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BMDO RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE June 2001
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BUDGET ACTIVITY 3 - Advanced Technology Development	PE NUMBER AND TITLE 0603175C BMD Technology
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COST <i>(In Thousands)</i>	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	0	0	112890						Continuing	Continuing
6010 Advanced Technology Development	0	0	110111						Continuing	Continuing
6090 Program Operations	0	0	2779						Continuing	Continuing

THIS FY02 AMENDED PB REQUEST FOR PE 0603175C, BMD TECHNOLOGY, IS \$20M LESS THAN THE FY02 AMENDED PB R-1 BMD TECHNOLOGY PE AMOUNT OF \$132,890K. THIS IS DUE TO THE TRANSFER OF \$20M TO THE PE 0603881C, TERMINAL DEFENSE, IN SUPPORT OF THE FY02 CONTINUED ISRAELI COOPERATIVE PROGRAM.

A. Mission Description and Budget Item Justification

Beginning in FY2002, the Ballistic Missile Defense Organization (BMDO) is consolidating the activities of its Science and Technology Program into one Program Element (PE), 0603175C. The new PE structure will facilitate a more efficient and effective integration of missile defense related applied research and advanced technology development.

The Ballistic Missile Defense (BMD) Technology program is established to develop components, subprojects and new concepts needed to keep pace with the constantly evolving ballistic missile threat. Investments maintain a balance between providing improvements in current acquisition programs and demonstrating the enabling technology for new concepts.

Many of today's baseline BMD projects are viable due to the wise investment in technology research, development and maturation. Examples include: the Lightweight Exoatmospheric Projectile (LEAP), indium antimonide and mercury cadmium telluride ultra-sensitive infrared detectors; 32-bit radiation hardened Reduced Instruction Set Computer (RISC) processors for image analysis; composite materials for lightweight satellite structures; interferometric fiber-optic gyroscopes for miniaturized guidance and control projects; and solid-state gallium arsenide transmitter/receivers for advanced BMDO radars; and dual wave passive imaging for BMD test missions.

The Advanced Technology Development project is organized around four thrusts. The thrusts cluster technology efforts that have a synergistic effect in the three phases of a ballistic missile's flight as well as pushing for an ever-greater geographic coverage of the BMD system for maximum military utility and cost optimization. The first thrust, Terminal Missile Defense, continues investment in atmospheric interceptor technology needs for terminal missile defenses and introduces a novel concept for long range atmospheric defense. The second thrust, Midcourse Counter-Countermeasures, builds on the previous program of developing an interceptor seeker using fused active and passive sensors for defeating sophisticated penetration aids anticipated in future threats. It adds new projects to discriminate between pen aids and targets by improved ground-based radar projects, directly perturbing the objects and attacking multiple objects in midcourse by using miniature kill vehicles. The Boost-Phase Intercept (BPI) thrust provides a modest investment in novel early launch detection concepts and advanced high energy laser projects as risk reduction to the technical challenges of detecting and engaging a missile launch as early in its trajectory as possible. The final thrust, Global Defense seeks to enhance the ability to provide continuous, global

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<p>surveillance and precise tracking over very long ranges. Passive surveillance from space that can quickly detect launches under all conditions and establish precise tracking are crucial for boost phase and early midcourse intercepts.</p> <p>A number of technology activities, grouped as Enabling Technology Support, provide technology outputs that are applicable across multiple technology thrust areas. These activities are essential for robust, effective missile defense projects. Enabling Technology Support includes advanced technology development efforts in the multi-application areas of radar; focal plane arrays; materials, structures and power; space experiments; and engineering analysis. Enabling Technology Support also provides the only applied research efforts in the DoD which focus specifically on future BMD technical requirements. To prepare to meet critical future active defense needs, the efforts include an aggressive program of high-leverage technologies that yield markedly improved capabilities across a selected range of boost, midcourse, and terminal defense interceptors, advanced sensors, and innovative science. The Innovative Science and Technology (IS&T) activity invests seed money in high-risk technologies that could significantly change BMD development. Specific technology areas include: 1) sensing, imaging, ranging, and discrimination, 2) phenomenology studies and boost phase intercept handover, 3) electronic and photonic materials and devices and wide band gap technology, 4) information processing and computing technologies, 5) directed energy, non-linear optical devices and processes, 6) kill enhancement devices and, 7) power generation and conditioning and thermal management. This activity conducts proof-of-concept research and matures novel technologies for transition to advanced technology development. The objective of the Technology Applications (TA) Program is to develop and support the transfer of BMD-derived technology to other DOD agencies as well as other federal, state, and local government institutions, laboratories, universities, and industry. Incorporation of technology applications by the private sector and other government agencies can result in reduced unit costs and further improvements to future BMDO applications.</p> <p>Small Business Innovation Research (SBIR) and the Small Business Technology Transfer (STTR) programs are also managed under this project. Under this program, awards are made to small business firms to develop technology capabilities for both military and commercial applications.</p> <p>Program Operations:</p> <p>This project covers personnel and related facility support costs, statutory and fiscal requirements, support service contracts and the BMDO Data Centers Programs.</p> <p>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 & Missile Defense Command, US Army PEO Air and Missile Defense, US Navy PEO for Theater Surface Combatants, 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.</p> <p>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.</p>		

