

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

DATE
February 2000

BUDGET ACTIVITY
4 - Demonstration and Validation

PE NUMBER AND TITLE
0603875C International Cooperative Programs

COST (In Thousands)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	59126	81560	116992	142041	82394	69423	54512	Continuing	Continuing
1161 Advanced Sensor Technology*	12905	0	35778	93342	76394	63423	48512	Continuing	Continuing
1462 Other US - Russian Cooperative Programs	0	0	0	6000	6000	6000	6000	Continuing	Continuing
2259 Israeli Cooperative Project	46221	81560	81214	42699	0	0	0	Continuing	Continuing

*Will require reprogramming.

A. Mission Description and Budget Item Justification

This program is in budget activity 4 –Demonstration and Validation, Research Category 6.3B. This Program Element was created in accordance with H.R. 1119, SEC.223, which called for establishment of a PE referred to as the “cooperative Ballistic Missile Defense Program.” This PE finances cooperative efforts with Israel and with the Russian Federation. Cooperation with Israel centers around the Development of an initial capability for the Arrow Missile Defense system that is interoperable with US missile defense forces. The PE also funds work with the Russian Federation on advanced satellite early warning, and other cooperative research with the Russian Federation.

B. Program Change Summary	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Previous President's Budget (FY 2000 PB)	0	58903	36650	36719
Congressional Adjustments			+45000	
Appropriated Value			81650	
Adjustments to Appropriated Value				
a. Congressional General Reductions			-1466	
b. OSD Reductions				
c. Omnibus or Other Above Threshold Reductions				
d. Below Threshold Reprogramming			1376	
e. Rescissions				
Adjustments to Budget Years Since FY 2000 PB		223	0	80273
Current Budget Submit (FY 2001 PB)		59126	81560	116992

Change Summary Explanation:

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BUDGET ACTIVITY 4 - Demonstration and Validation				PE NUMBER AND TITLE 0603875C International Cooperative Programs				PROJECT 1161		
COST (In Thousands)		FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
1161	Advanced Sensor Technology*	12905	0	35778	93342	76394	63423	48512	Continuing	Continuing

*Will require reprogramming.

A. Mission Description and Budget Item Justification

To prepare for critical future active defense needs, BMDO will conduct a balanced international cooperative program of high leverage technologies that yield improved capabilities across a selected range of advanced sensors, as well as advances in innovative science. The objectives of these investments are subsystems with improved performance and reduced costs for acquisition programs.

Russian American Cooperative Programs:

- The Russian American Observation Satellites (RAMOS) program is an innovative American-Russian space-based remote sensor research and development program addressing ballistic missile defense and national security. This program engaged Russian early warning satellite developers in the joint definition and execution of aircraft and space experiments. Near-term experiments have focused on planning and executing nearly simultaneous observations of Earth features using U.S. and Russian satellites. The final phase of the near-term experiments included the development of U.S. and Russian instruments for proof-of-concept measurements from the Flying Infrared Signatures Technology Aircraft (FISTA). The program will ultimately design, build, launch, and operate two satellites that will provide stereoscopic observations of the earth's atmosphere and ballistic missile launches in the short wavelength and mid-to-long wavelength infrared bands.

FY 1999 Accomplishments:

- 11585 During FY98 and FY99 BMDO conducted a major technology planning review, as well as a full review of the RAMOS program. The results of these reviews confirmed that there were technology benefits to the planned experiments under RAMOS. However, the associated technology objectives were assessed to be lower in priority than other critical technologies needed at that time to address future ballistic missile threats. A subsequent review of U.S.-Russian cooperation determined that continuing a program leading to space-based testing would significantly benefit U.S.-Russian relations. As a consequence, plans for a two satellite program were reviewed and revised to better adapt the program to defense needs.
- 925 The Russian and U.S. scientists analyzed data collected from specialized infrared sensors during prior years. These sensors were developed by the U.S. and Russia and flown aboard the U.S. Flying Infrared Signature Technology Aircraft (FISTA) operated by the Air Force Research Laboratory. Modeling and simulation of high altitude cloud sun glint and cloud background scene structure in the mid-to-longwave infrared band continued.
- 395 FY99 efforts supported Russian research into their own future early warning satellites by having the Russians begin Mid/Long Wavelength Infrared (M/LWIR) space sensor and satellite designs using non-U.S. component technologies. The FY 1999 effort continued research into mitigation of Short Wavelength Infrared (SWIR) solar glint effects by developing a prototype design of a space hyperspectral polarimeter for future flight.

