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BALLISTIC MISSILE DEFENSE SYSTEM
TRANSITION AND TRANSFER PLAN
2006

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Missile Defense Agency/TR
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Washington, DC 20301-7100

Ballistic Missile Defense System
Transition and Transfer Plan
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EXECUTIVE SUMMARY

DoD Directive 5134.9, Missile Defense Agency, October 9, 2004 indicates that MDA is responsible to develop plans in conjunction with the Secretaries of the Military Departments, as appropriate, that include resource, contracting, personnel, and facilities for BMDS element(s) transferring in or out of MDA responsibility. The MDA is required to baseline BMDS capabilities and configurations that transfer from MDA to the Military Department procurement and operations, early enough to support effective transfer.

MDA has developed this BMDS Transition and Transfer Plan with inputs from elements, MDA Staff, the Services, and Combatant Commands to promote a continued productive relationship with stakeholders to achieve acquisition, capability fielding, and sustainment of the BMDS. This plan includes critical and open issues relative to the BMDS. Some issues have recently been addressed, particularly the lead military department designation for near term components being fielded (FBX-T, SBX, and the Cobra Dane upgrade), during the Joint Requirements Oversight Council's meetings on November 10, 2005 and January 19, 2006. Others have work ahead, and are nearing technical maturity to a point where early military department involvement as lead service would facilitate the desired program objective memorandum synchronization, technology and threat pacing. Still other components test our stated acquisition decision-making processes (THAAD and Aegis BMD) and contractual matters (GBI/GFC). The work ahead challenges us to achieve even greater cooperation in our desire to meet National objectives.

Each BMDS component is addressed in an Annex which contains roles and responsibilities organized using the Doctrine, Organization, Training, Materiel, Leadership, Personnel, and Facilities (DOTMLPF) construct, and security and contract status. Note that some components may never formally transfer to the Services, as understood in the traditional Department of Defense (DoD) acquisition context.

The BMDS Transition plan documents role and responsibility agreement between the MDA and the Services, with consideration of the requirements of the Combatant Commands (COCOMs).

Ballistic Missile Defense System Transition and Transfer Plan

1. PURPOSE

The purpose of this Plan is to document the overarching MDA concepts for transition and transfer (Transition) in the context of the BMDS, guide the transition of BMDS Elements and Components from MDA to a Service, and characterize MDA and Service roles and responsibilities (including funding) to insure a successful hand-off of military capability to a military service and use by the Combatant Commanders (COCOMS).

1.1 Content

The Basic Plan identifies critical issues and concerns (refer to Section 3) and documents summary funding arrangements and responsibilities (refer to Section 9) for discussion and negotiation among the Services, the COCOMs, and the MDA. The Annexes identify both critical and other open issues, and more detailed funding arrangements and responsibilities relative to a specific component. If there is a disagreement regarding funding, OUSD(AT&L) will lead the resolution of such a dispute by preparing a USD(AT&L) recommendation for a DepSecDef decision. The decision package will objectively lay out supporting information, be coordinated with Service Secretaries and other stakeholders, and include any dissenting views of Service Secretaries or other stakeholders.

This Plan and its Annexes emphasizes the current and pending fiscal years, while briefly addressing out-year concerns and commitments.

1.2 Document Structure and Presentation

This Transition Plan incorporates Annexes (as listed in Section 15) that document Element- and Component-specific Transition Plans, including expectations for Service roles and responsibilities for procurement, operations, support, and sustainment. This Plan will be updated annually or as significant changes warrant – it is a snapshot that captures both current and future status, roles, and responsibilities for the components and elements of the BMDS. Additional Annexes may be incorporated in future versions of this Plan.

Several sections of this Plan address specific areas of concern to senior management:

- **Executive Summaries** discuss (1) whether or not a component or element is a **candidate for transition** during the POM time frame, FY08-13; (2) whether there are **known unfunded requirements** either by MDA or the Services; and (3) **Critical Issues** that should be highlighted.

Note: **Executive summaries, as provided for each Annex, are included in Section 15 of this Plan.**

- **Critical Issues** (open issues deemed of **executive interest** for the overall BMDS) are documented in Section 3 of this Plan. Section 3 for each Annex presents **Open Issues** relevant to that element or component, which may include Critical Issues.

- **Funding** requirements are summarized in Section 9 of this Plan. Greater detail regarding funding requirements is presented in Section 9 of the various Annexes.

Note: **ALL funding data presented in this Plan and its Annexes is preliminary, pre-decisional, and subject to change.**

An over-arching BMDS Executive Summary precedes the Basic Plan (BP) narrative. Annex-level executive summaries are presented in Section 15.

Using this BMDS Transition Plan will contribute to mission success; define budget responsibility, comply with DoD direction, and provide insight, to the extent applicable, on the status of the BMDS elements with respect to the statutory transfer criteria set forth in 10 USC 224(b), including the technical maturity of the programs, availability of facilities for production, and commitment of the Secretary of the military department concerned to procurement funding for the program, as shown by funding through future–years defense program and other defense planning documents. (Reference (c)) Future releases of this plan will summarize the MDA assessment of the status of each component relative to these statutory requirements.

2. FACTS AND ASSUMPTIONS

This section contains written authorities, policy statements, directives, etc. (i.e., Facts) and judgment-based statements not formalized. (i.e., Assumptions).

A Memorandum for all MDA (dated 28 September 2004) regarding the Ground Based Mid-Course (GMD) Transition Plan, signed by Lt Gen Obering, commented:

"...fielding BMDS...creates a 3-way relationship between MDA, the military services, and the COCOMS that must be continually balanced ... no single Service is likely to ever be wholly responsible for all aspects of production, operation and sustainment of a missile defense element since each component of such element is an integral part of a greater BMD system. Each component or element will support and depend on other

components...This transition construct ... blurs the line between traditional R&D, production, support and operational activities ...."

This insight is directly relevant to the entire BMDS Transition Plan.

2.1. Facts

Late in 2002, National Security Presidential Directive (NSPD-23) (reference (d)) directed the Department of Defense to field an initial set of missile defense capabilities in 2004 to address the ballistic missile threat to our homeland, deployed forces, allies, and friends. To meet this accelerated timeline, the MDA Director announced the intent to leverage the BMDS test bed into an operational capability. As a result, components of the BMDS initial capability have been made available to the operational community before the traditional developmental process is complete.

The Secretary of Defense (SECDEF) has directed that the MDA Director "... develop plans, in conjunction with the Secretaries of the Military Departments, as appropriate, that include resources, contracting, personnel, and facilities for BMDS element(s) transferring in or out of MDA responsibility. The MDA shall baseline BMDS capabilities and configurations that transfer from MDA to Military Department procurement and operations, early enough to support effective transfer." (Reference (c))

MDA is developing and deploying Elements and Components that range across the technological spectrum from very mature systems, which are being modified to accommodate an added missile defense mission, to newly-developed systems relatively early in the research and development test and evaluation (RDT&E) process with possible fielding and deployment years in the future. As such, each Element and Component has attributes that make it unique. For example, Cobra Dane is an asset to which MDA is adding a missile defense capability. The Sea Based X-Band Radar (SBX) is an example of a newly-developed Element.

Prior to 2002, the predecessor Ballistic Missile Defense Organization and the Services issued RDT&E contracts to develop the BMDS test bed. Consistent with the SECDEF's direction to MDA to implement "a single program to develop an integrated system," all such contracts have subsequently been awarded by MDA. Refer to the Annexes for more details.

MDA as the Element and Component materiel developer, based on the type funds used for development, may not fund life time support for the assets it fields as an operational capability.

Because certain elements and components may never transfer from the purview of the MDA, BMDS element and component life cycle sustainment funding responsibility will be considered on a case-by-case basis.

This Plan documents mutually-agreed responsibilities, obligations, and funding commitments associated with various BMDS elements. Initial BMDS assets transferred from MDA will define a baseline capability (e.g., 90 SM-3 Block 1A missiles in Block 04 for Aegis BMD). Commitment to transfer the baseline does not commit MDA or a Service to undocumented responsibilities. Future force structure requirements will require additional discussion, negotiation, and agreement.

2.2. Assumptions

The BMDS evolutionary acquisition process is such that certain elements and components may never formally transfer to the Services, as understood in the traditional Department of Defense (DoD) acquisition process.

Although desirable, a lead Service designation is not necessary to initiate the Transition planning process, however such designations should be made as early as possible in an element or component's life cycle. For example, the Army and the Navy are currently supporting MDA programs in various stages of development and deployment. Service and COCOM stakeholders begin to be engaged to discuss transfer opportunities and roles and responsibilities that may lead to eventual transfer.

As much time as possible should be allotted to perform an effective transfer of a capability, role or responsibility, at least 36 months but preferably as long as 72 months, to permit the services to plan and resource the capability.

Normally, transition of a BMDS capability to operational use occurs before a procurement decision.

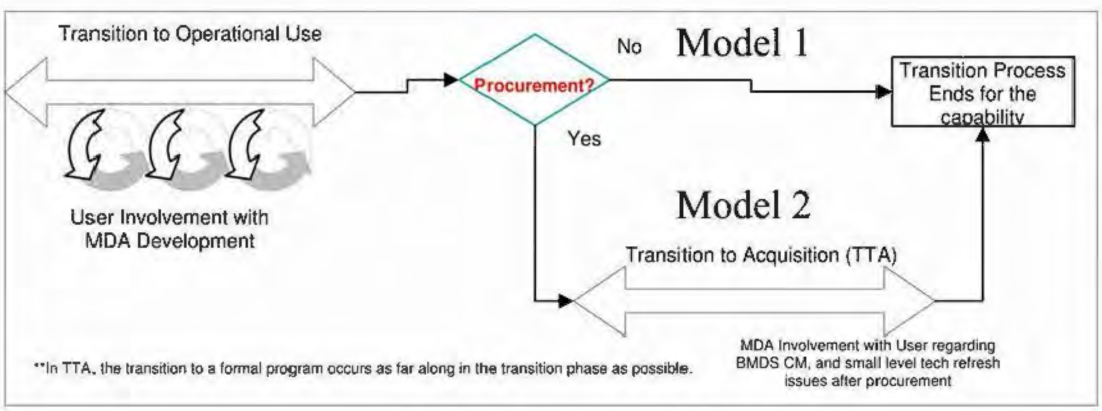


Figure 1 Transition Models

Figure 1 illustrates two general models within a transition phase. In all cases, there will be a transition to operational use, not necessarily "transfer" in the traditional DoD usage. Transition To Acquisition is the planning activity that leads to production and procurement. MDA uses capability based acquisition and evolutionary acquisition (EA) processes. Spiral development is a subset of EA. (Reference (p))

During this part of the transition phase, the user is involved with MDA to reduce risk associated with an emerging capability. Once operational use is attained, a decision must be made regarding whether procurement should occur. If procurement is not needed, then only a single, viable capability is transferred to the user. If the decision is for procurement, then a transition to acquisition occurs. Under this condition, MDA and the Service work even more closely to develop production representative articles and strive to procure multiple copies of the capability. In all cases, MDA will remain engaged with the user regarding configuration management and technical refreshment matters pertaining to the BMDS after procurement. If technical refreshment matters become significant, then MDA and the Service, with Direction from USD (AT&L), engage on a major upgrade or new enhancement.

