



Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-328



Space Based Space Surveillance Block 10 (SBSS BLOCK 10)

As of FY 2011 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Common Acronyms and Abbreviations for MDAP Programs

Acq O&M - Acquisition-Related Operations and Maintenance
ACAT - Acquisition Category
ADM - Acquisition Decision Memorandum
APB - Acquisition Program Baseline
APPN - Appropriation
APUC - Average Procurement Unit Cost
\$B - Billions of Dollars
BA - Budget Authority/Budget Activity
Blk - Block
BY - Base Year
CAPE - Cost Assessment and Program Evaluation
CARD - Cost Analysis Requirements Description
CDD - Capability Development Document
CLIN - Contract Line Item Number
CPD - Capability Production Document
CY - Calendar Year
DAB - Defense Acquisition Board
DAE - Defense Acquisition Executive
DAMIR - Defense Acquisition Management Information Retrieval
DoD - Department of Defense
DSN - Defense Switched Network
EMD - Engineering and Manufacturing Development
EVM - Earned Value Management
FOC - Full Operational Capability
FMS - Foreign Military Sales
FRP - Full Rate Production
FY - Fiscal Year
FYDP - Future Years Defense Program
ICE - Independent Cost Estimate
IOC - Initial Operational Capability
Inc - Increment
JROC - Joint Requirements Oversight Council
\$K - Thousands of Dollars
KPP - Key Performance Parameter
LRIP - Low Rate Initial Production
\$M - Millions of Dollars
MDA - Milestone Decision Authority
MDAP - Major Defense Acquisition Program
MILCON - Military Construction
N/A - Not Applicable
O&M - Operations and Maintenance
ORD - Operational Requirements Document
OSD - Office of the Secretary of Defense
O&S - Operating and Support
PAUC - Program Acquisition Unit Cost

PB - President's Budget
PE - Program Element
PEO - Program Executive Officer
PM - Program Manager
POE - Program Office Estimate
RDT&E - Research, Development, Test, and Evaluation
SAR - Selected Acquisition Report
SCP - Service Cost Position
TBD - To Be Determined
TY - Then Year
UCR - Unit Cost Reporting
U.S. - United States
USD(AT&L) - Under Secretary of Defense (Acquisition, Technology and Logistics)

Program Information

Program Name

Space Based Space Surveillance (SBSS) Block 10 (SBSS B10)

DoD Component

AirForce

Responsible Office

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Date Assigned: July 10, 2009

References

SAR Baseline (Development Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated January 26, 2008

Approved APB

DAE Approved Acquisition Program Baseline (APB) dated January 26, 2008

Mission and Description

The Space Based Space Surveillance (SBSS) system is a Space Superiority system that provides space surveillance capabilities to satisfy Space Situational Awareness (SSA) needs of the warfighter. The SBSS Block 10 mission is to collect metric (position), maneuver detection, and space object identification (characterization) data on man-made resident space objects. SBSS Block 10 will operate 24 hours a day, 7 days a week to serve users who require SSA of deep-space and near-Earth objects.

SBSS Block 10 will be an end-to-end space control system, including space, ground, and launch segments. The space segment consists of one three-axis stabilized satellite with a gimbaled visible optical payload in a low earth, polar orbit. The ground segment provides satellite command and control, mission operations, mission planning, mission data processing, data dissemination, and interfaces to users and the command structure. Mission operations will be conducted from a Satellite Operations Center located at Schriever Air Force Base, CO and will utilize Air Force Satellite Control Network and Universal Space Network ground stations throughout the world. Through this network, the operations center will execute SBSS satellite telemetry, tracking and commanding. The launch segment consists of a Minotaur IV launch vehicle acquired by the Space Development & Test Wing at Kirtland AFB, NM.

Boeing in Seal Beach, CA led SBSS system development and teamed with Ball Aerospace in Boulder, CO, who built the space vehicle, while Massachusetts Institute of Technology's Lincoln Laboratories provided key mission planning capability.

Executive Summary

In-Process Review: On April 2, 2008, the program successfully completed an In-Process Review with the Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)), resulting in an Acquisition Decision Memorandum. All actions have been satisfied.