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<p>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.</p> <p>This project also includes the BMDO Data Centers Programs. The BMDO Data Centers Information System Program Manager provides management, oversight, technical assistance, and expertise for the BMDO Data Centers Program. The BMDO Data Centers Program archives, manages, and develops data products, distributes and provides remote access to all relevant BMD data. Operation and management of Data Center activities is accomplished at several sites, each site specializing in a particular discipline. Taskings include providing assessments for technical/programmatic issues and data center performance, coordinating segment customer program/data management requirements, and cooperative partnership requirements.</p>		
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BUDGET ACTIVITY 3 - Advanced Technology Development	PE NUMBER AND TITLE 0603175C BMD Technology
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B. Program Change Summary	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>
Previous President's Budget (<u>FY 2001</u> PB)	0	0	0	0
Appropriated Value				
Adjustments to Appropriated Value				
a. Congressional General Reductions				
b. Small Business Innovation Research (SBIR) / Small Business Technology Transfer (STTR)				
c. Omnibus or Other Above Threshold Reductions				
d. Below Threshold Reprogramming				
e. Rescissions				
Adjustments to Budget Years Since <u>FY 2001</u> PB				
Current Budget Submit (<u>FY 2002</u> PB)	0	0	112890	0

Change Summary Explanation:

FY 2000 Accomplishments:

- 0 Technology projects were funded under Program Element Number 0603173 (Advanced Technology Development) and 0602173 (Applied Research). Previous projects included: 1180 Surveillance Technologies, 1280 Interceptor Technologies, 1461 BMC4I, 1651 Innovative Science and Technology 1660 Statutory and Mandated Programs, 3354 Targets, 3360 Test Resources, 4000 Operational Support.
- Total 0

FY 2001 Planned Program:

- 0 Technology projects were funded under Program Elements: 0603173 (Advanced Technology Development) and 0602173 (Applied Research). Previous projects included: 1180 Surveillance Technologies, 1280 Interceptor Technologies, 1461 BMC4I, 1651 Innovative Science and Technology 1660 Statutory and Mandated Programs, 3354 Targets, 3360 Test Resources, 4000 Operational Support.
- Total 0

FY 2002 Planned Program:

- 8631 Terminal Missile Defense: Initiate advanced development of advanced technology interceptor components addressing maneuvering threat counter-countermeasures, extending the footprint for upper-tier BMD projects, and long range atmospheric defense concepts.
- 55646 Midcourse Counter-Countermeasures: Initiate advanced development of discriminating seeker components including multicolor focal plane arrays and laser radars. Initiate advanced development of transportable discriminating radar, miniature kill vehicle, and interactive discrimination concepts.
- 4914 Boost-Phase Intercept: Initiate advanced development of early launch detection concepts and enhanced boost phase high energy laser projects.
- 16082 Global Defense: Initiate advanced development of space-based passive surveillance technologies.

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- 21293 Enabling Technology Support: Initiate advanced development and applied research of radar, focal plane arrays, analysis; and other enabling technologies, concepts and processes to be used by BMD projects.
 - 3545 Incrementally fund an estimated 10 Historically Black Colleges and Universities / Minority Institutions (HBCU/MI) contracts in the areas of electronics, sensors, materials, and BMC3 selected in FY01 competition. Continue to provide assistance to large, medium, and small businesses wishing to bring BMD supported technology to the commercial market through the TA program.
 - 2779 Program Operations: Provides management and support for overhead/indirect fixed costs such as civilian payroll, travel, rents & utilities, supplies and the data centers programs.
- Total 112890

B. Other Program Funding Summary	<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>	<u>FY 2007</u>	To <u>Compl</u>	Total <u>Cost</u>
0603173C – Advanced Technology Development	212281	130837	0						CONT	CONT
0602173C – Applied Research	89290	55731	0						CONT	CONT
0603880C - BMD System	0	0	779584						CONT	CONT
0603881C - Terminal Defense System	0	0	988180						CONT	CONT
0603882C - Midcourse Defense System	0	0	3940534						CONT	CONT
0603883C - Boost Defense System	0	0	685363						CONT	CONT
0603884C - Sensors	0	0	495600						CONT	CONT

C. Acquisition Strategy:

BMDO tasks the Services through Program Management Directives (PMDs) to perform the required tasks in support of the BMD Technology Project and performs quarterly reviews to verify and validate completed tasks. The IS&T activity solicits proposals by an annual Broad Agency Announcement (BAA) of research opportunities. Proposals received are competitively judged according to BMD innovation, relevance, cost, and capabilities of the offeror. The HBCU/MI activity also receives proposals in response to a biannual BAA.

D. Schedule Profile	<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>	<u>FY 2007</u>
Terminal Missile Defense			1Q – 4Q	CONT	CONT	CONT	CONT	CONT
Midcourse Counter-Countermeasures			1Q – 4Q	CONT	CONT	CONT	CONT	CONT
Boost-Phase Intercept			1Q – 4Q	CONT	CONT	CONT	CONT	CONT
Global Defense			1Q – 4Q	CONT	CONT	CONT	CONT	CONT
Enabling Technology Support			1Q – 4Q	CONT	CONT	CONT	CONT	CONT