Reference (a) defines Transition as one of three phases in the BMDS acquisition cycle. The transition phase for a Component or Element normally concludes with transfer, however the spiral development process associated with the BMDS may result in certain Components or Elements never departing from the transition phase.

3. CRITICAL ISSUES

A key purpose of the BMDS Transition Plan is to identify issues and concerns for discussion and negotiation among the Services, the COCOMs, and the MDA. Numerous open issues are documented in Sections 3 of the various Annexes. Critical Issues, such as those presented here, are a consolidation of cross cutting issues (affecting more that one component or Military Department) that may require resolution at higher levels within the Department of Defense. OUSD(AT&L) would lead the resolution of such issues by preparing a USD(AT&L) recommendation for a DepSecDef decision. The decision package would objectively lay out supporting information and be coordinated with stakeholders. Dissenting views of Service Secretaries or other stakeholders would be included in the decision package .

The listings which follow have been keyed to the respective Annexes in which open issues were identified. Critical issues are presented in the subsections which follow. Each issue is characterized as follows:

- Descriptive title
- *Discussion* – A brief background narrative regarding the issue.
- *Impact* – A characterization of the consequences of the failure to resolve the issue.

- *Recommendation* – MDA-suggested "way ahead" to obtain resolution of the critical issue.
- *Resolution* – Text changes based on Service critical comments, as analyzed, adjudicated, and agreed-to by OUSD(AT&L), MDA, the Services, and JTAMDO, have been incorporated in this document.

3.1. Critical Issue #1: Process to Enter and Exit a Transition Phase is Unclear [Resolved]

Discussion: There is no clearly defined process for an OSD/DoD-level decision to approve entry or exit of an MDA- developed BMDS component to or from a transition phase. SECDEF memorandum ((Reference (a) para b, atch 1, page 2) indicates that a Senior Executive Council decision is required to approve of the MDA Director's recommendation for a component to enter the transition phase. This seemingly conflicts with DoD Directive 5134.1 "Under Secretary of Defense for Acquisition Technology and Logistics," (1994), codified at 32 C.F.R. Part 384, which grants the USD (AT&L) authority to direct the Secretaries of the Military Departments and heads of all other DoD components on all matters of acquisition (Section 384.7).

One example of a component potentially entering the transition phase is the Terminal High Altitude Area Defense system. The Director MDA and the THAAD program manager are seeking involvement and commitment of Army resources to THAAD development to align Army personnel and the Army managed common support equipment to support THAAD. An example of a component potentially exiting the transition phase is Aegis BMD. At the current time, a memorandum for USD (AT&L) approval is being staffed from MDA through the Navy that addresses activities completed (research, development, and testing) and responsibilities after a "transfer" of Block 04 Aegis BMD capability to the Navy (i.e. the Aegis BMD Transfer memo). The Aegis Transfer Memo includes operational testing agreements, a SM-3 missile maintenance agreement, and documentation of system maturity. While the Aegis Transfer Memo is an example of additional clarification to trigger an event, the governing guidance still states that an SEC decision is required to either enter or exit a transition phase.

Impact: While the January 2, 2002 SECDEF guidance provides revolutionary guidance, the requirement for SEC approval to enter and exit a transition phase introduces an unnecessary impediment to decision-making and consumes staff decision-making resources.

Resolution: When a proposal is made for an element to enter or exit transition, the OUSD(AT&L) will coordinate with Service Secretaries, and other stakeholders, a recommendation from USD(AT&L) to the DepSecDef for approval (i.e., a paper SEC). For an unresolved issue, the USD(AT&L) will propose a resolution to the DepSecDef for decision, which includes any dissenting views of Service Secretaries or other stakeholders.

3.2. Critical Issue #2: Lead Military Department Not Yet Designated [Resolved]

Discussion: MDA components need to have Lead Military Services identified to influence the design to meet warfighter needs and provide operations and support resources through the component life cycle. Although progress has been made regarding this critical issue (designation of the Air Force for the Cobra Dane and the Army for the FBX-T), this critical issue remains unresolved for SBX and KEI components.

As the first of its kind, the SBX has no military department origins or pedigree like Aegis BMD or THAAD components. Developed from concept by MDA, SBX-1 now has useful BMD capability and is a candidate to enter a transition phase. SBX was originally contracted as a test-bed article, so a full data package, technical manuals, and training materials were not required. Additionally, since SBX-1 was categorized as a test asset and not an operational asset, only minimal force protection and self defense capability were required. These conditions changed in July 2, 2004, when DEPSECDEF declared that all missile defense assets that can provide a defensive capability, including the SBX-1, would be designated as System Security Level A (SSL-A) when they begin defensive operations. The SSL-A designation drove both higher physical security requirements and the need for Military Service involvement to support and defend the SBX when it uses its BMD capability. The placement of the SBX near its OCONUS test and operating locations this year elevated the lack of an SBX Lead Service designation to the November 10, 2005 and January 19, 2006 JROC sessions. In these discussions, MDA committed to provide operations and maintenance funding to cover FY06 and FY 07, as the expense of development. MDA has committed to fund contractor logistics support until FY 13. The results of the JROC held on 19 Jan 06 indicate that USSTRATCOM, MDA and the Services jointly develop an SBX concept of operations that will help in designating a Lead Military Department(s).

KEI has not been assigned a lead Department for either the land- or sea -mobile variant. To date, this has not been a serious problem because the program is in the early phase of system design and because informal interactions with the Departments have been taking place. In a August 26, 2005 Memorandum, the Commander, USSTRATCOM recommended that the Army perform as the Lead Department for the land-mobile KEI and the Navy as Lead Department for the sea-mobile KEI. The Deputy Director for Force Protection, JTAMDO presented the Lead Department issue to the JROC, on November 10, 2005, but only addressed Cobra Dane, SBX, and FBX-T components, which have imminent operations and support costs associated with fielding at an operational location. Other maturing elements, such as KEI, could easily become contentious if allowed to continue development and fielding without a Lead Department designation.

Impact: Without a Lead Military Department, the regional Combatant Commander has no Service component assigned to SBX; and MDA continues to perform operations and support functions for which a Service is responsible. With respect to KEI, it's overall design is being completed prior to a System Design Review planned for 2007. The land-mobile KEI variant needs a lead Department formally designated by the spring of 2006 so that the Department can influence the design for supportability. If early involvement is obtained, that Military Department can proactively plan funding resources for personnel and unique support equipment required for fielding.

Resolution: When a lead service needs to be designated for a BMDS element, OUSD(AT&L) will staff a decision package with Service Secretaries and other stakeholders (i.e., a paper SEC). If there is not agreement on all aspects of the designation, the USD(AT&L) will propose a resolution to the DepSecDef for decision, which includes any dissenting views of Service Secretaries or other stakeholders.

3.3. Critical Issue #3: System Ownership and Contractor Logistics Support over the Component Lifecycle

Discussion: The GMD system deployed using developmental hardware under a Contractor Logistics Support (CLS) maintenance concept to last over the life cycle of the component. As a result, MDA designed the support and development infrastructure to be integrated heavily with the Prime Contractor. Accordingly, the Army is reluctant to assume contractual relationships and associated maintenance costs attributable to "design" decisions made without Army involvement. Therefore, the Army currently accepts only responsibility for system operations. Course of action 1) Make MDA the life cycle manager, and Course of action 2) Make the Army the lifecycle manager in FY 14.

Impact: Until a decision process and criteria regarding the transfer of maintenance and support are established, the Army is reluctant to POM for maintenance or support. As a result, MDA will continue to fund maintenance from RDT&E funding potentially sub-optimizing the development program.

Recommendation: OUSD(AT&L) will staff a decision package with Army and MDA stakeholders regarding the assignment of life cycle manager responsibilities for the GMD system. On completion of this process, should the Army and MDA not be able to come to agreement, OUSD(AT&L) would prepare a USD(AT&L) recommendation for a DepSecDef decision. The decision package would objectively lay out supporting information, be coordinated with Service Secretaries and other stakeholders, and include any dissenting views of Service Secretaries or other stakeholders.

