

UNCLASSIFIED

BMDO RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE September 1998
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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 <i>(In Thousands)</i>	FY 1998 Actual	FY 1999 Estimate	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	0	95721	141821	128551	143563	133414	138205	140331	Continuing	Continuing
3155 TAMD Integration	0	22277	34605	36278	33997	31764	37394	38152	Continuing	Continuing
3251 Systems Engineering and Technical Support	0	13845	13268	13074	13660	13628	12800	12378	Continuing	Continuing
3261 TMD BM/C3I (BM/C3I Concepts)	0	38679	41204	44605	43214	43053	42109	42965	Continuing	Continuing
3359 System Test and Evaluation	0	20920	52744	34594	52692	44969	45902	46836	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 system designed to protect the United States and its Allies 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).

Theater Missile Defense programs, projects, and activities in Advanced Development that have as a primary objective the development of technologies capable of supporting systems, components, and architectures that could produce highly effective defenses against theater missile threats. The projects in this Program Element provide for optimal Theater and Air Missile Defense (TAMD) architectural solutions to address the entire theater level threat. The efforts are directly linked with the architectural definition, design, integration, interoperability, and Test & Evaluation of the TMD Family of Systems.

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.

C. Acquisition Strategy: See Individual R2a summaries.

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B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (<u>FY 1999</u> PB)	N/A	96915	130289	141315
Congressional Adjustments				
Appropriated Value		96915		
Adjustments to Appropriated Value				
a. Congressional Reductions (FFRDC, Inflation, etc)		-1194		
b. OSD Reductions				
c. Emergency Supplemental				
Adjustments to Budget Years Since <u>FY 1999</u> PB				
Current Budget Submit (<u>FY 2000 / 2001</u> PB)		95721	141821	128551

Change Summary Explanation: Rephased TAMD Integration funding in FY00 and FY01 to be in proper alignment with required effort.

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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 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
3155 TAMD Integration	0	22277	34605	36278	33997	31764	37394	38152	Continuing	Continuing

A. Mission Description and Budget Item Justification

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 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 population centers within an assigned theater of operations. The TAMD FoS architecture will focus on the integration of Theater Ballistic Missile Defense (TBMD), Cruise Missile Defense (CMD), Air Defense (AD), Attack Operations (AO), and Passive Defense (PD). In addition, BMC4I capability improvements, such as definition of JTAMD Systems and BMC4I to achieve a Single Integrated Air Picture (SIAP) capability, will be included in this project. A significant amount of effort will also be put into maintaining and upgrading modeling and simulation tools, including Commanders Analysis Planning Simulation (CAPS), Extended Air Defense Test Bed (EADTB), Extended Air Defense Simulation (EADSIM), further development of the Theater Missile Defense System Exerciser (TMDSE), and additional development of other models as required. Support will be provided to Joint TAMD FoS testing, demonstrations and exercise efforts. The results of the TAMD process will be documented in the TAMD Master Plan which outlines the Operations Architecture, Systems Architecture, Technical Architecture and Investment Strategy. A TMD Systems Requirements Document (SRD) and subsequent Interface Control Documents will be used by BMDO to capture the FoS engineering requirements for TAMD integration.

FY 1998 Accomplishments:

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- Total 0

FY 1999 Planned Program:

- 6839 Single Integrated Air Picture (SIAP) Definition and Risk Mitigation- Develop an operational and engineering definition of potential material solutions for SIAP, JCTN Integration Analysis, JCTN/JDN Gateway Development, Technical Requirements documentation, and development of of tools and prototypes for SIAP analysis, Virtual Distributed Analysis of SIAP requirements and behavior. Develop common software module approaches and solutions.
- 8941 TAMD Integration - Support 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.

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BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603873C Family of System E & I	PROJECT 3155
3359 System Test & Evaluation	25551 60032 40331 58923 51084 49339 50398	
3261 TMD BM/C3I	32082 37870 43597 42281 42215 43146 44094	

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.