Launch Readiness: The Space Based Space Surveillance (SBSS) Block 10 space vehicle is available for launch, meeting a major Acquisition Program Baseline (APB) milestone. Development of the SBSS Space Vehicle and Ground Segment is complete to support Launch and early on-orbit system checkout. In the fall of 2009, the SBSS team completed all segment and system testing, as well as all Functional and Physical Configuration Audits demonstrating full system functionality and satisfaction of all technical requirements. The space vehicle was delivered to Vandenberg Air Force Base, CA in September for an October launch but was subsequently returned to the factory in Boulder, CO to await closure of the Minotaur IV launch vehicle development issues.

Taurus XL Fairing Failure: After a failure of a Taurus XL rocket in February 2009, commonalities between the Taurus XL and Minotaur IV drove SBSS launch postponement from the planned date of April 30, 2009. The independent National Aeronautics and Space Administration (NASA) and Orbital Sciences Mishap Investigation Boards results released in July indicated no impact to the Minotaur IV fleet for payload fairing separation during launch.

Minotaur IV Launch Vehicle Technical Issue: The launch date was subsequently delayed because of a Minotaur IV fleet issue identified in October 2009 that had the potential to cause loss of attitude control during Stage 3 coast. Launch of the SBSS Block 10 satellite has been delayed to no earlier than June 2010 pending launch vehicle and range availability. The Minotaur IV contractor has developed a design solution and the Program Executive Officer (PEO) chartered a comprehensive independent review of the launch vehicle that is expected to complete in February 2010. The SBSS program is performing risk reduction activities, working with the Space Development and Test Wing on Minotaur IV deep-dive reviews, and investigating the viability of a Delta II launch vehicle option.

Operations & Sustainment Contract: In September 2008 the Assistant Secretary of the Air Force for Acquisition (SAF/AQ) approved a sole source Justification and Approval (J&A), authorizing the SBSS program office to pursue a contract with Boeing for operations and sustainment planning and execution through the Mean Mission Duration of the system. The program office has since completed the proposal process and definitization of the Maintenance and Operations Requirements contract, which procures up to two years of contractor operations and five years of contractor maintenance after Launch + 60 days.

Launch and Operations Readiness: Launch Rehearsal #2 and Operations Rehearsals #2 and #3 successfully exercised, rehearsed, and demonstrated launch and operations readiness of the SBSS team and supporting organizations. As a result of the launch delay, additional events will be scheduled before the final dress rehearsals to maintain and enhance crew proficiency.

APB Cost Performance: Prior to identification of Minotaur IV launch vehicle issues, SBSS Block 10 was forecasted to perform within 1% of APB objective cost. Current program office estimates forecast the program will perform 2.7% under its APB Cost Threshold, based on a June 2010 launch. Current estimates indicate a breach if the Minotaur IV launch vehicle or Western Range and telemetry assets do not support a launch before October 1, 2010.

The program does not have any significant software issues at this time.