4. PROGRAM/SYSTEM DESCRIPTION

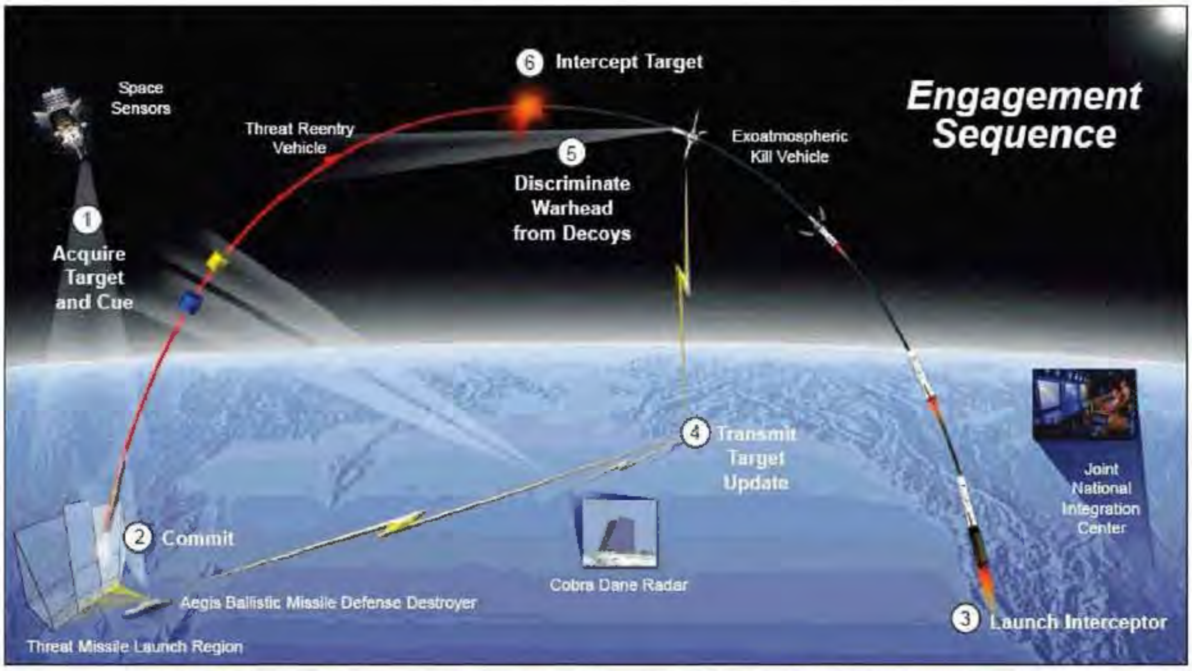
The Presidentially-directed mission of MDA is to provide a global BMDS capability to defend the United States, its deployed forces, friends, and allies. This ambitious requirement demands teamwork among MDA, the Services, and the COCOMs. (Reference (a))

With the initial capability of the Ballistic Missile Defense System, the United States has a capability to meet the limited, near-term ballistic missile threat. The initial capability provides a defense against short- and medium-range ballistic missiles using PAC-3 and Aegis BMD SM-3 missiles. The initial capability also enables engagement of intermediate-range and intercontinental ballistic missiles in the midcourse phase using Ground-Based Interceptors (GBI).

The MDA continues its strong research and development program to provide, over time, improvements and upgrades to the existing capability. In 2006-2007 the Missile Defense Agency will work to expand the breadth and depth of the initial capability by adding networked, forward-deployed sensors; additional interceptors at sea and on land; and layers of increasingly capable weapons and sensors.

The years ahead will be more demanding than those of the past as the Missile Defense Agency continues to carry out the tough engineering tasks of developing, testing, and enhancing ballistic missile defenses for fielding. Therefore, even as we cross over the threshold of initial capability, the Missile Defense Agency will place an overriding priority on the Agency's mission — to develop an integrated, layered ballistic missile defense system to defend the United States, its deployed forces, allies, and friends against all ranges of missiles in all phases of flight.

The MDA identifies Ballistic Missile Defense System capabilities, architectures, and element contributions to counter the threat and organizes them by Engagement Sequence Groups (ESGs) (Figure 2). These ESGs describe a combination of weapons, sensors and Command and Control, Battle Management, and Communications capabilities that must work together to detect, track and intercept an enemy missile. Using ESGs as a tool enhances functional and engineering analysis, creates manageable combinations for Block configurations, and simplifies allocations of BMDS capabilities to provide a structure to assess Ballistic Missile Defense System performance and to assist the warfighters in developing concepts of operations.



A graphical depiction of an Engagement Sequence for a long-range interceptor missile; intercept occurs in space.

Figure 2 Typical BMDS Engagement Sequence

The MDA uses capability-based acquisition processes. This flexible development program allows the Agency to employ the most advanced technologies in response to the rapidly-evolving missile threat. Capability-based acquisition in the MDA is structured in two-year "blocks" – Block 2004, for example, represents calendar years 2004-2005. Developments in any one block build on those of previous blocks, while opportunities to field capabilities of the BMDS occur throughout.

4.1. Block 2004

The missile defense program is developing and fielding a layered defense for the United States, our deployed forces, allies and friends against threats of all ranges and in all phases of flight. Initially limited, these defenses will evolve to become increasingly capable over time as technologies mature. Block 2004 represents the period of development for calendar years 2004 and 2005.

In late 2004, the United States fielded the initial BMDS Test Bed that can be used for limited defense operations (LDO) as the MDA continues to develop and test the system.

~~(FOUO)~~ During 2005, the Missile Defense Agency achieved substantial incremental improvements to the initial BMDS capabilities, adding interceptors and sensors and achieving a number of test successes (ref (l)):

Sensors:

- Successfully acquired and tracked ICBMs with Forward-Based X-Band Radar – Ready to deploy to Japan
- Achieved Sea-Based X-Band radar high-power radiation and initial calibration – Currently in Hawaii, en route to Adak
- Added 4 Aegis Long-Range Surveillance and Track (LRS&T) destroyers
- Completed upgrades of Cobra Dane and Beale radars

Interceptors:

- Added an Aegis engagement cruiser
- Fielded 4 Standard Missile-3 (SM-3) interceptors
- Emplaced 2 ground-based interceptors (GBIs) at Fort Greely
- Engineered "dormant mode" to enable Ground-Based Midcourse Defense to rapidly transition from test to operations
- Implemented recommendations of the Mission Readiness Task Force

4.2. Block 2006

Block 2006 represents the period of development for calendar years 2006 and 2007. In Block 2006, the Missile Defense Agency will continue developing existing capabilities and provide new capabilities to be added to those fielded in Block 2004 (Figure 3).

~~(FOUO)~~ As of 31 December 2005, the Director of the MDA identified the following "Emerging Block 2006 Capabilities" (Reference (l)):

- *Improved defense against intercontinental ballistic missiles from North Korea* – Forward-Based X-Band radar delivered to Japan; and Sea-Based X-Band radar.
- *Limited defense against intercontinental ballistic missiles from Iran* – Fylingdales UEWR radar.
- *Available the next 12 months* – Total of 3 cruisers with additional SM-3 interceptors; Expand Ground-Based Interceptors to 16 in Alaska and 2 in California; and Continued integration of emerging capabilities into command and control and fire control.

Figure 3 BMDS Block 2006 Configuration

4.3. Block 2008

~~(FOUO)~~ Block 2008 represents the period of development for calendar years 2008 and 2009. In January 2006, the Director, MDA, identified a number of emerging Block 2008 capabilities. (Reference (l)):

- *Increased capability against North Korea and Iran* – Up to 38 Ground-Based Interceptors and Thule radar (Greenland).
- *Initial Defense against asymmetric threats and improved capability against regional threats* – Fifteen Aegis destroyers for engagement capability with additional SM-3 interceptors; and 24 THAAD interceptors.
- *Greater mobility to address surprise threats* – Two additional forward-based radars and two Surveillance and Tracking Satellites.

5. PROGRAM STATUS

(U) The program status of each element and component is provided in the individual Annexes. Executive Summaries for all 13 Annexes are presented in Section 15. The program status of the entire system is provided in section 5.2.

~~(FOUO)~~ Early in 2005, MDA implemented management changes to focus on quality control and management issues to address the problems highlighted by recent flight test problems. Throughout the year, a series of test successes were achieved:

- *Ground-Based Midcourse Defense* – Successful completion of FT-1; successful BMDS characterization test using air-launched target across Cobra Dane radar (Alaska); Successful Capability Demo 11
- *Aegis BMD* – Successful intercepts in FTM 04-1 and FTM 04-2; GT-189 LRS&T verification
- *C2BMC/Sensors* – Continual flight/ground testing across the operational architecture (CMCM testing; Multiple software updates; Latency issues resolved)
- *Terminal High Altitude Area Defense (THAAD)* – Successful completion of FTT-1 on 22 Nov 05

Airborne Laser – Successful completion of high power laser and low power system-active

5.1. The BMDS Implementation Strategy

(U) The MDA has devised a four-part implementation strategy for the development of a comprehensive BMDS:

~~(FOUO)~~ Initially, the MDA will establish a limited defensive capability for the U.S. against the North Korean long-range missile threat while continuing to mature and evolve the system. This includes the fielding of protection for deployed forces from shorter-range threats. Second, the MDA will evolve a capability for the U.S. against long-range threats from the Middle East. Third, the MDA will expand protection to our deployed forces, allies, and friends around the world. Finally, the MDA will expand the depth of protection with additional interceptors, sensors, and layers.

~~(FOUO)~~ In FY06, MDA will focus on expanding and improving the initial ballistic missile defense capability. The first objective is to complete the development, fielding and verification of the Block 2004 BMD system. The first interceptors, upgraded radars and command and control, battle management and communication elements of this system are in place in Alaska, California, and Colorado.

5.2. System Configuration Status

~~(FOUO)~~ As of the end of CY 2005, the BMDS Block 2004 capability to defend the U.S. against long-range ballistic missile attack by North Korea was as follows. (Reference (l):

- *Ground-Based Interceptors* (10 total)
- *Aegis in the Sea of Japan* (10 LRS&T ships available)
- *Cobra Dane Radar Upgrade* (Alaska)
- *Beale Radar Upgrade* (California)
- *Command and Control* (U.S. Strategic Command, Northern Command, *added* Pacific Command)
- *Situational Awareness Nodes* (White House, Pentagon)

~~(FOUO)~~ As of the end of CY 2005, the BMDS Block 2004 capability to defend the U.S. against short- and medium-range ballistic missile attack was as follows:

- *Two Aegis cruisers* with SM-3 interceptors (9 total)
- *Continued fielding* of Patriot Advanced Capability-3 (PAC-3) batteries

5.3. Shakedown Period Results

~~(FOUO)~~ The BMDS is currently in a "shakedown" period, similar to the situation when a crew takes a new warship to sea to learn what adjustments and corrections should be made prior to its entry into operational service. During this time, MDA, the Services, and COCOMs are training crews, testing components, and simulating operational conditions in coordination with the combatant commanders to learn about the system's capabilities and limitations. If necessary, the system could be used to defend against a limited ballistic missile attack during the "shakedown" period.

