System (NACTS)									
(U) Operational Fielding									
(U) NACTS Encryption Contract Award									
(U) Advanced Threats Development (M3P)									
(U) Preliminary Design Review (PDR)									
(U) Field Testing									
(U) Production Decision									
(U) IOC									
(U) Joint Service Range Software Interoperability									
(U) Joint Service AMRAAM 5.1 Software Upgrade									
(U) Joint Service Tracking Instrumentation									
(U) Subsystem Emulator (TISM)									
(U) Digital Display System (DDS) Replacement with Advanced DDS (ADDS)									
(U) Joint Tactical Combat Training System (JTCTS)									
(U) Tech Eval Report Complete									
(U) ASSET Facility									
(U) ADDS 4.1 & 5.0 AF/Navy Integration									
(U) DDS Upgrade Air National Guard (ANG)									
(U) * = Completed event									
Project 652286									
Exhibit R-2 (PE 0604735F)									

Page 4 of 7 Pages

816

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development	0604735F Combat Training Ranges	652286	
(U) F. Schedule Profile Continued			
		FY 1999	FY 2000
		1 2 3 4	1 2 3 4
(U) X = Planned event			
Project 652286		Exhibit R-2 (PE 0604735F)	

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT	
05 - Engineering and Manufacturing Development		0604735F Combat Training Ranges		652286	
(U)	A. Project Cost Breakdown (\$ in Thousands)				
		FY 1999	FY 2000	FY 2001	
(U)	Aircraft Interface Development	926	505	2,007	
(U)	Mini-Mutes Modification Program (M3P)	4,175	4,764	2,764	
(U)	MUTES Computer Upgrade	0	0	1,200	
(U)	Joint Service Interoperability Improvements	1,710	620	2,692	
(U)	ACTS (Air Combat Training System) Software Support Evaluation and Test (ASSETS) Efforts	2,252	100	145	
(U)	Joint Tactical Combat Training Ranges (JTCTS)/Alpena Development	1,000	0	0	
(U)	Combat Training Ranges Program Office Support	3,078	2,839	3,751	
(U)	NACTS Encryption Development		3,000		
(U)	Total	13,141	11,828	12,559	
(U)	B. Budget Acquisition History and Planning Information (\$ in Thousands)				
(U)	Performing Organizations:				
	Contractor or Government	Contract Method/Type	Award or Obligation Date	Performing Activity EAC	Project Office EAC
	Performing Activity	Vehicle			
	Product Development Organizations				
	Cubic Defense (NACTS)	C/CPAF/FFP	Mar 95	31,149	0
	Raytheon (JTCTS)	Navy Contr	Mar 95	2,500	0
	ASI (ASSET)	CPAF	Sep 96	2,385	100
	Harris Corp (Advanced Threats)	CPFF	May 98	380	4,764
	Joint Interoperability Aircraft Interface	Navy Contract Through MOAs with ALCs & Aircraft SPO Contractors	Mar 97 Jun 96	3,429 1,035	620 505
	NACTS Encryption	TO BE	3rd Qtr/00	3,000	
	Project 652286		Page 6 of 7 Pages		Exhibit R-3 (PE 0604735F)

818

UNCLASSIFIED

BUDGET ACTIVITY			PE NUMBER AND TITLE		DATE	PROJECT
RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			0604735F Combat Training Ranges		February 2000	652286
05 - Engineering and Manufacturing Development						
(U) Performing Organizations Continued:						
<u>Product Development Organizations</u>						
COMPETED						
L3 CONIC (AMODSM)	Navy	FY95	2,880	0	0	2,880
Contractor						
<u>Support and Management Organizations</u>						
AAC/WRR, Eglin AFB, FL	Various		8,576	2,778	2,539	TBD
NAWC, China Lake, CA	Various		113	0	0	113
<u>Test and Evaluation Organizations</u>						
AAC/WRR, Eglin AFB, FL	Various		1,405	100	100	TBD
46 Test Wing, Eglin AFB, FL	Various		640	200	200	TBD
<u>Subtotals</u>			<u>Total Prior to FY 1999</u>	<u>Budget FY 1999</u>	<u>Budget FY 2000</u>	<u>Total Program</u>
Subtotal Product Development			43,758	10,063	8,989	TBD
Subtotal Support and Management			8,689	2,778	2,539	TBD
Subtotal Test and Evaluation			2,045	300	300	TBD
Total Project			54,492	13,141	11,828	TBD

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

PE TITLE: Integrated Command & Control Applications

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

DATE _____

February 2000

BUDGET ACTIVITY

PE NUMBER AND TITLE

05 - Engineering and Manufacturing Development

0604740F Integrated Command & Control

Applications

[illegible]

(U) A. Mission Description

The goal of this program is to dramatically reduce the development time, costs, and risks associated with the acquisition and development of warfighting command and control (C2) systems by using families of pre-defined product lines to enhance common application use and reuse. Project 2523 minimizes development cost and time by using pre-defined product line architectures with tested, reusable software components from mature programs. The use of common product line designs during development can improve software quality and reliability while reducing fielding times and overall life cycle costs. Project 2524, Reuse and Component Support (RCS) identifies, tests, and provides reusable software components and products to the IC2A program. The RCS project developed a software reuse strategy for the DoD; and is developing a National Product Line Asset Center (NPLACE) Software Reuse Repository (a Congressional special interest item) to manage a command center product line based on primarily commercial off-the-shelf (COTS) products. The IC2A program has determined that over 80% of the functionality of any command center software is common to all command centers. For programs using product line concepts, average savings of 56% in development costs and 66% in development time can be realized.

(U) **B. Budget Activity Justification**

This program is in budget activity 5 - Engineering and Manufacturing Development, due to the nature of the effort.

(U) C: Program Change Summary (\$ in Thousands)

(U)	Previous President's Budget (FY 2000 PBR)	FY 1999	FY 2000	FY 2001	Total Cost
		<u>2,194</u>	196	216	TBD
(U)	Appropriated Value				
(U)	Adjustments to Appropriated Value	2,200	6,096		
	a. Congressional/General Reductions	-6			

Page 1 of 10 Pages

Exhibit R-2 (PE 0604740F)

821

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE		
05 - Engineering and Manufacturing Development	0604740F Integrated Command & Control Applications		
(U) C. Program Change Summary (\$ in Thousands) Continued			Total Cost
b. Small Business Innovative Research	FY 1999 FY 2000 FY 2001	-70 -41	TBD
c. Omnibus or Other Above Threshold Reprogram		-66	TBD
d. Below Threshold Reprogram		-11	TBD
e. Rescissions			
f. Other			
(U) Adjustments to Budget Years Since FY 2000 PBR			
(U) Current Budget Submit/FY 2001 PBR		2,047	6,055
(U) Significant Program Changes:			
Congress added \$5.9 million in FY00 for Asset Software Reuse Program \$2.8 million), National Product Line Asset Center (NPLACE)(\$2.6 million), and Air Force Product Line Engineering (\$0.5 million).			

Page 2 of 10 Pages
 Exhibit R-2 (PE 0604740F)

822

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604740F Integrated Command & Control Applications								652523	
		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
652523	Architectural Implementation	47	195	214	233	252	271	290	Continuing	TBD	
(U) <u>A. Mission Description</u> This project will be renamed Product Lines. This project forms a vital component of the Integrated Command and Control Applications (IC2A) program by providing pre-defined product line architectures with tested, reusable software components to build Command and Control (C2) systems. Using rapid prototyping techniques, a Product Line contractor can quickly tailor a product line to the warfighter's needs and deliver an integrated, combat-ready system. All product lines and components are based on Defense Information Infrastructure Common Operating Environment (DII COE) principles; make maximum use of open system architectures, industry standards, Commercial Off-the Shelf (COTS) products, and government furnished equipment; and incorporate multilevel security (MLS) features. This effort minimizes development risks by reusing proven software components from mature programs and by continuously testing new products and technologies against the product line designs to ensure integration and interoperability. The Product Line contractors develop and maintain the product line infrastructure in a collaborative, synergistic environment using validated, mature software engineering processes to help ensure the quality of the designs and components. Proven product line designs and tested software components reduce development costs, risks, and time for the user. New technologies, capabilities, and incremental developments are assessed and integrated into the designs as part of the product line development process to minimize any impact to the user. (U) <u>FY 1999 (\$ in Thousands)</u> (U) \$47 Qualified components for product lines. (U) \$47 Total (U) <u>FY 2000 (\$ in Thousands)</u> (U) \$195 Qualify components for product lines. (U) \$195 Total (U) <u>FY 2001 (\$ in Thousands)</u> (U) \$214 Qualify components for product lines. (U) \$214 Total (U) <u>B. Project Change Summary</u>											

Project 652523

Page 3 of 10 Pages

Exhibit R-2A (PE 0604740F)

823

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604740F Integrated Command & Control Applications								652523	
(U)	C. Other Program Funding Summary (\$ in Thousands)	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to	Total Cost	
		Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Complete		
(U)	Not applicable										
(U)	D. Acquisition Strategy										
	All major contracts within this Program Element were awarded after full and open competition.										
(U)	E. Schedule Profile										
(U)	Product Line Component Qualification (Ongoing)										
	* - Completed Event										
	X - Planned Event										
	This is a support and management level of effort program. All activities are ongoing.										

Project 652523

Page 4 of 10 Pages

Exhibit R-2A (PE 0604740F)

Page 4 of 10 Pages

Exhibit R-2A (PE 0604740F)

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604740F Integrated Command & Control Applications								652523	
(U)	<u>A. Project Cost Breakdown (\$ in Thousands)</u>										
(U)	Product Line Component Qualification										
(U)	Total										
(U)	<u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>										
(U)	<u>Performing Organizations:</u>										
	<u>Contractor or Government Performing Activity</u>	<u>Contract Method/Type or Funding Vehicle</u>	<u>Award or Obligation Date</u>	<u>Performing Activity EAC</u>	<u>Project Office EAC</u>	<u>Total Prior to FY 1999</u>	<u>Budget FY 1999</u>	<u>Budget FY 2000</u>	<u>Budget FY 2001</u>	<u>Budget to Complete</u>	<u>Total Program</u>
	<u>Product Development Organizations</u>										
	Hughes	CPFF	19 Dec 92	N/A	N/A	453	15	65	71	Continuing	TBD
	Raytheon	CPFF	19 Dec 92	N/A	N/A	1,000	16	65	72	Continuing	TBD
	AGCS	CPFF	Dec 94	N/A	N/A	50	0	0	0	0	50
	TRW	CPFF	12 Feb 97	N/A	N/A	0	16	65	71	Continuing	TBD
	Unisys	CPFF	29 Sep 93	N/A	N/A	30	0	0	0	0	30
	<u>Support and Management Organizations</u>										
	Not applicable.										
	<u>Test and Evaluation Organizations</u>										
	Not applicable.										
(U)	<u>Government Furnished Property:</u>										
	<u>Contract Method/Type or Funding Vehicle</u>	<u>Award or Obligation Date</u>	<u>Delivery Date</u>	<u>Total Prior to FY 1999</u>	<u>Budget FY 1999</u>	<u>Budget FY 2000</u>	<u>Budget FY 2001</u>	<u>Budget to Complete</u>	<u>Total Program</u>		
	<u>Product Development Property</u>										
	Not applicable.										
	<u>Support and Management Property</u>										
	Not applicable.										

Project 652523

Page 5 of 10 Pages

Exhibit R-3 (PE 0604740F)

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 2000	
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT		
05 - Engineering and Manufacturing Development		0604740F Integrated Command & Control Applications		652523		
(U) Government Furnished Property Continued:						
<u>Test and Evaluation Property</u>						
Subtotals						
Subtotal Product Development		Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget to Complete	Total Program
		1,533	47	195	TBD	TBD
Subtotal Support and Management						
Subtotal Test and Evaluation						
Total Project		1,533	47	195	TBD	TBD

Project 652523

Page 6 of 10 Pages

Exhibit R-3 (PE 0604740F)

Page 6 of 10 Pages

UNCLASSIFIED

Exhibit R-3 (PE 0604740F)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE		February 2000						
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT						
05 - Engineering and Manufacturing Development		0604740F Integrated Command & Control Applications		652524						
		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
652524	Reuse and Component Support	2,000	5,860	0	0	0	0	0	0	7,860
(U) A. Mission Description This project identifies, tests, and provides reusable software components and products for use by Air Force and Department of Defense program offices. A software reuse strategy for DoD was developed as part of this effort. Efforts are continuing with development of a Product Line Asset Center Software Reuse Repository to manage a command center product line based primarily on commercial off-the-shelf (COTS) products through the National Product Line Asset Center (NPLACE) contract vehicle. (U) FY 1999 (\$ in Thousands) (U) \$360 Identified Enterprise Wide Assets (From COTS, GOTS, Product line engineering centers). (U) \$1,396 Performed suitability testing against product line architectures, assets, criteria, and design. (U) \$244 Maintained repository/distribute product line architecture, assets, criteria, and design. (U) \$2,000 Total (U) FY 2000 (\$ in Thousands) (U) \$2,780 Asset Software Reuse Program (U) \$2,580 National Product Line Asset Center (NPLACE) (U) \$500 Air Force Product Line Engineering (U) \$5,860 Total (U) FY 2001 (\$ in Thousands) (U) \$0 No Activity (U) \$0 Total (U) B. Project Change Summary Congress added \$5.9 million in FY00 for Asset Software Reuse Program \$2.8 million), National Product Line Asset Center (NPLACE)(\$2.6 million), and Air Force Product Line Engineering (\$0.5 million).										

Project 652524

Page 7 of 10 Pages

Exhibit R-2A (PE 0604740F)

827

UNCLASSIFIED

[illegible]

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

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604740F Integrated Command & Control Applications								652524	
<u>A. Project Cost Breakdown (\$ in Thousands)</u>											
(U)	Enterprise-wide Asset Identification	FY 1999	FY 2000	FY 2001							
(U)	Product Line Suitability Testing (NPLACE)	360	2,780	0							
(U)	Product Line Engineering	1,396	2,580	0							
(U)	Total	244	500	0							
		2,000	5,860	0							
Congress added \$5.9 million in FY00 for Asset Software Reuse Program \$2.8 million), National Product Line Asset Center (NPLACE)(\$2.6 million), and Air Force Product Line Engineering (\$0.5 million).											
<u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>											
<u>Performing Organizations:</u>											
Contract or	Contract	Performing	Award or	Project	Budget	Budget	Budget	Budget to	Total		
Government	Method/Type	Activity	Obligation	Office	FY 1999	FY 2000	FY 2001	Complete	Program		
Performing	or Funding	EAC	Date	EAC							
Activity	Vehicle										
Product Development Organizations											
West Virginia High	NPLACE	N/A	18 Nov 96	N/A	1,672	2,600	0	0	4,272		
Technology Center											
Raytheon/Hughes/TRW	CPFF	N/A	20 Feb 97	N/A	328	3,260	0	0	3,588		
Support and Management Organizations											
Not applicable.											
Test and Evaluation Organizations											
Not applicable.											
<u>Government Furnished Property:</u>											
Contract	Contract	Award or	Delivery	Total Prior	Budget	Budget	Budget	Budget to	Total		
Method/Type	Method/Type	Obligation	Date	to FY 1999	FY 1999	FY 2000	FY 2001	Complete	Program		
or Funding	or Funding	Date									
Vehicle	Vehicle										
Item											
Description											
Project 652524											
Page 9 of 10 Pages											
Exhibit R-3 (PE 0604740F)											

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 2000	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE								0604740F Integrated Command & Control Applications		652524
05 - Engineering and Manufacturing Development												
(U) Government Furnished Property Continued:												
		Contract		Award or		Delivery						
		Method/Type		Obligation		Date						
		or Funding		Date								
		Vehicle										
Description		Product Development Property										
		Not applicable.										
		Support and Management Property										
		Test and Evaluation Property										
Subtotals												
		Not applicable.										
		Subtotal Product Development										
		Subtotal Support and Management										
		Subtotal Test and Evaluation										
Total Project												

Exhibit R-3 (PE 0604740F)

