# Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-362

# Ballistic Missile Defense System (BMDS)

As of December 31, 2012

Defense Acquisition Management
Information Retrieval
(DAMIR)

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## Program Information

| Program Name |
| --- |
| Ballistic Missile Defense System (BMDS) |

| DoD Component |
| --- |
| DoD |

## Responsible Office

| Responsible Office | | |
| --- | --- | --- |
| VADM James D. Syring<br>Missile Defense Agency (MDA)<br>5700 18th Street<br>Fort Belvoir, VA 22060-5573<br>james.syring@mda.mil | **Phone**<br>**Fax**<br>**DSN Phone**<br>**DSN Fax**<br>**Date Assigned** | 571-231-8006<br>571-231-8090<br>289-8006<br>289-8090<br>November 19, 2012 |

## References

| SAR Baseline (Planning Estimate) |
| --- |
| National Security Presidential Directive (NSPD) - 23 dated December 16, 2002 |

## Mission and Description

### Mission and Description

To develop and deploy a layered BMDS to defend the United States (US), its deployed forces, allies, and friends from ballistic missile attacks of all ranges and in all phases of flight.

Following guidance from the President, the Secretary of Defense approved the Ballistic Missile Defense (BMD) Review Report (dated February 2010), which established the following policy priorities to frame missile defense development and acquisition program strategies:

1. The US will continue to defend the homeland against the threat of limited ballistic missile attack.
2. The US will defend against regional missile threats to US forces, while protecting allies and partners and enabling them to defend themselves.
3. Before new capabilities are deployed, they must undergo testing that enables assessment under realistic operational conditions.
4. The commitment to new capabilities must be fiscally sustainable over the long term.
5. US BMD capabilities must be flexible enough to adapt as threats change.
6. The US will seek to lead expanded international efforts for missile defense.

# Executive Summary

## Executive Summary

The Missile Defense Agency (MDA) accomplished a number of key goals toward satisfying critical Ballistic Missile Defense (BMD) capability requirements directed by the 2010 Secretary of Defense BMD Review Report and Presidential guidance as well as identified in the Warfighter Prioritized Capability List. Critical milestones were achieved to support homeland and regional defense capabilities, enhanced testing, development of new BMDS capabilities, and international cooperation in 2012. MDA also completed several management initiatives.

MDA continued the strategy updated last year of delivering capability to the Warfighter. This strategy provides capability to the Warfighter sooner by making more frequent, smaller delivery increments.

## Homeland and Regional Defense

MDA continues to support Presidential and DoD direction. Specifically, MDA is enhancing the existing homeland defense hedge by increasing our operational fleet of Ground-Based Interceptors (GBIs) from 30 to 44 to stay ahead of the growing threat from North Korea and Iran. This enhancement includes refurbishment of Missile Field 1 at Fort Greely, Alaska. The goal of 44 operational GBIs in 2017 will be reached by re-allocating from the stockpile reliability, spares, and flight test program to the operational fleet. MDA plans to procure an additional 14 GBIs, starting in FY 2016, to backfill those GBIs that were allocated to the operational fleet.

Commitment to strengthen homeland defense also requires a successful return of the Ground-based Midcourse Defense (GMD) program to flight testing with a successful intercept flight test. MDA has incorporated a less concurrent programmatic and technical strategy to achieve return to intercept. The Agency will also add an In-Flight Interceptor Communications System (IFICS) Data Terminal at Fort Drum (New York) in FY 2015 to provide improved interceptor performance.

Section 227 of the FY 2013 National Defense Authorization Act requires the Secretary of Defense, not later than December 31, 2013, to “conduct a study to evaluate at least three possible additional locations in the United States, selected by the Director of the Missile Defense Agency, that would be best suited for future deployment of an interceptor capable of protecting the homeland against threats from nations such as North Korea and Iran. At least two of such locations shall be on the East Coast of the United States.”

To maintain enhanced readiness of our networked strategic radars, MDA continues to work with the Air Force in upgrading the Early Warning Radar (EWR) at Clear, Alaska and Cape Cod Massachusetts, to provide a missile defense capability and improved BMD sensor coverage of the continental US. In coordination with the Air Force, MDA plans to transfer the Beale (California), Fylingdales (United Kingdom), and Thule (Greenland) Upgraded EWRs to the Air Force in 2013. In partnership with the Warfighter, MDA continues to maintain and integrate its world-wide Command, Control, Battle Management, and Communications (C2BMC) assets for homeland and regional missile defense.

MDA remains committed to strengthening regional missile defense. MDA continues to work closely with allies around the world to develop capabilities and improve cooperation. Europe remains a key focus and MDA continues to support the European Phased Adaptive Approach (EPAA), which provides protection of deployed US forces and allies and is the US contribution to the territorial defense in Europe. Phase 2 EPAA is on schedule to deploy in the 2015 timeframe and will include Standard Missile (SM)-3 Block IB capacity available for global deployment and the upgraded Aegis BMD Weapons System for both at-sea and ashore capability in addition to the SM-3 Block IB missile. Phase 3 is scheduled to be complete in the 2018 timeframe and will deploy another upgrade to the Aegis

BMD Weapons System and the SM-3 Block IIA variant, which is currently under development. With the completion of Phase 3, the BMDS will provide coverage for European North Atlantic Treaty Organization (NATO) territory and US forces in the region.

MDA is continuing procurement and planned delivery of SM-3 Block IB and Terminal High Altitude Area Defense (THAAD) interceptors; construction of an Aegis Ashore test facility at the Pacific Missile Test Range by 2014 and two Aegis Ashore sites (Romania by 2015, Poland by 2018); along with operation and sustainment of C2BMC fielded sites.

During 2012, several BMDS component programs transitioned to more mature acquisition lifecycle phases or rebaselined their program to incorporate major fact-of-life updates. These programs are:

- THAAD established a new program increment (THAAD 2.0) to manage capability software upgrades and obsolescence updates. MDA is coordinating updated program baselines with the Army.
- Upgraded EWR established initial program baselines in the Product Development (Limited Fielding) MDA acquisition phase. MDA is coordinating updated program baselines with the Air Force.
- Aegis BMD 4.0.1/4.0.2 was certified by the Navy and MDA.
- SM-3 Block IB with Aegis Weapon System 4.0.1/4.0.2 transitioned from Product Development to Initial Production with an Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L))-signed Acquisition Decision Memorandum (ADM). MDA coordinated updated production baselines with the Navy.
- Aegis Ashore was rebaselined to provide definition for capability to European Phased Adaptive Approach Phase III with an Aegis Ashore site in Poland. MDA coordinated updated program baselines with the Navy.
- C2BMC Spiral 8.2 transitioned to the Product Development (Software Intensive Spirals) acquisition phase. MDA is coordinating updated program baselines with the Tri-Service organization chaired by the Air Force.

**International Cooperation**

In 2012, MDA continued to expand missile defense cooperation with key allies. MDA currently participates in missile defense-related projects and studies with over twenty countries and the NATO. MDA will continue to work with NATO allies to develop requirements and further capabilities for regional defense.

Significant 2012 accomplishments and coordination activities with countries in the Middle East included:

- Continued execution of the United Arab Emirates' (UAE) THAAD Letter of Offer and Acceptance including UAE's request to add additional interceptors and launchers.
- Addressed Letters of Request from Qatar for the purchase of two THAAD batteries and for the integration of air defense systems.
- Continued coordination with other Middle East countries through the Gulf Cooperation Council to strengthen cooperation and determine common missile defense interests.

MDA continues its cooperative development program with Israel for several BMD systems and facilitating interoperability with the US BMDS. Work continues under existing agreements for the Arrow Weapon System, David's Sling, and the Upper Tier Interceptor programs. Congressional support and funding was provided for FY 2012-2015 for Israel's procurement of Iron Dome. MDA provided additional funding and is negotiating a new agreement with Israel to provide further funding and ensure the US has rights to Iron Dome technology, as well as to explore co-production opportunities.

In Europe, MDA successfully supported negotiations to deploy BMD interceptor missiles in Romania and Poland for EPAA. MDA continues to plan for the 2013 start of construction of the EPAA Phase 2 Aegis Ashore site in Romania.

In the Asia-Pacific region, MDA continued to expand bi-lateral relationships with Australia, Japan, and the Republic of Korea (ROK). The MDA and the ROK successfully completed the first phase of joint BMD architecture analysis. MDA and Japan completed the second amendment to the SM-3 Block IIA Cooperative Development Program; and signed the Memorandum of Implementation allowing export of Japanese developed components to be assembled into all-up-rounds in support of global COCOM demand for capability, and specifically to support EPAA Phase 3.