~~(FOUO)~~ Once "shakedown" is complete, the Secretary of Defense will establish designated readiness conditions to control the operational status of the BMDS while still permitting further development and testing. (Reference (i))

5.4. Test Program

~~(FOUO)~~ As of 31 December 2005, the Director of the MDA identified the following Planned BMDS Flight Testing in 2006 (Reference (l)):

- *Long-range midcourse defense* – Three GBI tests against targets from Kodiak, Alaska; and Beale radar characterization flight.
- *Sea-based midcourse defense* – Two intercept flight tests involving new SM-3 design; and one Japanese SM-3 nose cone proof-of-principle flight.
- *Land-based terminal defense* – Four THAAD flights, including first intercept in June 2006.

For BMDS test policy, refer to section 6.6.

6. ORGANIZATIONAL RESPONSIBILITIES

Reference (c) assigns the following responsibilities to MDA, the Services, and the COCOMs in the development, deployment, and operation of the BMDS:

6.1. Missile Defense Agency (MDA)

~~(FOUO)~~ MDA is responsible for BMDS programmatic policy and research and development. The Director, MDA, serves as the acquisition executive for all programs funded by MDA and exercises all BMDS-related source selection and milestone decision authorities up to the production decision associated with the transfer of procurement responsibility to a Service. The Agency's responsibilities include developing and delivering operational missile defense capabilities to warfighters, as well as ensuring the safety and quality of the BMDS. The MDA will ensure that the necessary JCIDS pre-cursor documents to a Capability Production Document (CPD) are produced in sufficient detail to support Service CPD development."

6.2. The Services

~~(FOUO)~~ The Army, Navy, and Air Force have responsibility for programming, planning, and budgeting for the procurement, operations, support, and sustainment of assigned BMDS Elements and components and are responsible for developing a capability-based CPD and providing the forces and resources necessary to support fielding the BMDS, as agreed to by Services and MDA, or as directed by the DepSecDef.

6.3. The Combatant Commands (COCOMs)

~~(FOUO)~~ USSTRATCOM serves as the operational proponent for Global Ballistic Missile Defense and carries out this responsibility by coordinating with the Director, MDA, in developing and implementing the BMDS Concept of Operations.

~~(FOUO)~~ Inherent in the concept of operations is the preeminent role of USSTRATCOM regarding command authority over its forces deployed within a geographic combatant commander's area of responsibility. According to the Unified Command Plan (Reference (t)), USSTRATCOM forces remain assigned to and under the control of USSTRATCOM, unless otherwise directed by the Secretary of Defense. USSTRATCOM does not exercise those functions of command associated with area responsibility, such as fall within the purview of USNORTHCOM, USPACOM, and other Geographic Commanders.

6.4. DOTMLPF

The successful addressing of **DOTMLPF – Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel,** and **Facilities** – is key to the successful planning and implementation of Transition and Transfer processes and must be incorporated, as appropriate, in all Annexes. For system acquisition professionals and logisticians, the MDA interpretation of the relationship of DOTMLPF components or elements to the traditional elements of Integrated Logistics Support (ILS) is depicted in Figure 4:

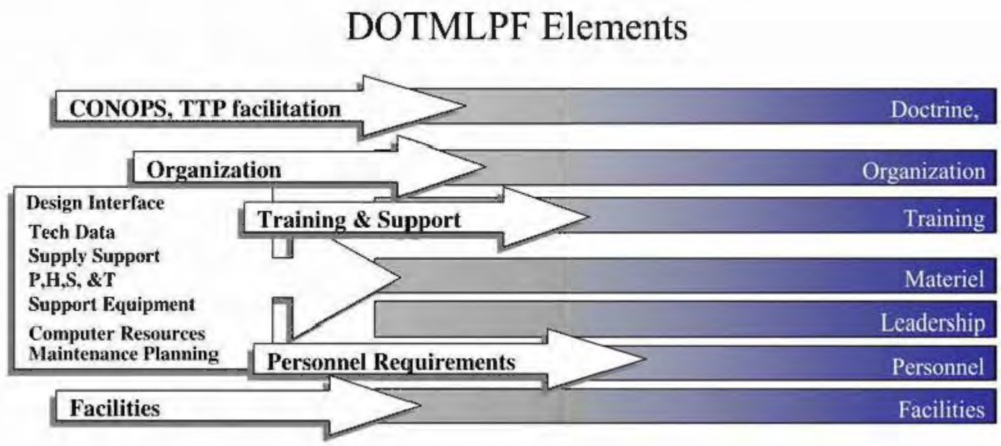


Figure 1 DOTMLPF Elements

Three additional specific areas have been identified for discussion in each of the Annexes:

- **Security**
- **Test Strategy**
- **Supportability Strategy**

In general, the COCOMs provide tactical and operational control over assigned elements and components, while the Services provide administrative control.

6.4.1. Doctrine

~~(FOUO)~~ The BMDS doctrine is the overarching doctrine that governs ballistic missile defense of all classes. STRATCOM is responsible for writing ballistic missile defense doctrine and concept of operations (CONOPS), as well as assisting elements, components, and Services in developing mission-essential functions to ensure BMDS continuity of operation. The Services are responsible for developing and publishing BMDS element doctrine and Tactics, Techniques, and Procedures (TTPs).

~~(FOUO)~~ Engagement Sequence Groups (ESGs) are used in the development of the doctrine for the deployment and operation of BMDS. Figure 3, presented in Section 4.1, de[picts a typical BMDS Engagement Sequnce. As new elements/components are added to the BMDS, doctrine will have to be developed for their integration and employment. MDA, the COCOMs, and the other Services shall participate in doctrine development by providing technical support to the Lead Service doctrine developer.

6.4.2. Organization

~~(FOUO)~~ MDA assists Services with preparing and documenting an organizational structure for the sustained combat operation and logistical support of the BMDS element and component.

~~(FOUO)~~ Lead Services will prepare and document an organizational structure for the sustained combat operation and logistical support of the BMDS element and component. The "organization" document will describe the capabilities that are provided by the structure and will include a listing of required personnel and equipment. The document:

- Authorizes personnel and equipment,
- Describes their roles and responsibilities.
- Lists personnel requirements by skill, experience, grade level, security clearance, special qualification, and quantity.
- Identifies mission-critical equipment.

MDA will assist the Lead Services in preparing an information exchange operational concept in accordance with the latest DoD Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) Architecture Framework. This will ensure that the new BMDS element is interoperable and integrated with other Joint and military Service BMDS organizations and capable of performing its mission.

~~(FOUO)~~ STRATCOM is responsible for planning, coordinating, and integrating the BMDS into COCOM organizations.

6.4.3. Training

~~(FOUO)~~ MDA will support the Services and COCOMs in their Title 10 USC responsibilities to perform crew/team and higher collective training, to train replacement personnel, and to maintain operational task proficiency, for elements and components transferred to Services.

~~(FOUO)~~ STRATCOM is responsible for the institution and oversight of the global missile defense training program.

6.4.4. Materiel

~~(FOUO)~~ MDA will provide related materiel, software, and training to the Service and/or COCOM element and component. MDA will ensure the BMDS element and component designs are logistically supportable. The Services will provide common support equipment for assigned BMDS elements and components.

~~(FOUO)~~ MDA is responsible for configuration management for the ballistic missile defense system. A key consideration is the assessment of the need for regression testing. When BMDS configuration changes are proposed to the BMDS configuration management board, the proposal must address costs associated with regression testing.

Spectrum certification is an additional BMDS-wide materiel consideration. All spectrum-dependent equipment/systems owned and operated by the DoD require spectrum certification. Program managers initiate this certification with the submission of a DD Form 1494 (Application for Equipment Frequency Allocation) to the Frequency Management Office of the pertinent Military Service. This application must be coordinated through the Military Communications-Electronics Board (MCEB) before funds are authorized for the development of any new equipment that will radiate electromagnetic energy.

6.4.5. Leadership and Education

Leadership and Education are fundamental across MDA, the Services, and COCOMs. All are challenged to manage and implement change across the DOTMLPF spectrum with respect to fielding, operating, sustaining, and supporting the BMDS in the course of the evolutionary acquisition process. Education is integral to the assurance that required talents are developed, maintained, and available to support the BMDS mission.

6.4.6. Personnel

The personnel component of DOTMLPF is primarily to ensure that qualified personnel are there to support a capability. This includes identification of the knowledge, skills, abilities, and competencies needed to perform a position, job, or task. This may involve creation of new occupational specialties to support new missions, threats, and technologies and revision of those specialties over a period of time.

Each element and component Annex defines plans for the manning of activated elements and components and for the coordination and preparation of personnel for deployment.

Services plan and execute manning of activated elements and components and coordinate the preparation of personnel for deployment.

COCOMs augment their staff as needed to execute the global ballistic missile defense mission.

6.4.7. Facilities

~~(FOUO)~~ MDA is responsible for RDT&E construction requirements needed for the activation of elements and components. MDA will identify construction requirements in accordance with reference (s) and prepare appropriate requests and justification in the specified DoD format. MDA will initiate environmental and community impact studies and mitigate impacts of fielding BMDS capabilities. MDA is responsible to comply with RDT&E construction rules.

~~(FOUO)~~ Assigned lead Services are responsible for MILCON construction requirements and impacts under military construction rules. The Services are not responsible for military construction until agreement on facilities costs are reached. The Services are responsible for facilities construction only after the transition and transfer of an element or component.

6.5. Security

~~(FOUO)~~ The MDA is responsible for the security of assets while in the RDT&E process. The COCOMs and Services have security requirements (... Physical Security ... Antiterrorism/Force Protection ... Security System Level ... Systems Certification and Accreditation/Information Assurance ...) that weapons systems have to meet prior to transition and transfer. The Annexes address these issues to ensure that MDA contributes to the meeting of these requirements. (References (f) and (g).)