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Total 12905

FY 2000 Planned Program:

- 0 Collect and analyze data from specialized infrared sensors developed by the U.S. and Russia and flown aboard the U.S. Flying Infrared Signature Technology Aircraft (FISTA). Continue efforts focused on the modeling and simulation of high altitude cloud sun glint and cloud background scene structure in the mid-to-longwave infrared band. Finalizes prototype design of a space hyperspectral polarimeter for future flight tests.

- Begins the preliminary design process for the satellite experiment. Confirms application of chosen bandwidths toward meeting program objectives, Reviews system and subsystem requirements, identifies risk items and recommends mitigation. Defines work package split between the U.S. and Russia concerning launch vehicles, integration planning, mission operations concept, and data analysis capabilities. Begins preliminary design process for the platform and instruments.

Total 0

FY 2001 Planned Program:

- 35278 Completes the preliminary design process for the satellite experiment and begins the final design efforts. Defines work package split between the U.S. and Russia concerning launch vehicles, integration planning, mission operations concept, and data analysis capabilities. Completes the preliminary design process for the platform and instruments and begins the final satellite design efforts.
- 500 Establishes system engineering and configuration control processes. Provides technical review of exported data.

Total 35778

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>	<u>To</u>	<u>Total</u>
NA									<u>Compl</u>	<u>Cost</u>

C. Acquisition Strategy:

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1161

The current U.S. prime contractor for RAMOS is the Space Dynamics Laboratory of Utah State University, a designated University Affiliated Research Center for space sensors. SDL has a prime/subcontractor relationship with the Russians. The Russian lead is Rosvoorouzhenie, a State Company, with technical execution done by NPO Cometa and Astrophysica.

RAMOS is a cooperative experiment program designed to engage the Russians in early warning and theater missile defense related technologies.

D. Schedule Profile	<u>FY 1997</u>	<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>
Joint U.S./Russian Obs. (MSX/MSTI/RESURS-1)	1Q, 3Q								
Phase I (Program Definition) Contract Signed	3Q								
Proof of Concept Sensors - FISTA	3Q, 4Q								
Polarization Measurements - FISTA	3Q, 4Q	3Q, 4Q							
Russian Federation Presidential Approval		2Q							
Concept Design Review		2Q							
Proof of Concept Demonstrations		3Q, 4Q							
Data Analysis of Previous Experiments			3Q, 4Q	1Q, 2Q					
Additional FISTA Measurements				1Q					
Prototype Design of Space Hyperspectral Polarimeter				1Q					
Phase II (Design and Operations) Contract				3Q					
Initiate Development of Preliminary Satellite Design				3Q					
Preliminary Design Review					2Q				
Critical Design Review / Begin Fabrication						2Q			
Satellite Fabrication and Testing Complete								1Q	
Launch								2Q	
On Orbit Operations Begin								2Q	

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BMDO RDT&E COST ANALYSIS (R-3)

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BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603875C International Cooperative Programs	PROJECT 1161
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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. Hardware Development	SS/CPFF	USU/SDL, Logan, UT	26375	15150		35278		TBD	76803	TBD
Subtotal Product Development:			26375	15150		35278			76803	TBD

Remark: Prior to FY 1999, the RAMOS program was in BA3 - Advanced Technology Development, PE 0603173C, Support Technologies – ATD

The FY-2000 funding will continue data analysis and concept design efforts in support of the preliminary design process for the satellite experiment; define the work package split between the U.S. and Russia concerning launch vehicles, integration planning, mission operations concept, and data analysis capabilities; and begin the preliminary design process for the platform and instruments.

