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

DATE: February 2002

BUDGET ACTIVITY: 3 - Advanced Technology Development

PE NUMBER AND TITLE: 0603173C Support Tech - Adv Tech Dev

COST (*In Thousands*)	FY2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY2005 Estimate	FY2006 Estimate	FY2007 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	130716	0	0	0	0	0	0	TBD	TBD
1180 Surveillance Technologies	41578	0	0	0	0	0	0	TBD	TBD
1280 Interceptor Technologies	43323	0	0	0	0	0	0	TBD	TBD
1461 BMC4I	6222	0	0	0	0	0	0	TBD	TBD
1651 Innovative Science and Technology (IS&T)	8998	0	0	0	0	0	0	TBD	TBD
1660 Statutory and Mandated Programs	2898	0	0	0	0	0	0	TBD	TBD
3354 Targets	7066	0	0	0	0	0	0	TBD	TBD
3360 Test Resources	2613	0	0	0	0	0	0	TBD	TBD
4000 Operational Support	18018	0	0	0	0	0	0	TBD	TBD

The Ballistic Missile Defense (BMD) Program and resulting FY 2002 President's Budget request has been developed based on revised Secretary of Defense direction to develop capabilities to defend against the missile threat and sustain appropriate deterrence levels. Beginning in FY 2002, funding from this Program Element is moved to the Missile Defense Agency (MDA) Program Element 0603175C to facilitate BMD system capability evolution, allow timely responses and reactions to changes in the BMD program, and provide the programmatic agility to mitigate unforeseen consequences.

A. Mission Description and Budget Item Justification

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

The BMD technology program is designed to resolve many key Research & Development (R&D) issues for future Theater and National Missile Defense (TMD/NMD) systems. BMDO crafts the program as a component of the overall Department technology plan. Efforts include:

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- Advanced active and passive sensor technology development, which is needed to detect, track, discriminate, and intercept advanced BMD threats. This includes the detection and tracking of low observable targets and other high-leverage sensor technologies. Force and systems level planning and analysis to identify promising technology for insertion into MDAP technical roadmaps and to assess their utility in meeting the ballistic missile defense future architecture vision (Project 1180).
- Development and integration of critical technologies for performing hypervelocity hit-to-kill intercepts of ballistic missiles within and outside the atmosphere. Development and demonstration of advanced interceptor sensor processing and power components; interceptor guidance and divert subsystems, multifunctional materials and structures; low-cost interceptor composite manufacturing processes; and low-cost flight test demonstrations (Project 1280).
- BMD Battle Management Command, Control, Communications, Computers and Intelligence (BMC4I) advanced technology programs to develop kill assessment, high-speed computing, secure & reliable communications, sensor fusion, and interoperability technologies for NMD and TMD programs (Project 1461).
- Continued development of low-cost ballistic missile launch vehicle alternatives (Project 3354).
- Use of the new Infrared (IR) data collection capabilities provided by the High Altitude Observatory (HALO) upgrade and fuse IR data with Radio Frequency (RF) data collected on targets (Project 3360).
- Required manpower aligned with the performance of these programs (Project 4000).

FY 2001 Accomplishments:

- 41578 Surveillance Technologies (1180): Completed analysis of Midcourse Space Experiment (MSX) data in support of Space-Based Infrared System (SBIRS) and NMD/Ground-Based Interceptors (GBI) programs. Continued research development and evaluation of radar technologies in the areas of Transmitter/Waveform Generators, Antennas, Threats/Environments, Receiver/Signal Processors, Controller/Data Processors, and Electro-Mechanical Support used by MDAPs. Refine the MDAP technology transition framework for sufficiently matured radar technologies. Launched Space Technology Research Vehicle (STRV) 1c/d experiments 1Q01. Continued STRV-2 on-orbit space experiments and continue analysis of experiment data.
- 43323 Interceptor Technologies (1280): Completed Jet Interaction model validation. Deliver prototypes for Strapdown IR Seeker (SIS) and Solid Divert Attitude Control System (SDACS). Delivered Master Frequency Generator (MFG) to PAC-3. Completed test equipment and fused-sensor system for DITP. Reinstated work on range resolved Doppler radar. Grounded test Discriminating Interceptor Technology Program (DITP) hardware. Began design of advanced multi-functional interceptor structure. Continued development of advanced technology components for future interceptor systems.
- 6222 BMC4I (1461): Investigated development of advanced interoperability messaging and translation protocols to improve communications. Investigated development of pre-planning and adaptive battle management tools to improve real-time battle status assessment. Continued development in low temperature deposition processes for thick silicon coatings on various substrates for optics; especially on large mirror surfaces needed in directed-energy weapon systems.
- 8998 Innovative Science and Technology (1651): Initiated Wide Band Gap (WBG) semiconductor effort to integrate material and device development of gallium-indium-aluminum-nitride quaternary compound.
- 7066 Targets – EXCALIBUR (3354): Continued development of low-cost ballistic missile launch vehicle alternatives. Funded supports the Phase III SBIR effort to build a liquid fueled target based on the EXCALIBUR design engine for a short duration test firing and to conduct additional design studies/prototype development for vehicle subsystems.
- 2898 Civilian Salaries for BMDO (1660).

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2613 Test Resources (3360): RF/IR Data Fusion Testbed activity will provided a hardware development test bed matched to the real-time signal processor developed for the HALO upgrade. Test bed exploited the HALO upgrade, Optical Data Analysis activity, Radar Data Analysis activity, and the Missile Defense Data Center for historical data sets. Hardware test bed served multiple purposes including a software development role for surveillance asset development and advanced algorithm development.

- 18018 Operational Support (4000): Continued providing management and support for BMDO overhead/indirect fixed costs, and continued to provide management and analysis support to the technology program in areas such as cost/schedule/performance assessment, cost estimating and analysis, budget analysis and formulation, program planning and control, and contract management.

Total 130716

B. Program Change Summary	FY 2001	FY 2002	FY 2003
Previous President's Budget (FY 2002 PB)	93249		
Congressional Adjustments	38800		
Appropriated Value	132049		
Adjustments to Appropriated Value			
a. Congressional General Reductions	-1212		
b. SBIR / STTR			
c. Omnibus or Other Above Threshold Reductions	-121		
d. Below Threshold Reprogramming			
e. Rescissions			
Adjustments to Budget Years Since FY 2002 PB	37467		
Current Budget Submit (FY 2003 Budget Estimates)	130716		

Change Summary Explanation:
Significant FY 2001 increase due to Congressional action.

Beginning in FY 2002, funding from this Program Element moved to the Missile Defense Agency Program Element 0603175C.