MDA/SIS OPSEC planners will provide COCOM (USSTRATCOM) and/or Lead Service OPSEC planners with appropriate OPSEC Plans for the related system being transferred or transitioned. COCOM (USSTRATCOM) and Lead Service OPSEC planners should provide copies of their OPSEC plan to MDA/SIS to ensure integrated horizontal protection of MDA and operational sensitivities that transcend operating environments. Direct liaison authority applies between MDA/SIS OPSEC planners and their COCOM counterparts.

USSTRATCOM is the approval authority for determining if physical security requirements are met prior to a BMDS asset transitioning to an operational status. (Reference (r))

If a component or element does not enter a transition phase, then the component remains in the RDT&E phase and MDA is responsible for arranging for operations, support and sustainment throughout spiral development and will attempt to optimize cost efficiency and effectiveness depending upon each components and the case's merits.

~~(FOUO)~~ Similarly, each Annex, wherever appropriate, addresses Original Classification Authority (OCA), associated security classification guidance, and foreign disclosure authority as affected by the Transition and Transfer process. (Reference (e))

~~(FOUO)~~ The Services need to insure appropriate resourcing for counterintelligence support of transitioned elements of the BMDS.

6.5.1. Security/Foreign Disclosure

~~(FOUO)~~ MDA will transfer disclosure authority of an element or component to the Service on the effecting of transfer of the element or component. MDA will retain disclosure authority and technology transfer responsibilities and oversight for RDT&E efforts involving future upgrades and improvements.

6.6. Test Policy

~~(FOUO)~~ The BMDS Element and component test strategy includes developmental and operational testing. "MDA is responsible for DT&E of the BMDS and its elements … (MDA shall) assure the suitability and supportability of the developed system; produced BMDS components in the development and transition phases; conduct developmental testing and evaluation; and conduct capability-based operational testing, in coordination with the DOT&E." (Reference (a))

~~(FOUO)~~ MDA has established a Responsible Test Organization (RTO) as the MDA authority for planning, provisioning, executing, analyzing, and reporting BMDS Developmental Test and Evaluation activities for elements and components. Element program directors support the RTO by providing planning, programming, and budgeting activities (as well as cost schedule and performance analysis). The RTO develops, justifies, and defends the budget for BMDS developmental testing.

~~(FOUO)~~ The overarching planning document for the BMDS test program is the Integrated Master Test Plan. The Developmental Master Test Plan is the comparable element- or component-specific planning document.

~~(FOUO)~~ The RTO verifies element program director planning, programming, and budgeting inputs to this plan. Where applicable, DT&E estimates for elements and components are included in various Annexes to this Plan. Such estimates will be improved as specific Annexes are revised each year.

6.7. Supportability/Sustainment Strategy

~~(FOUO)~~ The overall BMDS sustainment strategy is the aggregate of element and component sustainment concepts. Oversight will be limited to establishing and monitoring key sustainment metrics, and establishing those minimum standards required for interoperability, compliance with Department of Defense (DoD) and MDA Decision and Safety, Quality, and Mission Assurance guidance/standards and future integration.

Integration of sustainment activities at the BMDS system level will focus on those that offer opportunities for minimizing life cycle cost and logistics footprint, while improving support to operating forces. Typical sustainment activities can include Performance-Based Logistics and the consolidation of logistic support contracts to contribute to the sustainment of the operational capabilities of BMDS elements and components. MDA will coordinate with Services regarding the consolidation of sustainment below depot level. (Reference (m))

~~(FOUO)~~ A key facet for the successful execution of the supportability and sustainment strategy of the BMDS is the implementation of inter-service and inter-governmental support agreements. Agreements noted in this plan regarding base operations will be implemented in many cases using inter-service and inter-governmental support agreements. Section 10 of each Annex identifies relevant agreements for the element or component.

7. CONTRACT STATUS

Refer to the several Annexes, as listed in Section 15, for details regarding contract status.

8. PLAN FOR TRANSITION ACTIONS/MILESTONES

The notional time lines and rule sets for BMDS Transition and Transfer by element or component are summarized in the following figures. The rule set refers to conditions that will influence transition and transfer to a Service.