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. Development Support	Allot	AFRL, Hanscom AFB	1425	500		0		TBD	1925	2300
Subtotal Support Costs:			1425	500					1925	2300

Remark: Prior to FY 1999, the RAMOS program was in BA3 - Advanced Technology Development, PE 0603173C, Support Technologies – ATD

The FY-2000 funding will provide for conducting FISTA aircraft measurements using U.S. instruments and the Russian 6.3-micron imaging radiometer collect, compile and analyze the data and provide support to modeling and simulation efforts.

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.										
b.										
c.										
d.										
e.										
f.										
Subtotal Test and Evaluation:										

Remark:

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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. Program Management Support	C/CPFF	NRC, Arlington, VA	745	350		500		TBD	1595	4700
Subtotal Management Services:			745	350		500			1595	4700

Project Total Cost:			28545	16000		35778			80323	TBD
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Remark: Prior to FY 1999, the RAMOS program was in BA3 - Advanced Technology Development, PE 0603173C, Support Technologies - ATD

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BUDGET ACTIVITY 4 - Demonstration and Validation	PE NUMBER AND TITLE 0603875C International Cooperative Programs	PROJECT 1462
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COST (In Thousands)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
1462 Other US - Russian Cooperative Programs	0	0	0	6000	6000	6000	6000	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program provides additional cooperative research and development work with the Russian Federation in the area of technologies supporting missile defense programs. The project will allow the United States and Russia to take full advantage of Russia's unique technical capabilities that complement U.S. missile defense technologies.

FY 1999 Accomplishments:

- 0
- Total 0

FY 2000 Planned Program:

- 0
- Total 0

FY 2001 Planned Program:

- 0
- Total 0

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

C. Acquisition Strategy:

D. <u>Schedule Profile</u>	<u>FY 1997</u>	<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>	<u>FY 2006</u>

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COST (In Thousands)		FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
2259	Israeli Cooperative Project	46221	81560	81214	42699	0	0	0	Continuing	Continuing

A. Mission Description and Budget Item Justification

This project includes the Arrow Deployability Program (ADP), Arrow interoperability, the Israeli Test Bed (ITB), and the Israeli System Architecture and Integration (ISA&I) Project. The U.S. derives considerable benefits from its participation in these projects. The primary benefits are in U.S. gains in technology and technical data that will reduce risks in U.S. TMD developmental programs. The U.S. also benefits from the eventual presence of an anti-ballistic missile defense system in Israel, which provides deterrence of future theater ballistic missile (TBM) conflicts in that region. This defensive system also contributes to a more robust defensive response should deterrence fail.

The Arrow Deployability Program consists of efforts to integrate and test the elements making up a ballistic missile defense system for Israel. It includes the U.S.-Israel cooperative initiative to integrate the jointly developed Arrow II anti-theater ballistic missile (ATBM) interceptor and launcher with the Israeli developed Arrow components, e.g., fire control radar (Green Pine), fire control/battle management center (Citron tree) and launcher control center (Hazelnut Tree). The cooperative Arrow program is in its third phase. Phase I consisted of the Arrow Experiments project that cooperatively developed the pre-prototype Arrow I interceptor. It was followed by the Arrow Continuation Experiments (ACES) project (Phase II) which was a continuation of Phase I, and consisted of critical lethality and flight tests using the upgraded Arrow II interceptor. Arrow II interceptor development, now complete, provided the basis for an informed Government of Israel engineering and manufacturing decision for an integrated ATBM defense capability. The phase II program was highly successful and satisfied the Israeli requirement for a ballistic missile interceptor for defense of Israeli critical assets and population centers. The phase II program contributed to the U.S. technology base for new advanced anti-tactical ballistic missile technologies that were incorporated into the U.S. theater missile defense (TMD) systems, and also provided risk reduction technologies in the event that U.S. ATBM technical efforts failed to meet expectations.

