

UNCLASSIFIED

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

DATE

February 2003

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

03 - Advanced Technology Development (ATD)

0603444F MAUI SPACE SURVEILLANCE SYSTEM

4868

COST (\$ in Thousands)	FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
4868 Maui Space Surveillance System	25,958	47,888	6,323	6,323	6,340	6,418	6,516	6,607	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	0

(U) **A. Mission Description**

This program funds the operation and upgrading of the Maui Space Surveillance System (MSSS) in Hawaii. Note: In FY 2003, Congress added \$27 million for the MSSS, \$2 million for High Accuracy Network Determination System, and \$13 million for Panoramic Survey Telescope And Rapid Response System (Pan-STARRS).

(U) **FY 2002 (\$ in Thousands)**

- (U) \$0 Accomplishments/Planned Program
- (U) \$3,383 Enhanced operational and research utility of MSSS data products to include thermal mapping of long-wave infrared imagery. Studied the feasibility of daylight imaging and active tracking with Advanced Electro Optical System (AEOS) to include effects on sensor performance and safety issues. Analyzed satellite orientation data for detailed characterization of space reconnaissance threats. Enhanced exploration tools and data dissemination architecture.
- (U) \$13,233 Provided technical support to research, development, and operational users and visiting experimenters using the MSSS assets.
- (U) \$3,944 Conducted and demonstrated AEOS/MSSS upgrades and enhancements. Completed the AEOS long-wave infrared imager upgrade background subtraction effort by operationalizing the test code (algorithm) to produce accurate radiometric data, temperature maps, and imagery. Upgraded radiometer to allow for simultaneous four-channel capability and increased processing speed. Improved resolution of the sensor on the 1.6-meter telescope by replacing the tracking system. Improved the reliability of the observatory control system to increase acquisition rate of targets.
- (U) \$2,030 Continued follow-up role on AEOS and lost satellite search and non-imaging space object identification to detect and characterize smaller/fainter objects.
- (U) \$3,368 Executed the Pan-STARRS effort. Defined technical concept for execution of Pan-STARRS to include the development of advanced charged-coupled devices (CCDs) to detect very-dim space objects of the 24th magnitude, a telescope system that uses the CCD detectors, and the hardware/procedures to collect and display the data. Initiated data archiving to support future data collection.
- (U) \$25,958 Total

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BUDGET ACTIVITY		PROJECT
03 - Advanced Technology Development (ATD)		0603444F MAUI SPACE SURVEILLANCE SYSTEM 4868
(U) <u>A. Mission Description Continued</u>		
(U) <u>FY 2003 (\$ in Thousands)</u>		
(U)	\$0	Accomplishments/Planned Program
(U)	\$4,133	Enhance operational and research utility of Maui Space Surveillance System (MSSS) with ability to operate at higher classification levels with dedicated areas. Design and develop heavy lift elevator for movement of the 3.6 meter primary mirror. Perform environmental studies to support recoating the 3.6 meter primary mirror. Provide integrated data architecture for dissemination of information to include integration of sensors in close proximity of MSSS. Analyze and study fusion of infrared and visible data products.
(U)	\$21,488	Provide technical support to research, development, and operational users and visiting experimenters using the MSSS assets. Provide support to resolve electromagnetic interference problems at the observatory summit.
(U)	\$5,879	Continue MSSS modernization. Execute reliability improvements and capability enhancements for the radiometer, adaptive optics, and spectrograph systems to include sensitivity improvements to the radiometer, enhancement of high order wavefront compensation, and characterization of the spectrograph for non-imaging space object identification applications. Develop and extend the capability to collect active signatures of space objects.
(U)	\$1,546	Continue lost satellite search and non-imaging space object identification to detect and characterize smaller/fainter objects including Near-Earth Asteroid Tracking.
(U)	\$12,863	Continue Panoramic Survey Telescope And Rapid Response System (Pan-STARRS) effort. Design and develop telescope system to include the development of advanced charged coupled devices (CCDs) to detect very dim space objects of the 24th magnitude, a telescope system that uses the CCD detectors, and the hardware/procedures to collect and display the data. Continue data archiving to support future data collection.
(U)	\$1,979	Demonstrate use of High Accuracy Network Determination System (HANDS) for high accuracy orbit prediction, non-imaging signatures, and study the possibilities of use for low resolution imaging.
(U)	\$47,888	Total
(U) <u>FY 2004 (\$ in Thousands)</u>		
(U)	\$0	Accomplishments/Planned Program
(U)	\$612	Enhance operational and research utility of MSSS. Study and design fast frame rate camera on the adaptive optics system to allow for increased levels of high quality imagery and speckle imaging techniques.
(U)	\$4,549	Provide technical support to research, development, and operational users and visiting experimenters using the MSSS assets.
(U)	\$1,162	Continue MSSS modernization. Continue efforts in discrimination using active illumination system to validate discrimination algorithms and techniques for high precision range rate data collection. Demonstrate high precision laser pointing, line of sight stabilization, and tilt compensation to increase image resolution using active illumination. Demonstrate the ability to collect signatures for midcourse objects.
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(U) **A. Mission Description Continued**(U) **FY 2004 (\$ in Thousands) Continued**

(U) \$6,323 Total

(U) **B. Budget Activity Justification**

This program is in Budget Activity 3, Advanced Technology Development, since it enables and demonstrates technologies for existing system upgrades and/or new system developments that have military utility and address warfighter needs.

(U) **C. Program Change Summary (\$ in Thousands)**

	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>Total Cost</u>
(U) Previous President's Budget	27,020	6,472	6,452	
(U) Appropriated Value	27,284	48,472		
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions	-264	-512		
b. Small Business Innovative Research	-824			
c. Omnibus or Other Above Threshold Reprogram		-72		
d. Below Threshold Reprogram	-111			
e. Rescissions	-127			
(U) Adjustments to Budget Years Since FY 2003 PBR			-129	
(U) Current Budget Submit/FY 2004 PBR	25,958	47,888	6,323	TBD

(U) **Significant Program Changes:**

In FY 2003, Congress added \$27 million for the Maui Space Surveillance System, \$2 million for High Accuracy Network Determination System, and \$13 million for Panoramic Survey Telescope And Rapid Response System (Pan-STARRS).

(U) **D. Other Program Funding Summary (\$ in Thousands)**

(U) Related Activities:

(U) PE 0602605F, Directed Energy Technology.

(U) PE 0603605F, Advanced Weapons Technology.

(U) PE 0602500F, Multi-Disciplinary Space Technology.

(U) PE 0603500F, Multi-Disciplinary Advanced Development Space Technology.

(U) PE 0603883C, Ballistic Missile Defense Boost Phase Segment.

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<p>(U) <u>D. Other Program Funding Summary (\$ in Thousands)</u></p> <p>(U) This project has been coordinated through the Reliance process to harmonize efforts and eliminate duplication.</p> <p>(U) <u>E. Acquisition Strategy</u> Not Applicable.</p> <p>(U) <u>F. Schedule Profile</u> (U) Not Applicable.</p>		
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