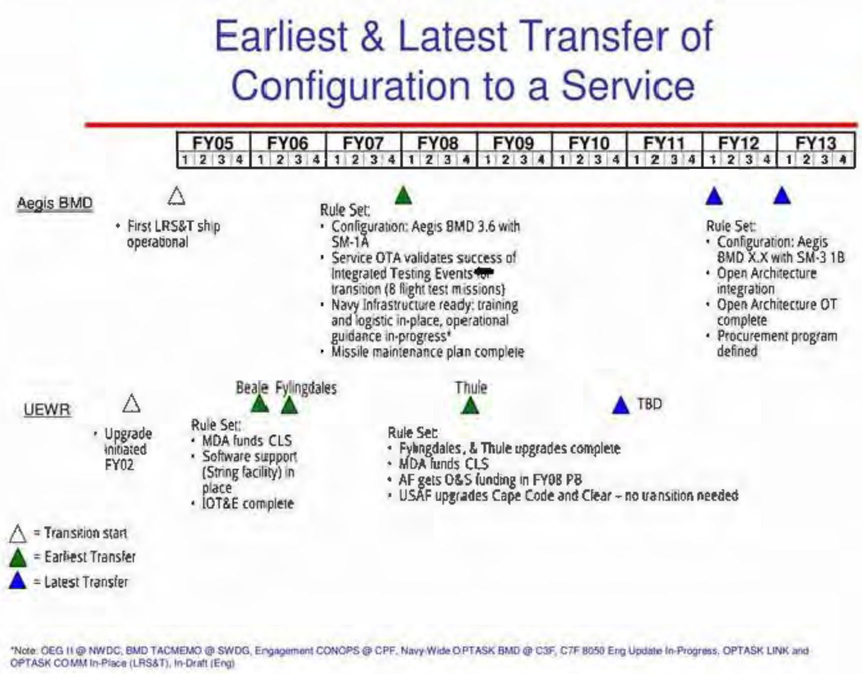


Figure 5 Aegis BMD and UEWR

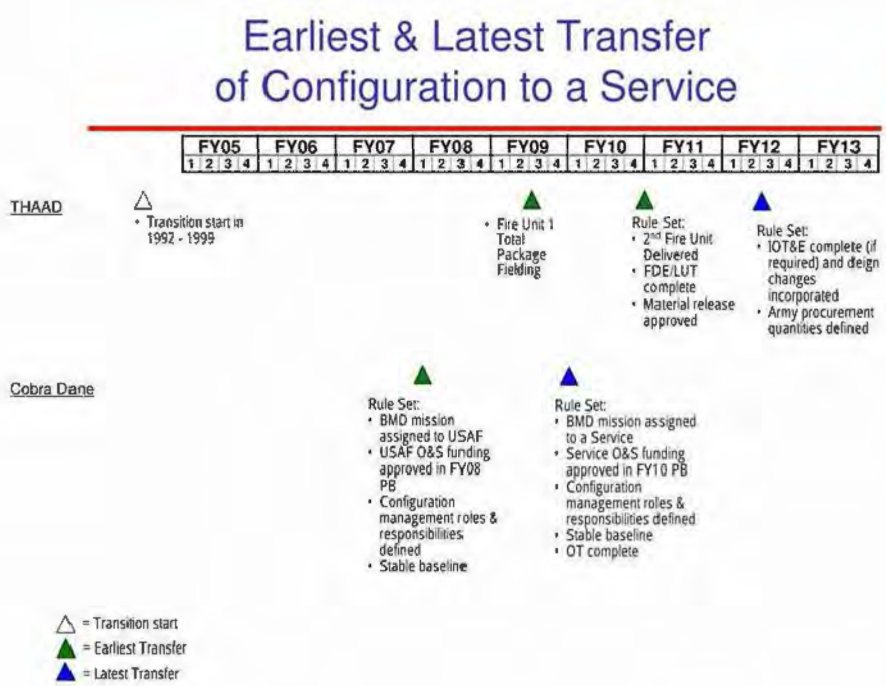


Figure 6 THAAD and Cobra Dane

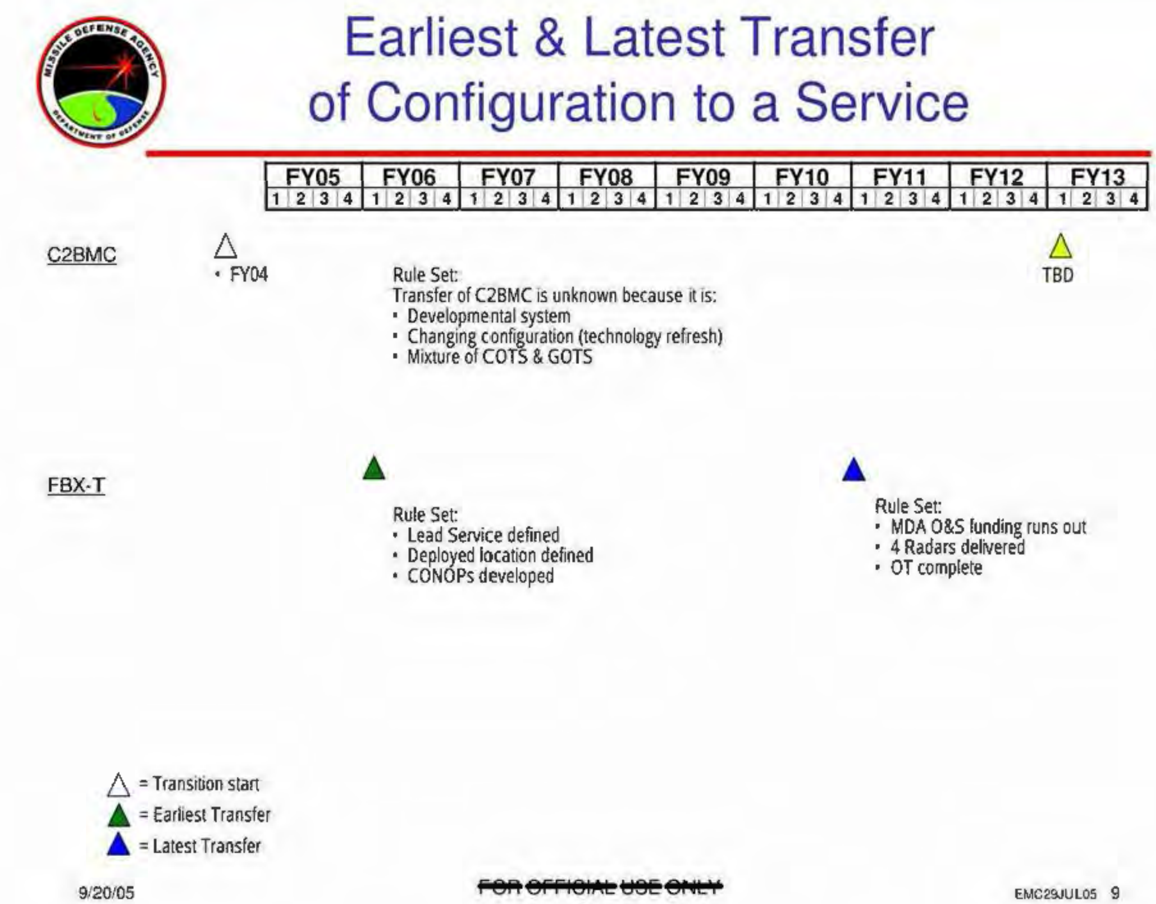


Figure 7 C2BMC and FBX-T

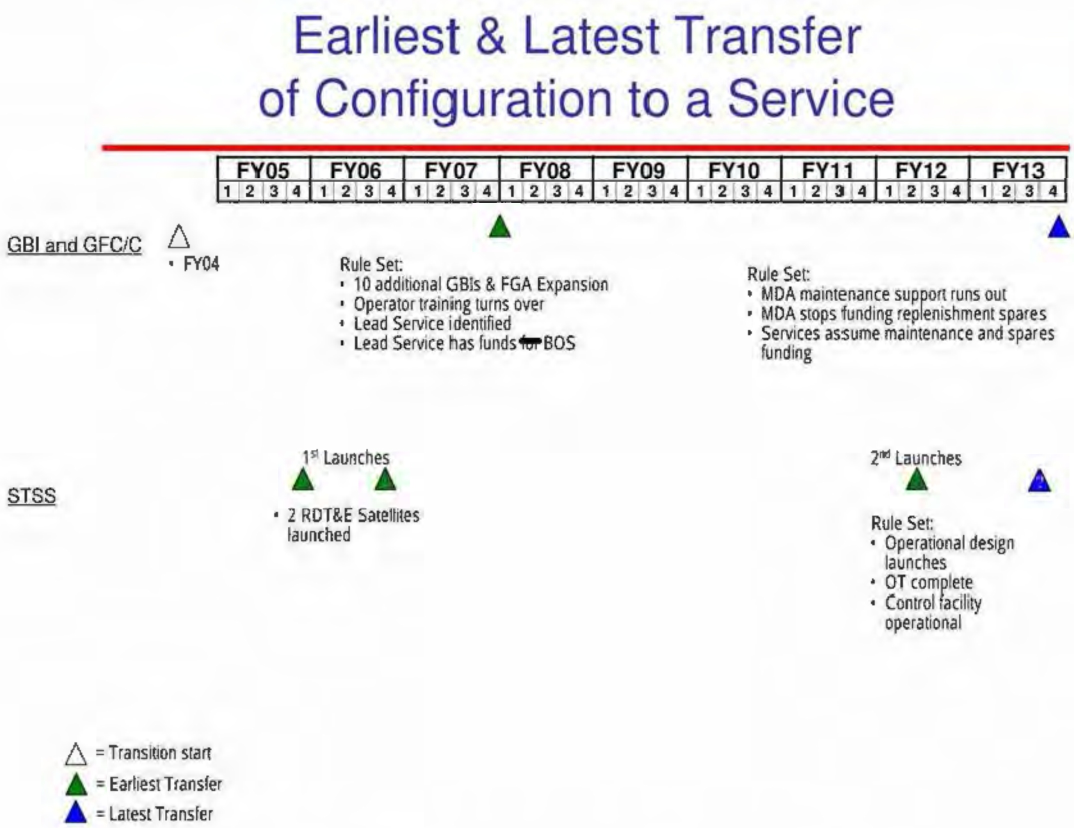


Figure 8 GBI and GFC/C and STSS

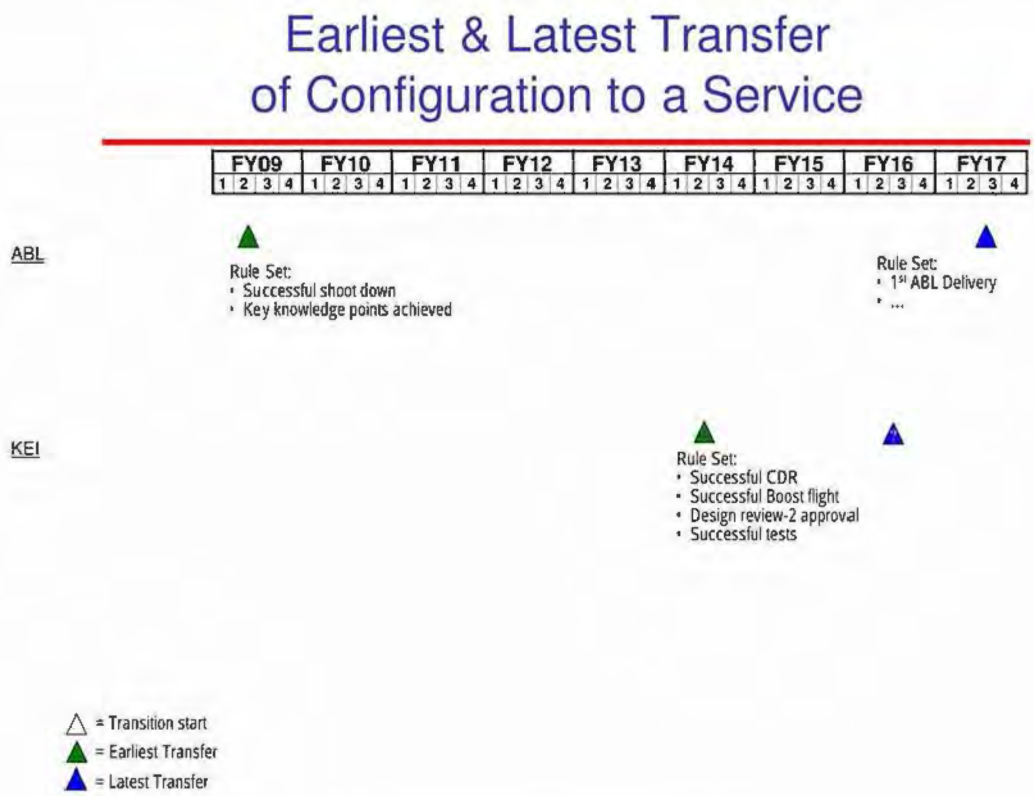


Figure 9 ABL and KEI

9. FUNDING

Refer to the several Annexes, as listed in Section 15, for details regarding funding.

Funding responsibility varies between the respective Services and MDA per BMDS Element and component. In general, funding responsibilities are as follows:

- Manning – Lead Service
- O&M – Lead Service
- Physical Security and Force Protection, including Counterintelligence (CI) support, and foreign disclosure and technology transfer responsibilities (once system has been transferred to the Lead Service) – Lead Service
- RDT&E – MDA
- Training – MDA or Lead Service
- Initial Operational Capability with RDT&E funds yet below procurement quantities in relation to the traditional acquisition model – MDA
- Procurement – Lead Service

Figure 10 shows a roll-up of the funding represented in each Annex. Congress appropriates RDT&E money for all of MDA's work. Congress has granted the Secretary of Defense authority to use these funds for other than RDT&E functions (reference (o)). Figure 11 briefly explains what's included in each funding line. For details on each element, please refer to the Annex.

Note: ALL funding data provided in this Plan and its Annexes is preliminary and pre-decisional, and subject to change.

RDT&E ($M)	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
THAAD			$0.5	$4.0	$9.0	$14.0	$(-16.0)	$(-16.0)
Aegis	$23.0	$43.0	$70.7	$71.0	$77.8	$62.4	$64.2	$66.3
UEWR		$22.0	$23.0	$2.1	$2.1	$2.1	$2.2	$2.2
Cobra Dane	$6.2	$6.2	$4.7	$4.4	$4.1	$3.7	$3.5	$3.4
FBX-T	$37.6	$47.2	$62.1	$67.0	$88.8	$105.1	$107.3	$109.6
SBX	$81.0	$92.0	$94.0	$96.0	$107.0	$100.0	$102.0	$104.0
GBI GFCC	$173.0	$411.0	$324.0	$400.0	$332.0	$344.0	TBD	TBD
C2BMC	$32.41	$50.52	$57.15	$53.67	$61.37	$55.09	$62.83	$57.85
STSS	$231.2	$379.5	$412.2	$751.4	$940.0	$871.5	$745.0	$677.0
ABL	$454.7	$598.9	$542.6	$417.4	$416.4	$647.8	TBD	TBD
KEI	$202.0	$386.0	$400.0	$852.0	$1,149.0	$1,651.0	$1,426.0	$1,239.0
PAC3	$3.8	$1.6	$1.0					
SBIRS								
Total	$1,244.9	$2,037.9	$1,992.0	$2,719.0	$3,187.6	$3,856.7	$2,497.0	$2,243.4

Figure 10 Summary of Funding from Element Annexes

THAAD	Figures represent Interim Contractor Support requirements; FY12 and 13 are not funded
Aegis BMD	MDA O&S costs for the Long Range Search and Track, Engagement and SM-3 missile maintenance missions
UEWR	Estimates for MDA sustainment of the UEWR systems.
Cobra Dane	Funds pay for organizational and depot maintenance, and system improvements
FBX-T	This data is based on PB 07; the figures should be considered preliminary and pre-decisional. The MDA/SN budget includes funding for Contractor Logistics Support to operate and maintain the deployed radars, site physical security, spares, integrated logistics support infrastructure/depot support, and site maintenance through the end of FY 2011. The figures provided in this Annex do not include one-time costs for deployment and site preparation. Budget requirements are subject to change depending on where the radar sites are located and what facilities/support can be negotiated locally with in-theater commands and or the host nation.
SBX	FY07 POM for SBX CLS
GBI GFCC	O&S budget for FY06 - FY11

C2BMC	Pays for Unit personnel, continuing system improvements, sustaining support, indirect support and unit operations
STSS	Total FY06 PB
ABL	Approved FY06 POM; budget cuts in 1QFY06 are expected to cause these figures to change
KEI	FY07 APOM position for continuing the D&T program. All funds are MDA monies; no Service funds have yet been allocated to the KEI program. No procurement or operations and sustainment funds are included in KEI's budget profile. These RDT&E funds pay for the design, fabrication, integration, and test of the land-mobile KEI. This includes the purchase of the following for developmental testing: three launchers, four KFC/C sets, and twelve interceptors (including spares).
PAC3	Funding For Upper Tier Debris Mitigation ECP -0024. $1M of the FY06 amount is for Lower Tier Program Office support of BMDS development.
SBIRS	(No figures available as of 6 Feb 06.)