The third phase is the ongoing ADP, which began in Fiscal Year 1996. This phase of the program pursues the research and development of technologies associated with the demonstration and deployment of the integrated Arrow Weapon System (AWS) to permit the Government of Israeli (GOI) to make a decision regarding its deployment (without financial participation by the U.S. beyond the R&D stage). This effort includes integrated system-level flight tests of the total AWS. The first such integrated intercept flight test was successfully conducted in Israel on November 1, 1999. The Green Pine radar detected a Scud-class ballistic target and the Citron Tree battle management center commanded the launch of the Arrow II interceptor and communicated with it in-flight to successfully destroy the incoming missile. An interface has now been developed and delivered in Israel for AWS interoperability with U.S. TMD systems based on a common JTIDS/Link-16 communications architecture and message protocol. It is now planned to use the BMDO-developed Theater Missile Defense System Exerciser (TMDSE) to conduct interactive simulation exercises to test, assess, and validate the JTIDS-based interoperability between the AWS and U.S. TMD systems. Once the TMDSE experiments are completed in FY01, the AWS will be certified as fully interoperable with any deployed U.S. TMD systems. Lethality, kill assessment and producibility will continue to be assessed. Subsequent U.S.-Israeli cooperative R&D on other ballistic missile defense concepts or enhancements to the AWS may occur in the future. The International Agreement (IA) between the U.S. and Israel for the ADP is being amended to formalize the U.S. addition of \$45M RDT&E from