Threshold Breaches

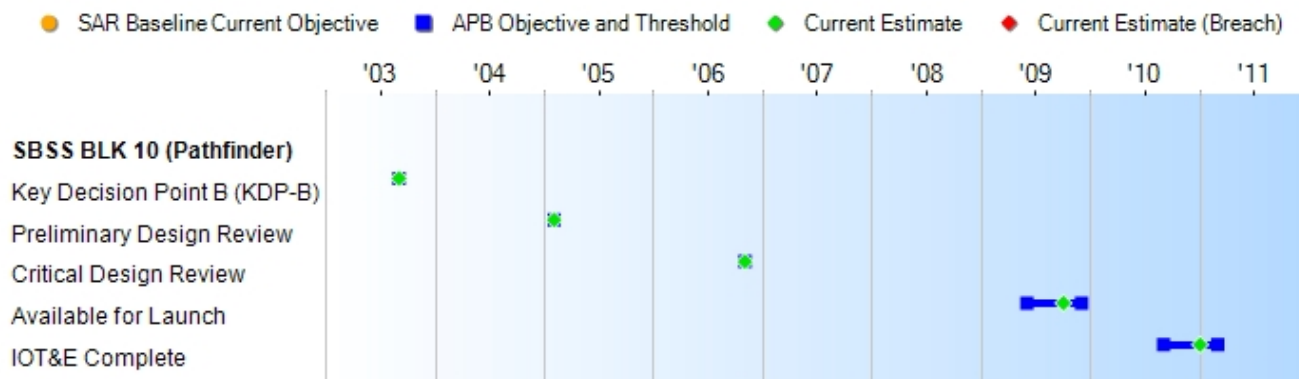
APB Breaches

- Schedule
- Performance
- Cost
 - RDT&E
 - Procurement
 - MILCON
 - Acq O&M
- O&S Cost
- Unit Cost
 - PAUC
 - APUC

Nunn-McCurdy Breaches

- Current UCR Baseline**
 - PAUC None
 - APUC None
- Original UCR Baseline**
 - PAUC None
 - APUC None

Schedule



Schedule Events				
Events	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate
Key Decision Point B (KDP-B)	Sep 2003	Sep 2003	Sep 2003	Sep 2003
Preliminary Design Review	Feb 2005	Feb 2005	Feb 2005	Feb 2005
Critical Design Review	Nov 2006	Nov 2006	Nov 2006	Nov 2006
Available for Launch	Jun 2009	Jun 2009	Dec 2009	Oct 2009 (Ch-1)
IOT&E Complete	Sep 2010	Sep 2010	Mar 2011	Jan 2011 (Ch-2)

Change Explanations

(Ch-1) Current Estimate for the Available for Launch milestone changed from June 2009 to October 2009 due to ground system issues that delayed segment sell-off.

(Ch-2) Current Estimate for the Initial Operational Test and Evaluation (IOT&E) Complete milestone changed from September 2010 to January 2011 due to Minotaur IV launch vehicle technical issues that have delayed space vehicle launch until June 2010.

Acronyms and Abbreviations

IOT&E - Initial Operational Test and Evaluation

Performance

Performance Characteristics				
SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Demonstrated Performance	Current Estimate
Net-Ready				
100%	100%	100%	TBD	100%

Classified Performance information is provided in the classified annex to this submission.

Requirements Reference

Space-Based Space Surveillance (SBSS) Block 10 Pathfinder Capability Development Document dated September 22, 2005

Change Explanations

None

Track to Budget

RDT&E			
Appn	BA	PE	
Air Force	3600	05	0604425F
Project		Name	
A006		Space Based Space Surveillance (Shared)	
Notes			

PE is shared by the following MDAP or Pre-MDAP programs: Space-Based Space Surveillance (SBSS) Block 10 and SBSS Follow-On.

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2007 \$M			BY 2007 \$M	TY \$M		
	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate	SAR Baseline Development Estimate	Current APB Development Objective	Current Estimate
RDT&E	810.5	810.5	891.6	869.5	825.8	825.8	881.7
Procurement	0.0	0.0	--	0.0	0.0	0.0	0.0
Flyaway	--	--	--	0.0	--	--	0.0
Recurring	--	--	--	0.0	--	--	0.0
Non Recurring	--	--	--	0.0	--	--	0.0
Support	--	--	--	0.0	--	--	0.0
Other Support	--	--	--	0.0	--	--	0.0
Initial Spares	--	--	--	0.0	--	--	0.0
MILCON	0.0	0.0	--	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	--	0.0	0.0	0.0	0.0
Total	810.5	810.5	N/A	869.5	825.8	825.8	881.7

Total Quantity				
Quantity	SAR Baseline Development Estimate	Current APB Development	Current Estimate	
RDT&E		1	1	1
Procurement		0	0	0
Total		1	1	1

Quantity Notes

The program quantity consists of one satellite and ground system.