Figure 11 Notes for Figure 10

10. AGREEMENTS AND COMMITMENTS

Refer to the several Annexes, as listed in Section 15, for details regarding agreements and commitments.

11. REFERENCES

References relevant to the BMDS Transition and Transfer process follows:

(a) Secretary of Defense memo dated 2 Jan 02, "Missile Defense Program Direction"

(b) United States Code, Title 10, Subtitle A, Part 1, Chapter 9, Section 224(b)

(c) Department of Defense Directive 5134.9 dated 9 Oct 04, "Missile Defense Agency (MDA)"

(d) National Security Presidential Directive dated 16 Dec 02 (NSPD-23)

(e) Department of Defense 5200.1-R dated Jan 97, "Information Security Program"

(f) Department of Defense 5200.8-R dated May 91, "Physical Security Program"

(g) Department of Defense Directive 2000.12 dated 18 Aug 03, "DoD Antiterrorism Program"

(h) Under Secretary of Defense (Acquisition, Technology, and Logistics) memo dated 13 Feb 2002, "Ballistic Missile Defense Program Implementation Guidance"

(i) MDA Director's Opening Remarks to PITCH Course 2-2005, May 05

(j) United States Strategic Command Memorandum SM# 220-05 dated 26 Aug 05 for the Under Secretary of Defense for Acquisition, Technology and Logistics, "Operationalizing an Integrated Missile Defense System"

(k) Joint National Integration Center Ground Test 04-5 Event Summary, Aug 05

(l) MDA Director's "All Hands Briefing," 13 January 2006

(m) MDA Sustainment Directive 5010.AA (draft)

(n) MDA Director's memorandum dated 19 January 2006, "MDA Contractor Logistics Support (CLS) Definition"

(o) FY05 DOD Authorization Conference, H.R. 4200; H. Rept. 108-767 (10/8/04), Page 26, SEC. 231, "Fielding of Ballistic Missile Defense Capabilities." Sec. 222 in the FY04 Authorization Act (House Report 108-354) at page 30.

(p) Department of Defense Instruction 5000.2 dated 12 May 03, "Operation of the Defense Acquisition System"

(q) MDA News Release 05-NEWS-0010, 17 Nov 05

(r) U.S. Strategic Command Directive 538-2 dated 3 October 2005, "Global Ballistic Missile Defense Physical Security Program"

(s) MDA Directive 4165.01 dated 1 July 2003, "Real Property Acquisition and Sustainment"

(t) President of the United States, "Unified Command Plan 2004," dated 1 March 2005

(u) Deputy Secretary of Defense, "Designation of Lead Military Department for Two Elements of the Ballistic Missile Defense System (BMDS)," dated 11 Feb 2006

12. ACRONYMS

The following acronyms apply throughout this Plan, including the Annexes:

A
ABL ... Airborne Laser
Aegis BMD ... Aegis Ballistic Missile Defense System
AFFTC ... Air Force Flight Test Center
AFOTEC ... Air Force Operational Test and Evaluation Command
AFSPC ... Air Force Space Command
APOM ... Amended Program Objective Memorandum
ATEC ... Army Test and Evaluation Command
ATP ... Authority to Proceed
AUR ... All Up Round

B
BASOPS ... Base Operations and Support
BMC3 ... Ballistic Missile Command, Control, and Communications

C
CAP ... Combined Aggregate Program
CD ... AN/FPS 108 System (Cobra Dane Upgrade)
CI ... Counterintelligence
CLS ... Contractor Logistics Support
CNE ... Communications Node Equipment
COCOM ... Combatant Command(er)
COI ... Critical Operational Issue
CONOPS ... Concept of Operations
COTS ... Commercial-Off-The-Shelf
CSCI ... Computer Software Configuration Item
CSE ... Common Support Equipment
C2BMC ... Command, Control, Battle Management and Communications

D
DOTMPLF … Doctrine, Organization, Training, Materiel, Leadership (Development and Training), Personnel, and Facilities
DSP … Defense Support Program

E
EKV … Exo-atmospheric Kill Vehicle

F
FBX-T … Forward-Based X-Band Radar
FDS … Flight Demonstration System
FRD … Facilities Requirements Document
FYDP … Future Years Defense Plan

G
GBI … Ground-Based Interceptor
GCN … GMD Communications Network
GFC/C … GMD Fire Control and Communication
GMD … Ground-Based Midcourse Defense

H
HWIL … Hardware-in-the-Loop

I
IA … Information Assurance
IDO … Initial Defensive Operations (unspecified missile defense capability)
IFICS … In-Flight Interceptor Communications System (GMD)
IFT … Integrated Flight Test
IMD … Integrated Missile Defense
IMTP … Integrated Master Test Plan
ISO … International Standards Organization
ITE/AA … Integrated Threat Warning/Attack Assessment

J
JFCC-IMD ... Joint Forces Component Command – Integrated Missile Defense
JNIC ... Joint National Integration Center

K
KEI ... Kinetic Energy Interceptors
KV ... Kill Vehicle

L
LFT&E ... Live Fire Test and Evaluation
LRBM ... Long Range Ballistic Missile
LRS&T ... Long Range Search & Track
LTPO ... Lower Tier Project Office
LUT ... Limited User Test

M
MDNTB ... Missile Defense National Team B
MDSEC ... Missile Defense Satellite Experimental Center
MEADS ... Medium Extended Air Defense System
MOTS ... Military-Off-The-Shelf

N
NMD ... National Missile Defense
NSPD ... National Security Presidential Directive
NSS ... National Security Space

O
OCA ... Original Classification Authority
OPTEVFOR ... Operational Test and Evaluation Force
OT&E ... Operational Test and Evaluation

P

PAC-3 ... Patriot Advanced Capability – 3
PBL ... Performance-Based Logistics
PEO ... Program Executive Office(r)
PID ... Program Introduction Document
PIDS ... Prime Item Development Specification
PMRF ... Pacific Missile Range Facility
PPP ... Program Protection Plan

Q

R

RAM ... Reliability, Availability, and Maintainability
RDT&E ... Research, Development, Test and Evaluation
RTO ... Responsible Test Organization

S

SBIRS ... Space Based Infrared System
SBX ... Sea Based X-Band Radar
SCG ... Security Classification Guide
SCIF ... Sensitive Compartmented Information Facility
SECDEF ... Secretary of Defense
SMC ... Space and Missile Center
SME ... Subject Matter Expert
SM-3 ... Standard Missile-3
SPA ... System Programming Agency
SRBM ... Short Range Ballistic Missile
SSAA ... System Security Authorization Agreement
SSL ... System Security Level
STSS ... Space Tracking and Surveillance System

U

UEWR ... AN/FPS 132 Upgraded Early Warning Radar
UFR ... Unfunded Requirement
USAADASCH ... U.S. Army Air Defense Artillery School
USC ... United States Code

V
VAFB … Vandenberg Air Force Base
VLS … Vertical Launch System

W

X

Y

Z

13. DEFINITIONS

The following definitions apply throughout this Plan, including the Annexes:

Contractor Logistics Support. *"Contractor Logistics Support (CLS) is an integrated strategy that utilizes commercial contractors to sustain BMDS Element and Component operations while the System's capability and reliability evolves. The services provided by CLS sustain BMDS Mission equipment and are augmented whenever increases to the System's maintainability, reliability, or other operational criteria are required. CLS may include, but is not limited to: spare and repair parts; support equipment; technical data; tools; test measurement and diagnostic equipment; maintenance manpower; and operator and maintenance training. The BMDS will normally be maintained on two levels: On-Site and Depot. CLS is not a specific set of deliverables, but rather the ability to sustain and mature a developmental/operational capability for the BMDS. The scope of the sustainment effort to be provided by a contractor will be governed by a CLS contract."* (Reference (n))

DOTMLPF. Helpful general characterizations of the elements of DOTMPLF are provided at a web site maintained for the Joint Forces Command -- www.teao.saic.com:

> *Doctrine products include doctrine publications, Tactics, Techniques and Procedures (TTP), operating procedures, regulations, checklists, or policy which governs or guides the way the military conducts business.*

Organization products and services include actual organizations needed to conduct an operation or business, the visual representation of those organizations, organizational characteristics, and opportunities and challenges in utilizing them to perform an operation or conduct business.

Training products and services encompass training content and all methods of delivering that content to its intended audience which enables performance and support of the mission.

Materiel products are traditionally what have been associated with the defense acquisition process. Weapons, platforms, communication equipment, medical equipment, transportation, training software, etc. Just remember even though materiel may be used to directly perform a mission, it may also support another DOTLPF component that supports the mission – especially facilities and training.

From a requirements perspective, leadership deals with management and implementation of change across the DOTMLPF spectrum.

The personnel component of DOTMLPF is primarily to ensure that qualified personnel are there to support a capability. This includes identification of the knowledge, skills, abilities, and competencies needed to perform a position, job, or task. It may involve creation of new occupational specialties to support new missions, threats, and technologies and revision of those specialties over a period of time.