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		DATE		PROJECT					
05 - Engineering and Manufacturing Development		February 2000		652053					
PE NUMBER AND TITLE		0604750F Intelligence Equipment		Total Cost					
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete
652053 National Air Intel Center		1,179	1,336	1,298	1,315	1,338	1,364	1,391	Continuing
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0
(U) A. Mission Description Intelligence Equipment (IE) provides continuing development and upgrades of threat analysis capabilities of the National Air Intelligence Center (NAIC) and Air Force Information Warfare Center (AFIWC). Both organizations are tasked with providing detailed foreign technology intelligence information to a variety of DOD and non-DOD customers. In the past few years, customers' requirements have been more sophisticated, dictating more detailed and timely intelligence not only in the technology regime but also in the economic, world crisis, and political arenas. IE provides NAIC and AFIWC with the tools necessary to produce timely intelligence of foreign weapon systems and develops the tools to model and assess foreign airborne and aerospace systems. This is the only AF program developing new, or upgraded analysis, modeling and simulation tools focused on intelligence production in support of AF developmental and operational functions. IE directs the engineering and development of specialized hardware and software to conduct Information Operations (IO) with systems which process, integrate, display, and distribute intelligence data/ information for the Air Intelligence Agency (AIA), primarily NAIC, AFIWC, and 497th IG/IND.									
(U) FY 1999 (\$ in Thousands)									
(U) \$155	Completed Advanced Communication Network Modeling								
(U) \$301	Completed CRMPS IO Modeling								
(U) \$272	Completed Radio Frequency Weapons Modeling								
(U) \$232	Initiated Comm Network Modeling Tool-Upgrade (TEL-SCOPE)								
(U) \$137	Initiated Adv Infrared Countermeasures Systems Assessment Model (AIRSAM) Update								
(U) \$65	Initiated Radio Frequency Weapons Modeling Improvements (HEIMDAL 2+)								
(U) \$17	Initiated High Speed Propulsion Engine Modeling (Phase 1 - Pulsed-Detonation Engine Model)								
(U) \$1,179	Total								
(U) FY 2000 (\$ in Thousands)									
(U) \$330	Complete Comm Network Modeling Tool-Upgrade (TEL-SCOPE)								
(U) \$317	Continue Adv Infrared Countermeasures Systems Assessment Model (AIRSAM) Update								
(U) \$366	Continue Radio Frequency Weapons Modeling Improvements (HEIMDAL 2+)								
(U) \$147	Continue High Speed Propulsion Modeling (Phase 1 - Pulsed-Detonation Engine Model)								
Project 652053		Page 1 of 7 Pages		831		Exhibit R-2 (PE 0604750F)			

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development		0604750F Intelligence Equipment	652053	
(U)	<u>A. Mission Description Continued</u>			
(U)	<u>FY 2000 (\$ in Thousands) Continued</u>			
(U)	\$176	Initiate Mitas Missile System/Booster & Post Booster Upgrades (Phase 1 Focus Area, DIODE Objectives)		
(U)	\$1,336	Total		
(U)	<u>FY 2001 (\$ in Thousands)</u>			
(U)	\$169	Complete Adv Infrared Countermeasures Systems Assessment Model (AIRSAM) Update		
(U)	\$119	Complete Radio Frequency Weapons Modeling Improvements (HEIMDAL 2+)		
(U)	\$68	Continue High Speed Engine Propulsion Modeling (Phase 1 - Pulsed-Detonation Engine Model)		
(U)	\$49	Continue High Speed Engine Propulsion Modeling (Phase 2 - Air Turbo Ramjet Engine Model)		
(U)	\$38	Continue High Speed Engine Propulsion Modeling (Phase 3 - Turbo-Ramjet Engine Model)		
(U)	\$299	Continue Missile System/Booster & Post Booster Upgrades for MiTAS (Phase 2)		
(U)	\$278	Continue Mitas Missile System/Booster & Post Booster Upgrades (Phase 1 Focus Area, DIODE Objectives)		
(U)	\$278	Initiate IVIEW 2000 Upgrade/Standard Visualization Solution (SVS)		
(U)	\$1,298	Total		
(U)	<u>B. Budget Activity Justification</u>			
	This effort is Budget Activity 5, Engineering & Manufacturing Development, because the program develops and inserts new technology into existing systems and models to keep existing systems current.			
(U)	<u>C. Program Change Summary (\$ in Thousands)</u>			
(U)	Previous President's Budget (FY 2000 PBR)		<u>FY 1999</u>	<u>FY 2000</u>
(U)	Appropriated Value		1,296	1,345
(U)	Adjustments to Appropriated Value		1,300	1,345
	a. Congressional/General Reductions		-4	
	b. Small Business Innovative Research		-33	
	c. Omnibus or Other Above Threshold Reprogram			-9
	d. Below Threshold Reprogram		-77	
	e. Rescissions		-7	
	f. Other			
(U)	Adjustments to Budget Years Since FY 2000 PBR			-13
				TBD
Project 652053			Exhibit R-2 (PE 0604750F)	

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000		
BUDGET ACTIVITY			PE NUMBER AND TITLE					PROJECT					
05 - Engineering and Manufacturing Development			0604750F Intelligence Equipment					652053					
(U)	C. Program Change Summary (\$ in Thousands) Continued												
(U)	Current Budget Submit/FY 2001 PBR												
(U)	Significant Program Changes:												
	None												
(U)	D. Other Program Funding Summary (\$ in Thousands)												
			FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2000	FY 2001	Total Cost	
			Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	1,336	1,298	TBD	
(U)	Not Applicable												
(U)	E. Acquisition Strategy												
	All major contracts within this Program Element were awarded after full and open competition.												
(U)	F. Schedule Profile												
(U)	Completed Adv Communication Network Modeling Tool												
(U)	Completed CRMPs IO Modeling												
(U)	Completed Radio Frequency Weapons Modeling												
(U)	Completed Virtual Laboratory Model Testbed												
(U)	Communication Network Modeling Tool Upgrade (TEL-SCOPE) upgrade												
(U)	Advanced IRCM Systems Assessment Model (AIRSAM) Update												
(U)	Radio Frequency Weapons Modeling Improvements (HEIMDALL-2+)												
(U)	Begin High Speed Propulsion / Pulsed Detonation Engine Model												
(U)	Begin High Speed Propulsion / Air-Turbo Ramjet Engine Model												
(U)	Begin High Speed Propulsion / Turbo-Ramjets Engine Model												
(U)	Begin Missile System / Booster & Post Booster Upgrades for MiTAS												
(U)	Begin IVIEW 2000 Upgrade/Standard Visualization Solution (SVS)												
(U)	Begin DIODE Objectives Model												
Project 652053													
Page 3 of 7 Pages													
Exhibit R-2 (PE 0604750F)													

833

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 2000	
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT
05 - Engineering and Manufacturing Development		0604750F Intelligence Equipment		652053
(U) <u>E. Schedule Profile Continued</u>				
1	FY 1999	2	3	4
		1	2	3
		4	1	2
			3	4
				3
				4
Note: * denotes completed event, X denotes planned event.				

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT	
05 - Engineering and Manufacturing Development		0604750F Intelligence Equipment		652053	
(U)	A. Project Cost Breakdown (\$ in Thousands)				
		FY 1999	FY 2000		FY 2001
(U)	Adv Com Network Modeling Tool (CNMT)	155			
(U)	CRMPS IO Modeling	301			
(U)	Radio Frequency Weapons Modeling	272			
(U)	Comm Network Modeling Tool (CNMT) Upgrade (TEL-SCOPE)	232	313		
(U)	Adv IRCM Systems Assessment Model (AIRSAM) Update	137	299		169
(U)	Radio Frequency Weapon Modeling Improvements (HEIMDALL 2+)	65	348		119
(U)	High Speed Propulsion: Pulsed Detonation Engine Model	17	129		68
(U)	High Speed Propulsion: Air Turbo Ramjet Engine Model				49
(U)	High Speed Propulsion: Turbo-Ramjet Engine Model				38
(U)	Missile System: Booster & Post Booster Upgrades for MiTAS		89		299
(U)	IVIEW 2000 Upgrade/Standard Visualization Solution (SVS)		158		278
(U)	DIODE Objectives Model				278
(U)	Integrated IO Modeling Environment				
(U)	Adv Analysis Capability: Integrated Avionics System Model				
(U)	Total	1,179	1,336		1,298
(U)	B. Budget Acquisition History and Planning Information (\$ in Thousands)				
(U)	Performing Organizations:				
	Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Project Office EAC	Performing Activity EAC
	Product Development Organizations			Total Prior to FY 1999	Budget FY 1999
	Planning Research Corp(PRC)/Liton 95-C-0048	CPFF	31 Jul 98	N/A	183
	Sterling Software, Inc	CPFF	Sep 99	N/A	N/A
	98-D-0318/06			25	301
	Applied Sciences Laboratory	CPFF	17 Jul 97	N/A	408
	97-C-0036/01			332	
					Continuing
					Continuing
					Continuing
					TBD
					TBD
					TBD
Project 652053		Page 5 of 7 Pages		Exhibit R-3 (PE 0604750F)	

835

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	February 2000	
BUDGET ACTIVITY		PE NUMBER AND TITLE			PROJECT		
05 - Engineering and Manufacturing Development		0604750F Intelligence Equipment			652053		
(U) <u>Performing Organizations Continued:</u>							
<u>Product Development Organizations</u>							
Applied Sciences Laboratory	CPFF	26 May 99	N/A	N/A	57	353	128 Continuing TBD
97-C-0036/02							
Planning Research	CPFF	31 Jul 98	N/A	N/A	78	290	368
Corp(PRC)/Litton 95-C-0048							
Sterling Software, Inc	CPFF	12 Feb 99	N/A	N/A	143	332	178 Continuing TBD
98-D-0318/02							
TBD for 2 High Speed	TBD	TBD	N/A	N/A			94 Continuing TBD
Propulsion							
TBD for MiTAS	TBD	TBD	N/A	N/A			283 Continuing TBD
TBD for Integ IO Modeling	TBD	TBD	N/A	N/A			Continuing TBD
Environment							
TBD for IVIEW 2000	TBD	TBD	N/A	N/A		153	283 Continuing TBD
Upgrade							
TBD for Adv Analysis	TBD	TBD	N/A	N/A			Continuing TBD
Capability: Integ Avionics							
System Model							
TBD for DIODE Objective	TBD	TBD	N/A	N/A		197	239 Continuing TBD
Model							
<u>Support and Management Organizations</u>							
N/A							
<u>Test and Evaluation Organizations</u>							
N/A							
(U) <u>Government Furnished Property:</u>							
<u>Contract</u>							
<u>Method/Type</u>							
<u>Award or</u>							
<u>Obligation</u>							
<u>Date</u>							
<u>Delivery</u>							
<u>Date</u>							
<u>Vehicle</u>							
<u>Total Prior</u>							
<u>to FY 1999</u>							
<u>Budget</u>							
<u>FY 1999</u>							
<u>Budget</u>							
<u>FY 2000</u>							
<u>Budget to</u>							
<u>Complete</u>							
<u>Total</u>							
<u>Program</u>							
Project 652053					Exhibit R-3 (PE 0604750F)		

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE									
05 - Engineering and Manufacturing Development		0604750F Intelligence Equipment									
(U) Government Furnished Property Continued:											
Contract											
Item	Method/Type	Award or									
	or Funding	Obligation	Delivery								
Description	Vehicle	Date	Date								
Product Development Property											
N/A											
Support and Management Property											
N/A											
Test and Evaluation Property											
N/A											
Subtotals											
Subtotal Product Development				Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program		
				669	1,179	1,336	1,298	TBD	TBD		
Subtotal Support and Management											
Subtotal Test and Evaluation											
Total Project				669	1,179	1,336	1,298	TBD	TBD		

Project 652053

Page 7 of 7 Pages

Exhibit R-3 (PE 0604750F)

837

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

PE NUMBER: 0604754F

UNCLASSIFIED

PE TITLE: Joint Tactical Information Distribution System

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 2000						
BUDGET ACTIVITY		PE NUMBER AND TITLE								
05 - Engineering and Manufacturing Development		0604754F Joint Tactical Information Distribution								
		System								
		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
	COST (\$ in Thousands)									
	Total Program Element (PE) Cost	20,236	8,542	8,745	8,859	9,155	9,337	9,522	Continuing	TBD
654749	Link 16 System Integration	6,128	7,928	8,140	8,859	9,155	9,337	9,522	Continuing	TBD
65P771	JTIDS	14,108	614	605	0	0	0	0	0	465,113
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0
(U) A. Mission Description Joint Tactical Information Distribution System (JTIDS) is a secure, jam-resistant, high-capacity data link for use in a tactical combat environment. The follow on system is the Multifunction Information Distribution System (MIDS) for which the Navy is the Executive Service. Both JTIDS and MIDS broadcast Link 16 (TADIL J) messages, free text, imagery and voice. They provide interoperability, local and global connectivity, and situational awareness to the user when operating under rapidly changing operational conditions. Both terminals are used by the Air Force, Army, Navy, and Marine Corps Theater Command and Control (C2) elements, weapons platforms, and sensors. The number of Air Force platforms hosting Link-16 (either JTIDS or MIDS) is expanding, from C2 aircraft (E-3, E-8, etc.) into the fighter, bomber, sensor, tanker, and other tactical fleets (F-15, F-16, F-22, RJ, ABCCC, B-1, B-2, B-52, etc.). Utilization of Link-16 in a joint environment requires the integration of terminals into these host platforms, and interoperability of Link-16 nets across all deployed joint and allied platforms. Cross-platform activities performed by the Link 16 System Integration Office (SIO) include: integration efforts encompassing hardware, software, operational, and logistics development, certification of individual Link-16 implementations to joint and allied standards, establishment of Service-wide net management procedures and operations, system wide enhancements and improvements, and test and sustainment activities. In addition, the SIO is supporting the integration of Link 16 into the Icelandic Air Defense System (IADS) and has management responsibility for the Air Force's Air Defense System Integration systems (ADSI). The JTIDS project office provides the user with JTIDS 2/2H terminals, as well as all of the acquisition support, technical assistance and integration necessary to operationally field, retrofit, and assist all of the platforms.										

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE		February 2000						
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT						
05 - Engineering and Manufacturing Development		0604754F Joint Tactical Information Distribution		654749						
		System								
	COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
654749	Link 16 System Integration	6,128	7,928	8,140	8,859	9,155	9,337	9,522	Continuing	TBD
(U) A. Mission Description Joint Tactical Information Distribution System (JTIDS) is a secure, jam-resistant, high-capacity data link for use in a tactical combat environment. The follow on system is the Multifunction Information Distribution System (MIDS) run by the Navy. Both JTIDS and MIDS broadcast Link 16 (TADIL J) messages, free text, imagery and voice. They provide interoperability, local and global connectivity, and situational awareness to the user when operating under rapidly changing operational conditions. Both terminals are used by the Air Force, Army, Navy, and Marine Corps Theater Command and Control (C2) elements, weapons platforms, and sensors. The number of Air Force platforms hosting Link-16 (either JTIDS or MIDS) is expanding, from C2 aircraft (E-3, E-8, etc.) into the fighter, bomber, sensor, tanker, and other tactical fleets (F-15, F-16, F-22, RJ, ABCCC, B-1, B-2, B-52, etc.). Utilization of Link-16 in a joint environment requires the integration of terminals into these host platforms, and interoperability of Link-16 nets across all deployed joint and allied platforms. Cross-platform activities performed by the Link 16 System Integration Office (SIO) include: integration efforts encompassing hardware, software, operational, and logistics development, certification of individual Link-16 implementations to joint and allied standards, establishment of Service-wide net management procedures and operations, system wide enhancements and improvements, and test and sustainment activities. In addition, the SIO is supporting the integration of Link 16 into the Icelandic Air Defense System (IADS) and has management responsibility for the Air Force's Air Defense System Integration (ADSI) systems. (U) <u>FY 1999 (\$ in Thousands)</u> (U) \$4,358 CONTINUED LINK-16 INTEGRATION: Efforts associated with hardware and software integration of Link 16 terminals into Air Force platforms. -- (U) On-going Engineering Integration Support to Platforms; Technical Improvements; Field Support; Technical Assistance to related tactical data link demonstration programs. (U) \$1,500 CONTINUED LINK-16 EMD SUPPORT: Efforts associated with fielding terminals. -- (U) Support Operations Support Working Group; Maintain Developmental Equipment; Test Support; Fielding/Non-Recurring Training; Network Support; Crypto Support; Spectrum Support. (U) \$100 CONTINUED TACTICAL DATA LINK CONNECTIVITY: -- (U) Link 16 Gateway/Interfaces										

Project 654749

Page 3 of 13 Pages

Exhibit R-2A (PE 0604754F)

841

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development	0604754F Joint Tactical Information Distribution System	654749	
(U) A. <u>Mission Description Continued</u>			
(U) FY 1999 (\$ in Thousands) Continued	-- (U) Air Defense System Integration (ADSI) Management.		
(U) \$170	CONTINUED SYSTEM TESTING & SUPPORT: Cross platform Test and Evaluation and system-level testing.		
(U) \$6,128	Total		
(U) FY 2000 (\$ in Thousands)			
(U) \$5,659	CONTINUE LINK-16 INTEGRATION: Efforts associated with hardware and software integration of Link 16 terminals into Air Force platforms.		
	-- (U) On-going Engineering Integration Support to Platforms; Technical Improvements; Field Support; Technical Assistance to related tactical data link demonstration programs.		
(U) \$2,019	CONTINUE LINK-16 EMD SUPPORT: Efforts associated with fielding terminals.		
	-- (U) Support Operations Support Working Group; Maintain Developmental Equipment; Test Support; Fielding/Non-Recurring Training; Network Support; Crypto Support; Spectrum Support; Gateway Support; Data link Tool Support.		
(U) \$100	CONTINUED TACTICAL DATA LINK CONNECTIVITY:		
	-- (U) Link 16 Gateway/Interfaces		
	-- (U) ADSI Management.		
(U) \$150	CONTINUED SYSTEM TESTING & SUPPORT: Cross-platform Test and Evaluation and system-level testing.		
(U) \$7,928	Total		
(U) FY 2001 (\$ in Thousands)			
(U) \$5,838	CONTINUE LINK-16 INTEGRATION: Efforts associated with hardware and software integration of Link 16 terminals into Air Force platforms.		
	-- (U) On-going Engineering Integration Support to Platforms; Technical Improvements; Field Support; Technical Assistance to related tactical data link demonstration programs.		
(U) \$2,052	CONTINUE LINK-16 EMD SUPPORT: Efforts associated with fielding terminals.		
	-- (U) Support Operations Support Working Group; Maintain Developmental Equipment; Test Support; Fielding/Non-Recurring Training; Network Support; Crypto Support; Spectrum Support.		
(U) \$100	CONTINUED TACTICAL DATA LINK CONNECTIVITY:		
	-- (U) Link 16 Gateway/Interfaces. (This is considered a new start in FY01 due to the increased scope of Gateway efforts in this year)		
Project 654749		Page 4 of 13 Pages	Exhibit R-2A (PE 0604754F)

842

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development	0604754F Joint Tactical Information Distribution	654749	
System			
(U) A. Mission Description Continued			
(U) FY 2001 (\$ in Thousands) Continued			
(U) -- (U) ADSI Management. (ADSI is considered a new start in FY01 due the award of a large contract for ADSI sustainment and development)			
(U) CONTINUED SYSTEM TESTING & SUPPORT: Cross-platform Test and Evaluation and system-level testing.			
(U) \$150			
(U) \$8,140			
(U) B. Project Change Summary			
No significant changes			
(U) C. Other Program Funding Summary (\$ in Thousands)			
	FY 1999	FY 2000	FY 2001
	Actual	Estimate	Estimate
(U) AF RDT&E			
(U) Other APPN			
(U) D. Acquisition Strategy			
The Air Force Link 16 System Integration Office (SIO) provides for common development of integration and interoperability across all Air Force platforms and ensures that Link 16 is procured and maintained as a joint, end-to-end, command and control system. Host platforms program and budget for JTIDS or MIDS (Fighter Data Link (FDL) and Low Volume Terminal (LVT) derivatives) production terminals and for installation into operational units.			
(U) E. Schedule Profile			
	FY 1999	FY 2000	FY 2001
	1	2	3
	4	1	2
	3	4	1
			2
			3
			4
(U) FDL Testing			
(U) - QT&E/QOT&E Complete			
(U) - Flight QOT&E Complete			
(U) Contract Milestones			
(U) - Link 16/VMF Gateway ACTD Demo			
(U) - Link 16/VMF Gateway ACTD Complete			
(U) - Time Slot Reallocation Class II Software Mod Complete			
(U) - Enhanced Throughput Demo Complete			
Project 654749	Page 5 of 13 Pages	Exhibit R-2A (PE 0604754F)	

843

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)						DATE	February 2000	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE							
05 - Engineering and Manufacturing Development	0604754F Joint Tactical Information Distribution							654749
	System							
(U) E. Schedule Profile Continued								
	1	FY 1999 2	3	4	1	FY 2000 2	3	FY 2001 2
- FDL Initial Rate Production Award				*				
- FDL Full Rate Production Award						X		
- MIDS LVT - F-16 Production Award							X	
Host Platform Integration Start								
- F-15E (thru FY01)								
- F-15C/D Installation/Training (start)				*				
- F-16 (thru FY04)						X		
- Compass Call (thru FY02)				*				
- Airborne Laser (ABL) (thru 1st Qtr FY03)								
- B-2 EMD						X		
Command and Control Platforms								
- AWACS Link 16 Qual Complete				*				
Complete Baseline Integration						X		
- MCE (P3I)								
-- Installation Start								
-- Installation Complete								
- IADS installation start								
* Denotes completed events								
X Denotes planned events								

UNCLASSIFIED

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

DATE

February 2000

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

05 - Engineering and Manufacturing Development

0604754F Joint Tactical Information Distribution

654749

System

(U) A. Project Cost Breakdown (\$ in Thousands)

	FY 1999	FY 2000	FY 2001
(U) Link-16 Integration	4,358	5,659	5,838
(U) EMD Activities	1,500	2,019	2,052
(U) Tactical Data Link Connectivity	100	100	100
(U) System Testing & Support	170	150	150
(U) Total	6,128	7,928	8,140

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

(U) Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program
Product Development Organizations										
Data Link Solutions	MIPR	TBD			114	450	600	624	Continuing	TBD
Support and Management Organizations										
ESC	Various				521	301	315	325	Continuing	TBD
CONTRACTOR SUPPORT	FPLOE	Various			1,076	2,667	2,858	2,988	Continuing	TBD
MITRE	FPLOE	Various			4,165	2,540	4,005	4,053	Continuing	TBD
Test and Evaluation Organizations										
EGLIN AFB	PO/616	Various			852	170	150	150	Continuing	TBD
Subtotals					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program
Subtotal Product Development					114	450	600	624	TBD	TBD
Subtotal Support and Management					5,762	5,508	7,178	7,366	TBD	TBD
Subtotal Test and Evaluation					852	170	150	150	TBD	TBD
Total Project					6,728	6,128	7,928	8,140	TBD	TBD

Project 654749

Page 7 of 13 Pages

Exhibit R-3 (PE 0604754F)

845

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE		February 2000						
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT						
05 - Engineering and Manufacturing Development		0604754F Joint Tactical Information Distribution System		65P771						
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
65P771	JTIDS	14,108	614	605	0	0	0	0	0	465,113
* Note: As a result of Air Force requirements, the ordering period for JTIDS hardware was extended from 30 Sept 99 to 30 Sept 01. This will force the Program Office to remain open in FY02 and FY03. Funding to cover this increased effort will either come from the purchasing platforms or from a reprioritization within the PE. (U) A. Mission Description Joint Tactical Information Distribution System (JTIDS) is a secure, jam-resistant, high-capacity data link for use in a tactical combat environment. The follow on system is the Multifunction Information Distribution System (MIDS) run by the Navy. Both JTIDS and MIDS broadcast Link 16 (TADIL J) messages, free text, imagery and voice. They provide interoperability, local and global connectivity, and situational awareness to the user when operating under rapidly changing operational conditions. Both are used by the Air Force, Army, Navy, and Marine Corps Theater Command and Control (C2) elements, weapons platforms, and sensors. The JTIDS Program Office provides the user with JTIDS 2/2H terminals, as well as all of the acquisition support, technical assistance and integration necessary to operationally field, retrofit, and assist all of the platforms. (U) <u>FY 1999 (\$ in Thousands)</u> (U) \$300 CONTINUE ACQUISITION SUPPORT -- (U) Write, execute and administer contracts for multiple platforms -- (U) Command and Control Terminal Acquisition Support -- (U) Ongoing technical and programmatic support for JTIDS users (U) \$177 CONTINUE TECHNICAL SUPPORT -- (U) Technical Improvements -- Technical support to AF platforms for the purpose of integrating and executing product improvements -- Technology Updates (e.g., advanced hardware and software) (U) \$10 CONTINUE DIMINISHING MANUFACTURING RESOURCES -- (U) Identify problem electrical parts, assess impacts, develop, and implement resolution plans (U) \$13,621 Funding will be removed from this PE to cover OSD directed Gateway efforts. (U) \$14,108 Total										

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development	0604754F Joint Tactical Information Distribution	65P771	
System			
(U) A. Mission Description Continued			
(U) FY 2000 (\$ in Thousands)			
(U) \$373	CONTINUE ACQUISITION SUPPORT		
	-- (U) Write, execute and administer contracts for multiple platforms		
	-- (U) Command and Control Terminal Acquisition Support		
	-- (U) Ongoing technical and programmatic support for JTIDS users		
(U) \$191	CONTINUE TECHNICAL SUPPORT		
	-- (U) Technical Improvements		
	-- Technical support to AF platforms for the purpose of integrating and executing product improvements		
	-- Technology Updates (e.g., advanced hardware and software)		
(U) \$50	CONTINUE DIMINISHING MANUFACTURING RESOURCES		
	-- (U) Identify problem electrical parts, assess impacts, develop, and implement resolution plans		
(U) \$614	Total		
(U) FY 2001 (\$ in Thousands)			
(U) \$365	CONTINUE ACQUISITION SUPPORT		
	-- (U) Write, execute and administer contracts for multiple platforms		
	-- (U) Command and Control Terminal Acquisition Support		
	-- (U) Ongoing technical and programmatic support for JTIDS users		
(U) \$190	CONTINUE TECHNICAL SUPPORT		
	-- (U) Technical Improvements		
	-- Technical support to AF platforms for the purpose of integrating and executing product improvements		
	-- Technology Updates (e.g., advanced hardware and software)		
(U) \$50	CONTINUE DIMINISHING MANUFACTURING RESOURCES		
	-- (U) Identify problem electrical parts, assess impacts, develop, and implement resolution plans		
(U) \$605	Total		
(U) B. Project Change Summary			
The FY99 funding includes \$13.7M for JTIDS/MIDS gateway and connectivity activities provided by the Operational Rapid Response Supplemental.			
Project 65P771		Page 9 of 13 Pages	
		Exhibit R-2A (PE 0604754F)	

847

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000	
BUDGET ACTIVITY		PE NUMBER AND TITLE									PROJECT	
05 - Engineering and Manufacturing Development		0604754F Joint Tactical Information Distribution									65P771	
		System										
(U)	C. Other Program Funding Summary (\$ in Thousands)											
		FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to	Total Cost		
		Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Complete			
(U)	AF RDT&E	0								0		
(U)	Other APPN											
(U)	Other Proc AF, PE 0204738F, Theater Battle Management Core System (TBMCS)	2,762	0	0	0	0	0	0	0	2,762		
(U)	Other Proc AF, 0305208F, Intel Ops Ground Syst.	2,306	0	0	0	0	0	0	0	2,306		
(U)	Other Proc AF, 11RCON, Rivet Joint	1,235	0	0	0	0	0	0	0	1,235		
(U)	Other Proc AF, PE 0207581F Joint Surveillance Target Attack Radar System (JSTARS)	2,010	0	0	0	0	0	0	0	2,010		
(U)	Other Proc AF, Warner Robins Air Logistics Center	4,288	0	0	0	0	0	0	0	4,288		
(U)	Other Proc AF, PE 06072300 Ground Theater Air Control System (GTACS)	0	1,274	0	0	0	0	0	0	1,274		
(U)	Other Proc AF, PE 0604226F, B-1	0	2,400	0	0	0	0	0	0	2,400		
	* Other Program Funding reflects procurement of JTIDS hardware only. There are other USAF programs (F-15, F-16) that are budgeted to procure MIDS terminals in the FY99-FY05 timeframe.											
(U)	D. Acquisition Strategy											
	The JTIDS program office continues to manage the acquisition for the JTIDS Class 2/2H terminals for the Air Force , Navy, and Marine Corps. The Program Office has extended the ordering period for procurement of terminals in order to meet platform requirements. Funding for JTIDS terminal procurement will continue to wind down as the next generation Multifunctional Information Distribution System (MIDS) terminal becomes available.											
Project 65P771		Page 10 of 13 Pages									Exhibit R-2A (PE 0604754F)	

848

UNCLASSIFIED

UNCLASSIFIED

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

DATE

February 2000

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

05 - Engineering and Manufacturing Development

0604754F Joint Tactical Information Distribution

65P771

System

	1	FY 1999		4	1	FY 2000		4	1	FY 2001		
		2	3			2	3			2	3	
(U) <u>E. Schedule Profile</u>		*				X				X		
(U) New Software Releases (Yearly event)												
(U) - FRP-2 Contract Extension				*		X						
(U) EFX99						X						
(U) Host Platform Integration Start												
(U) - B-1B JTIDS Class 2												
(U) Terminal Orders												
(U) - TBMCS				*								
(U) - Intel Ops Ground System			*									
(U) - Rivet Joint						X						
(U) - Joint STARS				*								
(U) - Warner Robins ALC			*									
(U) - GTACS						X						
(U) - B-1						X						
(U) Terminal Deliveries												
(U) - TBMCS												
(U) - Intel Ops Ground System										X		
(U) - Joint STARS										X		
(U) - Warner Robins ALC												
(U) - GTACS						X						
(U) - B-1												
(U) X denotes planned event												X
(U) * denotes completed event												X

Project 65P771

Page 11 of 13 Pages

Exhibit R-2A (PE 0604754F)

849

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									
BUDGET ACTIVITY					DATE				
05 - Engineering and Manufacturing Development					February 2000				
PE NUMBER AND TITLE					PROJECT				
0604754F Joint Tactical Information Distribution					65P771				
System									
(U)	<u>A. Project Cost Breakdown (\$ in Thousands)</u>				<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>Budget to Complete</u>	<u>Total Program</u>
(U)	Acquisition Support				300	373			365
(U)	Technical Support				177	191			190
(U)	Diminishing Manufacturing Resources				10	50			50
(U)	OSD take for Gateway activities				13,621				
(U)	Total				14,108	614			605
(U)	<u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>								
(U)	<u>Performing Organizations:</u>								
	Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget to Complete
<u>Product Development Organizations</u>									
	GEC-MARCONI	FFP	DEC 85	230,727	230,727	230,727		0	230,727
	LOCKHEED	FFP	JUN 93	6,761	6,761	6,761		0	6,761
	GEC-MARCONI	FFP	JUN 93	1,123	1,123	850	44	0	894
	CACD	FFP	JUN 93	1,616	1,616	1,072	111	352	1,879
	MCAIR	CPFF	MAR 94	2,434	2,434	2,434			2,434
	RADC	PO/616	Various	3,067	3,067	3,067		0	3,067
	WR-ALC	PO/616	Various	2,966	2,966	2,966		0	2,966
	NADEP	MIPR	Various	1,030	1,030	1,030	42	0	1,072
	ACSI	FFP	SEP 94	492	492	492		0	492
	VIASAT, INC.	FFP	Various	815	815	815		0	815
	AF Platforms	PO/616	Various	169	169	169		0	169
	NORTHROP GR	FFP	AUG 97	500	500	500		0	500
	ROCKWELL	FFP	Various	2,080	2,080	2,080		0	2,080
	HUGHES	FFP	Various	133	133	133		0	133

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE									
05 - Engineering and Manufacturing Development		0604754F Joint Tactical Information Distribution									65P771
		System									
(U) Performing Organizations Continued:											
<u>Product Development Organizations</u>											
DRC	MAY 97	213	213	213						213	
MIDSCO, Inc	Various	4,251	4,251	4,251						0	
MOTOROLA INC	Various	1,800	1,800	1,800						0	
ALLIED SIGNAL	Various	75	75	75						0	
MCDONNELL DG	Various	2,582	2,582	2,582						0	
BOEING	Various	869	869	869						0	
<u>Support and Management Organizations</u>											
ESC	Various	21,875	21,875	21,479	53	150	150			0	
CONTRACTOR SUPPORT	Various	42,863	42,863	42,749	39	51	50			0	
MITRE	FPLOE	134,023	134,023	134,023	119	61	61			0	
<u>Test and Evaluation Organizations</u>											
MT HOME AFB	PO/616	416	416	416						0	
EGLIN AFB	PO/616	1,969	1,969	1,854	0	0	0			0	
Subtotals											
Subtotal Product Development				Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program		
Subtotal Support and Management				262,886	197	352	344	0	263,779		
Subtotal Test and Evaluation				198,251	211	262	261	0	198,985		
Total Project				2,270	0	0	0	0	2,270		
				463,407	408	614	605	0	465,034		

Project 65P771

Page 13 of 13 Pages

Exhibit R-3 (PE 0604754F)

851

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 2000					
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT					
05 - Engineering and Manufacturing Development		0604762F Common Low Observable Verification Sys		654683					
COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
654683 Common Low Observable Verification System	4,054	5,818	11,621	2,078	0	0	0	0	24,041
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0
(U) A. Mission Description Common Low Observable Verification System (CLOVerS) is intended as an easily deployable flightline system to evaluate surface anomalies on low observable (stealth) aircraft. It will allow maintenance personnel to determine if a repair is needed, or if the repair performed was successful in restoring the low observable characteristic of the aircraft. CLOVerS is intended for use with the B-2, F-117, F-22, as well as future aircraft such as the Joint Strike Fighter. Key capabilities required include the ability to detect, locate, and resolve small surface defects, reduced measurement time (compared to existing verification methods), operation under less restrictive security measures, and a small deployment footprint.									
(U) FY 1999 (\$ in Thousands)									
(U) \$3,893	Awarded Development Contract								
(U) \$48	Development Contract Award Fee								
(U) \$113	Program Office Support								
(U) \$4,054	Total								
(U) FY 2000 (\$ in Thousands)									
(U) \$5,621	Continue Development Contract								
(U) \$48	Continue Development Contract Award Fee								
(U) \$149	Program Office Support								
(U) \$5,818	Total								
(U) FY 2001 (\$ in Thousands)									
(U) \$11,237	Continue Development Contract								
(U) \$48	Continue Development Contract Award Fee								
(U) \$336	Program Office Support								
(U) \$11,621	Total								

Project 654683

Page 1 of 5 Pages

Exhibit R-2 (PE 0604762F)