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>
TAMD Master Plan		1Q						
Continuing Upgrades to EADTB, CAPS, and TMDSE Models		4Q						
Master Plan T&E Section (Demo Annex)		4Q						
SBIRS Low Study - Initial Preparation of Findings and Recommendations		1Q						
Delivery of SSRs for EADTB f/AEGIS(NTW), THAAD, and SBIRS Low		2Q						
Second Phase Systems for JCTN IPR		2Q						
SIAP Technical Requirements Document Interim Progress Review (IPR)		2Q						
Initial IPR for Joint Mission Area Assessment		2Q						
SBIRs Low QDR Follow-on Study Delivered to Under Secretary of Defense for Acquisition and Technology (USD(A&T))		3Q						
Deliver SSRs f/EADTB for PATRIOT, JTAGS, AEGIS, BDE, AMDPCS (ADTOC), and AWACS		3Q						
Development of the CMD and TBMD Systems Architecture Baseline		4Q						
SIAP Definition and Analysis Technical Requirements Document		4Q						
Second Phase Systems for JCTN Report		4Q						

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BUDGET ACTIVITY **4 - Demonstration and Validation** PE NUMBER AND TITLE **0603873C Family of System E & I** PROJECT **3155**

Follow-on Plan for SIAP User in the Loop Analysis		4Q						
User in the Loop SIAP Analysis Evaluation Results		4Q						

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BMDO RDT&E COST ANALYSIS (R-3)											DATE September 1998	
BUDGET ACTIVITY 4 - Demonstration and Validation					PE NUMBER AND TITLE 0603873C Family of System E & I						PROJECT 3155	
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Army - TMDSE Development	Suballocation			3818		4007		4659		Cont	12484	
b. Army, Navy, Air Force - EADTB SSR development	Suballocation			2068		1852		2153		Cont	6073	
Subtotal Product Development:				5886		5859		6812			18557	
Remark:												
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Army - Analysis Support	Suballocation	DAMO-FDE/SMDC		250		325		350			925	
b. Navy - Analysis Support	Suballocation	OPNAV-N86		250		325		350			925	
c. Air Force - Analysis Support	Suballocation	AFSAA		250		325		350			925	
d. Marine Corps - Analysis Support	Suballocation	MARCORSYSCOM		100		150		150			400	
e. JNTF support	Suballocation	JNTF		100		150		200			450	
f. POET support	MIPR	FFRDCs		42		75		100			217	
Subtotal Support Costs:				992		1350		1500			3842	
Remark:												
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a.												
Subtotal Test and Evaluation:												
Remark:												
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BMDO RDT&E COST ANALYSIS (R-3)	DATE September 1998
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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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IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	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	SPARTA, other misc		8437		19225		13366			41028	
b. SIAP Definition/System Effectiveness Analysis	Multiple	Multiple		6962		8171		14600			29733	
Subtotal Management Services:				15399		27396		27966			70761	

Remark:

Project Total Cost:				22277		34605		36278			93160	
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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 3251
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COST (In Thousands)	FY 1998 Actual	FY 1999 Estimate	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	0	13845	13268	13074	13660	13628	12800	12378	Continuing	Continuing

*The funding in this project for FY99-03 was transferred from PE 0603872C. See that R2 for FY96-98 funding.

A. Mission Description and Budget Item Justification

This project provides system engineering 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; 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.

FY 1998 Accomplishments:

- See PE 0603872C
- Total 0

FY 1999 Planned Program:

- 13845 Provide minimum-level system engineering and integration support at the TMD system level to include the following efforts: continue to identify inter-Service integration interfaces; prepare engineering documents that identify changes required in theater air defense C3I systems to incorporate TBMD; upgrade TMD Integrated Test Plan; upgrade system description documents; complete TMD integration trade studies; and plan, coordinate, and analyze C2 wargames for CINC CONOPS development.
- Total 13845

FY 2000 Planned Program:

- 13268 Provide minimum-level system engineering and integration support at the TMD system level to include the following efforts: continue to identify inter-Service integration interfaces; prepare engineering documents that identify changes required in theater air defense C3I systems to incorporate TBMD; upgrade TMD Integrated Test Plan; upgrade system description documents; complete TMD integration trade studies; and plan, coordinate, and analyze C2 wargames for CINC CONOPS development.
- Total 13268

FY 2001 Planned Program:

Project 3251

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- 13074 Provide minimum-level system engineering and integration support at the TMD system level to include the following efforts: continue to identify inter-Service integration interfaces; prepare engineering documents that identify changes required in theater air defense C3I systems to incorporate TBMD; upgrade TMD Integrated Test Plan; upgrade system description documents; complete TMD integration trade studies; and plan, coordinate, and analyze C2 wargames for CINC CONOPS development.

