PE NUMBER: 0603444F
PE TITLE: MAUI SPACE SURVEILLANCE SYSTEM

Exhibit R-2, RDT&E Budget Item Justification

DATE: February 2004

BUDGET ACTIVITY: 03 Advanced Technology Development (ATD)

PE NUMBER AND TITLE: 0603444F MAUI SPACE SURVEILLANCE SYSTEM

Cost ($ in Millions)	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total
Total Program Element (PE) Cost	47.130	51.581	6.306	6.323	6.405	6.513	6.617	Continuing	TBD
4868 Maui Space Surveillance System	47.130	51.581	6.306	6.323	6.405	6.513	6.617	Continuing	TBD

(U) A. Mission Description and Budget Item Justification

This program funds technology development at the Maui Space Surveillance System (MSSS) in Hawaii, as well as the operation and upgrade of the facility. Note: In FY 2004, Congress added $27 million for the MSSS, $8.5 million for High Accuracy Network Determination System, and $10.2 million for Panoramic Survey Telescope And Rapid Response System (Pan-STARRS).

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) B. Program Change Summary ($ in Millions)

		FY 2003	FY 2004	FY 2005
(U)	Previous President's Budget	47.888	6.323	6.323
(U)	Current PBR/President's Budget	47.130	51.581	6.306
(U)	Total Adjustments	-0.758	45.258	
(U)	Congressional Program Reductions			
	Congressional Rescissions		-0.442	
	Congressional Increases		45.700	
	Reprogrammings	-0.122		
	SBIR/STTR Transfer	-0.636		
(U)	Significant Program Changes:			

Not Applicable.

Exhibit R-2a, RDT&E Project Justification			DATE: February 2004
BUDGET ACTIVITY: 03 Advanced Technology Development (ATD)	PE NUMBER AND TITLE: 0603444F MAUI SPACE SURVEILLANCE SYSTEM	PROJECT NUMBER AND TITLE: 4868 Maui Space Surveillance System	

Cost ($ in Millions)	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total
4868 Maui Space Surveillance System	47.130	51.581	6.306	6.323	6.405	6.513	6.617	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0		

(U) A. Mission Description and Budget Item Justification

This program funds technology development at the Maui Space Surveillance System (MSSS) in Hawaii, as well as the operation and upgrade of the facility. Note: In FY 2004, Congress added $27 million for the MSSS, $8.5 million for High Accuracy Network Determination System, and $10.2 million for Panoramic Survey Telescope And Rapid Response System (Pan-STARRS).

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) B. Accomplishments/Planned Program ($ in Millions)	FY 2003	FY 2004	FY 2005
(U) MAJOR THRUST/CONGRESSIONAL ADD: Develop technology at the MSSS in Hawaii, as well as operate and upgrade the facility.	32.288	32.881	6.306

(U) In FY 2003: Completed initial design for heavy lift elevator for movement of the 3.6 meter primary mirror and completed environmental studies to support recoating the 3.6 meter primary mirror. Designed and developed integrated data architecture for dissemination of information for MSSS sensors. Optimized use of advanced algorithms for near-real-time post-processing of imagery for high interest objects. Provided technical support to research, development, and operational users and visiting experimenters using the MSSS assets. Provided support to resolve electromagnetic interference problems at the observatory summit. Executed reliability improvements and capability enhancements for the radiometer, adaptive optics, and spectrograph systems to include electronic and fiber board improvements to the radiometer, enhancement of high order wavefront compensation, and characterization of the spectrograph for non-imaging space object identification applications. Developed the capability to collect active signatures of space objects. Conducted lost satellite search and non-imaging space object identification to detect and characterize smaller/fainter objects including Near-Earth Asteroid Tracking.

(U) In FY 2004: Enhance utility by dedicating specific areas to operate at higher classification levels, continuing the upgrade of heavy lift elevator, providing support to resolve electromagnetic interference at site, enhancing reliability and maintainability by upgrading network servers at various classification levels, improving connectivity between sites, and procuring critical state-of-the-art spares. Provide automatic frame selection for daylight imagery that is post-processed using advanced algorithms for increased timeliness. Implement data dissemination architecture with secure, near-real-time, web-based connectivity for release of MSSS sensor information. Conduct technology development efforts using active laser illumination including high precision range rate data collection and demonstrate high precision laser pointing to increase measurement accuracy. Characterize and upgrade the adaptive

Exhibit R-2a, RDT&E Project Justification		DATE February 2004
BUDGET ACTIVITY 03 Advanced Technology Development (ATD)	PE NUMBER AND TITLE 0603444F MAUI SPACE SURVEILLANCE SYSTEM	PROJECT NUMBER AND TITLE 4868 Maui Space Surveillance System

optics system by implementing a tracker upgrade to improve sensitivity and implement diagnostic software capabilities improving resolution. Refurbish MSSS sensors such as the radiometer, long-wave imager, spectrograph, and daylight acquisition sensor for increased sensitivity and resolution. Conduct lost satellite search and non-imaging space object identification to detect and characterize smaller/fainter objects including Near-Earth Asteroid Tracking.

(U) In FY 2005: Enhance operational utility by procuring critical sensor and telescope spares, refurbishing the control rooms and upgrading computers for increased personnel efficiency, and maintaining requirements for safety and security in accordance with Air Force regulations.

(U)

(U)	CONGRESSIONAL ADD: Panoramic Survey Telescope And Rapid Response System (Pan-STARRS)	12.863	10.200	0.000

(U) In FY 2003: Began design of the telescope system to include the development of advanced charged coupled devices to detect very dim space objects of the 24th magnitude, a telescope system that uses the charged coupled device detectors, and the hardware/procedures to collect and display the data. Conducted data archiving to support future data collection.

(U) In FY 2004: Complete Preliminary Design Review and begin development for telescope system to include the development of advanced charged coupled devices to detect very dim space objects of the 24th magnitude, a telescope system that uses the charged coupled device detectors, and the hardware/procedures to collect and display the data. Design and develop data archiving to support future data collection.

(U) In FY 2005: Not Applicable.

(U)

(U)	CONGRESSIONAL ADD: High Accuracy Network Determination System (HANDS).	1.979	8.500	0.000

(U) In FY 2003: Demonstrated use of HANDS for high accuracy orbit prediction, non-imaging signatures, and studied the possibilities of use for low resolution imaging.

(U) In FY 2004: Deploy additional HANDS sensors in areas of high interest in the Space Surveillance Network and study use of system for detecting and tracking objects in low-earth orbit. Develop large field of view acquisition telescope.

(U) In FY 2005: Not Applicable.

(U)	Total Cost	47.130	51.581	6.306

(U) C. Other Program Funding Summary ($ in Millions)

	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost

(U) Related Activities:

(U) PE 0602605F, Directed Energy Technology.

(U) PE 0603605F, Advanced

Exhibit R-2a, RDT&E Project Justification		DATE February 2004
BUDGET ACTIVITY **03 Advanced Technology Development (ATD)**	PE NUMBER AND TITLE **0603444F MAUI SPACE SURVEILLANCE SYSTEM**	PROJECT NUMBER AND TITLE **4868 Maui Space Surveillance System**

(U) C. Other Program Funding Summary ($ in Millions)

Weapons Technology.
PE 0602500F,
(U) Multi-Disciplinary Space Technology.
PE 0603500F,
(U) Multi-Disciplinary Advanced Development Space Technology.
PE 0603883C, Ballistic Missile
(U) Defense Boost Phase Segment.
This project has been coordinated through the
(U) Reliance process to harmonize efforts and eliminate duplication.

(U) D. Acquisition Strategy

Not Applicable.