Cost and Funding

Funding Summary

Appropriation Summary									
FY 2011 President's Budget / December 2009 SAR (TY\$ M)									
Appropriation	Prior	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	To Complete	Total
RDT&E	723.9	123.9	29.9	2.0	2.0	0.0	0.0	0.0	881.7
Procurement	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2011 Total	723.9	123.9	29.9	2.0	2.0	0.0	0.0	0.0	881.7
PB 2009 Total	682.0	80.6	46.0	13.3	2.0	0.0	0.0	0.0	823.9
Delta	41.9	43.3	-16.1	-11.3	0.0	0.0	0.0	0.0	57.8

Quantity Summary										
FY 2011 President's Budget / December 2009 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	To Complete	Total
Development	1	0	0	0	0	0	0	0	0	1
Production	0	0	0	0	0	0	0	0	0	0
PB 2011 Total	1	0	0	0	0	0	0	0	0	1
PB 2009 Total	1	0	0	0	0	0	0	0	0	1
Delta	0	0	0	0	0	0	0	0	0	0

Cost and Funding

Annual Funding By Appropriation

Annual Funding							
3600 RDT&E Research, Development, Test, and Evaluation, Air Force							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2002	--	--	--	--	--	--	2.0
2003	--	--	--	--	--	--	10.2
2004	--	--	--	--	--	--	56.3
2005	--	--	--	--	--	--	76.4
2006	--	--	--	--	--	--	112.1
2007	--	--	--	--	--	--	155.1
2008	--	--	--	--	--	--	169.2
2009	--	--	--	--	--	--	142.6
2010	--	--	--	--	--	--	123.9
2011	--	--	--	--	--	--	29.9
2012	--	--	--	--	--	--	2.0
2013	--	--	--	--	--	--	2.0
Subtotal	1	--	--	--	--	--	881.7

Annual Funding 3600 RDT&E Research, Development, Test, and Evaluation, Air Force							
Fiscal Year	Quantity	BY 2007 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2002	--	--	--	--	--	--	2.2
2003	--	--	--	--	--	--	11.2
2004	--	--	--	--	--	--	60.3
2005	--	--	--	--	--	--	79.8
2006	--	--	--	--	--	--	113.7
2007	--	--	--	--	--	--	153.2
2008	--	--	--	--	--	--	163.9
2009	--	--	--	--	--	--	136.4
2010	--	--	--	--	--	--	117.3
2011	--	--	--	--	--	--	27.9
2012	--	--	--	--	--	--	1.8
2013	--	--	--	--	--	--	1.8
Subtotal	1	--	--	--	--	--	869.5

FY 2009 costs increased \$29.2M primarily due to mission assurance and costs associated with maintaining the contractor during a launch vehicle technical issue delay, and was funded by a Below Threshold Reprogramming and other internal realigns. FY 2010 values increased \$43.3M primarily due to launch vehicle delay impacts, and was funded by an intra-BPAC transfer from the SBSS Follow-On program. The FY 2010 value of \$123.9M reflects an Above Threshold Reprogramming payback (in the form of additional Headquarters withholds).

Low Rate Initial Production

There is no Low Rate Initial Production for this program.