853

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 2000
BUDGET ACTIVITY		PROJECT	
05 - Engineering and Manufacturing Development		0604762F Common Low Observable Verification Sys 654683	
(U)	B. Budget Activity Justification		
	This program is in budget activity 5 - Engineering and Manufacturing Development, Research Category 6.4 because this program develops the Common Low Observable Verification System (CLOVerS).		
(U)	C. Program Change Summary (\$ in Thousands)		
(U)	Previous President's Budget (FY 2000 PBR)	FY 1999	FY 2000
(U)	Appropriated Value	4,882	5,893
(U)	Adjustments to Appropriated Value	4,901	5,893
	a. Congressional/General Reductions	-5	
	b. Small Business Innovative Research	-90	
	c. Omnibus or Other Above Threshold Reprogram	-715	-39
	d. Below Threshold Reprogram	-37	-36
	e. Rescissions		
	f. Other		
(U)	Adjustments to Budget Years Since FY 2000 PBR		-102
(U)	Current Budget Submit/FY 2001 PBR	4,054	5,818
(U)	Significant Program Changes:		
(U)	D. Other Program Funding Summary (\$ in Thousands)		
	FY 1999	FY 2000	FY 2001
	Actual	Estimate	Estimate
(U)	PE27145F:Appn: Aircraft	0	0
	Procurement, AF (APAF)		
	Budget Activity: Aircraft		
	(A/C) Procurement/Common		
	Support Equipment, Program		
	Title: Common Low		
	Observable Test Equipment		
(U)	Spares	0	0
(U)	Total APAF	0	0
			11
			4,598
			191
			666
			224
			224
			Continuing
			Continuing
			TBD
			TBD
Project 654683		Exhibit R-2 (PE 0604762F)	

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 2000																																																																																												
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																																																																																													
05 - Engineering and Manufacturing Development		0604762F Common Low Observable Verification Sys 654683																																																																																													
(U) E. Acquisition Strategy The contract was awarded using full and open competition. Engineering and Manufacturing Development (EMD) contract type is Cost Plus Award Fee.																																																																																															
(U) F. Schedule Profile <table border="1"> <thead> <tr> <th></th> <th colspan="2">FY 1999</th> <th colspan="2">FY 2000</th> <th colspan="2">FY 2001</th> </tr> <tr> <th></th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>1</th> <th>2</th> </tr> </thead> <tbody> <tr> <td>(U) Milestone I Decision</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) RFP Release</td> <td>*</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Milestone II Decision</td> <td>*</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Contract Award</td> <td></td> <td>*</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Begin Hardware/Software Integration</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) DT&E</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) OT&E - FY02</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) LRIP Production - FY02-03</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) System Delivery - FY02-03</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>* = Completed event</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>X = Planned event</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>						FY 1999		FY 2000		FY 2001			1	2	3	4	1	2	(U) Milestone I Decision							(U) RFP Release	*						(U) Milestone II Decision	*						(U) Contract Award		*					(U) Begin Hardware/Software Integration							(U) DT&E							(U) OT&E - FY02							(U) LRIP Production - FY02-03							(U) System Delivery - FY02-03							* = Completed event							X = Planned event						
	FY 1999		FY 2000		FY 2001																																																																																										
	1	2	3	4	1	2																																																																																									
(U) Milestone I Decision																																																																																															
(U) RFP Release	*																																																																																														
(U) Milestone II Decision	*																																																																																														
(U) Contract Award		*																																																																																													
(U) Begin Hardware/Software Integration																																																																																															
(U) DT&E																																																																																															
(U) OT&E - FY02																																																																																															
(U) LRIP Production - FY02-03																																																																																															
(U) System Delivery - FY02-03																																																																																															
* = Completed event																																																																																															
X = Planned event																																																																																															

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									
BUDGET ACTIVITY					DATE		PROJECT		
05 - Engineering and Manufacturing Development					0604762F Common Low Observable Verification Sys		February 2000 654683		
A. Project Cost Breakdown (\$ in Thousands)					FY 1999		FY 2000		
(U)	CLOVerS Development Contract				3,893		5,621		11,237
(U)	CLOVerS Development Contract Award Fee				48		48		48
(U)	Program Office Support				113		149		336
(U)	Total				4,054		5,818		11,621
B. Budget Acquisition History and Planning Information (\$ in Thousands)									
(U)	Performing Organizations:								
	Contract or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget to Complete
	Product Development Organizations								Total Program
	Boeing Co., St Louis	CPAF/FPIF	May 99	TBD	22,263	0	3,941	5,669	1,691
	Support and Management Organizations								
	ASC/SMD, WPAFB OH	Various				470	113	149	387
	Test and Evaluation Organizations								
(U)	Government Furnished Property:								
	Contract	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget to Complete	Total Program
	Item Description								
	Product Development Property								
	Advanced Diagnostic Analysis Package (ADAP) and Radar Diagnostic Expert Equipment (RDES) software will be available to the contractor. Imaging Data from the B-2, F-117, and F-22 will be provided as appropriate. Current landing gear shrouds and flight control surface supports will be used until the CLOVerS items are developed.								
	Support and Management Property								
	Test and Evaluation Property								

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									
BUDGET ACTIVITY		PE NUMBER AND TITLE		DATE	PROJECT				
05 - Engineering and Manufacturing Development		0604762F Common Low Observable Verification Sys		February 2000	654683				
		Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program		
Subtotals									
Subtotal Product Development		0	3,941	5,669	11,237	1,691	22,538		
Subtotal Support and Management			113	149	384	387	1,503		
Subtotal Test and Evaluation		470							
Total Project		470	4,054	5,818	11,621	2,078	24,041		

857

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604779F Joint Interoperability of Tactical Command/Control								652189	
		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
652189	JINTACCS	5,317	5,798	5,825	5,889	5,982	6,101	6,221	Continuing	TBD	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	
(U) A. Mission Description The Joint Interoperability of Tactical Command and Control Systems (JINTACCS) Program is a Joint Staff directed program that provides the sole Air Force (AF) activity responsible for ensuring the interoperability of AF tactical data links (TDLs) [including, but not limited to Tactical Digital Information Links (TADILs) and Variable Message Formats (VMF)] and United States Message Text Format (USMTF) systems with the associated Joint and allied/coalition systems. The requirements for the program are delineated in DoDD 4630.5, DoDD 4630.8, CJCSI 6212.01A, and AFI 33-108. The program ensures platform/system interoperability through the development and management of the joint/combined architecture, tactical information exchange requirements (IERS), interface definitions and protocols, platform/system implementations, employment concepts, and operating procedures. This includes the coordination of all TDL and USMTF message standards configuration management, platform/system interoperability assessments and interoperability certification testing. Air Force platforms/systems participating in, and affected by, this program include: Airborne Warning and Control System (AWACS); Airborne Battlefield Command and Control Center (ABCCC); Modular Control Element (MCE); Air Operations Center (AOC); Joint Surveillance Target Attack Radar System (JSTARS); F-15 A/B/C/D/E; F-16 B30/40/50; F-22; A/OA-10; Joint Strike Fighter (JSF); Airborne Laser (ABL); B-1; B-2; B-52; F-117; RC-135; Regional/Sector Air Operations Center (RAOC/SAOC), Caribbean Basin Radar Network (CBRN); Command & Control Information Processing System (C2IPS); Space Based Infrared System (SBIRS); Iceland Air Defense System (IADS); Air Support Operations Center (ASOC); and Tactical Air Control Parties (TACPs). The Air Force JINTACCS program supports the Assistant Secretary of Defense (ASD) directive on harmonization of US and NATO messages (e.g., ATO and ACO). (U) <u>FY 1999 (\$ in Thousands)</u> (U) \$1,164 Continue Interoperability Certification Testing (U) \$1,547 - CAF Certification for JSTARS, and E-3 (U) \$2,606 - Joint Certification for MCE P31, JSTARS, E-3, F-15C, and ADSI (U) \$1,547 Continue US Message Text Formats Management (U) \$2,606 Continue Tactical Data Link Management and Architecture Development (U) \$2,606 - Support multiple multi TADIL & VMF meetings and working groups (U) \$2,606 - Consultations regarding implementation and interoperability with the F-16, and the E-8.											

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development	0604779F Joint Interoperability of Tactical Command/Control	652189	
(U) <u>A. Mission Description Continued</u>			
(U) <u>FY 1999 (\$ in Thousands) Continued</u>			
(U) \$5,317	- Consultations regarding software updates and interoperability with the E-3 Total		
(U) <u>FY 2000 (\$ in Thousands)</u>			
(U) \$1,190	Continue Interoperability Certification Testing		
	- Specific platforms for FY00 will be determined based on initial Link 16 message implementation, software upgrade, and system modification schedules		
(U) \$1,613	Continue US Message Text Formats Management		
(U) \$2,995	Continue Tactical Data Link Management and Architecture Development		
	- Support multiple multi TADIL & VMF meetings and working groups		
	- Consultations regarding implementation and interoperability with the F-16		
	- Consultations regarding software updates and interoperability with the F-15C, E-3, E-8, ABL		
(U) \$5,798	Total		
(U) <u>FY 2001 (\$ in Thousands)</u>			
(U) \$437	Continue Interoperability Certification Testing		
	- Specific platforms for FY01 will be determined based on initial Link 16 message implementation, software upgrade, and system modification schedules.		
(U) \$1,886	Continue US Message Text Formats Management		
(U) \$3,502	Continue Tactical Data Link Management and Architecture Development		
	- Support multi TADIL & VMF meetings and working groups		
	- Consultations regarding implementation and interoperability with the F-16		
	- Consultations regarding software updates and interoperability with the F-15C, E-3, E-8, ABCCC, CRC/CRE		
(U) \$5,825	Total		
(U) <u>B. Budget Activity Justification</u>			
	This program is in budget activity 5 - Engineering and Manufacturing Development, because it is designed to improve the interoperability of Tactical Command and Control (C2) Systems used in support of joint operations.		
Project 652189		Page 2 of 6 Pages	
		Exhibit R-2 (PE 0604779F)	

860

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT		
05 - Engineering and Manufacturing Development	0604779F Joint Interoperability of Tactical Command/Control	652189		
(U) C. <u>Program Change Summary (\$ in Thousands)</u>		FY 1999	FY 2000	FY 2001
(U) Previous President's Budget (FY 2000 PBR)		5,687	5,837	5,877
(U) Appropriated Value		5,823	5,837	
(U) Adjustments to Appropriated Value				
(U) a. Congressional/General Reductions		-136		
(U) b. Small Business Innovative Research		-160		
(U) c. Omnibus or Other Above Threshold Reprogram			-39	
(U) d. Below Threshold Reprogram		-180		
(U) e. Rescissions		-30		
(U) f. Other				
(U) Adjustments to Budget Years Since FY 2000 PBR				-52
(U) Current Budget Submit/FY 2001 PBR		5,317	5,798	5,825
(U) Significant Program Changes:				
(U) None				
(U) D. <u>Other Program Funding Summary (\$ in Thousands)</u>				
		FY 1999	FY 2000	FY 2001
		Actual	Estimate	Estimate
(U) AF RDT&E				
(U) Other APPN				
(U) Not Applicable				
(U) E. <u>Acquisition Strategy</u>				
As the Air Force lead agent for a jointly directed program, JINTACCS provides level of effort technical support for increasing interoperability of AF programs through message text and data link standards implementation.				
(U) F. <u>Schedule Profile</u>				
		FY 1999	FY 2000	FY 2001
Project 652189		Exhibit R-2 (PE 0604779F)		

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

February 2000

BUDGET ACTIVITY		PE NUMBER AND TITLE												PROJECT	
05 - Engineering and Manufacturing Development		0604779F Joint Interoperability of Tactical Command/Control												652189	
F. Schedule Profile Continued															
		1	FY 1999				FY 2000				FY 2001				
			2	3	4	1	2	3	4	1	2	3	4		
(U)	F-16 - Complete OFP M-3 baseline Implementation/Interoperability	*				X									
(U)	E-8 - Complete ASU Spiral 1 Implementation/Interoperability									X					
(U)	AOC - Complete baseline Implementation/Interoperability		*					X							
(U)	F-15C - Interoperability consultation for Software upgrades.									X					
(U)	F-16 - Interoperability consultation for Software upgrades.		*				X								
(U)	E-3 - Interoperability consultation for Software upgrades.										X				
(U)	E-8 - Interoperability consultation for Software upgrades.											X			
(U)	ABCCC - Interoperability consultation for Software upgrades.													X	
(U)	CRC/CRE - Interoperability consultation for Software upgrades.					X				X					
(U)	AOC - Interoperability consultation for Software upgrades.						X				X				
(U)	F-15E - Interoperability consultation for Software upgrades.														
(U)	ABL - Interoperability consultation for Software upgrades.									X					
(U)	Interoperability Certification Testing														
(U)	(Passed Joint and CAF Interoperability)														
(U)	- MCE P31														
(U)	CAF		*												
(U)	Joint		*												
(U)	- JSTARS														
(U)	CAF														
(U)	Joint	*		*											
(U)	- E-3 AWACS														
(U)	CAF		*								X				
(U)	Joint											X			
(U)	- F-15C/D														
(U)	CAF												X		
(U)	Joint			*										X	

Project 652189

Page 4 of 6 Pages

Exhibit R-2 (PE 0604779F)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 2000	
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT		652189
05 - Engineering and Manufacturing Development	0604779F Joint Interoperability of Tactical Command/Control			
(U) F. <u>Schedule Profile Continued</u>				
		FY 1999	FY 2000	FY 2001
		1 2 3 4	1 2 3 4	1 2 3 4
(U) - ABCCC				
(U) CAF				
(U) Joint				
(U) - ADSI			X	
(U) Joint				X
(U) OPFAC INSTALL/INTEGRATION				
(U) - F-15E Complete				
* Denotes completed event				
X Denotes planned event				

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE									
05 - Engineering and Manufacturing Development		0604779F Joint Interoperability of Tactical Command/Control									February 2000
(U)	<u>A. Project Cost Breakdown (\$ in Thousands)</u>										
(U)	Interoperability Certification Testing										FY 2001
(U)	US Message Text Formats Management										437
(U)	Tactical Data Links Management										1,886
(U)	Total										3,502
(U)											5,825
(U)	<u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>										
(U)	<u>Performing Organizations:</u>										
	Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program
	<u>Product Development Organizations</u>										
	<u>Support and Management Organizations</u>										
	MITRE	CPAF	OCT 72			35,228	2,922	2,626	3,075	Continuing	TBD
	B3H	CPFF	MAY 97			2,494	778	1,647	1,978	Continuing	TBD
	COMPTeK	CPAF	OCT 92			3,728	612	0	0	Continuing	TBD
	HTI	CPAF	OCT 94			1,300	0	0	0	0	1,300
	Prog Office	Various	Various			243	453	335	335	Continuing	TBD
	AF Participating Test Unit (PTU)	PO/616	OCT 97			1,242	552	1,190	437	Continuing	TBD
	<u>Test and Evaluation Organizations</u>										
	Subtotals					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program
	Subtotal Product Development										
	Subtotal Support and Management					44,235	5,317	5,798	5,825	TBD	TBD
	Subtotal Test and Evaluation										
	Total Project					44,235	5,317	5,798	5,825	TBD	TBD
Project 652189											
Page 6 of 6 Pages											
Exhibit R-3 (PE 0604779F)											

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604800F Joint Strike Fighter EMD								653831	
		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
653831	Joint Strike Fighter	0	0	299,540	1,321,726	1,927,241	1,853,319	1,631,937	Continuing	TBD	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	
(U)	A. Mission Description The Joint Strike Fighter (JSF) program will develop and field a family of aircraft that meets the needs of the USN, USAF, and USMC and allies, with optimum commonality among the variants to minimize life cycle costs. This is a joint program with no executive service. Navy and Air Force each provide approximately equal shares of annual funding for the program.										
	PROGRAM FUNDING BREAKOUT REFLECTS NAVY AND AIR FORCE FUNDING. DEPICTED FUNDING EXCLUDES ANTICIPATED FOREIGN FUNDING FOR EMD (TBD).										
(U)	FY 1999 (\$ in Thousands)										
(U)	\$0										
(U)	\$0										
(U)	\$0										
(U)	FY 2000 (\$ in Thousands)										
(U)	\$0										
(U)	\$0										
(U)	\$0										
(U)	FY 2001 (\$ in Thousands)										
(U)	\$595,502										
(U)	\$595,502										
	Notes:										
	- This program element continues development efforts budgeted in Program Element 0603800F prior to and during fiscal year 2001.										
	- December 1998 Selected Acquisition Report (SAR) reflected total EMD cost estimate of \$19.8B (\$TY) funded by USAF, USN, and anticipated (but not finalized) foreign sources.										
Project 653831		Page 1 of 6 Pages								Exhibit R-2 (PE 0604800F)	

865

UNCLASSIFIED

UNCLASSIFIED

BUDGET ACTIVITY		RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 2000					
05 - Engineering and Manufacturing Development		PE NUMBER AND TITLE		PROJECT						
		0604800F Joint Strike Fighter EMD		653831						
(U)	B. Budget Activity Justification This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT encompassing new end-item engineering and manufacturing development for the next generation strike fighter prior to production approval decision.									
(U)	C. Program Change Summary (\$ in Thousands)									
(U)	Previous President's Budget (FY 2000 PBR)	FY 1999	FY 2000	FY 2001	Total Cost					
(U)	Appropriated Value	0	0	536,586	TBD					
(U)	Adjustments to Appropriated Value									
(U)	a. Congressional/General Reductions									
(U)	b. Small Business Innovative Research									
(U)	c. Omnibus or Other Above Threshold Reprogram									
(U)	d. Below Threshold Reprogram									
(U)	e. Rescissions	0								
(U)	f. Other	0			TBD					
(U)	Adjustments to Budget Years Since FY 2000 PBR			-237,046						
(U)	Current Budget Submit/FY 2001 PBR	0		299,540	TBD					
(U)	Significant Program Changes: The FY 2001 decrease of \$237,046 reflects a -\$107,000 transfer to JSF Pre-EMD Program Element 0603800F, a -\$130,000 due to JSF EMD rephasing and a program adjustment decrease of \$46.									
(U)	D. Other Program Funding Summary (\$ in Thousands)									
(U)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
(U)	AF RDT&E									
(U)	RDT&E 0603800F	456,137	249,088	129,538	0	0	0	0	0	1,695,723
(U)	RDT&E 0603800N	471,290	239,907	131,566	0	0	0	0	0	1,742,506
(U)	RDT&E 0603800E	0	0	0	0	0	0	0	0	118,006
(U)	UNITED KINGDOM	34,096	26,101	0	0	0	0	0	0	200,291
(U)	MULTI-LATERAL (Note 1)	7,500	5,100	1,700	0	0	0	0	0	32,100
(U)	CANADA	3,000	2,700	600	0	0	0	0	0	10,600

Project 653831

Page 2 of 6 Pages

Exhibit R-2 (PE 0604800F)

866

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	653831
05 - Engineering and Manufacturing Development		0604800F Joint Strike Fighter EMD									
(U) D. Other Program Funding Summary (\$ in Thousands)		FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to	Total Cost	
		Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Complete		
(U) ITALY		10,000	0	0	0	0	0	0	0	10,000	
(U) RDT&E 0604800N		0	0	295,962	1,324,048	1,932,487	1,859,938	1,639,111	Continuing	TBD	
(U) Other APPN											
(U) USAF 0207142F		0	0	0	0	0	18,000	587,308	Continuing	TBD	
(U) APN-1 0204800N		0	0	0	0	0	0	57,735	Continuing	TBD	
Note 1: Multi-Lateral countries include Netherlands, Norway and Denmark.											
Note 2: FY99 1999 Actual - RDT&E 0603800F understated in ABIDES by \$2.537M. Below Threshold Reprogram (BTR) not reflected in ABIDES database.											
(U) E. Acquisition Strategy											
Ongoing pre-EMD activities center around three distinct objectives that provide a sound foundation for the start of EMD in fiscal year 2001:											
(1) facilitating the Services' development of fully validated, affordable operational requirements;											
(2) lowering risk by investing in and demonstrating key leveraging technologies that lower the cost of development, production and ownership; and											
(3) demonstrating operational concepts.											
Early warfighter and technologist interaction is an essential aspect of the requirements definition process, and key to achieving JSF affordability goals. To an unprecedented degree the JSF Program is using cost-performance trades early, as an integral part of the weapon system development process. The Services are defining requirements through an iterative process, balancing weapon system capability against life cycle cost at every stage. Each iteration of requirements is provided to industry. They evolve their designs and provide cost data back to the warfighters. The warfighters evaluate trades and make decisions for the next iteration. This process produced the Services' first Joint Initial Requirements Document (JIRD I) in 1995 and the second and third iterations in 1997 and 1998, respectively. The Services continue to refine their requirements through this process, which will culminate in the Operational Requirements Document (ORD) in FY 2000 to support the Milestone II decision.											
A sizable technology maturation effort is underway to reduce risk and life cycle cost (LCC) through technology maturation and demonstration. The primary emphasis is on technologies which have been identified as high payoff contributors to affordability, supportability, survivability, and lethality. Numerous demonstrations have been accomplished and others are in process to validate performance and life cycle cost impact to component, subsystem, and the total system.											
A multi-year \$2.2 billion JSF Concept Demonstration effort commenced in November 1996 with competitive contract awards to Boeing and Lockheed Martin for Concept Demonstration Programs. These competing contractors will build and fly concept demonstrator aircraft, conduct concept unique ground demonstrations, and											

BUDGET ACTIVITY		PE NUMBER AND TITLE		DATE	PROJECT																																				
RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		0604800F Joint Strike Fighter EMD		February 2000	653831																																				
(U) E. Acquisition Strategy Continued continue refinement of their ultimate delivered weapon system concepts. Specifically, Boeing and Lockheed Martin will demonstrate commonality and modularity, STOVL hover and transition, and low speed handling qualities of their respective weapon system concepts. Pratt and Whitney is providing propulsion hardware and engineering support for both Boeing's and Lockheed Martin's on-going JSF Concept Demonstration efforts. The JSF Alternate Engine Program with General Electric, continues development of an alternate engine source for production. Current program efforts will culminate in downselect to a single prime weapon system contractor for EMD at Milestone II in FY 2001. JSF procurement (USAF variant) is planned to begin in FY 2005, with advance procurement for Lot 1 in FY04. Procurement for USMC begins with Lot 2 in FY06. Procurement of the Navy variant begins with Lot 4 in FY08. (U) <u>F. Schedule Profile</u> <table border="1"> <thead> <tr> <th></th> <th colspan="3">FY 1999</th> <th colspan="3">FY 2000</th> <th colspan="3">FY 2001</th> </tr> <tr> <th></th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> </tr> </thead> <tbody> <tr> <td>(U) Milestone II and Award of EMD Contract</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>X</td> </tr> </tbody> </table>							FY 1999			FY 2000			FY 2001				1	2	3	4	1	2	3	4	1	2	3	4	(U) Milestone II and Award of EMD Contract												X
	FY 1999			FY 2000			FY 2001																																		
	1	2	3	4	1	2	3	4	1	2	3	4																													
(U) Milestone II and Award of EMD Contract												X																													

Project 653831

Page 4 of 6 Pages

Exhibit R-2 (PE 0604800F)

868

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE									
05 - Engineering and Manufacturing Development		0604800F Joint Strike Fighter EMD									February 2000
(U)	<u>A. Project Cost Breakdown (\$ in Thousands)</u>										
(U)	Engineering and Manufacturing Development (EMD) (Note 1)										
(U)	Total										
	Note 1:										
	- Additional funding breakout is TBD pending source selection for JSF EMD in FY 2001.										
	- Excludes TBD anticipated foreign funding.										
(U)	<u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>										
(U)	<u>Performing Organizations:</u>										
	Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget to Complete	Total Program	
	EMD (Note 1)	TBD	TBD			0	0	0	Continuing	TBD	
	<u>Product Development Organizations</u>										
	<u>Support and Management Organizations</u>										
	<u>Test and Evaluation Organizations</u>										
	Note 1:										
	- Additional funding breakout is pending source selection for JSF EMD in FY 2001.										
	- Excludes TBD anticipated foreign funding.										
	- Total program funding is TBD.										
(U)	<u>Government Furnished Property:</u>										
	Contract	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget to Complete	Total Program		
	Item Description										
	Product Development Property										
	Support and Management Property										
	Test and Evaluation Property										

Project 653831

Page 5 of 6 Pages

Exhibit R-3 (PE 0604800F)

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 2000																																										
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																																											
05 - Engineering and Manufacturing Development	0604800F Joint Strike Fighter EMD	653831																																											
(U) <u>Government Furnished Property Continued:</u> Note: - Additional funding breakout is pending source selection for JSF EMD in FY 2001. - Total program funding is TBD. <table border="0"> <tr> <td><u>Subtotals</u></td> <td>Total Prior to FY 1999</td> <td>Budget FY 1999</td> <td>Budget FY 2000</td> <td>Budget FY 2001</td> <td>Budget to Complete</td> <td>Total Program</td> </tr> <tr> <td></td> <td>0</td> <td>0</td> <td>0</td> <td>595,502</td> <td>TBD</td> <td>TBD</td> </tr> <tr> <td>Subtotal Product Development</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Subtotal Support and Management</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Subtotal Test and Evaluation</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Total Project</td> <td>0</td> <td>0</td> <td>0</td> <td>595,502</td> <td>TBD</td> <td>TBD</td> </tr> </table> Note: - Excludes TBD anticipated foreign funding. - Total program funding is TBD.				<u>Subtotals</u>	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program		0	0	0	595,502	TBD	TBD	Subtotal Product Development							Subtotal Support and Management							Subtotal Test and Evaluation							Total Project	0	0	0	595,502	TBD	TBD
<u>Subtotals</u>	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program																																							
	0	0	0	595,502	TBD	TBD																																							
Subtotal Product Development																																													
Subtotal Support and Management																																													
Subtotal Test and Evaluation																																													
Total Project	0	0	0	595,502	TBD	TBD																																							
Project 653831		Exhibit R-3 (PE 0604800F)																																											

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604805F Commercial Operations and Support								654771	
		Savings Initiative									
		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
654771	Commercial O&S Savings Initiative	11,617	19,904	19,851	19,833	19,824	19,808	19,787	Continuing	TBD	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	
(U)	A. Mission Description This program aims to reduce total ownership costs, particularly Operations and Support (O&S) costs, through insertion of commercial products and processes into fielded military systems. These savings are expected to result by reducing the costs of parts and maintenance, reducing the need for specialized equipment, increasing reliability, and increasing efficiency of subsystems. Commercial Operations and Support Savings Initiative (COSSI) projects will be performed in two stages. In Stage I, each competitively selected, flexible cost share proposal will provide the Non-Recurring Engineering (NRE) required to create a kit that can be used in a fielded military system and perform the testing needed to verify that inserted kits will produce O&S cost savings while at least maintaining the current system level of performance of the fielded system. Based on the results of a Stage I project, the Air Force will decide whether to proceed to Stage II. The goal in Stage II is to purchase a reasonable production quantity of kits based on a fair and reasonable price (i.e., the value of the kits vice the cost of the kits to the Air Force under a Federal Acquisition Regulation (FAR) vehicle). COSSI is a valuable tool for reducing total ownership cost of fielded weapon systems and offers an opportunity for the Air Force to leverage the commercial sector's much faster product development and technology refresh cycle times. The program is designed to be attractive to non-traditional defense suppliers as well through the use of flexible Other Transaction (OT) contracts.										
(U)	FY 1999 (\$ in Thousands) Leveraged commercial electronics and software to swap existing military processors with form, fit, and function replacements to increase reliability, obsolescence avoidance, and software commonality.										
(U)	\$7,541										
(U)	\$2,510	Reduced inventory requirements, maintenance turn times, and mobility deployment footprints through insertion of reliable commercial items.									
(U)	\$1,566	Reduced test, technical manual, and training costs through automation and use of commercial hardware and software.									
(U)	\$11,617	Total									
(U)	FY 2000 (\$ in Thousands) Leverage commercial electronics and software to swap existing military processors with form, fit, and function replacements to increase reliability, obsolescence avoidance, and software commonality. Replace array processors in fighter aircraft radar to improve reliability and reduce maintenance costs and aircraft down time.										
(U)	\$10,134										
(U)	\$8,500	Reduce inventory requirements, maintenance turn times, and mobility deployment footprints through insertion of reliable commercial items.									
Project 654771		Page 1 of 5 Pages								Exhibit R-2 (PE 0604805F)	

871

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development	0604805F Commercial Operations and Support	654771	
Savings Initiative			
(U) A. <u>Mission Description Continued</u>			
(U) FY 2000 (\$ in Thousands) Continued	Replace pyrotechnic-activated weapon release system with pneumatic-based one to decrease maintenance hours, hazardous waste, and airlift of explosive devices.		
(U) \$1,270	Reduce test, technical manual, and training costs through automation and use of commercial hardware and software. Replace two boxes of avionics test station with one that is commercially-based, more reliable, and able to test a greater number of subsystems.		
(U) \$19,904	Total		
(U) FY 2001 (\$ in Thousands)			
(U) \$11,851	Leverage commercial electronics and software to swap existing military processors with form, fit, and function replacements to increase reliability, obsolescence avoidance, and software commonality. Potential targets include fighter aircraft avionics components.		
(U) \$5,000	Reduce inventory requirements, maintenance turn times, and mobility deployment footprints through insertion of reliable commercial items.		
(U) \$3,000	Aircraft engine parts, particularly for fighter and cargo planes, represent possible improvement areas.		
(U) \$19,851	Reduce test, technical manual, and training costs through automation and use of commercial hardware and software. Common or adaptable test stands may be emphasized.		
(U) \$19,851	Total		
(U) B. <u>Budget Activity Justification</u>			
This program is in Budget Activity 4, Demonstration and Validation, since it includes efforts necessary to evaluate integrated technologies in as realistic an operating environment as possible to assess performance or cost reduction potential.			
(U) C. <u>Program Change Summary (\$ in Thousands)</u>	FY 1999	FY 2000	FY 2001
(U) Previous President's Budget (FY 2000 PBR)	15,892	30,485	30,434
(U) Appropriated Value	15,937	20,485	
(U) Adjustments to Appropriated Value			
a. Congressional/General Reductions	-45		
b. Small Business Innovative Research	-494		
c. Omnibus or Other Above Threshold Reprogram		-135	
d. Below Threshold Reprogram	-3,716		
e. Rescissions	-65	-446	
Project 654771		Exhibit R-2 (PE 0604805F)	

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)						DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT	
05 - Engineering and Manufacturing Development		0604805F Commercial Operations and Support				654771	
		Savings Initiative					
(U)	<u>C. Program Change Summary (\$ in Thousands) Continued</u>					Total Cost	
	f. Other	FY 1999	FY 2000	FY 2001			
(U)	Adjustments to Budget Years Since FY 2000 PBR			-10,583		TBD	
(U)	Current Budget Submit/FY 2001 PBR	11,617	19,904	19,851			
(U)	Significant Program Changes:						
	Funding reduction in FY 2001 due to higher priority Air Force needs.						
(U)	<u>D. Other Program Funding Summary (\$ in Thousands)</u>					Total Cost	
		FY 1999	FY 2000	FY 2001	FY 2002	Cost to Complete	
	Actual Estimate	Estimate	Estimate	Estimate	Estimate		
(U)	AF RDT&E						
(U)	Other APPN						
(U)	(U) Related Activities:						
(U)	(U) PE 0602805F, Dual Use Science and Technology (DUST).						
(U)	<u>E. Acquisition Strategy</u>						
	As authorized by Congress, Other Transactions (OTs) for prototypes will be used during Stage I. Project selections will be made using full and open competition.						
(U)	<u>F. Schedule Profile</u>						
		FY 1999	FY 2000	FY 2001			
		1 2 3 4 1 2 3 4 1 2 3 4					
(U)	Request For Release (RFP) Release	*	*	*	X	X	
(U)	Contract Awards	*	*	*	X	X	

873

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									
BUDGET ACTIVITY		PE NUMBER AND TITLE		DATE		PROJECT			
05 - Engineering and Manufacturing Development		0604805F Commercial Operations and Support		February 2000		654771			
		Savings Initiative							
(U)	A. Project Cost Breakdown (\$ in Thousands)								
(U)	Leverage commercial electronics and software to swap existing military processors with form, fit, and function replacements.			FY 1999	FY 2000	FY 2001			
(U)				7,541	10,134	11,851			
(U)	Reduce inventory requirements, maintenance turn times, and mobility deployment footprints through insertion of reliable commercial items.			2,510	8,500	5,000			
(U)	Reduce test, technical manual, and training costs through automation and use of commercial hardware and software.			1,566	1,270	3,000			
(U)	Total			11,617	19,904	19,851			
(U)	B. Budget Acquisition History and Planning Information (\$ in Thousands)								
(U)	Performing Organizations:								
	Contractor or Government	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001
	Product Development Organizations								
	L-3 Communications	OTA	Jun 99	N/A	N/A	0	1,563	0	0
	Marconi Avionics	OTA	Aug 99	N/A	N/A	0	2,780	0	0
	Telephonics	OTA	Sep 99	N/A	N/A	0	1,817	0	0
	Lockheed-Martin	OTA	Jul 99	N/A	N/A	0	3,004	0	0
	AIL Systems	OTA	Sep 99	N/A	N/A	0	1,270	0	0
	CPU Technologies	OTA	TBD	N/A	N/A	0	0	6,000	0
	Marconi Integrated	OTA	TBD	N/A	N/A	0	0	1,270	0
	Boeing St Louis	OTA	TBD	N/A	N/A	0	0	8,500	0
	Numerous	OTA	TBD	N/A	N/A	0	1,183	4,134	19,851
	Support and Management Organizations								
	Test and Evaluation Organizations								

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development	0604805F Commercial Operations and Support	654771	
	Savings Initiative		
		Total Prior to FY 1999	Budget FY 1999
		0	11,617
			Budget FY 2000
			19,904
			Budget FY 2001
			19,851
			Budget to Complete
			TBD
			Total Program
			TBD
Subtotals			
Subtotal Product Development			
Subtotal Support and Management			
Subtotal Test and Evaluation			
Total Project			
		0	11,617
			19,904
			19,851
			TBD
			TBD

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE									
05 - Engineering and Manufacturing Development		0604851F ICBM - EMD									
	COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
	Total Program Element (PE) Cost	70,063	38,235	18,325	43,659	12,414	0	0	0	956,932	
65133B	Rapid Execution & Combat Targeting (REACT)	0	0	0	10,511	0	0	0	0	10,511	
653085	Guidance Replacement Program (GRP)	9,472	0	0	0	0	0	0	0	543,893	
654210	Propulsion Replacement Program (PRP)	60,591	29,553	0	0	0	0	0	0	329,959	
654788	PSRE Life Extension Program	0	8,682	18,325	19,337	12,414	0	0	0	58,758	
654823	ECS Replacement Program	0	0	0	13,811	0	0	0	0	13,811	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	
(U) A. Mission Description ICBM modernization efforts will extend the operational life of the Minuteman ICBM weapon system. The Guidance Replacement Program (GRP), which completed Engineering and Manufacturing Development (EMD) in FY99, replaces failing Minuteman guidance system electronics. The Propulsion Replacement Program (PRP), which will complete EMD in FY00, remanufactures all three Minuteman solid fuel stages to correct age-related degradations. The Propulsion System Rocket Engine (PSRE) Life Extension Program, which entered EMD in FY00, refurbishes the Minuteman post-boost vehicle (PBV) to correct age-related degradations. The Environmental Control System (ECS) Replacement Program, which enters EMD in FY02, will refurbish, update, and/or replace components of the Minuteman ECS in the Launch Facilities (LFs) and Missile Alert Facilities (MAFs). Rapid Execution and Combat Targeting (REACT), which will begin its EMD effort in FY02, will correct REACT security alarm management system and launch readiness deficiencies. Requirements for maintaining the Minuteman Weapon System are defined and validated in current defense planning guidance documentation. All of these modernization programs are designed to keep the Minuteman Weapon System at its historical availability and reliability levels. Although all programs will develop, produce, and install the parts and components necessary to modernize the respective Minuteman subsystems, only the development activities are funded in this Program Element. Procurement and installation are funded in the Minuteman III Modification line of the Minuteman Squadrons Program											

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)				DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE			
05 - Engineering and Manufacturing Development		0604851F ICBM - EMD			
(U)	<u>A. Mission Description Continued</u> Element (PE 0101213F).				
(U)	<u>B. Budget Activity Justification</u> This program is in Budget Activity 5 - Engineering and Manufacturing Development because the projects are being developed for the Air Force but have not received production approval. Program control is exercised at the project level.				
(U)	<u>C. Program Change Summary (\$ in Thousands)</u>				
(U)	Previous President's Budget (FY 2000 PBR)	FY 1999	FY 2000	FY 2001	Total Cost
(U)	Appropriated Value	81,205	38,804	30,388	986,275
(U)	Adjustments to Appropriated Value	81,546	38,804		
	a. Congressional/General Reductions	-341	-8		
	b. Small Business Innovative Research	-2,577			
	c. Omnibus or Other Above Threshold Reprogram	-8,173	-259		
	d. Below Threshold Reprogram	-392	-302		
	e. Rescissions				
	f. Other				
(U)	Adjustments to Budget Years Since FY 2000 PBR			-12,063	
(U)	Current Budget Submit/FY 2001 PBR	70,063	38,235	18,325	956,932
(U)	<u>Significant Program Changes:</u> FY99 Below Threshold Reprogram (BTR) includes \$3,723 for cancelled bills and \$4,450 for higher Air Force priorities. Rapid Execution & Combat Targeting (REACT) is a new project beginning in FY02. In addition, start of the Environmental Control System (ECS) Replacement Program has slipped from FY01 to FY02 to provide funding for higher priorities. As noted in FY00 President's Budget Request, Engineering and Manufacturing Development (EMD) for Propulsion System Rocket Engine (PSRE) Life Extension began in FY00. EMD for GRP ended in FY99 and PRP will be completed in FY00.				

Page 2 of 23 Pages

Exhibit R-2 (PE 0604851F)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604851F ICBM - EMD								65133B	
	COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
65133B	Rapid Execution & Combat Targeting (REACT)	0	0	0	10,511	0	0	0	0	10,511	
(U) A. Mission Description The Rapid Execution and Combat Targeting (REACT) Service Life Extension Program will modify the 50 Operational Missile Launch Control Centers, Weapon System Consoles and the 19 other Trainers and Test Facilities which support the missile system. It will update the AM System and B System REACT consoles as well as the appropriate trainer facilities with hardware changes to improve operability and maintainability. RDT&E funding will be used to design and prototype needed hardware and software as well as accomplish required testing and Nuclear Safety Cross Check Analysis (NSCCA). REACT includes development, procurement, and installation of the required hardware and software to correct identified deficiencies with the system; however, only the development effort is funded in this Program Element. Procurement and installation are funded in the Minuteman III Modifications line in the Minuteman Squadrons Program Element (PE 0101213F) (U) <u>FY 1999 (\$ in Thousands)</u> (U) \$0 No Activity (U) \$0 Total (U) <u>FY 2000 (\$ in Thousands)</u> (U) \$0 No Activity (U) \$0 Total (U) <u>FY 2001 (\$ in Thousands)</u> (U) \$0 No Activity (U) \$0 Total (U) B. Project Change Summary New start initiated with this Amended President's Budget submission. Program begins in FY02.											

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604851F ICBM - EMD								65133B	
(U)	C. Other Program Funding Summary (\$ in Thousands)	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to.	Total Cost	
		Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Complete		
(U)	Other APPN										
	None										
(U)	D. Acquisition Strategy	Planned acquisition will consist of developing and procuring all needed hardware and software modifications necessary to correct known deficiencies. Required testing and certification requirements, to include independent validation and verification as required, will also be accomplished.									
		This effort will be accomplished under the Prime Integration Contractor (PIC). Independent validation and verification efforts are planned to be accomplished under a cost plus-award-fee (CPAF) contract.									
(U)	E. Schedule Profile										
		FY 1999	FY 2000	FY 2001							
		1	2	3	4	1	2	3	4		
(U)	Contract Award (2nd Qtr, FY02)										

Project 65133B

Page 4 of 23 Pages

Exhibit R-2A (PE 0604851F)

880

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	PROJECT		
BUDGET ACTIVITY											65133B		
05 - Engineering and Manufacturing Development										PE NUMBER AND TITLE	0604851F ICBM - EMD		
(U)	A. Project Cost Breakdown (\$ in Thousands)												
(U)	No Activity - Project Begins in FY02										FY 1999	FY 2000	FY 2001
(U)	Total										0	0	0
(U)	Total										0	0	0
(U)	B. Budget Acquisition History and Planning Information (\$ in Thousands)												
(U)	Performing Organizations:												
	Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program		
	Product Development Organizations												
	TRW	C/CPAF	Feb 02	TBD	10,201	0	0	0	0	10,201	10,201		
	Support and Management Organizations												
	NSCCA	CPAF	Feb 02	TBD	250	0	0	0	0	250	250		
	Other Government Costs	TBD	Sep 02	N/A	10	0	0	0	0	10	10		
	Test and Evaluation Organizations												
	White Sands Test Complex	TBD	Sep 02	TBD	50	0	0	0	0	50	50		
	Subtotals					Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program		
	Subtotal Product Development					0	0	0	0	10,201	10,201		
	Subtotal Support and Management					0	0	0	0	260	260		
	Subtotal Test and Evaluation					0	0	0	0	50	50		
	Total Project					0	0	0	0	10,511	10,511		

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000																	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																		
05 - Engineering and Manufacturing Development		0604851F ICBM - EMD								653085																		
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost																		
653085	Guidance Replacement Program (GRP)	9,472	0	0	0	0	0	0	0	543,893																		
(U) A. Mission Description The Guidance Replacement Program (GRP) replaces failing guidance system electronics, and preserves the option to configure the missiles with the Peacekeeper Mk 21 reentry vehicle and/or an advanced inertial measurement unit. The Engineering and Manufacturing Development (EMD) contract was awarded to Rockwell International (now part of Boeing) in August 1993. GRP includes the development, production, and installation of replacement guidance components to extend the life of the operational Minuteman force; however only the development effort was funded in this Program Element. Procurement and installation units are funded in the Minuteman III Modifications line in the Minuteman Squadrons Program Element (PE 0101213F). GRP completed EMD funding in FY99. (U) FY 1999 (\$ in Thousands) <table> <tr><td>(U) \$5,712</td><td>Hardware/software development completed.</td></tr> <tr><td>(U) \$1,261</td><td>Nuclear Safety Cross Check Analysis (NSCCA) and Independent Validation and Verification (IV&V) completed.</td></tr> <tr><td>(U) \$414</td><td>Labs and support agencies efforts completed.</td></tr> <tr><td>(U) \$2,085</td><td>Testing and other engineering support provided.</td></tr> <tr><td>(U) \$9,472</td><td>Total</td></tr> </table> (U) FY 2000 (\$ in Thousands) <table> <tr><td>(U) \$0</td><td>No activity - EMD Completed in FY99.</td></tr> <tr><td>(U) \$0</td><td>Total</td></tr> </table> (U) FY 2001 (\$ in Thousands) <table> <tr><td>(U) \$0</td><td>No activity - EMD Completed in FY99.</td></tr> <tr><td>(U) \$0</td><td>Total</td></tr> </table> (U) B. Project Change Summary FY99 funding reduced to fund higher Air Force priorities. No major development issues encountered in last year of EMD; so funds could be made available without significant changes to content or schedule.											(U) \$5,712	Hardware/software development completed.	(U) \$1,261	Nuclear Safety Cross Check Analysis (NSCCA) and Independent Validation and Verification (IV&V) completed.	(U) \$414	Labs and support agencies efforts completed.	(U) \$2,085	Testing and other engineering support provided.	(U) \$9,472	Total	(U) \$0	No activity - EMD Completed in FY99.	(U) \$0	Total	(U) \$0	No activity - EMD Completed in FY99.	(U) \$0	Total
(U) \$5,712	Hardware/software development completed.																											
(U) \$1,261	Nuclear Safety Cross Check Analysis (NSCCA) and Independent Validation and Verification (IV&V) completed.																											
(U) \$414	Labs and support agencies efforts completed.																											
(U) \$2,085	Testing and other engineering support provided.																											
(U) \$9,472	Total																											
(U) \$0	No activity - EMD Completed in FY99.																											
(U) \$0	Total																											
(U) \$0	No activity - EMD Completed in FY99.																											
(U) \$0	Total																											

Project 653085

Page 6 of 23 Pages

Exhibit R-2A (PE 0604851F)

882

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)						DATE	February 2000			
BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT				
05 - Engineering and Manufacturing Development		0604851F ICBM - EMD				653085				
(U) C.	Other Program Funding Summary (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
(U)	APPN Other APPN									
(U)	APPN 14, Missiles - AF, BA 3, P-012, MM III Modifications, Mod #13503B (PE 0101213F, Minuteman Squadrons)	103,136	181,575	187,303	182,769	196,378	190,375	191,730	321,404	1,722,805
(U) D.	<u>Acquisition Strategy</u> An EMD contract was awarded in Aug 93 to develop, test, and replace selected guidance electronics and software. This cost plus-award-fee (CPAF) contract was issued following full and open competition.									
(U) E.	<u>Schedule Profile</u>									
(U)	PROGRAM MILESTONES									
(U)	--Milestone III Decision									
(U)	T&E MILESTONES									
(U)	--Complete Combined DT&E/IOT&E		*							
(U)	CONTRACT MILESTONES									
(U)	--EMD Completed									
(U)	--Low Rate Initial Production (LRIP) Deliveries Complete									X
(U)	--Full Rate Production (FRP) Contract Award									
(U)	* - Completed Event									
(U)	X - Planned Event									

Project 653085 Page 7 of 23 Pages Exhibit R-2A (PE 0604851F)

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 2000	PROJECT
BUDGET ACTIVITY										PE NUMBER AND TITLE		
05 - Engineering and Manufacturing Development										0604851F ICBM - EMD		
(U)	<u>A. Project Cost Breakdown (\$ in Thousands)</u>											
(U)	Hardware/Software Development										FY 1999	FY 2000
(U)	Nuclear Safety Cross Check Analysis Contract										5,712	
(U)	Labs/Agencies										1,261	
(U)	Other Engineering Support & Testing										414	
(U)	Total										2,085	
											9,472	FY 2001
(U)	<u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>											
(U)	<u>Performing Organizations:</u>											
	Contract or	Contract										
	Government	Method/Type	Award or	Performing	Project							
	Performing	or Funding	Obligation	Activity	Office							
	Activity	Vehicle	Date	EAC	EAC	Total Prior	Budget	Budget	Budget	Budget to	Total	
						to FY 1999	FY 1999	FY 2000	FY 2001	Complete	Program	
<u>Product Development Organizations</u>												
	Boeing-North American	C/CPAF	Aug 93	419,428	419,428	417,881	1,547			0	419,428	
	Boeing-North American	C/CPAF	Sep 94	4,463	4,463	4,463	0			0	4,463	
	TRW (Prime)	C/CPAF	Dec 97	13,318	13,318	9,677	3,641			0	13,318	
<u>Support and Management Organizations</u>												
	TRW (SETA)	SS/CPAF	Jan 94	42,010	42,010	42,010	0			0	42,010	
	Logicon (NSCCA/IV&V)	SS/CPAF	Mar 94	20,242	20,242	18,981	1,261			0	20,242	
	Charles Draper Labs (CSDL)	SS/FFP	Jun 94	5,264	5,264	5,264	0			0	5,264	
	Other Engineering Support	Various	Aug 93	29,133	29,133	26,110	3,023			0	29,133	
<u>Test and Evaluation Organizations</u>												
	AGMC	PO	As Req'd	173	173	173	0			0	173	
	White Sands Missile Range	PO	As Req'd	649	649	649	0			0	649	
(WSMR)												
	Vandenberg AFB	PO/MIPR	As Req'd	6,714	6,714	6,714	0			0	6,714	
	Maxwell AFB	MIPR	As Req'd	27	27	27	0			0	27	
	Sandia National Lab (SNL)	MIPR	As Req'd	2,382	2,382	2,382	0			0	2,382	
	Physics Int	MIPR	As Req'd	22	22	22	0			0	22	
Project 653085										Exhibit R-3 (PE 0604851F)		

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	February 2000	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE			653085		
05 - Engineering and Manufacturing Development							
(U) Performing Organizations Continued:							
Test and Evaluation Organizations							
Little Mountain	PO	As Req'd	68	68	0	0	68
(U) Government Furnished Property:							
Contract							
Method/Type							
or Funding							
Vehicle							
Product Development Property							
None							
Support and Management Property							
None							
Test and Evaluation Property							
None							
Subtotals							
Subtotal Product Development			Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget to Complete	Total Program
			432,021	5,188		0	437,209
Subtotal Support and Management			92,365	4,284		0	96,649
Subtotal Test and Evaluation			10,035	0		0	10,035
Total Project			534,421	9,472		0	543,893

Project 653085

Page 9 of 23 Pages

Exhibit R-3 (PE 0604851F)

885

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604851F ICBM - EMD								654210	
	COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
654210	Propulsion Replacement Program (PRP)	60,591	29,553	0	0	0	0	0	0	329,959	
(U) A. Mission Description The Propulsion Replacement Program (PRP) will remanufacture all three solid fuel stages to correct age-related degradations, maintain existing weapon system reliability, and support Minuteman life extension. Any of the degradations (propellant cracking, case corrosion, liner deterioration, inhibitor deterioration, and line debond) can cause catastrophic motor failure and, in turn, mission failure. RDT&E efforts will identify replacement materials that are no longer available or which have become environmentally unacceptable, reduce life cycle costs, and identify corrections to age-related degradations. The project entered Phase 2 (Engineering and Manufacturing Development) in FY94. RDT&E efforts will identify replacement materials that are no longer available or which have become environmentally unacceptable, reduce life cycle costs, and identify corrections to age-related degradations. Only changes that can be demonstrated in an appropriate timeframe to ensure Minuteman propulsion system continues to meet existing performance specifications while remaining viable and supportable will be incorporated. PRP includes development, procurement, and installation of the remanufactured solid fuel motors to extend the life of the operational Minuteman force; however, only the development effort was funded in this Program Element. Procurement and installation are funded in the Minuteman III Modifications line in the Minuteman Squadrons Program Element (PE 0101213F).											
(U)	FY 1999 (\$ in Thousands)										
(U)	\$39,194	Continued component reuse and materials replacement studies, continued stage design and development to include refurbishment. Continued fabrication, tooling, and waste disposal for qualification motor testing.									
(U)	\$17,005	Continued integration of program activities such as system engineering, program management, range support, Arnold Engineering Development Center (AEDC) testing, booster disassembly/assembly, booster transportation.									
(U)	\$3,887	Continued software modification.									
(U)	\$505	Completed ordnance development effort.									
(U)	\$60,591	Total									

UNCLASSIFIED

UNCLASSIFIED

BUDGET ACTIVITY		RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE	PROJECT					
05 - Engineering and Manufacturing Development		PE NUMBER AND TITLE		0604851F ICBM - EMD	February 2000					
(U)	<u>A. Mission Description Continued</u>									
(U)	FY 2000 (\$ in Thousands)									
(U)	\$19,252	Complete component reuse and materials replacement studies, continue stage design and development to include refurbishment. Complete fabrication, tooling, and waste disposal for qualification motor testing.								
(U)	\$8,681	Complete integration of program activities such as system engineering, program management, range support, AEDC testing, booster disassembly/assembly, booster transportation.								
(U)	\$1,620	Complete software modification.								
(U)	\$29,553	Total								
(U)	FY 2001 (\$ in Thousands)									
(U)	\$0	No activity - EMD Completed in FY00.								
(U)	\$0	Total								
(U)	<u>B. Project Change Summary</u>									
	No significant changes.									
(U)	<u>C. Other Program Funding Summary (\$ in Thousands)</u>									
		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
(U)	Other APPN									
(U)	APPN 14, Missiles - AF, BA	0	84,720	139,437	252,287	259,167	265,934	260,698	559,270	1,821,513
	3, P-012, MM III									
	Modifications, Mod #5053									
	(PE 0101213F, Minuteman Squadrans)									
(U)	<u>D. Acquisition Strategy</u>									
	Planned acquisition will consist of all hardware and software modifications; integration and flight test support; delivery of remanufactured Stage I, II, and III motors; nuclear certification analysis tasks; and independent software certification.									
	All PRP contracts, with the exception of NSCCA and independent software certification, have been transferred to the Prime Integration Contractor (PIC).									
Project 654210		Page 11 of 23 Pages		Exhibit R-2A (PE 0604851F)						

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)					
BUDGET ACTIVITY					DATE February 2000 PROJECT 654210
05 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604851F ICBM - EMD				
(U) <u>E. Schedule Profile</u>	FY 1999	FY 2000	FY 2001	X	
	1	2	3	4	
(U) PROGRAM MILESTONES					
(U) --Milestone III Decision					
(U) T&E MILESTONES					
(U) --Complete Motor Qualification Tests	*				
(U) --Combined DT&E/IOT&E Flight Test					
(U) --Dedicated IOT&E Flight Test			X		
(U) CONTRACT MILESTONES					
(U) --Low Rate Initial Production (LRIP) Contract Award					
(U) --Full Rate Production (FRP) Contract Award	* *				X
(U) * - Completed Event					
(U) X - Planned Event					

Project 654210 Page 12 of 23 Pages Exhibit R-2A (PE 0604851F)

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 2000
BUDGET ACTIVITY										PROJECT	
05 - Engineering and Manufacturing Development										654210	
PE NUMBER AND TITLE										0604851F ICBM - EMD	
(U)	<u>A. Project Cost Breakdown (\$ in Thousands)</u>										
(U)	Technology Insertion									FY 1999	FY 2000
(U)	Software									53,502	14,765
(U)	Other Program Costs									3,887	1,620
(U)	Total									3,202	13,168
(U)										60,591	29,553
(U)	<u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>										
(U)	<u>Performing Organizations:</u>										
	<u>Contractor or Government Performing Activity</u>	<u>Contract Method/Type or Funding Vehicle</u>	<u>Award or Obligation Date</u>	<u>Performing Activity EAC</u>	<u>Project Office EAC</u>	<u>Total Prior to FY 1999</u>	<u>Budget FY 1999</u>	<u>Budget FY 2000</u>	<u>Budget FY 2001</u>	<u>Budget to Complete</u>	<u>Total Program</u>
	<u>Product Development Organizations</u>										
	Thiokol	SS/CPAF	Aug 94	55,875	55,875	55,875	0	0	0	0	55,875
	Aerojet	SS/CPAF	Jul 94	50,738	50,738	50,738	0	0	0	0	50,738
	CSD	SS/CPAF	Jul 94	68,508	68,508	68,508	0	0	0	0	68,508
	Thiokol	C/CPAF	Feb 97	2,262	2,262	2,262	0	0	0	0	2,262
	Boeing-North American	C/CPAF	Oct 96	1,887	1,887	1,887	0	0	0	0	1,887
	Logicon	C/CPAF	Oct 96	2,976	2,976	2,170	579	227	0	0	2,976
	GTE	C/CPAF	Oct 96	1,820	1,820	1,027	561	232	0	0	1,820
	TRW (Prime)	C/CPAF	Dec 97	102,386	102,386	29,867	56,249	16,270	0	0	102,386
	<u>Support and Management Organizations</u>										
	TRW (SETA)	SS/CPAF	Oct 94	20,857	20,857	20,857	0	0	0	0	20,857
	Program Integration	Various	As Req'd	N/A	N/A	2,329	171	105	0	0	2,605
	Other	Various	As Req'd	N/A	N/A		600	227	0	0	827
	<u>Test and Evaluation Organizations</u>										
	AEDC	PO	As Req'd	N/A	N/A	4,145	1,495	2,275	0	0	7,915
	Vandenberg AFB	PO	Nov 99	N/A	N/A	32	936	10,217	0	0	11,185
	Wright Labs	PO	As Req'd	N/A	N/A	37	0	0	0	0	37
	Phillips Lab	PO	As Req'd	N/A	N/A	81	0	0	0	0	81
Project 654210										Exhibit R-3 (PE 0604851F)	

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE				
05 - Engineering and Manufacturing Development		0604851F ICBM - EMD			February 2000	
(U) Government Furnished Property:						
Contract						
Item	Method/Type	Award or	Delivery			
Description	or Funding	Obligation	Date			
Vehicle						
Product Development Property						
None						
Support and Management Property						
None						
Test and Evaluation Property						
None						
Subtotals						
Subtotal Product Development						
Subtotal Support and Management						
Subtotal Test and Evaluation						
Total Project						
		Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Total Program
		212,334	57,389	16,729	0	286,452
		23,186	771	332	0	24,289
		4,295	2,431	12,492	0	19,218
		239,815	60,591	29,553	0	329,959

Project 654210

Page 14 of 23 Pages

Exhibit R-3 (PE 0604851F)

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604851F ICBM - EMD								654788	
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
654788	PSRE Life Extension Program	0	8,682	18,325	19,337	12,414	0	0	0	58,758	
Identified as new start in FY00 PB Submission.											
(U) A. Mission Description											
The Propulsion System Rocket Engine (PSRE) Life Extension Program will refurbish the Minuteman post-boost vehicle (PBV) propulsion system. This refurbishment will correct age-related degradations, reduce life cycle costs, and support Minuteman life extension while maintaining existing weapon system reliability. Deficiencies identified (e.g., relief valve aging, titanium pressure sensing (PC) tube cracking, and fuel flex line cracks) may cause system failure/loss of performance and, in turn, potential mission failure. Other deficiencies (e.g., staging connector aging and actuator motor performance) will impact weapon system availability in addition to reducing system performance. RDT&E efforts will identify replacement materials for those no longer available or which have become environmentally unacceptable. The program will then design/develop components and manufacturing processes necessary to correct the identified deficiencies. PSRE Life Extension Program includes development, procurement, and installation of replacement/refurbished components necessary to extend the life of the Minuteman force; however, only the development effort is funded in this Program Element. Procurement and installation are funded in the Minuteman III Modifications line in the Minuteman Squadrons Program Element (PE 0101213F).											
(U)	FY 1999 (\$ in Thousands)										
(U)	\$0	No activity - EMD begins in FY00.									
(U)	\$0	Total									
(U)	FY 2000 (\$ in Thousands)										
(U)	\$4,877	Begin design/development of components requiring refurbishment or replacement.									
(U)	\$3,805	Begin design/development of necessary support equipment.									
(U)	\$8,682	Total									
Project 654788		Page 15 of 23 Pages								Exhibit R-2A (PE 0604851F)	

891

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)						DATE	February 2000			
BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT				
05 - Engineering and Manufacturing Development		0604851F ICBM - EMD				654788				
(U)	A. Mission Description Continued									
(U)	FY 2001 (\$ in Thousands)									
(U)	\$7,545 Continue component design/development of components requiring refurbishment or replacement.									
(U)	\$5,541 Continue support equipment design/development of necessary support equipment.									
(U)	\$5,239 Begin test and evaluation efforts.									
(U)	\$18,325 Total									
(U)	B. Project Change Summary									
	No significant changes to content, schedule, or cost.									
(U)	C. Other Program Funding Summary (\$ in Thousands)									
		<u>FY 1999 Actual</u>	<u>FY 2000 Estimate</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>Cost to Complete</u>	<u>Total Cost</u>
(U)	Other APPN									
(U)	APPN 14, Missiles-AF, BA 3, P-012, MM III Modifications, Mod #5768 (PE 0101213F, Minuteman Squadrons)					8,961	20,379	20,700	79,523	129,563
(U)	D. Acquisition Strategy									
	The PSRE Life Extension Program will be conducted under the ICBM Prime Integration Contractor (PIC).									
(U)	E. Schedule Profile									
		<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>		
(U)	ENGINEERING MILESTONES	1	2	3	4	1	2	3	4	
(U)	--PDR									
(U)	--CDR				X				X	
(U)	T&E MILESTONES									
(U)	--Re-certification (Begins FY02)									
(U)	CONTRACT MILESTONES					*				
(U)	--EMD Contract Award									

Project 654788
Page 16 of 23 Pages
Exhibit R-2A (PE 0604851F)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)		DATE	February 2000	
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT		
05 - Engineering and Manufacturing Development	0604851F ICBM - EMD			654788
(U) E. Schedule Profile Continued				
		FY 1999	FY 2000	FY 2001
		1 2 3 4 1	2 3 4 1 2	3 4
* - Completed Event				
X - Planned Event				
Project 654788				
Page 17 of 23 Pages				
Exhibit R-2A (PE 0604851F)				

893

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT					
05 - Engineering and Manufacturing Development		0604851F ICBM - EMD				654788					
(U)	A. Project Cost Breakdown (\$ in Thousands)										
(U)	Component Design/Development									FY 2000	FY 2001
(U)	Support Equipment Design/Development									4,877	7,545
(U)	System Test and Evaluation									3,805	5,541
(U)	Total									8,682	18,325
(U)	B. Budget Acquisition History and Planning Information (\$ in Thousands)										
(U)	Performing Organizations:										
	Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program
	Product Development Organizations										
	TRW (Prime)	C/CPAF	Oct 99	51,471	51,471			8,532	16,840	26,099	51,471
	Support and Management Organizations										
	SPO Support	TBD	TBD	TBD	993			150	301	542	993
	Test and Evaluation Organizations										
	White Sands Test Facility (WSTF)	PO	As Req'd	6,294	6,294				1,184	5,110	6,294
(U)	Government Furnished Property:										
	Contract										
	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date								
	Item Description										
	Product Development Property										
	None										
	Support and Management Property										
	None										

Project 654788
Page 18 of 23 Pages
Exhibit R-3 (PE 0604851F)

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT		
05 - Engineering and Manufacturing Development		0604851F ICBM - EMD	654788		
(U) Government Furnished Property Continued:					
Test and Evaluation Property					
None					
Subtotals					
Subtotal Product Development		Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001
Subtotal Support and Management				8,532	16,840
Subtotal Test and Evaluation				150	301
Total Project				8,682	18,325
					31,751
					58,758
					6,294
					542
					26,099
					51,471
					993
					6,294
					542
					26,099
					51,471
					993
					6,294
					542
					26,099
					51,471
					993
					6,294
					542
					26,099
					51,471
					993
					6,294
					542
					26,099
					51,471
					993
					6,294
					542
					26,099
					51,471
					993
					6,294
					542
					26,099
					51,471
					993
					6,294
					542
					26,099
					51,471
					993
					6,294
					542
					26,099
					51,471
					993
					6,294
					542
					26,099
					51,471
					993
					6,294
					542
					26,099
					51,471
					993
					6,294
					542
					26,099
					51,471
					993
					6,294
					542
					26,099
					51,471
					993
					6,294
					542
					26,099
					51,471
					993
					6,294
					542
					26,099
					51,471
					993
					6,294
					542
					26,099
					51,471
					993
					6,294
					542
					26,099
					51,471
					993
					6,294
					542

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604851F ICBM - EMD								654823	
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
654823	ECS Replacement Program	0	0	0	13,811	0	0	0	0	13,811	
(U)	A. Mission Description										
	The existing Minuteman environmental control system (ECS) was deployed in the 1960s with a 10-year design life. The Brine chillers were upgraded in the mid 1980s, however, those units have reached the end of their 10-15 year design life and must be replaced. Aging and obsolete ECS technology is adversely affecting weapon system availability and maintenance costs due to increased failure rates, non-availability of replacement parts, lack of remote diagnostic capabilities, and related supportability problems. This program will modify the existing ECS in the Minuteman launch facility (LF) and the missile alert facility (MAF) to benefit from new technologies and extend ECS life to 2020. The total ECS systems to be modified include LFs, MAFs, test and trainer sites.										
(U)	<u>FY 1999 (\$ in Thousands)</u>										
(U)	\$0	No activity - EMD begins in FY02.									
(U)	\$0	Total									
(U)	<u>FY 2000 (\$ in Thousands)</u>										
(U)	\$0	No activity - EMD begins in FY02.									
(U)	\$0	Total									
(U)	<u>FY 2001 (\$ in Thousands)</u>										
(U)	\$0	No activity - EMD begins in FY02.									
(U)	\$0	Total									
(U)	B. Project Change Summary										
	Project start delayed until FY02 to fund higher priority Air Force needs; new start notification included in FY00 President's Budget Request.										
(U)	C. Other Program Funding Summary (\$ in Thousands)										
	<u>FY 1999 Actual</u>	<u>FY 2000 Estimate</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>Cost to Complete</u>	<u>Total Cost</u>		
(U)	Other APPN										
(U)	APPN 14, Missiles - AF, BA 3, P-012, MM III Modifications, Mod # 5739		16,997		45,087	56,178	145,842	264,104			
Project 654823											
Page 20 of 23 Pages											
Exhibit R-2A (PE 0604851F)											

896

UNCLASSIFIED

[illegible]

Page 21 of 23 Pages

Exhibit R-2A (PE 0604851F)

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0604851F ICBM - EMD								654823	
(U)	<u>A. Project Cost Breakdown (\$ in Thousands)</u>										
(U)	No activity - Project Begins in FY02										
(U)	Total										
(U)	<u>B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>										
(U)	<u>Performing Organizations:</u>										
	<u>Contractor or Government Performing Activity</u>	<u>Contract Method/Type or Funding Vehicle</u>	<u>Award or Obligation Date</u>	<u>Performing Activity EAC</u>	<u>Project Office EAC</u>	<u>Total Prior to FY 1999</u>	<u>Budget FY 1999</u>	<u>Budget FY 2000</u>	<u>Budget FY 2001</u>	<u>Budget to Complete</u>	<u>Total Program</u>
	Product Development Organizations										
	TRW (Prime)	C/CPAF	TBD	N/A	13,611					13,611	13,611
	Support and Management Organizations										
	Various	Various	TBD	N/A	200					200	200
	Test and Evaluation Organizations										
	None										
(U)	<u>Government Furnished Property:</u>										
	<u>Contract</u>	<u>Method/Type or Funding Vehicle</u>	<u>Award or Obligation Date</u>	<u>Delivery Date</u>		<u>Total Prior to FY 1999</u>	<u>Budget FY 1999</u>	<u>Budget FY 2000</u>	<u>Budget FY 2001</u>	<u>Budget to Complete</u>	<u>Total Program</u>
	Item Description										
	Product Development Property										
	None										
	Support and Management Property										
	None										
	Test and Evaluation Property										
	None										
Project 654823											Exhibit R-3 (PE 0604851F)

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
05 - Engineering and Manufacturing Development	0604851F ICBM - EMD	654823	
Subtotals	Total Prior to FY 1999	Budget FY 1999	Budget to Complete
Subtotal Product Development		13,611	13,611
Subtotal Support and Management		200	200
Subtotal Test and Evaluation			
Total Project		13,811	13,811
Project 654823		Exhibit R-3 (PE 0604851F)	

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE							PROJECT		
05 - Engineering and Manufacturing Development		0604853F Evolved Expendable Launch Vehicle - EMD 650004							PROJECT		
	COST (\$ in Thousands)	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
650004	Evolved Expendable Launch Vehicle	241,973	317,964	332,952	244,021	12,392	0	0	0	1,172,554	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	
(U)	A. Mission Description										
	The Evolved Expendable Launch Vehicle (EELV) program is a space launch system development program. The mission of the EELV program is to partner with industry to develop a national launch capability that satisfies the government's National Launch Forecast (NLF) requirements and reduces the cost of space launch by at least 25%. The EELV system includes launch vehicles, a standard payload interface, support systems, mission integration (includes mission unique requirements), special studies (mission feasibility analysis, secondary payloads, dual manifesting, special flight instrumentation, loads analysis, etc.), post-flight data analysis, and launch operations activities. EELV provides two families of launch vehicles that will launch the government portion of the NLF currently serviced by Titan II, Delta II, Atlas II, and Titan IV. Evolved from current expendable launch systems or components thereof, EELV will support military, intelligence, and civil mission requirements.										
(U)	FY 1999 (\$ in Thousands)										
(U)	\$223,673	Continued system development/analysis									
(U)	\$10,190	Systems Engineering									
(U)	\$8,110	Program management and other support costs									
(U)	\$241,973	Total									
(U)	FY 2000 (\$ in Thousands)										
(U)	\$293,909	Continue system development/analysis									
(U)	\$12,582	Systems Engineering									
(U)	\$11,473	Program management and other support costs									
(U)	\$317,964	Total									
(U)	FY 2001 (\$ in Thousands)										
(U)	\$306,891	Continue system development/analysis									
(U)	\$13,211	Systems Engineering									
(U)	\$12,850	Program management and other support costs									
(U)	\$332,952	Total									
Project 650004		Page 1 of 5 Pages							Exhibit R-2 (PE 0604853F)		

901

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)					DATE	PROJECT				
BUDGET ACTIVITY		PE NUMBER AND TITLE								
05 - Engineering and Manufacturing Development		0604853F Evolved Expendable Launch Vehicle - EMD 650004								
(U)	B. Budget Activity Justification									
	This program element is in Budget Activity 5, Engineering and Manufacturing Development, because it supports engineering and manufacturing development of the EELV concept leading to deployment of a lower cost expendable launch vehicle system.									
(U)	C. Program Change Summary (\$ in Thousands)									
(U)	Previous President's Budget (FY 2000 PBR)	FY 1999	FY 2000	FY 2001	Total Cost					
(U)	Appropriated Value	259,143	324,803	307,502	1,168,742					
(U)	Adjustments to Appropriated Value	260,297	322,803							
	a. Congressional/General Reductions	-2,507	-169							
	b. Small Business Innovative Research	-7,699								
	c. Omnibus or Other Above Threshold Reprogram	0	-2,155							
	d. Below Threshold Reprogram	-6,765								
	e. Rescissions	-1,353	-2,515							
	f. Other									
(U)	Adjustments to Budget Years Since FY 2000 PBR	0		25,450		1,172,554				
(U)	Current Budget Submit/FY 2001 PBR	241,973	317,964	332,952						
(U)	Significant Program Changes:									
	The EELV development effort involves a Firm Fixed Price Other Transaction Agreement (OTA) with The Boeing Company (TBC) and Lockheed Martin Astronautics (LMA). The FY01 program was increased to restore previous inflation adjustments and a \$20M FY99 PB Congressional reduction. The \$20M Congressional decrease resulted in FY99 effort being delayed until FY01. With the restoration of these funds, the program is able to complete EELV development on schedule without increasing the total planned value of this effort. FY99 below threshold reprogramming funded other AF priorities.									
(U)	D. Other Program Funding Summary (\$ in Thousands)									
		FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
		Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate		
(U)	AF RDT&E									176,634
(U)	Other APPN									
(U)	NRO (Non-AF budget)*									95,100
(U)	Missile Procurement, AF	68,127		287,996	153,111	544,144	515,127	434,024	8,578,400	10,580,929
	PE0305953F (BA05,P-28)									
Project 650004										
Exhibit R-2 (PE 0604853F)										

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 2000	
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT	
05 - Engineering and Manufacturing Development		0604853F Evolved Expendable Launch Vehicle - EMD		650004	
(U)	<u>D. Other Program Funding Summary (\$ in Thousands)</u>				
	FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate
(U)	DARPA (Non-AF Budget) (PE 0603226E)**				
	* Total includes funding in FY96 and FY97.				
	** Total includes funding in FY94.				
(U)	<u>E. Acquisition Strategy</u>				
	The EELV concept of a family of launch vehicles emphasizes commonality of hardware and infrastructure and economies of scale to enhance production, operations, and support efficiencies. Cost improvements will be achieved through commonality; leveraging the commercial market place; reduction of supporting infrastructure (launch pads, manufacturing facilities, workforce); and optimization of production and launch operations, processes, and rates. EELV is an ongoing competitive program that initially used a rolling downselect acquisition strategy. Four initial contracts were awarded for the Low Cost Concept Validation (LCCV) phase in August 1995. The Air Force downselected to two contractors - Lockheed Martin and Boeing (originally McDonnell Douglas) - for the Pre-Engineering and Manufacturing Development (Pre-EMD) phase in December 1996. On 16 Oct 1998, two \$500M Other Transaction Agreements (OTA) were awarded to The Boeing Company and Lockheed Martin Astronautics for the development effort. The contractors will contribute additional funds of their own, as necessary, to bring their national launch operational capability on line. It is estimated that each contractor is investing approximately \$1B. During the development effort, each contractor's progress will be measured by the use of discrete contractual Milestone Payments associated with major development accomplishments. When a contractor completes a milestone on time, and the government agrees the milestone accomplishment criteria have been successfully met, the government is obligated to pay in the fiscal year in which the funds were budgeted. Simultaneous with the award of the development effort, an Initial Launch Services (ILS) contract was awarded to Boeing for \$1.38B (19 missions) and an ILS contract was awarded to Lockheed Martin for \$649M (9 missions). The Development/ILS approach maintains competition throughout the life of the program, leverages the growing commercial launch market, caps the government's development costs, and allows partnership with industry, while still reducing the program's overall cost to launch the NLF by at least 25% over existing systems. The EELV system will launch the government portion of the NLF through 2020.				
(U)	<u>F. Schedule Profile</u>				
		FY 1999	FY 2000	FY 2001	
		1 2 3 4 1 2 3 4 1 2 3 4			
(U)	Defense Acquisition Board - Milestone II	*			
(U)	Development OTAs awarded	*			
(U)	Tailored Critical Design Review completed			*	
Project 650004		Page 3 of 5 Pages		Exhibit R-2 (PE 0604853F)	

903

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT					
05 - Engineering and Manufacturing Development		0604853F Evolved Expendable Launch Vehicle - EMD				6500004					
(U)	A. Project Cost Breakdown (\$ in Thousands)										
(U)	System development	FY 1999	FY 2000	FY 2001							
(U)	Systems Engineering	223,673	293,909	306,891							
(U)	Program management and other support costs	10,191	12,582	13,211							
(U)	Total	8,109	11,473	12,850							
(U)		241,973	317,964	332,952							
(U)	B. Budget Acquisition History and Planning Information (\$ in Thousands)										
(U)	Performing Organizations:										
	Contract or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	
	<u>Product Development Organizations</u>										
	Prime Contractor Boeing	OTA	Oct 98	500,000	500,000	10,200	111,943	146,954	155,546	109,130	
	Prime Contractor Lockheed Martin	OTA	Oct 98	500,000	500,000	10,200	111,730	146,955	151,345	113,330	
	<u>Support and Management Organizations</u>										
	SPO Mission Spt	Various	Various	N/A	N/A	231	6,613	9,223	10,375	14,943	
	FFRDC	SS/CPAF	Annual	N/A	N/A	2,621	10,191	12,582	13,211	15,162	
	Other Cntr Spt	Various	Various	N/A	N/A	0	1,496	2,250	2,475	3,848	
	<u>Test and Evaluation Organizations</u>										
	None										
(U)	Government Furnished Property:										
	Contract	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1999	Budget FY 1999	Budget FY 2000	Budget FY 2001	Budget to Complete	Total Program	
	Item Description										
	Product Development Property										
	None										
Project 6500004											
Page 4 of 5 Pages											
Exhibit R-3 (PE 0604853F)											

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 2000
BUDGET ACTIVITY		PROJECT	
05 - Engineering and Manufacturing Development		0604853F Evolved Expendable Launch Vehicle - EMD 650004	
(U) <u>Government Furnished Property Continued:</u>			
<u>Support and Management Property</u>			
None			
<u>Test and Evaluation Property</u>			
None			
<u>Subtotals</u>			
Subtotal Product Development		Total Prior to FY 1999	Budget FY 1999
		20,400	223,673
Subtotal Support and Management		Budget FY 2000	FY 2000
		2,852	293,909
Subtotal Test and Evaluation		Budget FY 2001	FY 2001
		23,252	306,891
Total Project		Budget to Complete	Complete
		241,973	222,460
		317,964	33,953
		332,952	105,221
		256,413	1,172,554

Project 650004

Page 5 of 5 Pages

Exhibit R-3 (PE 0604853F)

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
05 - Engineering and Manufacturing Development		0605011F RDT&E For Aging Aircraft								654685	
COST (\$ in Thousands)		FY 1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost	
654685	Aging Aircraft	4,640	4,856	14,204	28,212	42,053	42,895	43,743	Continuing	TBD	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	
(U)	A. Mission Description This program is comprised of multiple efforts which will transition needed technology from laboratory research and commercial technology development into fieldable tools or capabilities and reduce total ownership costs. Projects will target critical needs of the aging fleet such as structures, subsystems, avionics/electronics, and non-destructive inspection (NDI) methods. Structures related projects will include the development of a corrosion prediction capability, alternate repair processes, and an economic service life evaluation capability. Subsystem projects will develop inspection and repair methods needed to maintain the full spectrum of subsystems (wiring, landing gear, fuel systems, etc.). Avionics/electronics efforts include studies and approaches to effectively managing aging-related issues to include obsolescence and diminishing sources. NDI projects will develop equipment and procedures for detecting hidden corrosion, fatigue cracks, and damage under repairs. Projects are typically focused on developing tools (NDI equipment, computer models) and capabilities (alternate repair processes) for Major Command (MAJCOM) and Air Logistics Center (ALC) use in extending useful aircraft service life, resolving flight safety problems, or replacing components no longer procurable. Projects will typically yield a single, validated prototype system or capability that is production ready; final depot or field implementation (equipment purchases, tech order updates, training, etc.) will be the responsibility of the MAJCOMs and ALCs. There is strong emphasis on developing solutions that will benefit multiple weapon systems, thereby reducing or eliminating stovepipe development of platform-specific solutions.										
(U)	FY 1999 (\$ in Thousands) Began developing improved capabilities for corrosion abatement, prevention, and control to reduce the associated maintenance burden.										
(U)	\$2,505	Improved corrosion detection capabilities to decrease inspection times and/or detect corrosion earlier. Developed and integrated software and analytical tools for more effective fleet corrosion management.									
(U)	\$1,016	Developed improved non-destructive inspection techniques that will reduce the time required to detect flaws and damage, such as fatigue cracking, corrosion, disbands, and trapped moisture, and/or enable early detection of damage, thus allowing for less costly repairs.									
(U)	\$1,119	Developed technologies to ensure the continued structural integrity of aging weapon systems, thus ensuring continued flight safety.									
(U)	\$4,640	Total									

Project 654685

Page 1 of 6 Pages

Exhibit R-2 (PE 0605011F)

907

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE		
05 - Engineering and Manufacturing Development	0605011F RDT&E For Aging Aircraft	February 2000	654685
(U) A. Mission Description Continued			
(U) FY 2000 (\$ in Thousands)			
(U) \$2,617	Continue work in corrosion maintenance improvements to develop corrosion abatement processes and temporary repairs which will provide a wider range of repair options, thus reducing the cost and manhours associated with corrosion maintenance. Continue development and integration of software and analytical tools to support corrosion management such as environmental exposure models and corrosion damage analyses which will allow depot engineers to better anticipate corrosion-related workload for future depot maintenance cycles. Continue work on improved corrosion detection capabilities to decrease inspection times and allow for earlier corrosion detection.		
(U) \$1,028	Continue work on improved non-destructive inspection (NDI) techniques that will reduce the time required to detect flaws and damage, such as fatigue cracking, corrosion, disbands, and trapped moisture, and/or enable early damage detection, thus allowing for less costly repairs. Efforts include the development of an NDI technique that will detect small cracks in deep, multi-layer structure without removing fasteners, thus reducing inspection as well as eliminating the potential for further damage by removing fasteners.		
(U) \$1,111	Continue work on technologies to maintain the structural integrity of aging weapon systems, thus ensuring continued flight safety. Efforts include development of viable maintenance procedures to address the delamination of aging integral fuel tank coatings, which should offer improved corrosion protection and eliminate the need to replace wing skins.		
(U) \$100	Initiate studies to identify policies and processes that need to be developed or refined to better address aging avionics/electronics issues such as parts obsolescence and diminishing manufacturing sources.		
(U) \$4,856	Total		
(U) FY 2001 (\$ in Thousands)			
(U) \$5,000	Continue work in corrosion maintenance improvements to develop corrosion abatement processes and temporary repairs which will provide a wider range of repair options, thus reducing the cost and manhours associated with corrosion maintenance. Continue the development and integration of software and analytical tools to support corrosion management such as environmental exposure models and corrosion damage analyses which will better allow engineers to anticipate workload. Continue work on improved corrosion detection capabilities, such as the Mobile Automated Scanner (MAUS), which will decrease inspection hours and repair costs.		
(U) \$4,644	Continue work on improved NDI techniques that will reduce the time required to detect flaws and damage, such as fatigue cracking, corrosion, disbands, and trapped moisture, and/or enable early damage detection, thus allowing for less costly repairs. Continue development of an NDI technique that will detect small cracks in deep, multi-layer structure without removing fasteners, thus reducing inspection time as well as eliminating the potential for further damage by removing fasteners. Expand the application of ultrasonic inspection techniques to detect fatigue cracks in internal wing structure from the outside of the aircraft, which will eliminate fuel tank entry requirements and potential damaging rivet removal.		
(U) \$4,460	Continue work on technologies to maintain the structural integrity of aging weapon systems, thus ensuring continued flight safety. Develop		
Project 654685	Page 2 of 6 Pages	Exhibit R-2 (PE 0605011F)	

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 2000
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT		
05 - Engineering and Manufacturing Development		0605011F RDT&E For Aging Aircraft	654685	
(U)	A. Mission Description Continued			
(U)	FY 2001 (\$ in Thousands) Continued			
(U)	\$100	viable maintenance procedures to address the delamination of aging integral fuel tank coatings, which should offer improved corrosion protection and eliminate the need to replace wing skins.		
(U)		Continue studies to identify policies and processes that need to be developed or refined to better refine aging avionics/electronics issues such as parts obsolescence and diminishing manufacturing sources. Initiate development of integrated avionics/electronics change management plans for common solutions across multiple platforms.		
(U)	\$14,204	Total		
(U)	B. Budget Activity Justification			
	This program is in Budget Activity 5, Engineering and Manufacturing Development, because projects/capabilities will be developed in this program, then made available for procurement by already operational systems.			
(U)	C. Program Change Summary (\$ in Thousands)			
(U)	Previous President's Budget (FY 2000 PBR)	FY 1999	FY 2000	FY 2001
(U)	Appropriated Value	4,887	4,889	14,310
(U)	Adjustments to Appropriated Value	4,901	4,889	
	a. Congressional/General Reductions	-14		
	b. Small Business Innovative Research	-143		
	c. Omnibus or Other Above Threshold Reprogram		-33	
	d. Below Threshold Reprogram	-78		
	e. Rescissions	-26		
	f. Other			
(U)	Adjustments to Budget Years Since FY 2000 PBR			-106
(U)	Current Budget Submit/FY 2001 PBR	4,640	4,856	14,204
(U)	Significant Program Changes:			
	Not Applicable.			
Project 654685		Page 3 of 6 Pages		Exhibit R-2 (PE 0605011F)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 2000																																													
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																																														
05 - Engineering and Manufacturing Development		0605011F RDT&E For Aging Aircraft								654685																																														
(U)	<u>D. Other Program Funding Summary (\$ in Thousands)</u>																																																							
	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to	Total Cost																																															
	Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Complete																																																
(U)	AF RDT&E																																																							
(U)	Other APPN																																																							
	(U) Related Activities:																																																							
	(U) PE 0708026F, Productivity/Reliability/Availability/Maintainability.																																																							
(U)	<u>E. Acquisition Strategy</u>																																																							
	Funding will be released to the Air Logistics Centers for the projects for which they are the Office of Primary Responsibility (OPR) that year. OPR will determine the most appropriate contract vehicle, Design Engineering Program (DEP) contract or full and open competition, to accomplish the project.																																																							
(U)	<u>E. Schedule Profile</u>																																																							
	<table border="1"> <thead> <tr> <th></th> <th colspan="3">FY 1999</th> <th colspan="3">FY 2000</th> <th colspan="3">FY 2001</th> </tr> <tr> <th></th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> </tr> </thead> <tbody> <tr> <td>(U) Project Screening</td> <td></td> <td></td> <td>*</td> <td></td> <td></td> <td></td> <td>X</td> <td></td> </tr> <tr> <td>(U) Request For Proposal Release</td> <td>*</td> <td></td> <td></td> <td>*</td> <td></td> <td></td> <td>X</td> <td></td> </tr> <tr> <td>(U) Contract Awards</td> <td></td> <td>*</td> <td>*</td> <td>*</td> <td>X</td> <td>X</td> <td>X</td> <td></td> </tr> </tbody> </table>											FY 1999			FY 2000			FY 2001				1	2	3	4	1	2	3	4	(U) Project Screening			*				X		(U) Request For Proposal Release	*			*			X		(U) Contract Awards		*	*	*	X	X	X	
	FY 1999			FY 2000			FY 2001																																																	
	1	2	3	4	1	2	3	4																																																
(U) Project Screening			*				X																																																	
(U) Request For Proposal Release	*			*			X																																																	
(U) Contract Awards		*	*	*	X	X	X																																																	

Project 654685

Page 4 of 6 Pages

Exhibit R-2 (PE 0605011F)

Page 4 of 6 Pages

Exhibit R-2 (PE 0605011F)

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 2000		
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT	
05 - Engineering and Manufacturing Development		0605011F RDT&E For Aging Aircraft		654685	
<u>Subtotals</u>		<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Total</u>
		<u>to FY 1999</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>Complete</u>
		0	4,640	4,856	TBD
Subtotal Product Development					TBD
Subtotal Support and Management					TBD
Subtotal Test and Evaluation					TBD
Total Project		0	4,640	4,856	TBD

Project 654685

Page 6 of 6 Pages

Exhibit R-3 (PE 0605011F)

Page 6 of 6 Pages

UNCLASSIFIED

Exhibit R-3 (PE 0605011F)