**Enhanced Testing**

MDA works closely with independent testers from the Military Services and the Director, Operational Test and Evaluation to follow the Integrated Master Test Plan (IMTP) to conduct a robust and cost-effective flight test program using operationally realistic conditions and Warfighter personnel to demonstrate BMD capabilities against current and emerging threats. MDA completed several significant flight tests in 2012; these tests include (but are not limited to):

- Flight Test Integrated (FTI) -01. In October 2012, MDA conducted the largest, most complex missile defense flight test ever attempted. FTI-01 integrated life-fire demonstration of an integrated air and BMD in which multiple regional missile defense system engaged targets at the same time. Aegis BMD, THAAD, and Patriot weapon systems defended against five near-simultaneous targets consisting of three ballistic missile and two air-breathing targets.
- Flight Test Standard Missile (FTM)-16 Event 2a. MDA and Navy successfully conducted a flight test resulting in the intercept by a SM-3 Block IB of a unitary ballistic missile target over the Pacific Ocean. FTM-16 Event 2a is the 22nd successful intercept in 27 flight test attempts for the Aegis BMD program. This intercept was a critical test for EPAA Phase 2 for the SM-3 Block IB which will be employed in the Aegis Ashore system in Romania in 2015.
- FTM-18. FTM-18 resulted in a lethal intercept in a complex debris environment of an SM-3 Block IB missile with the Aegis Weapon System 4.0.1 and a separating target launched from the Kauai Test Facility at the Pacific Missile Range Facility (PMRF) to the Broad Ocean Area northwest of PMRF.
- Several cooperative US/Israeli flight tests. MDA and Israel conducted several successful flight tests of the David Sling Weapon System “Stunner” missile and the Arrow Block 4 Weapon System. The Arrow Block 4 test was the final test before delivery of the Block 4 Arrow Weapons System.

**BMDS Technology Emphasis**

MDA’s Advanced Sensors Program has developed a strategy and roadmap with our academic, small business and major industrial partners that will begin demonstrating an airborne sensor tracking capability as early as the middle of this decade. We will integrate and demonstrate advanced sensors using available unmanned aero-vehicles to create a precision track our shooters can use to quickly and accurately target their interceptors. We proved the first step to this “launch on remote” capability during FTM-20 flight test by using satellite tracks to launch a SM-3 on a course to destroy a ballistic missile target. Using this same architecture we will increase the BMDS’s ability to identify lethal objects through incremental technology upgrades, increasing the discrimination capability of our sensors over time. We will test the first sensor capability in the field by 2015 on an unmanned aero-vehicle.

Our Directed Energy Program is building a foundation for the next generation high-energy laser by pursuing several promising lightweight, highly-efficient solid state laser technologies. These candidate technologies offer a path to high-efficiency, electrically-driven, compact, light-weight high-energy lasers for multiple missile defense applications.

The Airborne Laser Test Bed completed a key MDA Knowledge Point and made its final flight to Davis-Monthan Air Force Base, Arizona on February 14, 2012. The final reclamation phase for the airframe will occur in July 2013.

In mid-FY 2013, the DoD decided to restructure the SM-3 Block IIB program into a Common Kill Vehicle Technology development effort to improve GBI and SM-3 variants kill vehicle performance. This effort will develop or mature technology focusing on addressing future threat technology advancements. Additionally, the Department terminated the Precision Tracking Space System program based on performance, schedule, and cost risks associated with the development and the concurrent acquisition strategy. The 2013 BMDS SAR will address these topics in more detail.

**MDA Management**

MDA welcomed new senior leadership within the Agency late in 2012. Vice Admiral James Syring (US Navy) became the new MDA Director; Major General Samuel Greaves (US Air Force) became the new Deputy Director; Brigadier General Ole Knudson (US Army) became the new Program Executive for BMDS Programs and Integration; and Rear Admiral Randall Hendrickson (US Navy) became the new Program Executive for Aegis Programs.

MDA continues to execute the Missile Defense Agency Engineering and Support Services (MiDAESS) contractor support program. Most of the 54 Task Orders finished their last year of period of performance during 2012 and have been recompeted or are currently being recompeted. All Task Orders should have completed their recompetes and begun new period of performances in 2013. The new task orders will complete the original Indefinite Delivery/Indefinite Quantity (IDIQ) contracts.

**General**

There are no significant software-related issues with the program at this time.

Program funding and production quantities listed in this SAR are consistent with the FY 2014 President's Budget (PB). The FY 2014 PB did not reflect the enacted DoD Appropriation for FY 2013; it reflected the President's requested amounts for FY 2013.

## 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

No schedule milestones exist for BMDS.

| Memo |
| --- |
| For schedule milestones see the Unclassifed Ballistic Missile Defense System (BMDS) Accountability Report (BAR) and BAR Classified Annex dated April 24, 2013. |

## Performance

| Memo |
| --- |
| For performance characteristics see the Unclassified Ballistic Missile Defense System (BMDS) Accountability Report (BAR) and BAR Classified Annex dated April 24, 2013. |

## Track To Budget

| RDT&E | | | |
|---|---|---|---|
| APPN 0400 | BA 04 | PE 0305103C | (DoD) |
| | Project MDCS | Cyber Security Initiative | |
| APPN 0400 | BA 03 | PE 0603175C | (DoD) |
| | Project MD25 | Advanced Technology | |
| | Project MD40 | Program Wide Support | |
| APPN 0400 | BA 04 | PE 0603175C | (DoD) |
| | Project MD85 | Common Kill Vehicle | |
| APPN 0400 | BA 03 | PE 0603274C | (DoD) |
| | Project MD81 | Special Programs - MDA Technology | |
| APPN 0400 | BA 04 | PE 0603881C | (DoD) |
| | Project MC07 | BMDS Cyber Program | |
| | Project MD06 | Patriot Advanced Capability-3 (PAC-3) | |
| | Project MD07 | THAAD | |
| | Project MD40 | Program Wide Support | |
| | Project MT07 | THAAD Test | |
| APPN 0400 | BA 04 | PE 0603882C | (DoD) |
| | Project MC08 | BMDS Cyber Program | |
| | Project MD08 | Ground Based Midcourse | |
| | Project MD40 | Program Wide Support | |
| | Project MT08 | Ground Based Midcourse Test | |
| | Project MX08 | Ground Based Midcourse Development Support | |
| APPN 0400 | BA 04 | PE 0603884C | (DoD) |

| | | | |
|---|---|---|---|
| | Project MC11 | BMDS Cyber Program | |
| | Project MD11 | BMDS Radars | |
| | Project MD40 | Program Wide Support | |
| | Project MT11 | BMDS Radars Test | |
| APPN 0400 | BA 04 | PE 0603888C | (DoD) |
| | Project MD05 | Targets Program | |
| APPN 0400 | BA 04 | PE 0603890C | (DoD) |
| | Project MC30 | BMDS Cyber Program | |
| | Project MD24 | Systems Engineering & Integration | |
| | Project MD28 | Intelligence & Security | |
| | Project MD30 | BMD Information Management Systems | |
| | Project MD31 | Modeling & Simulation | |
| | Project MD32 | Quality, Safety, and Mission Assurance | |
| | Project MD40 | Program Wide Support | |
| | Project MT23 | Enabling - Test | |
| APPN 0400 | BA 04 | PE 0603891C | (DoD) |
| | Project MD27 | Special Programs | |
| APPN 0400 | BA 04 | PE 0603892C | (DoD) |
| | Project MC09 | BMDS Cyber Program | |
| | Project MD09 | Aegis BMD | |
| | Project MD40 | Program Wide Support | |
| | Project MT09 | Aegis BMD Test | |
| | Project MX09 | Aegis BMD Development Support | |
| APPN 0400 | BA 04 | PE 0603893C | (DoD) |
| | Project MD12 | Space Tracking & Surveillance System (STSS) | |
| | Project MD40 | Program Wide Support | |
| APPN 0400 | BA 04 | PE 0603895C | (DoD) |
| | Project MD33 | MD Space Exp Center | |