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<p>Congressional plus-up in FY00. As directed by FY00 Congressional language, this increased the U.S. cost share in the ADP agreement, which permits the GOI to withdraw an equal amount from the ADP in order to continue Israeli procurement of additional AWS third battery components. The budget includes an additional \$45M in FY2001 for a similar adjustment.</p> <p>Since program initiation in 1988, Israel successfully improved the performance of its pre-prototype Arrow I interceptor to the point that it achieved a successful intercept and target destruction in June 1994. Arrow II design and component testing progressed to the successful demonstration of the new warhead, electro-optical seeker, radar fuse, first stage booster, sustainer booster, launcher canister, and launcher. The ADP IA was signed in March 1996 and Presidential certification was completed in May 1996. Under the ADP agreement, the first flight test of the integrated AWS, a fly-out non-intercept test, was successfully completed on September 14, 1998. This was a combined ACES/ADP flight test and its success marked the conclusion of the ACES Program. This flight test was the first in which the other elements of the AWS rather than test range assets were used to control and communicate in-flight with the Arrow missile. This test demonstrated the technical maturity of the AWS and was followed by a successful integrated system intercept test against a ballistic missile target on November 1, 1999. The success of this intercept is leading the Israeli Air Force to declare the AWS operational in early CY 2000.</p> <p>The ITB Program is a medium-to-high fidelity theater missile defense simulation that provides the capability to evaluate potential Israeli missile defenses, aids the Israeli Ministry of Defense (IMoD) in the decision of which defense systems to field, provides insights into command and control in TMD and the role of human-in-the-loop, and trains Israeli Air Force personnel to function in a TMD environment. A structured set of joint U.S./Israeli experiments is being executed to evaluate the role of missile defenses in both mature and contingency Middle East theater operations. This funding also provides for a portion of the operation and maintenance of the ITB and for planned enhancements. Completed experiments identified additional enhancements needed to improve the ITB as an analysis tool. The enhancements incorporated in the ITB to date include radar and weapons models and a Boost Phase Intercept (BPI) simulation capability. The BPI enhancement benefited the Israeli BPI study completed in January 1996. The Adaptive Battle Management Center (ABMC) enhancement benefits the U.S. by enabling the ITB to simulate a wide variety of command and control, human-in-the-loop (HIL), and interoperability issues. The implementation of the Distributed Interactive Simulation (DIS) and high level architecture (HLA) technologies enables joint exercise experiments to be conducted both in Israel and across the water between U.S. TMD and Israeli TMD systems using a combination of such modeling and simulation tools as the Extended Air Defense Simulation (EADSIM), Extended Air Defense Test Bed (EADTB), and the ITB.</p> <p>ITB experiments are used to validate the performance of the prospective near-term Israel Theater Missile Defense System and provides valuable insight into the potential role of Human-In-The-Loop (HIL) for a TMD system. The ITB is being used as a tool to assist with the development of Combined Standard Operating Procedures (CSOP) between the U.S. European Command (USEUCOM) and Israel for potential combined TMD operations. Early warfighter activities in developing the CSOP at the ITB were invaluable during U.S. contingency operations in late FY 98. Further ITB experiments involving the Israeli Air Force and USEUCOM are planned in FY00 to finalize combined operating procedures and to begin the integration of the AWS in EUCOM's CSOP and OPLAN.</p> <p>The ISA&I tasks provide ongoing analysis and assessment of the baseline, evolutionary, and responsive threats to support the definition and evaluation of an initial Israeli Reference Missile Architecture (IRMA), a baseline missile configuration from which to assess and evaluate architectural effectiveness. Evolutionary growth paths to enhance the IRMA robustness against future threats will be identified. Critical TMD system architecture issues and technologies will be analyzed, and the conformance to established requirements of various ATBM programs, including the Arrow Deployability Program (ADP), Boost Phase Intercept concepts, and the ITB will be conducted. Finally, previously developed simulations and models will be used selectively to address significant TMD issues. Collectively, the tasks</p>		
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<p>conducted under this cooperatively sponsored ISA&I project will provide critical insights and technical data to both the U.S. and Israeli governments for improving near-term and evolutionary defenses against ballistic missile threats.</p> <p>The ISA&I Project activities demonstrated that defense of the State of Israel from TBM attacks is necessary, feasible and cost-effective. The ISA&I effort analyzed and addressed numerous TMD system issues including HIL, resource allocation, and threat analysis. The U.S. benefited from the architecture analysis work, including identification and progress toward resolution of critical TMD system issues such as kill assessment and the lethality study of a novel interceptor warhead. The ISA&I is playing a critical role in identifying possible AWS upgrades to preserve system effectiveness as more robust regional ballistic missile threats continue to evolve.</p> <p>FY 1999 Planned Program:</p> <ul style="list-style-type: none"> • 41352 Arrow Deployability Program. Commenced AWS integrated flight test. Evaluated U.S. and Arrow components for electro-magnetic interference. Transferred the results of the AWS tests to U.S. TMD interceptor developers. Continued interoperability, lethality, kill assessment and producibility studies leading to an initial Israeli operational capability. • 1520 Interoperability. Continued interoperability activities to include Arrow Link-16 Upgrade Converter (ALUC) Proof of Concept II (APOC II). Developed and began testing of U.S./Israeli technical interoperability capability. Began efforts to develop scenarios and test plans for conducting TMDSE experiments. • 1900 ITB. Continued ITB experiments on near-term improvements to the Israeli TMD system and on deployability. Provided improved threat model and Arrow II enhancements. Continued supporting U.S. EUCOM/IAF CSOP requirements and the potential for ITB II experiments. • 1449 ISA&I. Analyzed results of ITB Interoperability experiments. Continued evaluations of the performance of the near-term TMD system based on ADP system flight tests. Continued analysis of TMD refinements for future threats such as the evolving Iranian MRBM threat. • 0 Government Personnel and Support <p>Total 46221</p> <p>FY 2000 Planned Program:</p> <ul style="list-style-type: none"> • 78498 Arrow Deployability Program. Continue AWS to migrate the system toward an initial operational capability and validate activities via integrated flight tests. Transfer the results of the AWS tests to U.S. TMD interceptor developers. Continue lethality, kill assessment and producibility studies leading to an Israeli operational capability. Funding includes \$45M Congressional plus-up to offset Israel's continued requirement for procurement of components for a third Arrow battery. • 1751 ITB. Continue ITB experiments on near-term improvements to the Arrow TMD system deployability. Provide improved threat model and Arrow II update enhancements. Conduct distributed interactive simulation over-the-water experiments. Support U.S. EUCOM/IAF CSOP and CINC EUCOM exercise requirements utilizing the ITB. • 1173 ISA&I. Analyze results of ITB Interoperability experiments. Continue evaluations of the performance of the near- and far-term TMD system based on ADP system flight tests and evolving regional threats. Continue analysis of TMD system refinements necessary to defeat future threats such as the evolving Iranian MRBM threats. • 138 Government Personnel and Support <p>Total 81560</p>		
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FY 2001 Planned Program:

- 77849 Arrow Deployability Program. Continue to transfer system development and flight test results to U.S. TMD interceptor developers. Continue activities for achieving interoperability, lethality, and high confidence kill assessment. Funding includes \$45M which allows GOI to reduce ADP funding and continue procurement of components for the third Arrow battery.