Foreign Military Sales

None

Nuclear Costs

None

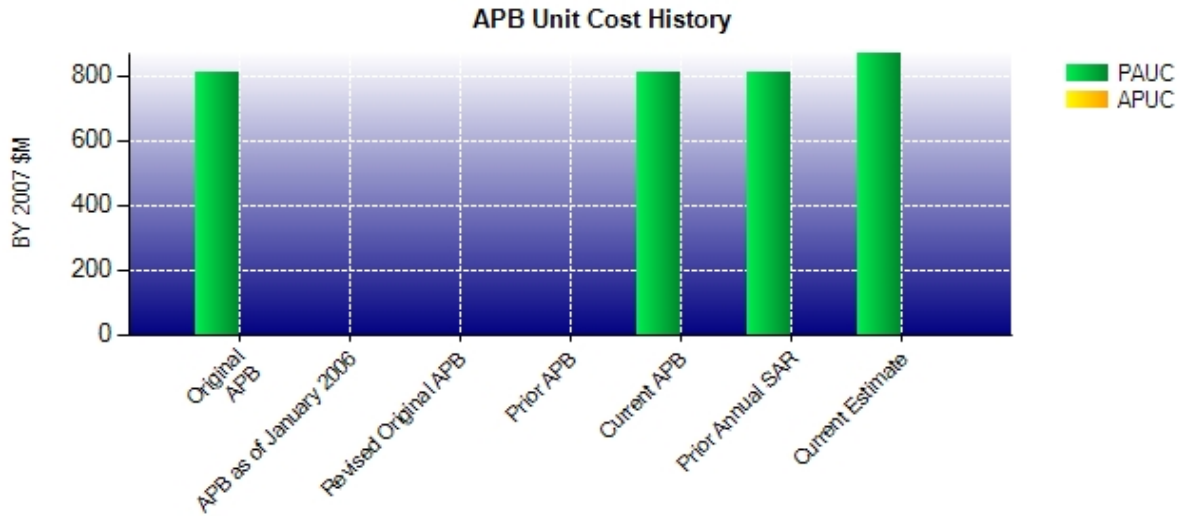
Unit Cost

Unit Cost Report

Item	BY 2007 \$M	BY 2007 \$M	% Change
	Current UCR Baseline (Jan 2008 APB)	Current Estimate (Dec 2009 SAR)	
Program Acquisition Unit Cost			
Cost	810.5	869.5	
Quantity	1	1	
Unit Cost	810.500	869.500	+7.28
Average Procurement Unit Cost			
Cost	--	0.0	
Quantity	--	0	
Unit Cost	--	--	--

Item	BY 2007 \$M	BY 2007 \$M	% Change
	Original UCR Baseline (Jan 2008 APB)	Current Estimate (Dec 2009 SAR)	
Program Acquisition Unit Cost			
Cost	810.5	869.5	
Quantity	1	1	
Unit Cost	810.500	869.500	+7.28
Average Procurement Unit Cost			
Cost	--	0.0	
Quantity	--	0	
Unit Cost	--	--	--

Unit Cost History



Item	Date	BY 2007 \$M		TY \$M	
		PAUC	APUC	PAUC	APUC
Original APB	Jan 2008	810.500	N/A	825.800	N/A
APB as of January 2006	N/A	N/A	N/A	N/A	N/A
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	N/A	N/A	N/A	N/A	N/A
Current APB	Jan 2008	810.500	N/A	825.800	N/A
Prior Annual SAR	Dec 2007	811.000	N/A	823.900	N/A
Current Estimate	Dec 2009	869.500	N/A	881.700	N/A

SAR Unit Cost History

Current SAR Baseline to Current Estimate (TY \$M)									
Initial PAUC Development Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
825.800	-5.400	0.000	72.500	0.000	-11.200	0.000	0.000	55.900	881.700

Current SAR Baseline to Current Estimate (TY \$M)										
Initial APUC Development Estimate	Changes								APUC Current Estimate	
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		
0.000	--	--	--	--	--	--	--	--	--	0.000

An APUC Unit Cost History is not available, since no Initial APUC Estimate had been calculated due to a lack of defined quantities.

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate
Milestone A		N/A	N/A	N/A
Milestone B			Sep 2003	Sep 2003
Milestone C		N/A	N/A	N/A
IOC		N/A	N/A	N/A
Total Cost (TY \$M)			825.8	881.7
Total Quantity			1	1
PAUC			825.800	881.700

Initial Operating Capability (IOC) is equivalent to Required Assets Available (RAA).

Cost Variance

Summary TY \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	825.8	--	--	825.8
Previous Changes				
Economic	-2.5	--	--	-2.5
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+0.6	--	--	+0.6
Other	--	--	--	--
Support	--	--	--	--
Subtotal	-1.9	--	--	-1.9
Current Changes				
Economic	-2.9	--	--	-2.9
Quantity	--	--	--	--
Schedule	+72.5	--	--	+72.5
Engineering	--	--	--	--
Estimating	-11.8	--	--	-11.8
Other	--	--	--	--
Support	--	--	--	--
Subtotal	+57.8	--	--	+57.8
Total Changes	+55.9	--	--	+55.9
Current Estimate	881.7	--	--	881.7

Summary BY 2007 \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	810.5	--	--	810.5
Previous Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+0.5	--	--	+0.5
Other	--	--	--	--
Support	--	--	--	--
Subtotal	+0.5	--	--	+0.5
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	+68.9	--	--	+68.9
Engineering	--	--	--	--
Estimating	-10.4	--	--	-10.4
Other	--	--	--	--
Support	--	--	--	--
Subtotal	+58.5	--	--	+58.5
Total Changes	+59.0	--	--	+59.0
Current Estimate	869.5	--	--	869.5

Previous Estimate: December 2007

RDT&E	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-2.9
Cost impacts of Minotaur IV launch vehicle delay (Schedule)	+68.9	+72.5
Adjustment for current and prior escalation. (Estimating)	+1.4	+1.5
Revised estimate for Maintenance and Operations of ground system (Estimating)	+12.4	+12.7
Update to Maintenance and Operations estimate due to contract definitization action (Estimating)	-24.2	-26.0
RDT&E Subtotal	+58.5	+57.8

Contracts

Contract Identification

Appropriation: RDT&E
Contract Name: Space Based Space Surveillance
Contractor: Northrop Grumman Space and Mission Systems Corp.
Contractor Location: Carson, CA 90746
Contract Number: FA8819-04-C-0002
Contract Type: Cost Plus Award Fee (CPAF)
Award Date: March 26, 2004
Definitization Date: December 17, 2004

Contract Price

Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
223.8	N/A	1	303.6	N/A	1	517.2	525.0

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to

Contract Variance

Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (11/26/2009)	-74.3	-1.4
Previous Cumulative Variances	-24.2	-2.5
Net Change	-50.1	+1.1

Cost and Schedule Variance Explanations

General Contract Variance Explanation

Schedule Variance is insignificant. The net unfavorable change in cost variance is due to three factors:

- 1) The Contractor's earned value baseline presupposes a December 2008 launch. Due to the limited remaining time in the development program at the time of the January 2008 Acquisition Program Baseline approval, the program manager made the recommendation not to rebaseline the contract. The Under Secretary of Defense for Acquisition, Technology and Logistics concurred with this policy at the In-Process Review held on April 2, 2008.
- 2) Actual costs exceeded estimates for mission assurance activities, specifically ground software testing, closure of system Assembly, Integration, and Test issues, and reaction wheel testing.
- 3) Unplanned cost impacts related to Minotaur IV Launch Vehicle technical issues and costs associated with maintaining the contractor during the resultant launch delay.

Notes

The difference from initial target to current target price is due to changes in scope of the effort. SBSS was initiated as a technology demonstration but ultimately became an operational system where the spacecraft requirements ended up more technically challenging than originally envisioned. Operational system demands forced schedule extensions which translated to increased target price.

Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	1	0	1	0.00%
Production	0	0	0	--
Total Program Quantity Delivered	1	0	1	0.00%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	881.7	Years Appropriated	9
Expended to Date	706.5	Percent Years Appropriated	75.00%
Percent Expended	80.13%	Appropriated to Date	847.8
Total Funding Years	12	Percent Appropriated	96.16%

Operating and Support Cost

Assumptions and Ground Rules

The Operating and Support cost estimate below captures activities planned in FY 2010 - FY 2015 for initial contractor operations and contractor logistics support (including sustainment, depot maintenance, engineering support, and anomaly resolution).

Cost Estimate Reference:

None

Sustainment Strategy:

None

Antecedent Information:

None

Unitized O&S Costs BY2007 \$M		
Cost Element	SBSS BLK 10 (Pathfinder)	No Antecedent (Antecedent)
Mission Pay & Allowance	--	--
Unit Level Consumption	--	--
Intermediate Maintenance	--	--
Depot Maintenance	--	--
Contractor Support	--	--
Sustaining Support	--	--
Indirect	--	--
Other	181.400	--
Total	181.400	--

Unitized Cost Comments:

None

Item	Total O&S Cost \$M			
	SBSS BLK 10 (Pathfinder)			No Antecedent (Antecedent)
	Current Development APB Objective/Threshold	Current Estimate		
Base Year	N/A	N/A	181.4	N/A
Then Year	N/A	N/A	198.2	N/A

Total O&S Cost Comment

None

Disposal Estimate Details

Date of Estimate:

Source of Estimate:

Disposal/Demilitarization Total Cost (BY 2007 \$M):