| | | | | |
|---|---|---|---|---|
| | | (MDSEC) | | |
| | Project MD40 | Program Wide Support | | |
| APPN 0400 | BA 04 | PE 0603896C | (DoD) | |
| | Project MC01 | BMDS Cyber Program | | |
| | Project MD01 | Command & Control, Battle Management, Communications (C2BMC) | | |
| | Project MD40 | Program Wide Support | | |
| | Project MT01 | C2BMC Test | | |
| | Project MX01 | C2BMC Development Support | | |
| APPN 0400 | BA 04 | PE 0603898C | (DoD) | |
| | Project MD03 | Joint Warfighter Support | | |
| | Project MD40 | Program Wide Support | | |
| APPN 0400 | BA 03 | PE 0603901C | (DoD) | |
| | Project MD40 | Program Wide Support | | (Sunk) |
| | Project MD69 | Directed Energy Research | | (Sunk) |
| APPN 0400 | BA 03 | PE 0603902C | (DoD) | |
| | Project MD40 | Program-Wide Support | | |
| | Project MD70 | Standard Missile-3 Block IIB (SM-3 IIB) | | |
| APPN 0400 | BA 04 | PE 0603904C | (DoD) | |
| | Project MC22 | BMDS Cyber Program | | |
| | Project MD22 | Missile Defense Integration & Operations Center (MDIOC) | | |
| | Project MD40 | Program Wide Support | | |
| APPN 0400 | BA 04 | PE 0603906C | (DoD) | |
| | Project MD35 | Regarding Trench | | |
| APPN 0400 | BA 04 | PE 0603907C | (DoD) | |
| | Project MD40 | Program Wide Support | | |
| | Project MD46 | Sea Based X-Band (SBX) Sustainment | | |

| | | | |
|---|---|---|---|
| | Project MX46 | Sea Based X-Band Radar Development Support | |
| APPN 0400 | BA 04 | PE 0603913C | (DoD) |
| | Project MD20 | Israeli Upper Tier | |
| | Project MD26 | Israeli ARROW Program | |
| | Project MD34 | Short Range Ballistic Missile Defense (SRBMD) | |
| APPN 0400 | BA 04 | PE 0603914C | (DoD) |
| | Project MC04 | BMDS Cyber Program | |
| | Project MD40 | Program Wide Support | |
| | Project MT04 | BMDS Test Program | |
| | Project MX04 | BMD Test Development Support | |
| APPN 0400 | BA 04 | PE 0603915C | (DoD) |
| | Project MD40 | Program Wide Support | |
| | Project MT05 | BMDS Targets Program | |
| APPN 0400 | BA 04 | PE 0604880C | (DoD) |
| | Project MC68 | Aegis Ashore | |
| | Project MD40 | Program-Wide Support | |
| | Project MD68 | Aegis Ashore | |
| | Project MT68 | Aegis Ashore Test | |
| APPN 0400 | BA 04 | PE 0604881C | (DoD) |
| | Project MD09 | SM-3 Block IIA Co-Development | |
| | Project MD40 | Program-Wide Support | |
| | Project MT09 | SM-3 Block IIA Co-Development Test | |
| APPN 0400 | BA 04 | PE 0604883C | (DoD) |
| | Project MD10 | Precision Tracking Space Sensor (PTSS) | |
| | Project MD40 | Program Wide Support | |
| APPN 0400 | BA 04 | PE 0604886C | (DoD) |

| | | | | |
|---|---|---|---|---|
| | Project MD40 | Program Wide Support | | (Sunk) |
| | Project MD95 | Advanced Remote Sensor Technology | | (Sunk) |
| APPN 0400 | BA 04 | PE 0605502C | (DoD) | |
| | Project MD45 | Small Business Innovative Research | | |
| APPN 0400 | BA 06 | PE 0901585C | (DoD) | |
| | Project MD42 | Pentagon Reservation Maintenance Reserve Fund (PRMRF) | | (Sunk) |
| APPN 0400 | BA 04 | PE 0901598C | (DoD) | |
| | Project MD38 | Management Headquarters | | |
| **Procurement** | | | | |
| APPN 0300 | BA 01 | PE 0208866C | (DoD) | |
| | ICN MD07 | THAAD | | |
| | ICN MD08 | Ground Based Midcourse | | |
| | ICN MD09 | Aegis BMD | | |
| | ICN MD11 | BMDS AN/TPY-2 Radars | | |
| | ICN MD73 | Aegis Ashore Phase III | | |
| | ICN MD77 | Radar Spares | | |
| | ICN MD78 | Aegis Spares | | |
| | ICN MD83 | Iron Dome | | |
| **MILCON** | | | | |
| APPN 0500 | | PE 0603882C | (DoD) | |
| | Project MD08 | Ground Based Midcourse | | |
| APPN 0500 | | PE 0603884C | (DoD) | |
| | Project MD11 | BMDS Radars | | |
| APPN 0500 | | PE 0603888C | (DoD) | |

| | | | |
|---|---|---|---|
| | Project MD04 | Test Program | |
| APPN 0500 | | PE 0604880C | (DoD) |
| | Project MD68 | Aegis Ashore | |

## Cost and Funding

## Cost Summary

**Total Acquisition Cost and Quantity**

| | BY $M | | | BY2002 $M | TY $M | | |
|---|---|---|---|---|---|---|---|
| Appropriation | SAR Baseline Plan Est | Current APB Objective/Threshold | | Current Estimate | SAR Baseline Plan Est | Current APB Objective | Current Estimate |
| RDT&E | 44740.1 | -- | -- | 100702.2 | 47217.1 | -- | 118262.8 |
| Procurement | 0.0 | -- | -- | 9923.1 | 0.0 | -- | 13009.5 |
| Flyaway | 0.0 | -- | -- | 9923.1 | 0.0 | -- | 13009.5 |
| Recurring | 0.0 | -- | -- | 9923.1 | 0.0 | -- | 13009.5 |
| Non Recurring | 0.0 | -- | -- | 0.0 | 0.0 | -- | 0.0 |
| Support | 0.0 | -- | -- | 0.0 | 0.0 | -- | 0.0 |
| Other Support | 0.0 | -- | -- | 0.0 | 0.0 | -- | 0.0 |
| Initial Spares | 0.0 | -- | -- | 0.0 | 0.0 | -- | 0.0 |
| MILCON | 0.0 | -- | -- | 676.2 | 0.0 | -- | 874.4 |
| Acq O&M | 0.0 | -- | -- | 0.0 | 0.0 | -- | 0.0 |
| Total | 44740.1 | -- | -- | 111301.5 | 47217.1 | -- | 132146.7 |

For Major Defense Acquisition Programs, DoD requires an Acquisition Program Baseline (APB) at program initiation. The APB establishes cost, quantity, schedule, and performance parameters that form the basis for unit cost reporting under 10 U.S.C. Sec. 2433. As a single integrated system of systems, the BMDS does not have an APB. In response to other statutory requirements, however, Missile Defense Agency provides the Congress with an annual BMDS Accountability Report (BAR), which includes schedule, technical, test, operational capacity, resource, and contract baselines that guide development of ballistic missile defense capabilities. The BAR includes unit cost baselines for key assets (e.g. Ground-Based Interceptors and AN/TPY-2 radars) comprising the BMDS.

| Quantity | SAR Baseline Plan Est | Current APB | Current Estimate |
|---|---|---|---|
| RDT&E | 0 | 0 | 0 |
| Procurement | 0 | 0 | 0 |
| Total | 0 | 0 | 0 |

Quantities of Key BMDS Assets (grouped by appropriation, total buys from FY 2002-2018)

| Program | Component | RDT&E Funded | Procurement Funded |
|---|---|---|---|
| THAAD | Batteries | 2 | 4 |
| | Interceptors | 50 | 310 |
| Aegis BMD | SM-3 Block I/IA Interceptors | 95 | 55 |
| | SM-3 Block IB Interceptors | 25 | 400 |
| GMD | GBIs | 58 | 6 |
| Sensors | AN/TPY-2 Radars | 7 | 4 |

## Cost and Funding

## Funding Summary

**Appropriation and Quantity Summary**
**FY2014 President's Budget / December 2012 SAR (TY$ M)**

| Appropriation | Prior | FY2013 | FY2014 | FY2015 | FY2016 | FY2017 | FY2018 | To Complete | Total |
|---|---|---|---|---|---|---|---|---|---|
| RDT&E | 84750.1 | 6224.7 | 5640.1 | 5808.8 | 5477.5 | 5197.3 | 5164.3 | 0.0 | 118262.8 |
| Procurement | 3460.3 | 1077.8 | 1575.5 | 1728.9 | 1491.8 | 1785.2 | 1890.0 | 0.0 | 13009.5 |
| MILCON | 268.9 | 188.3 | 212.1 | 11.7 | 172.4 | 10.4 | 10.6 | 0.0 | 874.4 |
| Acq O&M | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| PB 2014 Total | 88479.3 | 7490.8 | 7427.7 | 7549.4 | 7141.7 | 6992.9 | 7064.9 | 0.0 | 132146.7 |
| PB 2013 Total | 88457.2 | 7490.8 | 7360.8 | 7860.5 | 7596.9 | 7439.9 | 0.0 | 0.0 | 126206.1 |
| Delta | 22.1 | 0.0 | 66.9 | -311.1 | -455.2 | -447.0 | 7064.9 | 0.0 | 5940.6 |

Program funding and production quantities listed in this SAR are consistent with the FY 2014 President's Budget (PB). The FY 2014 PB did not reflect the enacted DoD appropriation for FY 2013, nor sequestration; it reflected the President's requested amounts for FY 2013.

| Quantity | Undistributed | Prior | FY2013 | FY2014 | FY2015 | FY2016 | FY2017 | FY2018 | To Complete | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Development | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Production | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PB 2014 Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PB 2013 Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Delta | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## Cost and Funding

## Annual Funding By Appropriation

**Annual Funding TY$**
**0400 | RDT&E | Research, Development, Test, and Evaluation, Defense-Wide**

| Fiscal Year | Quantity | End Item Recurring Flyaway TY $M | Non End Item Recurring Flyaway TY $M | Non Recurring Flyaway TY $M | Total Flyaway TY $M | Total Support TY $M | Total Program TY $M |
|---|---|---|---|---|---|---|---|
| 2002 | -- | -- | -- | -- | -- | -- | 6618.8 |
| 2003 | -- | -- | -- | -- | -- | -- | 6446.3 |
| 2004 | -- | -- | -- | -- | -- | -- | 7566.8 |
| 2005 | -- | -- | -- | -- | -- | -- | 8826.7 |
| 2006 | -- | -- | -- | -- | -- | -- | 7690.2 |
| 2007 | -- | -- | -- | -- | -- | -- | 9381.3 |
| 2008 | -- | -- | -- | -- | -- | -- | 8655.3 |
| 2009 | -- | -- | -- | -- | -- | -- | 8415.3 |
| 2010 | -- | -- | -- | -- | -- | -- | 6947.3 |
| 2011 | -- | -- | -- | -- | -- | -- | 7406.4 |
| 2012 | -- | -- | -- | -- | -- | -- | 6795.7 |
| 2013 | -- | -- | -- | -- | -- | -- | 6224.7 |
| 2014 | -- | -- | -- | -- | -- | -- | 5640.1 |
| 2015 | -- | -- | -- | -- | -- | -- | 5808.8 |
| 2016 | -- | -- | -- | -- | -- | -- | 5477.5 |
| 2017 | -- | -- | -- | -- | -- | -- | 5197.3 |
| 2018 | -- | -- | -- | -- | -- | -- | 5164.3 |
| **Subtotal** | **--** | **--** | **--** | **--** | **--** | **--** | **118262.8** |

**Annual Funding BY$**
**0400 | RDT&E | Research, Development, Test, and Evaluation, Defense-Wide**

| Fiscal Year | Quantity | End Item Recurring Flyaway BY 2002 $M | Non End Item Recurring Flyaway BY 2002 $M | Non Recurring Flyaway BY 2002 $M | Total Flyaway BY 2002 $M | Total Support BY 2002 $M | Total Program BY 2002 $M |
|---|---|---|---|---|---|---|---|
| 2002 | -- | -- | -- | -- | -- | -- | 6567.4 |
| 2003 | -- | -- | -- | -- | -- | -- | 6295.7 |
| 2004 | -- | -- | -- | -- | -- | -- | 7214.0 |
| 2005 | -- | -- | -- | -- | -- | -- | 8158.9 |
| 2006 | -- | -- | -- | -- | -- | -- | 6909.9 |
| 2007 | -- | -- | -- | -- | -- | -- | 8230.8 |
| 2008 | -- | -- | -- | -- | -- | -- | 7453.8 |
| 2009 | -- | -- | -- | -- | -- | -- | 7157.3 |
| 2010 | -- | -- | -- | -- | -- | -- | 5818.0 |
| 2011 | -- | -- | -- | -- | -- | -- | 6086.3 |
| 2012 | -- | -- | -- | -- | -- | -- | 5477.6 |
| 2013 | -- | -- | -- | -- | -- | -- | 4919.8 |
| 2014 | -- | -- | -- | -- | -- | -- | 4374.6 |
| 2015 | -- | -- | -- | -- | -- | -- | 4421.5 |
| 2016 | -- | -- | -- | -- | -- | -- | 4091.6 |
| 2017 | -- | -- | -- | -- | -- | -- | 3809.9 |
| 2018 | -- | -- | -- | -- | -- | -- | 3715.1 |
| **Subtotal** | **--** | **--** | **--** | **--** | **--** | **--** | **100702.2** |

**Annual Funding TY$**
**0300 | Procurement | Procurement, Defense-Wide**

| Fiscal Year | Quantity | End Item Recurring Flyaway TY $M | Non End Item Recurring Flyaway TY $M | Non Recurring Flyaway TY $M | Total Flyaway TY $M | Total Support TY $M | Total Program TY $M |
|---|---|---|---|---|---|---|---|
| 2009 | -- | -- | 206.6 | -- | 206.6 | -- | 206.6 |
| 2010 | -- | -- | 835.7 | -- | 835.7 | -- | 835.7 |
| 2011 | -- | -- | 1070.8 | -- | 1070.8 | -- | 1070.8 |
| 2012 | -- | -- | 1347.2 | -- | 1347.2 | -- | 1347.2 |
| 2013 | -- | -- | 1077.8 | -- | 1077.8 | -- | 1077.8 |
| 2014 | -- | -- | 1575.5 | -- | 1575.5 | -- | 1575.5 |
| 2015 | -- | -- | 1728.9 | -- | 1728.9 | -- | 1728.9 |
| 2016 | -- | -- | 1491.8 | -- | 1491.8 | -- | 1491.8 |
| 2017 | -- | -- | 1785.2 | -- | 1785.2 | -- | 1785.2 |
| 2018 | -- | -- | 1890.0 | -- | 1890.0 | -- | 1890.0 |
| **Subtotal** | **--** | **--** | **13009.5** | **--** | **13009.5** | **--** | **13009.5** |

**Annual Funding BY$**
**0300 | Procurement | Procurement, Defense-Wide**

| Fiscal Year | Quantity | End Item Recurring Flyaway BY 2002 $M | Non End Item Recurring Flyaway BY 2002 $M | Non Recurring Flyaway BY 2002 $M | Total Flyaway BY 2002 $M | Total Support BY 2002 $M | Total Program BY 2002 $M |
|---|---|---|---|---|---|---|---|
| 2009 | -- | -- | 174.1 | -- | 174.1 | -- | 174.1 |
| 2010 | -- | -- | 693.5 | -- | 693.5 | -- | 693.5 |
| 2011 | -- | -- | 871.9 | -- | 871.9 | -- | 871.9 |
| 2012 | -- | -- | 1075.7 | -- | 1075.7 | -- | 1075.7 |
| 2013 | -- | -- | 844.2 | -- | 844.2 | -- | 844.2 |
| 2014 | -- | -- | 1211.0 | -- | 1211.0 | -- | 1211.0 |
| 2015 | -- | -- | 1304.1 | -- | 1304.1 | -- | 1304.1 |
| 2016 | -- | -- | 1104.3 | -- | 1104.3 | -- | 1104.3 |
| 2017 | -- | -- | 1296.9 | -- | 1296.9 | -- | 1296.9 |
| 2018 | -- | -- | 1347.4 | -- | 1347.4 | -- | 1347.4 |
| **Subtotal** | **--** | **--** | **9923.1** | **--** | **9923.1** | **--** | **9923.1** |

**Annual Funding TY$**
**0500 | MILCON | Military Construction, Defense-Wide**

| Fiscal Year | Total Program TY $M |
|---|---|
| 2002 | 8.2 |
| 2003 | 24.9 |
| 2004 | 24.4 |
| 2005 | 22.3 |
| 2006 | 4.9 |
| 2007 | -- |
| 2008 | -- |
| 2009 | 18.3 |
| 2010 | 98.7 |
| 2011 | -- |
| 2012 | 67.2 |
| 2013 | 188.3 |
| 2014 | 212.1 |
| 2015 | 11.7 |
| 2016 | 172.4 |
| 2017 | 10.4 |
| 2018 | 10.6 |
| **Subtotal** | **874.4** |

**Annual Funding BY$**
**0500 | MILCON | Military Construction, Defense-Wide**

| Fiscal Year | Total Program BY 2002 $M |
|---|---|
| 2002 | 8.0 |
| 2003 | 23.7 |
| 2004 | 22.6 |
| 2005 | 20.1 |
| 2006 | 4.3 |
| 2007 | -- |
| 2008 | -- |
| 2009 | 15.2 |
| 2010 | 79.8 |
| 2011 | -- |
| 2012 | 52.3 |
| 2013 | 143.7 |
| 2014 | 158.8 |
| 2015 | 8.6 |
| 2016 | 124.3 |
| 2017 | 7.4 |
| 2018 | 7.4 |
| **Subtotal** | **676.2** |

## Low Rate Initial Production

There is no Low Rate Initial Production for this program.

## Foreign Military Sales

| Country | Date of Sale | Quantity | Total Cost $M | Memo |
|---|---|---|---|---|
| Japan | 11/5/2012 | 0 | 2.0 | FMS Case JA-P-FUE: Standard Missile-3 (SM-3) Cooperative Development (SCD) Insensitive Munitions Testing. No major deliveries. |
| Japan | 9/27/2012 | 0 | 2.0 | FMS Case JA-P-FUD: SCD Ground Flight Testing. No major deliveries. |
| United Arab Emirates | 12/25/2011 | 2 | 3499.0 | FMS Case AE-B-UAF, Two THAAD Batteries, consisting of 96 Interceptors, 2 AN/TPY-2 Radars, 9 Launchers, 8 Missile Round Pallets, 7 MIDS Terminals, 4 AMMPS, 10 PR4G TRC-9105 Radios, 4 PR4G TRC-9301C Radios, various tactical vehicles, trucks, training aids & devices, spare parts, training, government and contractor technical assistance, books & publications, and repair & return. |
| United Arab Emirates | 4/30/2010 | 0 | 13.8 | FMS Case AE-B-UAE, Technical Assistance & Site Survey. Deliveries: no major deliveries. |
| Japan | 3/22/2010 | 2 | 20.0 | FMS Case JA-P-FON: SM-3 BLK IA Spares and Return, Repair, Re-Shipment (RRR). Deliveries: SM-3 Standard Kinetic Warhead (KW); MK72 Rocket Booster Motor. |
| Japan | 1/15/2010 | 0 | 8.0 | FMS Case JA-P-FPX: Japan Hardware in the Loop (HWIL). No major deliveries. |
| Japan | 11/9/2008 | 0 | 21.0 | FMS Case JA-P-CAM: Japan Computer Program Test Site JABMD Upgrade. No major deliveries. |
| Japan | 9/11/2008 | 0 | 12.0 | FMS Case JA-P-FQV: SM-3 BLK IA Spares. No major deliveries. |
| Japan | 8/19/2008 | 0 | 59.0 | FMS Case JA-P-CAN: JS KIRISHIMA (DDG 174) Firing Event. Deliveries: Execution of Firing Event; no major deliveries. |
| Japan | 3/3/2008 | 9 | 202.0 | FMS Case JA-P-LWA: Japan Aegis BMD Block 2004 Upgrade of JS KIRISHIMA (DDG 174). Deliveries: 1 JBMD BLK 04 Computer Program, Peripherals, and SM-3 BLK IA Missiles. |
| Japan | 1/18/2008 | 0 | 53.0 | FMS Case JA-P-CAE: JS MYOKO (DDG 175) Firing Event. Deliveries: Execution of firing event; no major deliveries. |
| Japan | 1/3/2008 | 0 | 3.0 | FMS Case JA-P-FLU: Defining the Interface between Japan Aerospace Defense Ground Environment (JADGE) and Japan Aegis BMD. No major deliveries. |
| Netherlands | 8/31/2006 | 0 | 7.0 | FMS Case NE-P-GLK: Participation in ABMD Test Events and Trade Studies. Deliveries: No major deliveries. |

| | | | | |
|---|---|---|---|---|
| Japan | 8/21/2006 | 9 | 209.0 | FMS Case JA-P-LVK: Japan Aegis BMD Block 2004 Upgrade of JS MYOKO (DDG 175). Deliveries: 1 JBMD BLK 04 Computer Program, Peripherals, and SM-3 BLK IA Missiles. |
| Japan | 8/21/2006 | 0 | 56.0 | FMS Case JA-P-BIR: JS CHOKAI (DDG 176) Firing Event. No major deliveries. |
| Japan | 10/12/2005 | 9 | 167.0 | FMS Case JA-P-LUX: Japan Aegis BMD Block 2004 Upgrade of JS CHOKAI (DDG 176). Deliveries: 1 JBMD BLK 04 Computer Program, Peripherals, and SM-3 BLK IA Missiles. |
| Japan | 9/9/2005 | 0 | 55.0 | FMS Case JA-P-BIN: JS KONGO (DDG 173) Firing Event. No major deliveries. |
| Japan | 8/17/2004 | 9 | 309.0 | FMS Case JA-P-LUH, Japan Aegis BMD Block 2004 Upgrade of JS KONGO (DDG 173). Deliveries: 1 JBMD BLK 04 Computer Program, Peripherals, and SM-3 BLK IA Missiles. |
| Japan | 8/13/2004 | 0 | 21.0 | FMS Case JA-P-BGQ: Joint Control Test Vehicle (JCTV-1)/Joint Flight Test Mission. No major deliveries. |
| Japan | 11/19/2002 | 0 | 4.0 | FMS Case JA-P-BEY: Quantum Well Infrared Photodetector Integration and Test. No major deliveries. |
| Japan | 8/30/2001 | 0 | 6.0 | FMS Case JA-P-BDZ: Navy Theater Wide (NTW) Captive Carry Test. No major deliveries. |
| Netherlands | 9/28/2000 | 0 | 4.0 | FMS Case NE-P-GJS: Theater Ballistic Missile Defense Concept Validation Phase. No major deliveries. |

## Nuclear Cost

None

## Unit Cost

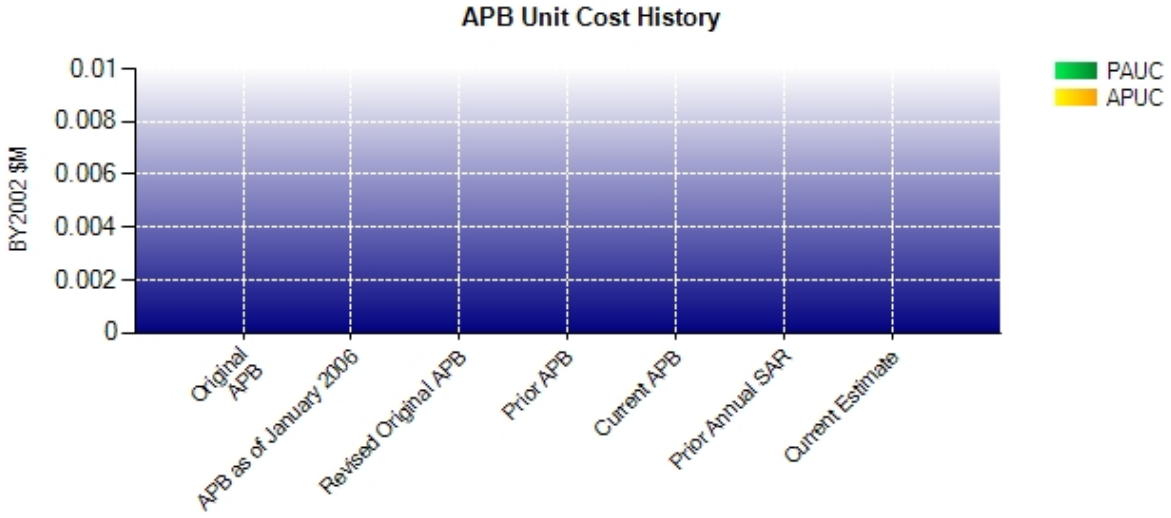
## Unit Cost Report

| Unit Cost | BY2002 $M Current UCR Baseline | BY2002 $M Current Estimate (DEC 2012 SAR) | BY % Change |
|---|---|---|---|
| Program Acquisition Unit Cost (PAUC) | | | |
| Cost | -- | 111301.5 | |
| Quantity | -- | 0 | |
| Unit Cost | -- | -- | -- |
| Average Procurement Unit Cost (APUC) | | | |
| Cost | -- | 9923.1 | |
| Quantity | -- | 0 | |
| Unit Cost | -- | -- | -- |

| Unit Cost | BY2002 $M Original UCR Baseline | BY2002 $M Current Estimate (DEC 2012 SAR) | BY % Change |
|---|---|---|---|
| Program Acquisition Unit Cost (PAUC) | | | |
| Cost | -- | 111301.5 | |
| Quantity | -- | 0 | |
| Unit Cost | -- | -- | -- |
| Average Procurement Unit Cost (APUC) | | | |
| Cost | -- | 9923.1 | |
| Quantity | -- | 0 | |
| Unit Cost | -- | -- | -- |

For Major Defense Acquisition Programs, DoD requires an Acquisition Program Baseline (APB) at program initiation. The APB establishes cost, quantity, schedule, and performance parameters that form the basis for unit cost reporting under 10 U.S.C. Sec. 2433. As a single integrated system of systems, the BMDS does not have an APB. In response to other statutory requirements, however, Missile Defense Agency provides the Congress with an annual BMDS Accountability Report (BAR), which includes schedule, technical, test, operational capacity, resource, and contract baselines that guide development of ballistic missile defense capabilities. The BAR includes unit cost baselines for key assets (e.g. Ground-Based Interceptors and AN/TPY-2 radars) comprising the BMDS.