 - 1820 ITB. Continue ITB experiments related to the operational Arrow TMD system deployability. Provide improved threat model and Arrow II update enhancements. Support U.S. EUCOM/IAF CSOP development and CINC EUCOM exercise requirements if feasible within budget.
 - 1409 ISA&I. Analyze results of ITB Interoperability experiments. Continue evaluations of the performance of the AWS. Continue analysis of TMD refinements for future emerging threats
 - 136 Government Personnel and Support
- Total 81214

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>	<u>To Compl</u>	<u>Total Cost</u>
3359 – Test Evaluation & Assess, PE 0603872C		3966	21363							25329
3359 – Test Evaluation & Assess, PE 0603873C		20297	23249	61299	34045	50090	37803	38868		265651

C. Acquisition Strategy: This is an ongoing cooperative U.S./GOI development program. By completing the Arrow Deployability Program, U.S. TMD programs will be afforded state-of-the-art technical data for program risk reduction and the GOI will have developed a robust AWS to defend against regional ballistic missile threats. Through the ADP, Link-16-based interoperability between the AWS and U.S. TMD systems will be achieved. The planned ISA&I and ITB efforts will continue to refine the operational tactics and techniques of the fielded near-term TMD system. The U.S. and the GOI, under the umbrella of the various Memoranda of Agreements, share project costs. The U.S. share of total funding is based upon the maturity of the development. Each contract associated with the individual projects is a firm-fixed price (FFP) contract. The GOI will likely continue to fund the Arrow Program through CY05 without any U.S. funding support U.S. obligations for ADP will be fulfilled in FY02.

D. Schedule Profile	<u>FY 1997</u>	<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>
Initiate Interoperability Requirements	1 Q								
Complete ITB Enhancements	2 Q	3 Q	1 Q						
U.S./Israel ADP First Amendment Signed		2 Q							
Initiate Interoperability Tests (APOC I)		2 Q							

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U.S./Israel ADP Second Amendment Signed		3 Q							
Complete Arrow II ACES Flight Test		4 Q							
Arrow Weapon System Flight Tests		4 Q		1Q & 3Q	1Q & 3Q	1Q			
Conduct APOC II			2 Q						
U.S. Benefits Review				1 Q					
Conduct TPOC				2 Q					
Initiate Interoperability Tests w/ U.S. TMDSE				2 Q					
ADP Third Battery Cost Share Adjustment						2 Q			
Complete ADP, ITB, and ISA&I						2 Q			

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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			
a. ADP Development and Third Arrow Battery	International Agreement with Israel	Israel Ministry of Defense, Israel	39637	75641		74945			190223	
b. ISA&I	FFP with Cost Share	Wales, Ltd., Israel	1449	1173		1409			4031	
c. ITB	FFP	USA/SMDC Huntsville, AL	1900	1751		1820			5471	
d. Gov Personnel & Spt	Direct Funding	USA/SMDC Huntsville, AL	0	138		136			274	
Subtotal Product Development:			42986	78703		78310			199999	

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			
a. ADP Arrow Project Office	Direct Funding	PEO/AMD	3235	2857	N/A	2904	N/A		8996	
Subtotal Support Costs:			3235	2857		2904			8996	

Remark:

III. Test and Evaluation	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			
a. N/A										
Subtotal Test and Evaluation:										

Remark:

BMDO RDT&E COST ANALYSIS (R-3)

DATE **February 2000**

BUDGET ACTIVITY
4 - Demonstration and Validation

PE NUMBER AND TITLE
0603875C International Cooperative Programs

PROJECT
2259

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. N/A										
Subtotal Management Services:										

Remark:

Project Total Cost:			46221	81560		81214			208995	
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Remark: