

UNCLASSIFIED

BMDO RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
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BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603873C Family of System E & I
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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	94422	145657	231248	261530	262606	320864	300207	Continuing	Continuing
3155 Systems Engineering and Integration	19150	62488	71873	84586	104004	157137	164866	Continuing	Continuing
3251 Systems Engineering and Technical Support	17230	0	0	0	0	0	0	TBD	TBD
3261 TMD BM/C3I (BM/C3I Concepts)	37745	53603	25756	72617	40833	59659	27972	Continuing	Continuing
3354 Targets	0	6317	0	0	0	0	0	TBD	TBD
3359 Test, Evaluation and Assessment	20297	23249	61299	34045	50090	37803	38868	Continuing	Continuing
4000 Operational Support	0	0	72320	70282	67679	66265	68501	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Theater Missile Defense (TMD) program's goal is to develop, maintain and deploy a cost-effective, Anti-Ballistic Missile (ABM) Treaty compliant interoperable system designed to protect deployed forces and areas of operations against the immediate and growing threat from shorter range theater ballistic missiles. The TMD core programs are PATRIOT Advanced Capability (PAC)-3, Theater High Altitude Area Defense (THAAD) System, Navy Area Theater Ballistic Missile Defense (TBMD) (formerly Lower Tier), and Navy Theater-Wide TBMD (Formerly Upper-Tier).

Family of Systems Engineering and Interoperability (FoS E&I) seeks to link the TMD core programs so that they fight as one system and obtain a force multiplier advantage. The projects in this Program Element builds FoS interoperability by conducting assessments of joint interoperability to identify weaknesses, defining architectural/engineering solutions to correct the weaknesses, integrating solutions, and testing the FoS fixes. Currently, the FoS interoperability effort is focused on near term Joint Data Network interoperability. However, a continuing R&D investment in Joint Composite Tracking Network is maintained to achieve a future single integrated air picture.

Beginning with FY 01, this program element includes manpower authorizations and the associated costs specifically identified and measured to the performance of these programs.

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This project is assigned to the Budget Activity and Program Element codes as identified in this descriptive summary in accordance with existing Department of Defense policy. Further justification of the Budget Activity code assigned to each Program Element is contained within the Brief Description of Element section of each Program Element Summary.

B. Program Change Summary	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 2000 PB)	95721	141821	128551
Congressional Adjustments		5000	
Appropriated Value		146821	
Adjustments to Appropriated Value			
a. Congressional Reductions (FFRDC, Inflation, etc)		-837	
b. OSD Reductions			
c. Emergency Supplemental			
d. Internal Reprogramming		-327	
Adjustments to Budget Years Since FY 2000 PB	-1299		102697
Current Budget Submit (FY 2001 PB)	94422	145657	231248

Change Summary Explanation: FY 01 – Starting in FY 01, all Family of System efforts from the Joint Theater Missile Defense program element (060387C2) will transfer to this program element to maintain adequate visibility into Theater Missile Defense efforts.

C. Acquisition Strategy: See Individual R2a summaries.

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BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603873C Family of System E & I	PROJECT 3155
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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
3155 Systems Engineering and Integration	19150	62488	71873	84586	104004	157137	164866	Continuing	Continuing

A. Mission Description and Budget Item Justification:

The purpose of this project is to provide system engineering, analysis, and technical support for the development of a joint Theater Air and Missile Defense (TAMD) Family of Systems (FoS) architecture. Joint Theater Air and Missile Defense (JTAMD) is the integrated capability to detect, classify, intercept and destroy or negate the effectiveness of enemy aircraft and missiles prior to launch or while in flight, to protect US and coalition forces, selected assets, and populations centers within an assigned theater of operations. The TAMD FoS architecture will focus on the integration of theater ballistic missile defense, cruise missile defense, air defense, and attack operations.

In addition, BMC4I capability improvements to achieve far-term interoperability goals, such as development of the Single Integrated Air Picture (SIAP) capability, Joint Composite Tracking Network (JCTN), and efforts to address advanced capabilities such as Air Directed Surface to Air Missiles (ADSAM) will be included in this project. This project also includes researching the contributions of systems such a Spaced Based Infrared Systems (SBIRS) and Airborne Laser (ABL) to the overall TMD architecture as well as other pillars of TMD such as Attack Operations and Passive Defense. A significant amount of effort will also be put on maintaining and upgrading modeling and simulation tools, including Commander's Analysis Planning Simulation (CAPS), Extended Air Defense Test Bed (EADTB) and Extended Air Defense Simulation (EADSIM), and further development of the Theater Missile Defense System Exerciser (TMDSE). Test Planning and Execution will focus on the achievement of Capability Increments (CIs) of a Family of Systems Architecture as proposed in draft FoS Draft Interoperability Program Plan. Efforts are focussed on the verification of legacy systems. This verification will establish the Family of Systems baseline. From this baseline, additional testing and verification in the following years will help develop the joint interoperability of the Family of Systems Architecture. In addition, efforts also support TMD inter-service test planning documentation. Efforts will provide for planning and development of a Capstone TMD Test and Evaluation Master Plan (TEMP), development of a near term test plan for the Joint Data Network (JDN), and review of the programmatic and technical documentation providing the technical baseline of the test program. This project also supports the Theater Missile Defense Critical Measurements Program (TCMP) which is a risk reduction program that is an integral part of Major Defense Acquisition Program (MDAP) component testing as well as Theater Air and Missile Defense (TAMD) Family of Systems (FoS) testing. This project provides support to shared activities between BMDO and JTAMDO as both organizations work cooperatively to achieve the TAMD capability. These activities include support to Service participation to the JTAMD program specifically in providing Service systems representations for analysis activities and direct participation in the JTAMD process. The results of the JTAMD process will be documented in the JTAMD Master Plan that outlines the Operations Architecture, Systems Architecture, Technical Architecture, Acquisition Roadmap and Investment Strategy to produce a JTAMD FoS capability.

FY 1999 Accomplishments:

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<ul style="list-style-type: none"> • 3705 • 9154 • 4991 • 1300 Total 19150 	<p>SIAP Definition - Developed an operational and engineering definition of material solutions for SIAP to include Technical Requirements Documents of a Joint Composite Tracking Network and also JCTN Integration Analysis, JCTN/JDN Gateway Development, Virtual Distributed Analysis of SIAP requirements and behavior, JMAA support, and support of ADSAM related activities.</p> <p>TAMD Integration – Supported development of JTAMD Master Plan System Architecture, Acquisition Road Map and Investment Strategy, CMD Baseline analysis, Technology Options plan for 2010, Combat Identification Application analysis, system engineering, engineering and technical trades analysis</p> <p>Modeling and Simulation Development – Developed TAMD System Specific Representations and advanced modeling and simulation capabilities</p> <p>System Effectiveness – Analyzed the effectiveness of JTAMD architecture including end-game analysis, lethality analysis and supported the planning of demonstration events.</p>
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FY 2000 Planned Program:

<ul style="list-style-type: none"> • 9717 • 12477 • 6881 • 1831 • 16870 • 1157 • 13555 Total 62488 	<p>SIAP – Continue SIAP definition analysis, address how the union of Joint Data Network and Joint Composite Tracking Network will meet SIAP requirements. Establish JCTN benchmarking to identify best data fusion and composite tracking algorithm for SIAP. Continue efforts to migrate CEC to a Joint CEC/JCTN. Begin acquisition activities for JCTN program planning and CEC cost reduction activities. Begin JCTN/JDN gateway prototype efforts with JLENS office.</p> <p>TAMD Integration – Continue to refine JTAMD systems architecture, which fully incorporates Theater Ballistic Missile Defense, Cruise Missile Defense, Attack Operations and Passive Defense. Further refine acquisition and investment strategies for JTAMD architecture</p> <p>Modeling and Simulation Development - Continue to develop TAMD System Specific Representations and advanced modeling and simulation capabilities to support TAMD requirements.</p> <p>System Effectiveness – Continue to refine analysis of the effectiveness of JTAMD architecture to include end-game analysis, lethality analysis and support the planning of demonstration events.</p> <p>TMD Systems Engineering – Provide scientific, engineering, and technical support for the acquisition, integration, and fielding of TMD systems including: review of products in comparison to standards, specifications, and requirements; modeling and simulation support of architecture analyses and trade-off studies; risk reduction and acquisition streamlining support; development of specifications and program documentation for JDN fixes and enhancements; engineering and technical support for international programs and BM/C3 efforts; conduct EADTB distributed analyses and operations; development and maintenance of technical and programmatic databases; and preparation of technical reports, briefings, and programmatic documentation.</p> <p>Test Planning and Support – Support development of TMD inter-service test planning documentation. Conduct TMD Consolidated Evaluation Plan / Integrated Test Plan review. Produce final draft of TMD Capstone TEMP. Develop JDN test plan working draft. Coordinate and participate in Joint Test Planning Teams and Test and evaluation IPTs.</p> <p>BMD Impact Analysis and Engineering – Delivers short notice engineering and analytical recommendations and proposed solutions associated with broad ballistic missile defense issues. Provides congressional, OSD, and BMDO leadership with a range of options for dealing with threat, architectural and system elements influencing the design and composition of US ballistic missile defenses. Includes resources to foster improvements in BMD command and control leading towards a coordinated engagement capability and single integrated air picture.</p>
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<p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 677 SIAP Development - Continue SIAP definition analysis, address how the union of Joint Data Network and Joint Composite Tracking Network will meet SIAP requirements. Other joint CEC/JCTN program efforts deferred pending budget readjustment for BMDO role as lead SIAP engineer. • 6259 TAMD Integration – Continue to refine JTAMD systems architecture, acquisition strategy and investment strategy, including long range analysis through the 2010 timeframe, effects of countermeasures, technology insertion options for the architecture, and engineering and cost trade off analysis. • 5070 Models and Simulations Development - Continue to develop TAMD System Specific Representations and advanced modeling and simulation capabilities to support TAMD requirements. • 15582 TCMP – Finalize documentation and provide technical support and on-site support for flight 3B. Conduct TCMP-3B flight test. Complete data analysis for TCMP-3 flight tests. Conduct TCMP-3B Data Analysis Review. Conduct TCMP-3B Data Assessment Workshop. Conduct mission planning for TCMP-4. Initiate design and initiate purchase of payload hardware for TCMP-4 flight tests. Initiate design and initiate purchase of launch vehicle hardware for TCMP-4 flight test. • 10906 TMD Program Support - Using FFRDC resources, perform independent technical and engineering assessments of TMD system architectures including: system concept development and assessment; critical element technical and programmatic assessments including trade-off analyses; reviews of mandated documents, international cooperative programs, and treaty implications; multi-Service and allied BM/C3 integration; modeling, simulation, experiment and flight test support; integration of fielded components into operational units; and specific studies and analyses of critical issues. Provide scientific, engineering, and technical support for the acquisition, integration, and fielding of TMD systems including: review of products in comparison to standards, specifications, and requirements; modeling and simulation support of architecture analyses and trade-off studies; risk reduction and acquisition streamlining support; engineering and technical support for international programs and BM/C3 efforts; conduct EADTB distributed analyses and operations; develop and maintain technical and programmatic databases; and preparation of technical reports, briefings, and programmatic documentation. • 16492 TMD Systems Engineering - Provide scientific, engineering, and technical support for the acquisition, integration, and fielding of TMD systems including: review of products in comparison to standards, specifications, and requirements; modeling and simulation support of architecture analyses and trade-off studies; risk reduction and acquisition streamlining support; engineering and technical support for international programs and BM/C3 efforts; conducted EADTB distributed analyses and operations; development and maintenance of technical and programmatic databases; and preparation of technical reports, briefings, and programmatic documentation. • Test Planning and Support - Produce JDN Test Plan Final Draft and Final JDN Test Plan. Conduct Capstone TEMP update review. Coordinate and participate in Joint Test Planning Teams and Test and Evaluation IPTs. • 1167 • 9388 EADTB – Deliver EADTB enhancements to support formal BMDO approved study/test requirements. Begin design and development of follow-on releases. Continue VV&A efforts. Provide EADSIM baseline maintenance. • 6332 Govt. Proj Pers & Support - Provide funding for government personnel and project management Total 71873 		
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B. Other Program Funding Summary	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
N/A										
<p>C. Acquisition Strategy: The TAMD Integration project acquisition strategy goal is to develop the TAMD Master Plan and the Joint Theater Air and Missile Defense (JTAMD) acquisition strategy through the use of analysis and studies that focus on existing service systems. These studies and analyses will evaluate those systems for JTAMD interoperability, CMD/TBMD capability, and Single Integrated Air Picture (SIAP) contributions. JTAMD FoS Engineering will provide for the joint systems and technical architecture for the JTAMD process as a complement to the operational architecture provided by the Joint Chiefs of Staff through JTAMDO. SIAP efforts begin the transition of CEC to a Joint CEC/JCTN, define required upgrades to JDN, and plan for acquisition program to address both near and far-term interoperability goals.</p>										
D. Schedule Profile	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
JCTN Phase II Study		4Q								
JCTN Technical Definition			4Q							
JCTN Min-Mix Study				1Q						
TAMD Master Plan					1Q	1Q	1Q	1Q	1Q	1Q
T&E IPT					1Q-3Q					
Release JCTN Benchmark Updates to Industry					1Q-4Q					
TMD Consolidated Evaluation Plan					1Q					
2010 TMD FoS Conceptual Design supporting IPP/POM					1Q					
Final Draft TMD Capstone TEMP					2Q					
Deliver TMD FoS IPP					2Q					
Deliver Lower Tier Interoperability System Performance Specification					3Q					
JDN Test Plan Working Draft					3Q					
Deliver Draft JCTN CARD					4Q					
Delivery of JDN Lower Tier Interface Control Document					4Q					
TCMP-3B Flight Readiness Review						1Q				
TCMP-3B Flight Test						2Q				
TCMP-3B Data Analysis Review						3Q				
TCMP Data Assessment Workshop						4Q				
JCTN/JDN Gateway Tech Definition					2Q					

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Final Draft Capstone TEMP					2Q						
Deliver of SSRs for EADTB f/AEGIS(NTW), THAAD, and SBIRS low					2Q						
Deliver SSRs f/EADTB for PATRIOT, JTAGS, AEGIS, BDE, AMDPCS (ADTOC), and AWACS					2Q						
Conduct Preliminary Design Reviews of TCMP-4 Launch Vehicle and Payload								1Q			
Conduct Critical Design Reviews of TCMP-4 Launch Vehicle and Payload								3Q			
Deliver Initial Prototype SIAP JCTN/JDN Gateway								1Q			
Draft Program Plan for JCTN Acquisition					4Q						
Establish SIAP Acquisition Strategy					4Q	4Q					
JCTN/SIAP Concept Definition Contracts								TBD			
Down select JCTN concept devel contract efforts									TBD		

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I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Army, Navy, Air Force – EADTB SSR Development	Suballocation		2170	3000	1Q00	3195	1Q01	Continue	Continue	
b. Army SBIRS SSR	Suballocation		750	0		0		750		
c. JNTF EADTB SSR development, SIT II, PAC-3 IOT&E		JNTF, Colorado Springs, CO		569	1Q00	715	1Q01	Continue	Continue	
d. M&S Development US/UK			550	400	1Q00					
e. VV&A M&S Support		Various		1090	1Q00	1160	1Q01	Continue	Continue	
f. TCMP Payload 3-B		MIT/LL, Lexington, Mass.				1100	3Q01	Continue	Continue	
g. TCMP Payload 4A&B		MIT/LL, Lexington, Mass				1399	3Q01			
h. TCMP Launch Vehicle		OSC, Chandler, AZ				1530	1Q01	Continue	Continue	
i. TCMP Flight Support		USAF				600	1Q01	Continue	Continue	
j. EADTB Development	CPAF	TBD – (HSV)				9388	1Q01	Continue	Continue	
k. JCTN/JDN Gateway Prototype		JLENS Program Office – Huntsville, AL		1200	1Q00	0			Continue	
l. JCTN/JDN Gateway Prototype Eval Facility		MITRE/MASC		450	1Q00	0			Continue	
m. JCTN Benchmark		ONR with subcontracts activity to: GTRI, Atlanta, GA; Numerica, Boulder, CO; Lockheed-Martin, Moorestown, NJ; Lockheed-Martin, Sunnyvale, CA; Raytheon, Elsegundo, CA		1330	1Q00	0			Continue	

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n. JCTN Benchmark	SPARTA, Arlington VA		250	1Q00	0				Continue
o. JCTN Benchmark	JNTF, Colorado Springs, CO		50	1Q00	0				Continue
p. JCTN Benchmark & Analysis	JHU/APL, Maryland		500	1Q00	0				Continue
q. Joint CEC Cost Reduction Tech Contracts	CEC Program Office with subcontracts to Solipsys, Laurel, MD; DSR, Fairfax, VA		935	1Q00	0				Continue
r. JCTN Technical Definition	SPARTA, Arlington, VA		900	1Q00	0				Continue
s. JCTN Technical Definition	CSCI, Springfield, VA	200	0		0			200	
Subtotal Product Development			3670	10674		19087		Continue	Continue

Remark:

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Army - Analysis Support	Suballocation	DAMO-FDE/SMDC	500	375	1Q00	375	1Q01	Continue	Continue	
b. Navy - Analysis Support	Suballocation	OPNAV-N86	375	375	1Q00	375	1Q01	Continue	Continue	
c. Air Force - Analysis Support	Suballocation	AFSAA	375	375	1Q00	375	1Q01	Continue	Continue	
d. Marine Corps - Analysis Support	Suballocation	MARCORSYSCOM	100	125	1Q00	125	1Q01	Continue	Continue	
e. JNTF support	Suballocation	JNTF		100	1Q00	100	1Q01	Continue	Continue	
f. TCMP Technical Support/Data		TBE, Huntsville, AL				300	1Q01	Continue	Continue	
g. TCMP Data Analysis		PRA, Huntsville, AL				200	1Q01	Continue	Continue	
h. TCMP Technical Support		NRC, Huntsville, AL				150	1Q01	Continue	Continue	
i. TCMP Flight Analysis		AF-TRW				300	1Q01	Continue	Continue	

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j. TCMP Flight Analysis		MIT/LL				1000	1Q01	Continue	Continue	
k. Missile Def Data Center		CAS				200	1Q01	Continue	Continue	
l. SETA Support	CPAF	SPARTA – VA				4906	1Q01	Continue	Continue	
m. SIAP Analysis Support		Multiple	1800	4102	1Q00	677	1Q01	Continue	Continue	
n. POET Support		FFRDCs				6000	1Q01	Continue	Continue	
o. BMD Analysis Support		Multiple		6579	1Q00					6976
p. M&S Analysis Support		Multiple		1822	1Q00					1822
Subtotal Support Costs			3150	13853		15083		Continue	Continue	

Remark:

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. T&E SETA		Vanguard – VA		1157	1Q00	1167	1Q01	Continue	Continue	
b. TCMP Range/Flight Ops		KMR/Raytheon				6203	1Q01	Continue	Continue	
c. TCMP Range/Flight Ops		CDC, Wake Island				1000	1Q01	Continue	Continue	
d. Sensor Deployment		Various				1600	1Q01	Continue	Continue	
Subtotal Test and Evaluation:				1157		9970		Continue	Continue	

Remark:

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TAMD Integration Analysis	CPAF/CPFF	SPARTA, Arlington, VA; CSCI, Springfield, VA; others	12330	11127	1Q00	4909	1Q01	Continue	Continue	
b. Govt Prog Pers						6332	1Q01	Continue	Continue	
c. Systems Engineering - Engineering fixes and enhancements to JDN/Link 16 and long-term JCTN Engineering	CPFF	TRW, Rosslyn, VA		16870	1Q00	16492	1Q01	Continue	Continue	
d. BMD Analysis Support		Multiple		6976	1Q00				6976	

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e. System Effectivness Evaluation Analysis	SPARTA, Arlington, VA, Battelle, Columbus, OH, MILTEC, Huntsville, AL; Teledyne- Brown, Huntsville,AL		1831	1Q00				1831	
Subtotal Mgmt Services		12330	36804		27733		Continue	Continue	
Remark:									
Project Total Cost:		19150	62488		71873		Continue	Continue	
Remark:									

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BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603873C Family of System E & I	PROJECT 3251
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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
3251 Systems Engineering and Technical Support	17230	0	0	0	0	0	0	TBD	TBD

A. Mission Description and Budget Item Justification

This project provides system engineering and technical support for the integration of Service-supplied weapon systems to facilitate the identification and resolution of inter-Service integration and interoperability issues; technical and engineering assessments and trade-off studies of Theater Missile Defense (TMD) system architectures and concepts.

Starting in FY 00, the funding for this project was transferred to project 3155.

FY 1999 Accomplishments:

- 8615 Provided TMD Family of System level system engineering and integration support that included the following efforts. Supported the Joint Theater Air and Missile Defense (JTAMD) process through the development of system requirements and architectures.
 - 3153 Developed the JDN Program Plan that defines an interoperability evolutionary acquisition strategy.
 - 5462 Planned and assessed TMD Integrated Testing to include HWILT, TMDSE, and Joint Service Exercises.
- Total 17230

FY 2000 Planned Program:

- Beginning in FY 00, the funding for this project has been transferred to Project 3155

B. <u>Other Program Funding Summary</u>	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
PE 0603873C PMA 3155/Task 07			16870	16492	18132	29494	30027	30669	Continue	Continue

C. Acquisition Strategy: This project used a competitively awarded SETA contract.

D. <u>Schedule Profile</u>	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
N/A										

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I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Systems Engineering	CPFF	TRW, Rosslyn VA	17230	0				Continue *	17230	0
Subtotal Product Development:			17230						17230	

Remark:

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

Remark:

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

Remark:

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Systems Engineering	CPFF	TRW, Rosslyn VA	17230					Continue *	17230	
Subtotal Management Services:			17230						17230	

Remark:

* Starting in FY00, the funding for this project was transferred to Project 3155, same Program Element.

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Project Total Cost:			17230						17230
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BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603873C Family of System E & I	PROJECT 3261
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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
3261 TMD BM/C3I (BM/C3I Concepts)	37745	53603	25756	72617	40833	59659	27972	Continuing	Continuing

A. Mission Description and Budget Item Justification

The objective of this project is to provide the warfighter with Theater Air and Missile Defense (TAMD) Battle Management/Command, Control and Intelligence (BM/C3I) that is flexible, responsive, and interoperable. TAMD is based on a Family-of-Systems (FoS) concept where the Services' air and ballistic missile defense and command and control (C2) systems are integrated together using various existing and developing communications capabilities and systems. The resulting FoS provides the CINC with TAMD systems 'plug and fight' capability to address a wide variety of air and missile threats that can be tailored for his theater of operations.

To achieve this objective of providing the warfighter with flexible, responsive, and interoperable BM/C3I for TAMD, the Ballistic Missile Defense Organization (BMDO) uses this project to provide oversight, leadership, guidance, and support to the Services' TAMD BM/C3I programs. The focus is on Joint approaches to integrate and synergize the Services' programs to include: (1) early warning and dissemination of theater ballistic missile launch information, (2) communication, and (3) command and control upgrades. In concert with this successful approach, BMDO has developed the TAMD BM/C3I Architecture to enable further interoperability improvements. By focusing project efforts on this architecture, the integration of individual activities will be enhanced while continuing to support earlier objectives.

The TAMD BM/C3I Architecture can be viewed as a set of FoS connectivities and common mission functions integrated via three networks: (1) the Joint Data Network (JDN): a near-real-time network based primarily on the Tactical Digital Information Link [TADIL-J / LINK-16] to provide overall FoS situational awareness, command and control, and weapon coordination; (2) The Joint Planning Network (JPN): a non-real-time/near-real-time network building upon the Global Command and Control System (GCCS) to support centralized planning and guidance. The JPN will complement the JDN by enabling consistent TAMD plan development and dissemination across command levels, Services, and the CINCs; (3) The Joint Composite Tracking Network (JCTN): a real-time network based on the Navy's Cooperative Engagement Capability (CEC) to directly link sensors and shooters within a theater to provide fire-quality information to maximize the effectiveness of multiple systems.

To achieve the TAMD BM/C3I Architecture, project efforts will address the following key areas: the development of external cueing for FoS sensors; the implementation of JDN [TADIL-J / LINK-16] TAMD messages in FoS C2 nodes; and the development and integration of GCCS TAMD applications. The overall objective of this project is to ensure the integration of Service systems so that they will be both affordable and jointly interoperable.

Recent emphasis is focused on the "FoS Interoperability" project. This project contains Link-16 fixes and enhanced Communication Information Management (CIM) efforts. These tasks contribute vertical and horizontal integration of the JPN, JDN and JCTN in support of joint and coalition TAMD operations, such as: Joint Range Extension (JRE), Time Slot Reallocation (TSR) and Joint Interface Control Officer (JICO) enhancements. The project further provides system engineering and technical support for the integration of Service-supplied weapon systems to facilitate the identification and resolution of inter-Service integration and interoperability issues; technical and engineering assessments and trade-off studies of Theater Air and Missile Defense (TAMD) system architectures and concepts; support for UK

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<p>developed sensor data fusion methodology; Ballistic Missile Defense (BMD) system survivability oversight and assessment; risk reduction and acquisition streamlining support; modeling, simulation, experiment, and flight test support; development and maintenance of technical and programmatic databases; and preparation of technical reports, briefings, and programmatic documentation associated with TAMD studies and critical issues.</p> <p>FY 1999 Accomplishments:</p> <ul style="list-style-type: none"> • 7402 BM/C3I Integration - Army: Developed ICP and system implementation documentation for Army Air and Missile Defense (AMD) systems for JDN message development; integrated PATRIOT into DII/COE compliant Army component of the JPN; development, integration, and the certification of ADSI component of Air & Missile Defense Planning & Control Systems (AMDPCS); integrated JTT into AMDPCS at ADA Bde; and above levels; integrated AMDPCS with German SAMOC under US/GE Interoperability program; delivered Army AMDWS/JDP Interface documentation to the JDP Program office; software integration report on upgrades to TADIL-A PATRIOT cueing for TBMs; delivered ASCIET 99 Joint Network design and load files for Link-16 Net Design; delivered demonstration plan for Army JRE; delivered Army annex to Integration plan of JRE; deliver Joint Requirements documents for Army JRE. • 8903 BM/C3I Integration - Air Force: Implemented JDP V1.0 TRNs and JTMDP V2.0 requirements in JDP 2.0; developed enhancements and fielded JDP V1.0 and V1.0.1 including enemy order of battle and JMTC; implemented model fidelity study results via Service-generated system data tables; produced JRE host integration plan with Service annexes; conducted JRE Joint Lab demonstration; integrated Navy and Army S-TADIL J UHF capability in AF JRE Gateway; developed Joint test environment to supplement live testing with operationally realistic loads (MASC); delivered Time Slot Reallocation recommendations; fielded JDP V1.0 with TBMCS V1.0; fielded JDP V1.0.1 with GCCS V3.0; initiated creation of testbed capability at identifies facility(ies); completed prototype JSTARS TAMD MSI and perform demonstration activities to determine effectiveness of prototype; implement change 8 ensure interoperability with FoS established TAMD baselines in JSTARS; developed a Joint communications plan/architecture to identify the out-of-theater, reach-back requirements for A2IPB; publish Joint Area Limitation TRD; developed a Correlation Roadmap. • 12190 BM/C3I Integration - Navy & USMC: Integrated prototype JDP 2.0 with Navy GCCS-M; conducted JRE Joint lab demonstration; produced JRE host integration plan with Service annexes; completed Joint Service staffing requirements document; developed test plans for JTIDS TSR development; developed test plan for Common Air Command & Control system, (CAC&CS); delivered TEMP draft on CAC&CS; completed software testing on SIAP; conducted demonstration on the SIAP. • 1285 BM/C3I Integration - Joint/Combined: Provided joint testing support for TAMD messages; continued theater/IBS integration process into TADIL-J messages; submitted "best-of-breed" candidates to CAN; develop TADIL ICP for joint correlation algorithm base; completed UK sensor management and passive warning studies; provided daily support, upkeep and maintenance to the InterPRO architecture software tool system; TMSC evaluation and testing a distributed environment; testing of TES component implementation of MIDB codes; documented and tested procedures for adding MIDB codes to TDPs; conducted tests using live TDDS and TIBs data, recording and simulation; initial preparation of the Advanced Concept Technology Demonstration (ACTD). • 1450 Cooperative Engagement Capability (CEC) Demonstration/Impact '98: This ACTD program provided data to extend the evaluation of enhanced warfighting capabilities and provided engineering data to enable an assessment of the potential for PATRIOT, THAAD, and Cooperative Engagement Capability (CEC) contributions in: increased Theatre Air and Missile Defense defended area, initiated a U.S. Army/U.S. Navy SIAP, and increasing contingency operation capability. 		
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•	1515 BM/C3I Integration – JNTF: Updated VV&A plan; performed V&V on JDP V1.0.1 for release; final updates made to JDP 2.0 requirements; performed user assessment of GCCS TAMD applications; demonstrated JDP capabilities; provided and maintained an operational representative GCCS host workshop.	
•	4416 FoS Interoperability - The Army, Navy, Marine Corps, Air Force and Joint National Test Facility provided support to Inter-Service integration, interoperability, identification and resolution of interface issues. Provided support to the JTAMD Process and its associated JTAMD Master Plan development, JTAMDO sponsored WIPTs, JTAMD Systems Architecture development, and the Systems Engineering and Integration (SE&I) process. Perform special studies as assigned and provided support to AQ Systems Interoperability and Integration (SI&I) efforts.	
Total	37161	
FY 2000 Planned Program:		
•	13072 Theater Missile Defense System Exerciser (TMDSE): This task supports the development of the TMDSE, the primary Hardware-in-the-Loop (HWIL) test tool for the TMD Family of Systems (FoS). Effort includes: evolution of TMDSE via incremental software builds and the addition of system nodes, the transition of TMDSE into the JNTF, and support of HWIL testing.	
•	5660 BM/C3I Integration -Army: Continue software development and integration activities; evaluate the message proposals options for JDN/JCTN networks to determine Army impacts/recommendations for submission; upgrade and test JCOES/DII compliant AMDWS planning modules with JDP V 3.0; continue integration/interoperability testing, certification and fielding of AMDWS planning modules to ADA Brigades and theater level command and control facilities; integration and testing of THAAD, JLENS functionality into AMDWS component of JPN; participate in 2 JRE field demonstration.	
•	8300 BM/C3I Integration -Air Force: Demonstrate and test JRE UHF S-TADIL J capability; integrate EHF MDR capability into JRE; implement JDP V2.0 into TBMCS V2.0 and GCCS V4.0; support JDP V3.0 GCCS/JPN development and integration and use into non-AOC TBMCS sites; implement A2IPB reach-back connectivity interfaces; conduct A2IPB prototype/reach-back field interoperability evaluations with appropriate TAMD Family of Systems; initial test of JPN performance with each service running its own version of JDP; publish JPN performance analysis report; produce JPN spiral development program that achieve incremental JPN performance improvements;	
•	6893 BM/C3I Integration- Navy & USMC: Participate in two Joint JRE field demonstration; complete JDP V2.0 integration and testing with GCCS-M; continue support to Navy platform implementation.	
•	2757 BM/C3I Integration- Joint/Combined: Joint testing support for TAMD messages; develop theater forwarding rules for JDM message development; support integration of multiple intel broadcasts into the integrated architecture based on common format and migration to unified joint DEDs; ATHENA participate in SIT 00; develop a draft interface change proposal for a joint method of geodetic alignment and sensor registration.	
•	11250 Cooperative Engagement Capability (CEC) Demonstration/Impact '98: This ACTD program provides data to extend the evaluation of enhanced warfighting capabilities and provides engineering data to enable an assessment of the potential for PATRIOT, THAAD, and Cooperative Engagement Capability (CEC) contributions in: increasing Theatre Air and Missile Defense defended area, initiating a U.S. Army/U.S. Navy SIAP, and increasing contingency operation capability. FY00 efforts include: 1.) Demonstrate the capability to engage a low altitude surrogate cruise missile with a PATRIOT PAC-3 missile at Over-The-Horizon ranges using AEGIS/CEC data. 2.) Conduct a THAAD/CEC data collect and analysis and integration investigation.	
•	342 BM/C3I Integration- JNTF: Develop Air tasking orders to support TAMD exercises; perform DII COE standards compliance validation on TAMD GCCS developed software; build out the TAMD BMC3 test center; document testing for TAMD BMC3; provide exercise support for rapid prototype testing of TAMD BMC3 concepts.	
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- 5329 FoS Interoperability - This task contributes to vertical and horizontal integration of the JPN, JDN and JCTN in support of joint and coalition TAMDM operations, such as: Joint Range Extension (JRE), Time Slot Reallocation (TSR) and Joint Interface Control Officer (JICO) enhancements. The Army, Navy, Marine Corps, Air Force and Joint National Test Facility will provide support to Inter-Service integration, interoperability, identification and resolution of interface issues. Provide support to the JTAMD Process and its associated JTAMD Master Plan development, JTAMDO sponsored WIPTs, JTAMD Systems Architecture development, and the Systems Engineering and Integration (SE&I) process. Perform special studies as assigned and provide support to AQ Systems Interoperability and Integration (SI&I) efforts.
- Total 53603

FY 2001 Planned Program:

- 10916 Theater Missile Defense System Exerciser (TMDSE): This task supports the development of the TMDSE, the primary Hardware-in-the-Loop (HWIL) test tool for the TMD Family of Systems (FoS). Effort includes: evolution of TMDSE via incremental software builds and the addition of system nodes, the transition of TMDSE into the JNTF, and support of HWIL testing.
 - 1999 BM/C3I Integration –Army Upgrade and test with JDP AMDWS planning modules with subsequent versions of JDP; develop objectives US/GE ADA Bde/SAMOC interoperability capabilities; transition JRE to lead service program offices.
 - 2803 BM/C3I Integration -Air Force: Demonstrate and test JRE UHF link to isolated units; develop and integrate Service-generated system data tables for new systems; complete final A2IPB prototype development (build 2); install A2IPB at CUBE or JNTF; certify evolutionary A2IPB software as DII COE segment; build prototype product solution in the Joint Planning Net.
 - 1583 BM/C3I Integration- Navy & USMC: Transition JRE into lead Service Program offices; integrate JDP V 3.0 with GCCS-M.
 - 400 BM/C3I Integration- Joint/Combined : Joint proposals for standard data elements; integration support for initiatives emerging information requirement for planned coalition interfaces; provide joint support for integration of multiple broadcast in theater include SEW and ITW/AA.
 - 4863 Cooperative Engagement Capability (CEC) Demonstration/Impact '98: This ACTD program provides data to extend the evaluation of enhanced warfighting capabilities and provides engineering data to enable an assessment of the potential for PATRIOT, THAAD, and Cooperative Engagement Capability (CEC) contributions in: increasing Theatre Air and Missile Defense defended area, initiating a U.S. Army/U.S. Navy SIAP, and increasing contingency operation capability. FY01 efforts focus on THAAD/CEC data analysis and integration investigation.
 - 435 BM/C3I Integration- JNTF: Assist other Service GCCS customers in their integration of TAMDM applications.
 - 2757 FoS Interoperability - This task contributes to vertical and horizontal integration of the JPN, JDN and JCTN in support of joint and coalition TAMDM operations, such as: Joint Range Extension (JRE), Time Slot Reallocation (TSR) and Joint Interface Control Officer (JICO) enhancements. The Army, Navy, Marine Corps, Air Force and Joint National Test Facility will provide support to Inter-Service integration, interoperability, identification and resolution of interface issues. Provide support to the JTAMD Process and its associated JTAMD Master Plan development, JTAMDO sponsored WIPTs, JTAMD Systems Architecture development, and the Systems Engineering and Integration (SE&I) process. Perform special studies as assigned and provide support to AQ Systems Interoperability and Integration (SI&I) efforts.
- Total 25756

B. Other Program Funding Summary	<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>To Compl</u>	<u>Total Cost</u>
PE 0603750D (OUSD AS&C)	2.000	4.192	2.192	.400	.400	0	0	TBD	TBD

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BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603873C Family of System E & I	PROJECT 3261
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C. Acquisition Strategy: The 3261 Project acquisition strategy leverages existing system acquisition programs (which are subject to milestone decisions and testing) and accomplishes supporting tasks to satisfy BM/C3I performance requirements. A significant portion of this project entails systems engineering of separately funded and managed service programs so that all systems will interoperate when fielded

D. Schedule Profile	<u>FY 1998</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>
Update TADIL-J message sets		X						
Test JTIDS integration to AOC		X						
Complete TCTA system certification testing in AOC and CIC		X						
Final development and fielding of JDP V 2.0 into GCCS V4.0			X					
Final development and fielding of JDP V 2.0 into TBMCS V2.0				X				
Initial version of JDP V 3.0			X					
Complete final A2IPB prototype development (Build 2)				X				
Certify evolutionary A2IPB software as DII COE segment				X				
Begin fielding A2IPB as a DII COE complaint GCCS segment					X			
Coordinate documentation, issues, suggested correction, and resolution plans concerning the JTAMDO/BMDO Family of Systems Architecture		X	X	X	X	X	X	
Install Area Limitation prototype at the CUBE or JNTF			X					
Complete final evolutionary prototype and certify Area Limitation software as DII COE segment				X				
Begin fielding Area Limitation as a DII COE compliant GCCS segment					X			
Support and incorporate WIPT analysis as results into the FoS management plan		X	X	X	X	X	X	

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BMDO RDT&E COST ANALYSIS (R-3)

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PROJECT
3261

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000	FY 2000	FY 2001	FY 2001	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date			
1. TMDSE - JNTF	Allotment	Multiple	0	13072	Oct 1999	10916	Oct 2000	Continue	Continue	
2. Army PEO-AMD	Allotment	Multiple	6413	5660	Oct 1999	1999	Oct 2000	Continue	Continue	
3. Air Force ESC	Allotment	Multiple	8005	8300	Oct 1999	2803	Oct 2000	Continue	Continue	
4. USMC Sys Com	Allotment	Multiple	3641	2283	Oct 1999	705	Oct 2000	Continue	Continue	
5. Navy PEO-TAD	Allotment	Multiple	7264	4610	Oct 1999	878	Oct 2000	Continue	Continue	
6. BMDO	Allotment	Multiple	535	2757	Oct 1999	400	Oct 2000	Continue	Continue	
7. CEC/Impact '98	Allotment	Multiple	1450	11250	Oct 1999	4863	Oct 2000	TBD	TBD	
8. JNTF	Allotment	Multiple	1021	342	Oct 1999	435	Oct 2000	Continue	Continue	
9. FoS Interoperability	Allotment	Multiple	4416	5329	Oct 1999	2757	Oct 2000	Continue	Continue	
Subtotal Product Development:			32745	53603		25756				

Remark:

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000	FY 2000	FY 2001	FY 2001	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date			
1. Army PEO-AMD	Allotment	Multiple	989	0		0		Continue	Continue	
2. Air Force ESC	Allotment	Multiple	898	0		0		Continue	Continue	
3. USMC Sys Com	Allotment	Multiple	296	0		0		Continue	Continue	
4. Navy PEO-TAD	Allotment	Multiple	989	0		0		Continue	Continue	
5. BMDO	Allotment	Multiple	750	0		0		Continue	Continue	
6. JNTF	Allotment	Multiple	494	0		0		Continue	Continue	
Subtotal Support Costs:			4416							

Remark:

BMDO RDT&E COST ANALYSIS (R-3)

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BUDGET ACTIVITY **4 - Demonstration and Validation** PE NUMBER AND TITLE **0603873C Family of System E & I** PROJECT **3261**

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

Remark:

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
A To be distributed				0		0		0		0
Subtotal Test and Evaluation:										0

Remark:

Project Total Cost:			37161	53603		25756			Continue	
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BMDO RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
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BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603873C Family of System E & I	PROJECT 3354
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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
3354 Targets	0	6317	0	0	0	0	0	TBD	TBD

A. Mission Description and Budget Item Justification The purpose of this effort is to provide for the acquisition of targets for SIT II and Impact 98 testing.

FY 1999 Accomplishments: No Funding

FY 2000 Planned Program:

- 6317 Develop and procure medium range ballistic missile for use during TMD Family of Systems Testing in System Integration Test II (SIT)..
- Total 6317

FY 2001 Planned Program: No funding.

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
2257 PATRIOT, PE 0604865C	237345	179139	81016	0	0	0	0	TBD	TBD
2260 THAAD, PE 0604861C	0	79462	549945	685168	789736	755134	591049	TBD	TBD
2260 THAAD, PE 0603861C	429266	523525	0	0	0	0	0	TBD	TBD
1266 NAVY THEATER WIDE, PE 0603868C	364284	375764	382671	287274	214301	246657	429674	TBD	TBD
2263 NAVY AREA, 0604867C	241782	307274	274234	228596	85866	33293	29369	TBD	TBD
3354 TARGETS, PE 0603872C	17615	48056	0	0	0	0	0	TBD	TBD
3354 TARGETS, PE 0603874C	1936	2300	49135	36211	38081	40260	40882	CONT	CONT
3360 TEST RESOURCES, PE 0603874C	41005	66237	69555	64211	54314	54375	54975	CONT	CONT
3360 TEST RESOURCES, PE 0603872	45846	13734	0	0	0	0	0	CONT	CONT

C. Acquisition Strategy:

D. Schedule Profile	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
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BUDGET ACTIVITY
4 - Demonstration and Validation

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SIT II						1Q				
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BMDO RDT&E COST ANALYSIS (R-3)

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BUDGET ACTIVITY
4 - Demonstration and Validation

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PROJECT
3354

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
b. Theater Target	FFP	BMDO		6317					6317	6317
Subtotal Product Development:				6317					6317	

Remark:

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
b.										
Subtotal Support Costs:										

Remark:

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
b.										
Subtotal Test and Evaluation:										

Remark:

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
b.										
Subtotal Management Services:										

Remark:

Project Total Cost:				6317					6317	
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Remark:

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BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603873C Family of System E & I	PROJECT 3359
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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
3359 Test, Evaluation and Assessment	20297	23249	61299	34045	50090	37803	38868	Continuing	Continuing

A. Mission Description and Budget Item Justification

This project contains BMDO's Commanders In Chiefs (CINCs') Assessment; (the long-term goal is to ensure the successful transition of interoperable Theater Air Missile Defense (TAMD) Family of Systems (FoS) to the warfighting customers); and FoS Assessment program. The CINCs' Assessment program is directed toward enabling the warfighters to employ TAMD systems as they are delivered. In addition, CINCs' Assessment supports the development of joint interoperability TAMD doctrine, Concepts of Operations (CONOPS), and Tactics, Techniques, and procedures (TTPs); and provides Joint/Coalition/Allied TAMD interoperability data from CINCs TAMD exercises. The FoS Assessment program validates progress in achieving Joint Interoperability. It uses data from the CINCs' TAMD exercises, Major Defense Acquisition Program (MDAP) interoperability tests, System Integration Tests (SITs), and Overlay tests along with joint interoperability Modeling and Simulation (M&S) via the Extended Air Defense Test Bed (EADTB), and Hardware-in-the-Loop tests (HWILT) (HWILTs use a tool called Theater Missile Defense System Exerciser) to support system engineering validate requirements. All of these programs support the TMD Capstone Requirements Document (CRD), TAMD Master Plan requirements and Capability Increments (CI) in the Draft Interoperability Program Plan (IPP). TAMD is based on a FoS concept where the Services air and ballistic missiles defense and command and control (C2) systems are integrated using various existing and developing communications capabilities and systems. As a resulting FoS provides the CINCs with 'plug and fight' C2 TAMD system capability that can be tailored for any theater of operations to address a wide variety of air and missile threats.

FY 1999 Accomplishments:

- 13495 Completed transition of TMDSE Build 3 to the JNTF. Funded JNTF for Tactical Communications Environment Segment (TCES) validation effort. Supported JDN gateway development to support HWITL 99a testing.
 - 4919 Conducted execution and analysis of HWILT99a and planning for HWILT99b at the JNTF. Initial planning for SIT II scheduled for FY01 execution. Collected and analyzed interoperability data from all FoS events (HWILT99a, FE98, ASCIET00, JPOW4, SLUGGER, RS) to develop a FoS assessment for Consolidated Assessment Report (CAR) publication. September 1999.
 - 1883 OTA's conducted operational assessments of FoS events including HWILT99a, ASCIET99 and RS99. Provided input into the Draft Captstone TMD TEMP.
- Total 20297

FY 2000 Planned Program:

- 638 Support CINC USPACOM by adding TAMD overlays to selected exercises, collecting data, analyzing results, and developing CONOPS &TTPs.
- 3881 Support CINCs By developing TAMD exercise framework, and assist with developing CONOPS and TTPs
- 14727 Conduct planning and pretest risk reduction/analysis on SIT II (scheduled FY01). Conduct HWILT 99a execution and analysis and HWILT 00 planning, execution and analysis at the JNTF. Conduct EADTB analysis to support FoS assessment. Collect and analyze interoperability data from all FoS events (HWILT, Service, MDAP and CINC exercises) to develop a FoS assessment and publish in the CAR.

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- 4003 OTA's conduct independent operational assessments of FoS using HWILT, service testing and Joint Exercises. Provide input to FoS T&E documentation
- Total 23249

FY 2001 Planned Program:

- 842 Support CINC USEUCOM by adding TAMD overlays to selected exercises, collecting data, analyzing results, and developing CONOPS &TTPs.
- 1213 Support CINC USCENCOM by adding TAMD overlays to selected exercises, collecting data, analyzing results, and developing CONOPS &TTP.
- 2341 Support CINC USACOM by adding TAMD overlays to selected exercises, collecting data, analyzing results, and developing CONOPS &TTP.
- 742 Support CINC USFK by adding TAMD overlays to selected exercises, collecting data, analyzing results, and developing CONOPS &TTP.
- 1638 Support CINC USPACOM by adding TAMD overlays to selected exercises, collecting data, analyzing results, and developing CONOPS &TTPs.
- 4945 Support CINC's By developing TAMD exercise framework, and assist with developing CONOPS and TTPs
- 46175 Execute SIT II. Conduct HWILT 01 planning, execution and analysis at the JNTF. Conduct EADTB analysis to support FoS assessment. Collect and analyze interoperability data from all FoS events (HWILT, Service, MDAP and CINC exercises) to develop a FoS assessment and publish in the CAR.
- 3403 OTA's conduct independent operational assessments of FoS using HWILT, service testing and Joint Exercises. Provide input to FoS T&E documentation.
- Total 61299

B. Other Program Funding Summary	<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>To Compl</u>	<u>Total Cost</u>
PE 0603872C Joint TMD, Project 3359, BMDO Tas 01		9099							

C. C. Acquisition Strategy: The FoS assessment strategy uses currently Program and OPFAC development and CINC exercises, coupled with an annual HWILT and periodic SIT tests for interoperability analysis and assessment. Event in-process reviews and test readiness reviews are conducted prior to execution. Documentation is reviewed as required. Yearly Consolidated Assessment Report is issued summarizing interoperability status using all test event results/conclusions.

D. 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>
SIT II			4Q				
Overlay					3Q		3Q
HWILT 00A	3Q						

DATE
February 2000

BUDGET ACTIVITY
4 - Demonstration and Validation

PE NUMBER AND TITLE
0603873C Family of System E & I

HWILT 99B			1Q					

UNCLASSIFIED

BMDO RDT&E COST ANALYSIS (R-3)

DATE
February 2000

BUDGET ACTIVITY
4 - Demonstration and Validation

PE NUMBER AND TITLE
0603873C Family of System E & I

PROJECT
3359

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. TMDSE B3	SubAllocation	TBE Huntsville, AL JNTF CO Springs, CO	13495						13495	
Subtotal Product Development			13495						13495	

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Systems Test Plan/Exec	SubAllocation	SMDC	441		1Q00	463	1Q01	Continue	Continue	
b. Gov Proj Personnel/Spt	SubAllocation	AMD PEO		.337	1Q00	.346	1Q01	Continue	Continue	
Subtotal Support Costs:			441	337		809				

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Test Planning/Execution	Suballocation	NWAS/ Joint/ Combined	3525	14090	1Q00	45081	1Q01	Continue	Continue	
b. OT&E	Suballocation	Other Test Agencies	1883	4003	1Q00	3403	1Q01	Continue	Continue	
c. CINC's Experiments	Suballocation	Theater CINC's		4519	1Q00	11721	1Q01	Continue	Continue	
Subtotal Test and Evaluation:			5408	22612		60205				

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a.	CPAF	SRS	953						953	
b.	CPAF	Vanguard		300	1Q00	285	1Q01	Continue	Continue	
Subtotal Management Services:			953	300		285				

DATE
February 2000

BUDGET ACTIVITY
4 - Demonstration and Validation

PE NUMBER AND TITLE
0603873C Family of System E & I

Project Total Cost:			20297	23249		61299			Continue	
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Remark:

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BMDO RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)	DATE February 2000
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BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603873C Family of System E & I	PROJECT 4000
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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
4000 Operational Support	0	0	72320	70282	67679	66265	68501	Continuing	Continuing

A. Mission Description and Budget Item Justification

Beginning with FY 01, this program element replaces the Joint TMD Dem/Val program element.

This project funds three basic areas: personnel and related facility support costs; statutory and fiscal requirements, and support service contracts.

Personnel covers government civilians performing program-wide oversight functions such as financial management, contracting, security, information systems support, and legal services at the Ballistic Missile Defense Organization located within the Washington D.C. area, as well as BMDO's Executing Agents within the US Army Space & Strategic Defense Command, US Army PEO Missile Defense, US Navy PEO for Theater Defense, US Air Force and the Joint National Test Facility. Related facility costs include rents, utilities, supplies, ADP equipment, and all the associated operation and maintenance activities.

Fiscal Requirements include reimbursable services acquired through the Defense Business Operating Fund (DBOF) such as accounting services provided by the Defense Finance and Accounting Services (DFAS); reserves for special termination costs on designated contracts; and provisions for terminating other programs as required. BMDO has additional requirements to provide for foreign currency fluctuations on its limited number of foreign contracts, statutory requirements include funding for charges to canceled appropriations in accordance with Public Law 101-510.

Finally, assistance required to support BMD program-wide management functions is also contained in this project. This assistance ranges from operational contracts to support functions such as ADP operations, Access control offices and graphics support, to efforts required to supplement BMDO and Executing Agent government personnel. Typical efforts include cost estimating, security management, information management, technology integration across BMDO projects and assessment of schedule, cost and performance, with attendant documentation of the many related programmatic issues. The requirements for this area are based on most economical and efficient utilization of contractors versus government personnel.

FY 1999 Accomplishments:

- 0 Efforts funded in the Joint Theater Missile Defense PE 060387C2

Total 0

FY 2000 Planned Program:

BMDO RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000
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BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603873C Family of System E & I	PROJECT 4000
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- 0 Efforts funded in the Joint Theater Missile Defense PE 060387C2

Total 0

FY 2001 Planned Program:

- 77214 Continue providing management and support for overhead/indirect fixed costs such as civilian payroll, travel, rents & utilities and supplies.

Total 77214

B. Program Change Summary	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (<u>FY 2000</u> PB)	0	0	77214
Appropriated Value			
Adjustments to Appropriated Value			
a. Congressional General Reductions			
b. SBIR / STTR			
c. Omnibus or Other Above Threshold Reductions			
d. Below Threshold Reprogramming			
e. Rescissions			
Adjustments to Budget Years Since <u>FY 2000</u> PB			-4894
Current Budget Submit (<u>FY 2001 / 2002</u> BES/PB)	0	0	72320

Change Summary Explanation: Starting in FY01, all Family of System efforts from the Joint Theater Missile Defense program element (060387C2) were transferred to this program in order to maintain adequate visibility into Theater Missile Defense efforts.

B. Other Program Funding Summary	<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>To</u>	<u>Total</u>
N/A								<u>Compl</u>	<u>Cost</u>