## Unit Cost History




| | | BY2002 $M | | TY $M | |
|---|---|---|---|---|---|
| | Date | PAUC | APUC | PAUC | APUC |
| **Original APB** | N/A | N/A | N/A | N/A | 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** | N/A | N/A | N/A | N/A | N/A |
| **Prior Annual SAR** | DEC 2011 | N/A | N/A | N/A | N/A |
| **Current Estimate** | DEC 2012 | N/A | N/A | N/A | N/A |

### SAR Unit Cost History

### Current SAR Baseline to Current Estimate (TY $M)

| Initial PAUC Plan Est | Changes | | | | | | | | PAUC Current Est |
|---|---|---|---|---|---|---|---|---|---|
| | Econ | Qty | Sch | Eng | Est | Oth | Spt | Total | |
| 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

## Current SAR Baseline to Current Estimate (TY $M)

| Initial APUC Plan Est | Changes | | | | | | | | APUC Current Est |
|---|---|---|---|---|---|---|---|---|---|
| | Econ | Qty | Sch | Eng | Est | Oth | Spt | Total | |
| 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

## SAR Baseline History

| Item/Event | SAR Planning Estimate (PE) | SAR Development Estimate (DE) | SAR Production Estimate (PdE) | Current Estimate |
|---|---|---|---|---|
| Milestone A | N/A | N/A | N/A | N/A |
| Milestone B | N/A | N/A | N/A | N/A |
| Milestone C | N/A | N/A | N/A | N/A |
| IOC | N/A | N/A | N/A | N/A |
| Total Cost (TY $M) | 47217.1 | N/A | N/A | 132146.7 |
| Total Quantity | 0 | N/A | N/A | 0 |
| Prog. Acq. Unit Cost (PAUC) | N/A | N/A | N/A | N/A |

## Cost Variance

| Summary Then Year $M | | | | |
|---|---|---|---|---|
| | RDT&E | Proc | MILCON | Total |
| SAR Baseline (Plan Est) | 47217.1 | -- | -- | 47217.1 |
| Previous Changes | | | | |
| Economic | +1622.6 | +132.2 | -14.1 | +1740.7 |
| Quantity | -- | -- | -- | -- |
| Schedule | -1684.3 | -124.7 | -- | -1809.0 |
| Engineering | +50127.5 | -1296.1 | -31.8 | +48799.6 |
| Estimating | -8993.3 | -1174.5 | +644.6 | -9523.2 |
| Other | -- | -- | -- | -- |
| Support | -- | -- | -- | -- |
| Subtotal | +41072.5 | -2463.1 | +598.7 | +39208.1 |
| Current Changes | | | | |
| Economic | +299.5 | +74.3 | +8.7 | +382.5 |
| Quantity | -- | -- | -- | -- |
| Schedule | -- | -- | -- | -- |
| Engineering | -1874.3 | -- | -- | -1874.3 |
| Estimating | -93.3 | +263.1 | +197.7 | +367.5 |
| Other | -- | -- | -- | -- |
| Support | -- | -- | -- | -- |
| Subtotal | -1668.1 | +337.4 | +206.4 | -1124.3 |
| Adjustments | +31641.3 | +15135.2 | +69.3 | +46845.8 |
| Total Changes | +71045.7 | +13009.5 | +874.4 | +84929.6 |
| CE - Cost Variance | 118262.8 | 13009.5 | 874.4 | 132146.7 |
| CE - Cost & Funding | 118262.8 | 13009.5 | 874.4 | 132146.7 |

| Summary Base Year 2002 $M | | | | |
|---|---|---|---|---|
| | RDT&E | Proc | MILCON | Total |
| SAR Baseline (Plan Est) | 44740.1 | -- | -- | 44740.1 |
| Previous Changes | | | | |
| Economic | -- | -- | -- | -- |
| Quantity | -- | -- | -- | -- |
| Schedule | -1417.0 | -91.5 | -- | -1508.5 |
| Engineering | +42340.5 | -977.2 | -24.3 | +41339.0 |
| Estimating | -7594.8 | -905.0 | +501.0 | -7998.8 |
| Other | -- | -- | -- | -- |
| Support | -- | -- | -- | -- |
| Subtotal | +33328.7 | -1973.7 | +476.7 | +31831.7 |
| Current Changes | | | | |
| Economic | -- | -- | -- | -- |
| Quantity | -- | -- | -- | -- |
| Schedule | -- | -- | -- | -- |
| Engineering | -1409.9 | -- | -- | -1409.9 |
| Estimating | -49.6 | +177.9 | +147.5 | +275.8 |
| Other | -- | -- | -- | -- |
| Support | -- | -- | -- | -- |
| Subtotal | -1459.5 | +177.9 | +147.5 | -1134.1 |
| Adjustments | +24092.9 | +11718.9 | +52.0 | +35863.8 |
| Total Changes | +55962.1 | +9923.1 | +676.2 | +66561.4 |
| CE - Cost Variance | 100702.2 | 9923.1 | 676.2 | 111301.5 |
| CE - Cost & Funding | 100702.2 | 9923.1 | 676.2 | 111301.5 |

Previous Estimate: December 2011

**Cost Variance Memo**

| | Then-Year $M | | | | Base-Year $M | | | |
|---|---|---|---|---|---|---|---|---|
| **Adjustments** | **RDT&E** | **PROC** | **MILCON** | **TOTAL** | **RDT&E** | **PROC** | **MILCON** | **TOTAL** |
| Dec 2009 SAR | 14,302.0 | 9,520.3 | 38.1 | 23,860.4 | 11,204.2 | 7,582.5 | 29.4 | 18,816.1 |
| Dec 2010 SAR | 6,279.4 | 2,191.1 | 10.1 | 8,480.6 | 4,805.2 | 1,662.4 | 7.6 | 6,475.2 |
| Dec 2011 SAR | 5,895.6 | 1,533.8 | 10.5 | 7,439.9 | 4,368.4 | 1,126.6 | 7.6 | 5,502.6 |
| Dec 2012 SAR | 5,164.3 | 1,890.0 | 10.6 | 7,064.9 | 3,715.1 | 1,347.4 | 7.4 | 5,069.9 |
| **Total** | **31,641.3** | **15,135.2** | **69.3** | **46,845.8** | **24,092.9** | **11,718.9** | **52.0** | **35,863.8** |

The December 2009 SAR adjustments reflected the addition of the FY 2014-15 funding for RDT&E and MILCON. It also reflected the initial reporting of Procurement for years FY 2009-15.

The December 2010 and 2011 SAR adjustments reflected the addition of the FY 2016 and 2017 funding for RDT&E, Procurement, and MILCON.

The December 2012 SAR adjustments reflect the addition of the FY 2018 funding for RDT&E, Procurement, and MILCON; previous SAR limited funding through FY 2017.

| RDT&E | $M | |
|---|---|---|
| **Current Change Explanations** | **Base Year** | **Then Year** |
| Revised escalation indices. (Economic) | N/A | +299.5 |
| Adjustment for current and prior escalation. (Estimating) | -60.9 | -75.6 |
| Aegis Standard Missile (SM-3) Block IIB program restructured (Engineering) | -1264.7 | -1679.0 |
| Precision Tracking Space Sensor (PTSS) program cancelled (Engineering) | -882.0 | -1171.7 |
| Increase for Advanced Technology / Risk Reduction (Engineering) | +365.4 | +489.0 |
| Common Kill Vehicle Program established (Engineering) | +211.6 | +280.6 |
| Increase to implement Ground-Based Midcourse Homeland Hedge Strategy (Engineering) | +159.8 | +206.8 |
| Increase for Sea Based X-band (SBX) radar Limited Test Support Status (Estimating) | +109.8 | +145.7 |
| Adjustments to realign to higher priorities (Estimating) | -98.5 | -163.4 |
| RDT&E Subtotal | -1459.5 | -1668.1 |

| Procurement | $M | |
|---|---|---|
| **Current Change Explanations** | **Base Year** | **Then Year** |
| Revised escalation indices. (Economic) | N/A | +74.3 |
| Adjustment for current and prior escalation. (Estimating) | -13.8 | -17.4 |
| Aegis SM-3 Block IB missile ramp adjustment (Estimating) | -362.4 | -466.0 |
| FY 2012 reduction to Terminal High Altitude Area Defense (THAAD) interceptors to align with production capacity. (Estimating) | -83.4 | -104.5 |
| Increase for Iron Dome missile defense system (Estimating) | +301.9 | +396.3 |
| Increase to implement Ground-Based Midcourse Homeland Hedge Strategy (additional Ground-Based Interceptors) (Estimating) | +222.2 | +303.0 |
| Increase for AN/TPY-2 radar spares (Estimating) | +120.0 | +159.6 |
| Revised Cost estimates and other adjustments (Estimating) | -6.6 | -7.9 |
| Procurement Subtotal | +177.9 | +337.4 |

| MILCON | $M | |
|---|---|---|
| **Current Change Explanations** | **Base Year** | **Then Year** |
| Revised escalation indices. (Economic) | N/A | +8.7 |
| Adjustment for current and prior escalation. (Estimating) | -3.8 | -4.9 |
| Refined estimates for Aegis Ashore sites in Romania and Poland (Estimating) | +76.6 | +102.9 |
| Increase to implement Ground-Based Midcourse Homeland Hedge Strategy (Missile Field #1 refurbishment at Fort Greely, AK) (Estimating) | +61.4 | +82.0 |
| Included funds for AN/TPY-2 radar deployment (Estimating) | +11.2 | +15.0 |
| Refined cost estimates and adjustments to other efforts (Estimating) | +2.1 | +2.7 |
| MILCON Subtotal | +147.5 | +206.4 |

## Contracts

**General Contract Memo**

The HQ0276-08-C-0001 effort is complete; although it was not reported as being 90% complete in 2011, the final contract performance report was submitted for December 2011 data and there was no activity on this contract in 2012. The Raytheon Follow-On IB Development effort continues on HQ0275-11-C-0002, however this contract did not make the list of BMDS' 'top 6' contracts to be reported in the December 2012 SAR, and is therefore not reported below.

**Appropriation: RDT&E**

| | |
|---|---|
| Contract Name | **Targets and Countermeasures Prime Contract** |
| Contractor | Lockheed Martin Corporation Space Systems Company |
| Contractor Location | Huntsville, AL 35806 |
| Contract Number, Type | HQ0006-04-D-0006, CPAF |
| Award Date | December 09, 2003 |
| Definitization Date | April 19, 2004 |

| Initial Contract Price ($M) | | | Current Contract Price ($M) | | | Estimated Price At Completion ($M) | |
|---|---|---|---|---|---|---|---|
| Target | Ceiling | Qty | Target | Ceiling | Qty | Contractor | Program Manager |
| 210.7 | N/A | N/A | 2367.2 | N/A | N/A | 2217.4 | 2236.0 |

| Variance | Cost Variance | Schedule Variance |
|---|---|---|
| Cumulative Variances To Date (2/28/2013) | -76.0 | -34.7 |
| Previous Cumulative Variances | -64.5 | -15.0 |
| Net Change | -11.5 | -19.7 |

**Cost And Schedule Variance Explanations**

The unfavorable net change in the cost variance is due to Delivery Order 22 Enhanced Medium-Range Ballistic Missile (eMRBM) efforts. Cost variance is due to the following: 1) Support Equipment area overruns caused by unplanned rework in Carriage Assembly due to changes for Iron Bird testing and unplanned Vehicle Restraint work; 2) System Engineering & Integrations overruns caused by unplanned work in Final Design Loads Analysis, Failure Mode Effects Analysis releases, Critical Design Review closeout actions and documents, Statement of Work Changes, and spec design changes; 3) Non Recurring Launch Vehicle overruns caused by unplanned Iron Bird rework; and 4) Avionics Control Module overruns due to unplanned effort on the Cold Gas Attitude Control System (CGACS) development. Improvement of Cost Variance occurred in Feb 2013 due to incorporation of scope on the eMRBM program. Actual costs on effort were incurred in FY12, prior to incorporation of scope, and cost recovery occurred. Negative variance is partially offset by efficiencies in Program Operations, Business Operations and Program Control.

The unfavorable net change in the schedule variance is due to Delivery Order 22 eMRBM efforts. eMRBM is behind baseline schedule due to late hardware deliveries in Support Equipment and Avionics Control Module areas. All components are expected to be delivered in time for Lockheed Martin Space System Company to deliver targets on time to meet mission dates.

**Contract Comments**

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to changes to the BMDS test requirements documented through semi-annual changes to the Integrated Master Test Plan and modifications to the Targets Plans. The modifications have resulted in additional costs which increased the current contract price target.

The net increase in contract actions for Calendar Year (CY) 2012 totaled $382.6M due to Integrated Master Test Plan requirements.

The following actions have added scope to this contract over the course of CY 2012:

| Delivery Order | Amount | Description |
|---|---|---|
| 022 - Hardware | $30M | Definitization |
| 023 – Sustainment & Maintenance | $3.6M | Additional scope |
| 024 – Mission Planning & Program Management | $42M | Additional scope |
| 025 – Launch Activities | $8M | Additional scope |
| 027 – Medium Range Ballistic Missile (MRBM) T-3 | $190M | Undefinitized Contract Action |
| 029 – Re-Entry Vehicles | $50M | Restructuring |
| 030 – Foreign Military Assets (FMAs) | $59M | Additional scope |
| **Total** | **$382.6M** | |

Additional Scope Description Details:

023:
- Sustainment and Maintenance efforts required for additional hardware and software purchased to support IMTP for:
o eMRBM
o MRBM T-3
o LV-2 Module Storage, Sustainment and Maintenance
o MBRV-5, -7, -8

024:
- Mission Options for FTO-01.1, FTO-01.2, FTO-01.3, FTP-08
- FTX-14 and FTM-20 Requirements Development

025:
- Mission Options added for FTI-01.3, FTO-01, FTG-06b
- Mission Support to eMRBM for Launch Operations

030:
- FMA-1 Primary and Backup Targets for FTO-01.3 were moved from DO22 to DO30
- Contract options exercised for development and build of 2 FMA-2 targets
- Procurement of 1 FMA-1 Target for WSMR flight mission (Patriot)

**Appropriation: RDT&E**

| | |
|---|---|
| Contract Name | **Development and Sustainment Contract** |
| Contractor | The Boeing, Co., Missile Defense Systems |
| Contractor Location | Huntsville, AL 35806 |
| Contract Number, Type | HQ0147-12-C-0004, CR/CPFF/CPIF/CPAF/FPIF |
| Award Date | December 30, 2011 |
| Definitization Date | December 30, 2011 |

| Initial Contract Price ($M) | | | Current Contract Price ($M) | | | Estimated Price At Completion ($M) | |
|---|---|---|---|---|---|---|---|
| Target | Ceiling | Qty | Target | Ceiling | Qty | Contractor | Program Manager |
| 2816.8 | N/A | N/A | 2872.8 | N/A | N/A | 2872.8 | 2872.8 |

| Variance | Cost Variance | Schedule Variance |
|---|---|---|
| Cumulative Variances To Date (2/28/2013) | +6.6 | -15.1 |
| Previous Cumulative Variances | 0.0 | 0.0 |
| Net Change | +6.6 | -15.1 |

**Cost And Schedule Variance Explanations**

The favorable net change in the cost variance is due to lagging invoices for Performance Based Logistics (PBL) Maintenance Contracts. Additionally changes in Test Command and Launch Equipment (CLE) Execution Strategy resulted in efficiencies realized from Warfighters solution to 24-7 Monitoring of Test CLE.

The unfavorable net change in the schedule variance is due to post-System Requirements Review (SRR) impacts resulting in delayed Enhanced Homeland Defense (EHD) Preliminary/Critical Design Reviews; delayed transfer of Flight Test Ground-Based Interceptor (FTG) 06b from the Ground-Based Midcourse Defense Contract (0001) to the Core Completion Contract (0008); and Inertial Measurement Unit (IMU) design delays.

**Contract Comments**

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the following contract actions:

• Options were exercised on the 0004 Contract for Clear Radar Integration and Development; Cape Cod Radar Integration and Development; and Distributed Multi-echelon Training System (DMETS) Support.

• Engineering Change Proposals (ECPs) were incorporated for Additional Warfighter Training; Capability Enhancement (CE) II Exo-atmospheric Kill Vehicle (EKV) Software for FTG-06b; and CE-I FTG-07 execution.

• Task Instructions (TIs) were issued for Signature Measurement Test Article; Ground-Based Interceptor (GBI) Probabilistic Risk Assessment; Integrated System Test Capability (ISTC) 2 Ballistic Missile Defense System (BMDS) Integrated Lab Concept; BMDS System Specifications; Shoot Assess Shoot (SAS); In-flight Interceptor Communications System (IFICS) Data Terminal Technical Refresh; and Increment 2 Probabilistic Risk Assessment (PRA) approach for GBI.

**Appropriation: RDT&E**

| | |
|---|---|
| Contract Name | **Aegis Ballistic Missile Defense (BMD)** |
| Contractor | Lockheed Martin |
| Contractor Location | Moorestown, NJ 08057 |
| Contract Number, Type | HQ0276-10-C-0001, CPIF/CPAF |
| Award Date | October 15, 2009 |
| Definitization Date | October 15, 2009 |

| Initial Contract Price ($M) | | | Current Contract Price ($M) | | | Estimated Price At Completion ($M) | |
|---|---|---|---|---|---|---|---|
| Target | Ceiling | Qty | Target | Ceiling | Qty | Contractor | Program Manager |
| 443.2 | N/A | N/A | 1075.0 | N/A | N/A | 1075.0 | 1064.0 |

| Variance | Cost Variance | Schedule Variance |
|---|---|---|
| Cumulative Variances To Date (2/13/2013) | -11.0 | -3.0 |
| Previous Cumulative Variances | +6.0 | -4.0 |
| Net Change | -17.0 | +1.0 |

**Cost And Schedule Variance Explanations**

The unfavorable net change in the cost variance is due to the Multi Mission Signal Processor (MMSP) overrun. The MMSP Contract Line Item (CLIN) is complete, but the program continues to carry the overrun in the cumulative to date cost variance data.

MMSP Development is a Navy effort using MDA HQ as a contract vehicle. It is entirely funded by Navy.

The favorable net change in the schedule variance is due to the Multi Mission Signal Processor (MMSP) CLIN effort being more complex than planned. The effort is now complete.

**Contract Comments**

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to additional software baseline awards. As software efforts are required and awarded, the effort will continue to increase in value.

This is the second year reporting the Lockheed Martin Aegis Ballistic Missile Defense effort.

This is the second year reporting the Lockheed Martin Aegis Ballistic Missile Defense effort.

**Appropriation: RDT&E**

| | |
|---|---|
| Contract Name | **SM-3 Technology Development of Production Missiles** |
| Contractor | Raytheon Missile Systems |
| Contractor Location | Tucson, AZ 85701 |
| Contract Number, Type | N00024-07-C-6119, CPIF |
| Award Date | May 14, 2007 |
| Definitization Date | February 15, 2008 |

| Initial Contract Price ($M) | | | Current Contract Price ($M) | | | Estimated Price At Completion ($M) | |
|---|---|---|---|---|---|---|---|
| Target | Ceiling | Qty | Target | Ceiling | Qty | Contractor | Program Manager |
| 146.9 | N/A | N/A | 1370.0 | N/A | N/A | 1286.0 | 1369.0 |

| Variance | Cost Variance | Schedule Variance |
|---|---|---|
| Cumulative Variances To Date (2/13/2013) | -14.0 | -15.0 |
| Previous Cumulative Variances | -6.0 | -15.0 |
| Net Change | -8.0 | +0.0 |

**Cost And Schedule Variance Explanations**

The unfavorable net change in the cost variance is due to a delayed delivery of The Throttlable Divert Attitude Control System (TDACS). The propellant casting process requiring increased tooling and longer dry time. Additional manufacture readiness efforts at suppliers created increased actions and increased cost as a result. Labor to manufacture and assemble components of the Guidance Unit Assembly has been higher than planned.

**Contract Comments**

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to an increase as yearly Missile Production Contract Line Item Numbers (CLINs) are awarded. The contract began with CLIN 1 IA Missile Deliveries; the effort is now on CLIN 16 IB and CLIN 19 IA Missiles.

**Appropriation: RDT&E**

| | |
|---|---|
| Contract Name | **Block IIA AUR Development & Integration** |
| Contractor | Raytheon Company |
| Contractor Location | 1151 E Hermans Rd<br>Tucson, AZ 85756 |
| Contract Number, Type | HQ0276-10-C-0005, CPIF/CPAF |
| Award Date | September 08, 2010 |
| Definitization Date | September 08, 2010 |

| Initial Contract Price ($M) | | | Current Contract Price ($M) | | | Estimated Price At Completion ($M) | |
|---|---|---|---|---|---|---|---|
| Target | Ceiling | Qty | Target | Ceiling | Qty | Contractor | Program Manager |
| 160.0 | N/A | N/A | 1415.0 | N/A | N/A | 1401.0 | 1405.0 |

| Variance | Cost Variance | Schedule Variance |
|---|---|---|
| Cumulative Variances To Date (2/13/2013) | -3.0 | -16.0 |
| Previous Cumulative Variances | -- | -- |
| Net Change | -3.0 | -16.0 |

**Cost And Schedule Variance Explanations**

The unfavorable cumulative cost variance is due to the additional effort required to resolve technical issues at subcontractor Aerojet and to achieve Non-Advocate Reviews (NAR) for Guidance Section (GS) Critical Design Review (CDR).

The unfavorable cumulative schedule variance is due to delayed Guidance Section efforts, detector availability and the actuation system at Aerojet.

**Contract Comments**

This is the first time this contract is being reported.

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the award of additional Missile Development contract line items.

**Appropriation: RDT&E**

| | |
|---|---|
| Contract Name | **SM-3 Technology Development of Block IB/IA Missiles** |
| Contractor | Raytheon Missile Systems |
| Contractor Location | Tucson, AZ 85756 |
| Contract Number, Type | HQ0276-11-C-0002, CPAF |
| Award Date | January 15, 2011 |
| Definitization Date | March 15, 2011 |

| Initial Contract Price ($M) | | | Current Contract Price ($M) | | | Estimated Price At Completion ($M) | |
|---|---|---|---|---|---|---|---|
| Target | Ceiling | Qty | Target | Ceiling | Qty | Contractor | Program Manager |
| 594.0 | N/A | N/A | 594.0 | N/A | N/A | 594.0 | 594.0 |

| Variance | Cost Variance | Schedule Variance |
|---|---|---|
| Cumulative Variances To Date (2/13/2013) | -1.0 | -5.0 |
| Previous Cumulative Variances | -- | -- |
| Net Change | -1.0 | -5.0 |

**Cost And Schedule Variance Explanations**

The unfavorable cumulative cost variance is due to additional Manufacturing Review Board activity to disposition propellant cups, process trials, casting cleaning and propellant boot shrinkage verification. This additional effort was required to assure acceptable propellant cups

The unfavorable cumulative schedule variance is due to System Qualification and Hazard testing taking longer than planned. Additional testing has been required to meet level of assurance on the Attitude Control System (ACS).

**Contract Comments**

This is the first time this contract is being reported.

## Deliveries and Expenditures

| Deliveries To Date | Plan To Date | Actual To Date | Total Quantity | Percent Delivered |
|---|---|---|---|---|
| Development | 0 | 0 | 0 | -- |
| Production | 0 | 0 | 0 | -- |
| Total Program Quantities Delivered | 0 | 0 | 0 | -- |

| Expenditures and Appropriations (TY $M) | | | |
|---|---|---|---|
| Total Acquisition Cost | 132146.7 | Years Appropriated | 12 |
| Expenditures To Date | 86842.0 | Percent Years Appropriated | 70.59% |
| Percent Expended | 65.72% | Appropriated to Date | 95970.1 |
| Total Funding Years | 17 | Percent Appropriated | 72.62% |

The above data is current as of 3/31/2012.

## Operating and Support Cost

**BMDS**

**Assumptions and Ground Rules**

Cost Estimate Reference:
None

Sustainment Strategy:
None

Antecedent Information:
None

| Unitized O&S Costs BY2002 $K | | |
|---|---|---|
| **Cost Element** | **BMDS** | **No Antecedent (Antecedent)** |
| Unit-Level Manpower | 0 | 0 |
| Unit Operations | 0 | 0 |
| Maintenance | 0 | 0 |
| Sustaining Support | 0 | 0 |
| Continuing System Improvements | 0 | 0 |
| Indirect Support | 0 | 0 |
| Other | 0 | 0 |
| Total | -- | -- |

Unitized Cost Comments:
None

| | Total O&S Cost $M | | | |
|---|---|---|---|---|
| | **APB Objective/Threshold** | | **Current Estimate** | |
| | **BMDS** | | **BMDS** | **No Antecedent (Antecedent)** |
| **Base Year** | N/A | N/A | N/A | N/A |
| **Then Year** | N/A | N/A | N/A | N/A |

Total O&S Costs Comments:
None

**Disposal Costs**

None