Total 13074

B. <u>Other Program Funding Summary</u>	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To <u>Compl</u>	Total <u>Cost</u>

C. Acquisition Strategy:

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
							X	X	X	X
							X	X	X	X

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BMDO RDT&E COST ANALYSIS (R-3)										DATE September 1998		
BUDGET ACTIVITY 4 - Demonstration and Validation					PE NUMBER AND TITLE 0603873C Family of System E & I					PROJECT 3251		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a.												
Subtotal Product Development:												
Remark:												
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a?												
Remark:												
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> 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	<u>FY 1999</u> Cost	<u>FY 1999</u> Award Date	<u>FY 2000</u> Cost	<u>FY 2000</u> Award Date	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a? Systems Engineering	CPAF	TRW		13845		13268		13074		Cont	40187	
Subtotal Management Services:				13845		13268		13074			40187	
Remark:												
Project Total Cost:				13845		13268		13074			40187	
Remark:												
Project 3251												

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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 1998 Actual	FY 1999 Estimate	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)	0	38679	41204	44605	43214	43053	42109	42965	Continuing	Continuing

*The funding in this project for FY99-03 was transferred from PE 0603872C. See that R2 for FY96-98 funding.

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, Computers and Intelligence (BM/C4I) 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 a 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/C4I for TAMD, the Ballistic Missile Defense Organization (BMDO) uses this project to provide oversight, leadership, guidance, and support to the Services' TAMD BM/C4I programs. The focus is on Joint approaches to integrate and synergize the Services' programs.

In recent years, this project has been focused on three thrusts: (1) early warning and dissemination of theater ballistic missile launch information, (2) communication interoperability, and (3) command and control upgrades. In concert with this successful approach, BMDO has developed a TAMD BM/C4I Architecture to enable further improvements in TAMD performance. By focusing project efforts on this architecture, the integration of individual activities will be enhanced while continuing to support earlier objectives.

This TAMD BM/C4I Architecture can be viewed as a set of FoS connectivities and common mission functions integrated via three networks. The first network to be implemented is the Joint Data Network (JDN): a near-real-time network based primarily on the Tactical Digital Information Link [TADIL-J / LINK-16] datalink to provide overall FoS situational awareness, command and control, and weapon coordination. The second network to be implemented is 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 CINCs. The third and final network to be implemented is 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 synergy of multiple systems.

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<p>To achieve the TAMD BM/C4I 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 interoperable.</p> <p>Fos Interoperability 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 Air and Missile Defense (TAMD) system architectures and concepts; support for UK 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 1998 Accomplishments:</p> <ul style="list-style-type: none"> • See PE 0603872C <p>Total 0</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 7192 BM/C3I Integration - Army: Deliver Army Develop ICP and system implementation documentation for Army AMD systems for JDN message development; integrate 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); integrate JTT into AMDPCS at ADA Bde; and above levels; integrate AMDPCS with German SAMOC under US/GE Interoperability program; deliver Army AMDWS/JDP Interface documentation to the JDP Program office; software integration report on upgrades to TADIL-A PATRIOT cueing for TBMs; deliver ASCIET 99 Joint Network design and load files for Link-16 Net Design; deliver demonstration plan for Army JRE; deliver Army annex to Integration plan of JRE; deliver Joint Requirements documents for Army JRE. . • 9026 BM/C3I Integration - Air Force: Implement JDP V1.0 TRNs and JTMDP V2.0 requirements in JDP 2.0; develop enhancements and field JDP V1.0 including enemy order of battle and JMTK; implement model fidelity study results via Service-generated system data tables; produce JRE host integration plan with Service annexes; conduct JRE Joint Lab demonstration; integrate Navy and Army S-TADIL J UHF capability in AF JRE Gateway; develop Joint test environment to supplement live testing with operationally realistic loads (MASC); deliver Time Slot Reallocation recommendations; field JDP, V 1.0 with TBMSC; initiate creation of testbed capability at identifies facility(ies); complete 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; develop a Joint communications plan/architecture to identify the out-of-theater, reach-back requirements for A2IPB; publish Joint Area Limination TRD; develop a Correlation Roadmap; 		
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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
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<ul style="list-style-type: none"> • 6925 BM/C3I Integration - Navy & USMC: Integrate JDP 2.0 with GCCS-M; conduct JRE Joint lab demonstration; produce JRE host integration plan with Service annexes; complete Joint Service staffing requirements document; develop test plans for JTIDS TSR development; develop test plan for Common Air Command & Control system, (CAC&CS); deliver TEMP draft on CAC&CS; complete software testing on SIAP; conduct demonstration on the SIAP. • 8913 BM/C3I Integration - Joint/Combined: Provide joint testing support for TAMD messages; continue theater/IBS integration process into TADIL-J messages; submit "best-of-breed" candidates to CAN; develop TADIL ICP for joint correlation algorithm base; complete UK sensor management and passive warning studies; provide 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; document and test procedures for adding MIDB codes to TDPs; conduct tests using live TDDS and TIBs data, recording and simulation; initial preparation of the Advanced Concept Technology Demonstrator (ACTD). • 1552 BM/C3I Integration - JNTF: Update VV&A plan; VV&A JDP V 2.0 for release; final update to JDP requirements 2Q99; perform user assessment of GCCS TAMD applications; demonstrate JDP capabilities; provide and maintain an operational representative GCCS host workshop. • 5071 FoS Interoperability - 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	38679	
FY 2000 Planned Program:		
<ul style="list-style-type: none"> • 7761 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. • 11148 BM/C3I Integration -Air Force: Demonstrate and test JRE UHF S-TADIL J capability; integrate EHF MDR capability into JRE; implement JDP V 3.0; support JDP 3.0 GCCS/JPN 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; • 3475 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. 		
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4 - Demonstration and Validation				0603873C Family of System E & I				3261				
•	11742	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.										
•	2392	BM/C3I Integration- JNTF: Develop Air tasking orders to support TAMD exercises; perform DII COE standards compliance validation on a II TRMD 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.										
•	4686	FoS Interoperability - 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		41204										
FY 2001 Planned Program:												
•	8223	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.										
•	12707	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.										
•	3532	BM/C3I Integration- Navy & USMC: Transition JRE into lead Service Program offices; integrate JDP V 3.0 with GCCS-M.										
•	15709	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.										
•	2263	BM/C3I Integration- JNTF: Assist other Service GCCS customers in their integration of TAMD applications.										
•	2171	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		44605										
B. Other Program Funding Summary			<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>	To Compl	Total Cost
Project 3261			Page 14 of 21 Pages						Exhibit R-2A (PE 0603873C)			

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BUDGET ACTIVITY 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603873C Family of System E & I				PROJECT 3261	
3261 TAMD BM/C3I PE 0603872C	68.958							Complete	68.958
3261 TAMD BM/C3I PE 0603873C		36.427	42.556	45.768	44.434	44.352	43.442	44.397	Continue 301.376
<p>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</p>									
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>	
Complete testing of AN/TPS-59	X								
Field two TOCs to active Army brigades	X								
Update TADIL-J message set approval	X								
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		X							
Final version and fielding of JDP V 3.0			X						
Complete final A2IPB prototype development (Build 2)				X					
Install A2IPB at JNTF				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 Limination prototype at the CUBE or JNTF			X						
Initiate final evolutionary prototype development			X						
<p>Project 3261 Page 15 of 21 Pages Exhibit R-2A (PE 0603873C)</p>									

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Complete final evolutionary prototype and certify Area Limination software as DII COE segment				X				
Begin fielding Area Limination 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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I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	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 – PEO AMD	Allotment	Multiple		7192		7761		8223		Continue	23176	
b. Air Force ESC	Allotment	Multiple		9026		11148		12707		Continue	32881	
c. USMC Sys Com	Allotment	Multiple		4189		1494		1518		Continue	7201	
d. Navy PEO-TAD	Allotment	Multiple		2736		1981		2014		Continue	6731	
e. BMDO	Allotment	Multiple		8913		11742		15709		Continue	36364	
f. JNTF	Allotment	Multiple		1552		2392		2263		Continue	6207	
Subtotal Product Development:				33608		36518		42434			112560	

Remark:

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	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 PEO-AMD	Allotment	Multiple		0989		1269		0529		Continue	2787	
b? Air Force ESC	Allotment	Multiple		0898		1269		0529		Continue	2696	
c? USMC Sys Com	Allotment	Multiple		0296		1269		0529		Continue	2094	
d? Navy PEO-TAD	Allotment	Multiple		0989		0293		0292		Continue	1574	
e? BMDO	Allotment	Multiple		1405		0293		0292		Continue	1990	
f? JNTF	Allotment	Multiple		0494		0293		0		Continue	787	
Subtotal Support Costs:				5071		4686		2171			11928	

Remark:

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	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:					0		0		0			0

Remark:

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IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 1999 Cost	FY 1999 Award Date	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:					0		0		0			0

Remark:

Project Total Cost:				38679		41204		44605			124488	
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Remark:

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COST (In Thousands)	FY 1998 Actual	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	Cost to Complete	Total Cost
3359 System Test and Evaluation	0	20920	52744	34594	52692	44969	45902	46836	Continuing	Continuing

*The funding in this project for FY99-03 was transferred from PE 0603872C. See that R2 for FY 1998 funding.

A. Mission Description and Budget Item Justification

This project continues effort previously started under PE 0603872C (for FY96-98) and provides for BMDO planning, oversight, and coordination of integrated Test and Evaluation activities, as well as inter-service Test and Evaluation efforts for assessment of the Family of Systems (FoS). Once the test plans are developed, test resource and target development and support is provided. (Test resources located in Project 3360 include test facilities, ranges and test instrumentation; target development and support is found in Project 3354). The program provides for support to the Major Defense Acquisition Program (MDAP) mandatory Live-Fire Test and Evaluation (LFT&E). This includes estimates of probability of kill of chemical/biological submunitions, creation of models to determine chemical/biological ground effects, confirmation of damage laws from low mass/high-velocity intercepts, confirmation of damage laws from high velocity rods, development of generic lethality targets. Additionally, this project provides the following: independent assessments of the Joint TMD system; maturity evaluation of technology programs; multiple-fidelity models and simulation to support system development testing; and execution of independent technical reviews, system analyses and performance evaluations which contribute to new or enhanced capabilities; management of the development process, and the decision-making process related to the allocation of resources. The performance evaluation has as its primary goals the identification and understanding of system-level performance drivers and the mitigation of technical risk, and to provide timely answers to critical issues and questions required by decision authorities through an annual Consolidated Evaluation Report (CER).

FY 1998 Accomplishments:

- See PE 0603872C
- Total 0

FY 1999 Planned Program:

- 16856 Plan and prepare for execution of SIT-II. Complete TMDSE Build 3 transition to the Joint National Test Facility.
- 735 Execute Capstone TEMP and methodologies for assessing test issues as part of the FoS test program. Conduct special studies and technical investigations. Participate in PAC-3 Test Readiness Reviews. Provide inputs to the PAC-3 evaluation in support of the BMD Acquisition Review Council (BMDARC) prior to PAC-3 MS III. Participate in SM-2 Blk IVA Flight Test Readiness Reviews. Provide evaluation support to BMDARC for the Navy Area TBMD UOES. Assess results of TMDSE FoS HWIL testing.
- 2500 Conduct operational assessments on TMD FoS events.

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- 446 Provide updated CER utilizing current test data from MDAPs and SITs, Joint Exercises, and Wargames as well as analytical techniques to estimate the TMD system maturity.
- 383 Provide technical support for System Test activities
- Total 20920

FY 2000 Planned Program:

- 45800 Plan and prepare for SIT II. Plan and conduct HWITL 00 test. Maintain/upgrade TMDSE.
- 1039 Execute Capstone TEMP and methodologies for assessing test issues as part of the FoS test program. Conduct special studies and technical investigations. Participate in PAC-3 Test Readiness Reviews. Provide inputs to the PAC-3 evaluation in support of the BMD Acquisition Review Council (BMDARC) prior to PAC-3 MS III. Participate in SM-2 Blk IVA Flight Test Readiness Reviews. Provide evaluation support to BMDARC for the Navy Area TBMD UOES. Assess results of TMDSE FoS HWIL testing.
- 5107 Conduct operational assessments on TMD FoS events.
- 461 Provide updated CER utilizing current test data from MDAPs and SITs, Joint Exercises, and Wargames as well as analytical techniques to estimate the TMD system maturity.
- 337 Provide technical support for System Test activities
- Total 52744

FY 2001 Planned Program:

- 27318 Execute SIT II. Maintain/upgrade TMDSE.
- 1066 Execute Capstone TEMP and methodologies for assessing test issues as part of the FoS test program. Conduct special studies and technical investigations. Participate in PAC-3 Test Readiness Reviews. Provide inputs to the PAC-3 evaluation in support of the BMD Acquisition Review Council (BMDARC) prior to PAC-3 MS III. Participate in SM-2 Blk IVA Flight Test Readiness Reviews. Provide evaluation support to BMDARC for the Navy Area TBMD UOES. Assess results of TMDSE FoS HWIL testing.
- 5391 Conduct operational assessments on TMD FoS events.
- 473 Provide updated CER utilizing current test data from MDAPs and SITs, Joint Exercises, and Wargames as well as analytical techniques to estimate the TMD system maturity.
- 346 Provide technical support for System Test activities
- Total 34594

B. Other Program Funding Summary	<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>	To Compl	Total Cost

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C. Acquisition Strategy: This effort will use Service executing agents through existing contracts to construct a TMD Family of Systems HWIL capability, TMD System Exerciser (TMDSE) and conduct TMD system level live flight testing. The strategy provides for lethality sled testing managed by BMDO and executed by Service labs against TMD targets. It also provides Service and BMDO system evaluation funding. The evaluation process is an iterative process which should begin early in the development cycle to add value to the development of the system. Critical system characteristics and issues should be identified early in the process and be evaluated to allow for informed decision-making. Family of System evaluations and assessments will be performed by BMDO and Service OTAs.

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>
SIT II				2Q				
SIT 2002						2Q		

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BMDO RDT&E COST ANALYSIS (R-3)										DATE September 1998		
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	<u>FY 1999 Cost</u>	<u>FY 1999 Award Date</u>	<u>FY 2000 Cost</u>	<u>FY 2000 Award Date</u>	<u>FY 2001 Cost</u>	<u>FY 2001 Award Date</u>	Cost To Complete	Total Cost	Target Value of Contract
a.												
Subtotal Product Development:												
Remark:												
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999 Cost</u>	<u>FY 1999 Award Date</u>	<u>FY 2000 Cost</u>	<u>FY 2000 Award Date</u>	<u>FY 2001 Cost</u>	<u>FY 2001 Award Date</u>	Cost To Complete	Total Cost	Target Value of Contract
a. T&E Support	CPAF	SRS		998		1039		1066		Cont	3103	
Subtotal Support Costs:				998		1039		1066			3103	
Remark:												
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999 Cost</u>	<u>FY 1999 Award Date</u>	<u>FY 2000 Cost</u>	<u>FY 2000 Award Date</u>	<u>FY 2001 Cost</u>	<u>FY 2001 Award Date</u>	Cost To Complete	Total Cost	Target Value of Contract
a. Test Planning/Execution	Suballocation	Joint/Combined		3565		32374		15154			51093	
b. OT&E	Suballocation	Other Test Agencies		2550		5107		5391			13048	
c. HWIL Develop/Testing	Suballocation	Joint/Combined		13807		14224		12983			41014	
Subtotal Test and Evaluation:				19922		51705		33528			105155	
Remark:												
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 1999 Cost</u>	<u>FY 1999 Award Date</u>	<u>FY 2000 Cost</u>	<u>FY 2000 Award Date</u>	<u>FY 2001 Cost</u>	<u>FY 2001 Award Date</u>	Cost To Complete	Total Cost	Target Value of Contract
a.												
Subtotal Management Services:												
Remark:												
Project Total Cost:				20920		52744		34594			108258	
Remark:												

DATE
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BUDGET ACTIVITY
4 - Demonstration and Validation

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