Facilities products and services include supplies, engineering support, and much of what is currently associated with logistics. Think...buildings, roads, runways, and infrastructure and the activities it takes to build and maintain them to support performance of operations or systems.

These definitions are in no way meant to imply we have the complete handle on these terms. Like most of the rest of the Department of Defense, our understanding of DOTMLPF is evolving. The two hardest DOTMLPF areas to describe in a requirements context are organization and leadership. These areas also have the potential to produce the most controversial requirements, primarily because they deal with behavioral change – both on an organization and personal level.

Lead Service. A Lead Service is the organization designated by the Secretary of Defense, or his designee, as having the primary responsibility for:

- *Manning, force protection, operation, and installation support as outlined in Interservice and Intragovernmental Support Agreements such as Support Agreements in existence at Fort Greely, AK and Vandenberg Air Force Base, CA .*

- *The requirements collaboratively worked between the Services and MDA, as captured in the BMDS Transition Plan.*

- *Develop the necessary Doctrine, Organization, Training, Material, Leadership, Personnel and Facility products required to put capabilities in the hands of Combatant Commanders.*

MDA retains Lead Service responsibilities for elements that will not transfer to a Service.

The Lead Service is responsible for ensuring that all its BMDS Components or Elements are supported, manned, and secured in accordance with this Plan, as approved by the Under Secretary of Defense for Acquisition, Technology, and Logistics [USD (AT&L).]

Operations and Maintenance. An approved fund category that supports a range of operational requirements – Maintenance of equipment and infrastructure; operations of forces (excluding pay); training & readiness; and base operations, such as snow removal, refuse collection, etc. (Reference (n))

Operations and Sustainment. This is the manning and operation of BMDS elements in their designated mission. Sustainment is the provision of personnel, logistics and other support required to maintain and prolong operations of combat until successful accomplishment or revision of the mission or of the national objective.

Transfer. Transfer is the conveying of a possession from one entity to another. This is typically an event that reflects the attainment of a decision point for an already-developed technology and capability. Transfer also includes the roles and responsibilities for procurement, operations, support, and sustainment. For the BMDS, reference (b) addresses transfer criteria as follows:

> *The Secretary of Defense shall establish criteria for the transfer of responsibility for a ballistic missile defense program from the Director of the Missile Defense Agency to the Secretary of a military department. The criteria established for such a transfer shall, at a minimum, address the following:*
>
> *(a) The technical maturity of the program.*
> *(b) The availability of facilities for production.*
> *(c) The commitment of the Secretary of the military department concerned to procurement funding for that program, as shown by*

funding through the future-years defense program and other defense planning documents.

The Secretary shall submit the criteria established, and any modifications to those criteria, to the congressional defense committees.

Transition. Reference (a) defines Transition as one of three phases in the BMDS acquisition cycle. The transition phase for a Component or Element normally concludes with transfer, however the spiral development process associated with the BMDS may result in certain Components or Elements never departing from the transition phase.

14. FIGURES

15. ANNEX EXECUTIVE SUMMARIES

The Figure which follows identifies the MDA Office of Primary Responsibility (OPR) and the Service expected to be responsible for procurement, operations, support, and sustainment for various BMDS elements and components, as described in the Annexes to this Plan:

Annex	MDA OPR	Service
(A) Terminal High Altitude Area Defense (THAAD) System	MDA/TH	Army
(B) Aegis Ballistic Missile Defense (Aegis BMD) System	MDA/AB	Navy
(C) AN/FPS 132 Upgraded Early Warning Radar (UEWR)	MDA/GM	USAF
(D) AN/FPS 108 System (Cobra Dane Upgrade)	MDA/GM	USAF
(E) Forward-Based X-Band Radar – Transportable (FBX-T)	MDA/SN	Army
(F) Sea-Based X-Band Radar (SBX)	MDA/GM	TBD
(G) Ground-Based Interceptors (GBI); Ground-Based Midcourse Defense (GMD) Fire Control (GFC) Node; In-Flight Interceptor Communications System (IFICS); GMD Communications Network (GCN)	MDA/GM	Army
(H) Command, Control, Battle Management and Communications (C2BMC)	MDA/BC	–
(I) Space Tracking and Surveillance System (STSS)	MDA/SS	USAF
(J) Airborne Laser (ABL)	MDA/AL	USAF
(K) Kinetic Energy Interceptors (KEI)	MDA/KI	TBD
(L) Patriot Advanced Capability – 3 (PAC-3) and Medium Extended Air Defense System (MEADS)	MDA/TR Army LNO	Army
(M) Space-Based Infrared System (SBIRS)	AFSPC	USAF

Figure 12 List of Annexes

The executive summary sections for each of the BMDS Transition and Transfer Plan Annexes follow this page, in the order listed above.

The full text for each of these Annexes is provided following this Basic Plan narrative.

15.1 THAAD Executive Summary (Annex A)

Terminal High Altitude Area Defense (THAAD) Annex to the Ballistic Missile Defense System (BMDS) Transition and Transfer Plan

THAAD is a ground-based, rapidly-transportable, forward-deployable terminal missile defense system being fielded to protect the homeland, forward-deployed military forces, friends, and allies from ballistic missiles. As an element of the BMDS Terminal Defense segment, THAAD will provide the opportunity to conduct endo-atmospheric and exo-atmospheric engagements against ballistic missiles that were not destroyed earlier in boost or midcourse phases of flight by other BMDS Elements. THAAD will detect, track, engage, and destroy Short and Medium Range Ballistic Missiles as a threshold capability and Intermediate Range Ballistic Missiles and Intercontinental Ballistic Missiles as an objective capability.

MDA will deliver the first THAAD Fire Unit to the Army in FY09 with the second Fire Unit scheduled for delivery in FY10. These THAAD Fire Units consist of three Launchers; 24 Missile Rounds; one THAAD Fire Control/Communications (TFCC) Component; one Radar Component; and Peculiar Support Equipment. THAAD Fire Units #1 and #2 will have the capability to operate autonomously, to be cued via Link-16 and to cue other elements via Link-16. Link-16 messages from the THAAD Element will also be received by the BMDS Command and Control, Battle Management, and Communications (C2BMC) to provide situational awareness.

Missile Defense Agency (MDA) will resource the fielding of a THAAD capability including: mission peculiar equipment; Associated Support Items of Equipment (ASIOE); development of Operational Concepts; and development of Doctrine, Tactics, Techniques, and Procedures. MDA will resource and conduct New Equipment Training, and Replacement Training, and resource Collective Training conducted by the Army in preparation for a Force Development Experimentation/Limited User Test (FDE/LUT). MDA is responsible for providing support to the THAAD peculiar equipment (Radars, Missile Rounds, Launchers, TFCC, etc) and has committed to fully funding Contractor Logistics Support (CLS) through FY11. In FY12/13 MDA will fund CLS as it relates to consequences of design defect issues and the approved THAAD Operational Mode Summary/Mission Profile (OMS/MP). The OMS/MP describes unit activity related to all training and operations. MDA will fund THAAD mission peculiar equipment support to the level of activity defined in the OMS/MP. The Army will be responsible for any support to THAAD mission peculiar equipment that results from training and operations beyond that identified in the OMS/MP.

The Army will be responsible for providing Common Support Equipment (CSE), manning the fielded THAAD capability, and for the Operation and Support (O&S) costs associated with the CSE through FY13. The Army will include budgeting in the Program Objective Memorandum (POM) for FY10-15 to begin full THAAD logistics support in FY14.

The U.S. Strategic Command (STRATCOM) will be responsible ~~for~~ providing overall planning, coordination, and integration of THAAD capabilities among the Geographic Combatant Commands.

THAAD will be transitioned to the Army using current existing policy. MDA will support the Army when it conducts a review of the THAAD Acquisition, Requirements, and Resources associated with the Transition. It is recommended the Army Acquisition Executive (AAE) participate in the MDA Contract Control Board (KCB) when the authority to proceed with the contract award for two Fire Units is requested. Should the Department of Defense (DoD) decide that additional THAAD procurement is necessary based on Warfighter requirements, an appropriate decision process, in accordance with established policy, will be implemented.

Table ES 1.0 shows a summary of MDA and Army funding and manning requirements. The Army funding requirements are estimates. MDA will continue to refine the estimates for Army resourcing in close coordination with the Deputy Assistant Secretary of the Army for Cost and Economics (DASA-CE).

$ in Millions	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
MDA RDT&E Fun to Procure Two Fir Units	0	0	184.4	334	135.7	203.9	0	0	0
MDA RDT&E Fun for FDE/LUT*	0	1.9	2	2	5	6.2	2.4	0	0
MDA RDT&E Fun for Interim Contrac Support (O&S)	0	0	0	0.5	4	9	14	(16)	(16)
Army Procurement Requirements	0	0	0	(10)	(10)	0	0	0	0
Army O&S Funds CSE and ASIOE	0	0	0	0	(4)	(4)	(8)	(8)	(8)
Army: Soldier Allocations	22	22	22	95**	190**	190**	285**	TBD**	TBD**

MDA numbers reflect PB07 budget
Figures in (red font) are not included in current POMs
*Figures do not include any dedicated flight testing based on schedule DT/OT tests
**Pending Total Army Analysis-13 (FY08-11 approved in Total Army Analysis-11)

Table ES 1.0 ~~(FOUO)~~ Funding and Manning Requirements

THAAD spiral development will continue with Block 08, Block 10, and Block 12 capabilities growth; therefore, programmatic transfer of the THAAD Program from MDA to Army will not occur. The THAAD Transition Annex does not address additional Fire Unit requirements beyond the first two.

Issues (See Section 3.0 for details)

- No senior-level decision process in place to direct transition of THAAD.
- Army CSE and O&S costs are currently unbudgeted in the POM.
- MDA CLS/Interim Contractor Support (ICS) for FY12 and FY13 unbudgeted by MDA.

15.2. AEGIS BMD Executive Summary (Annex B)

Purpose

This annex documents the responsibilities, resources, and schedules required among MDA, Combatant Commanders (COCOM's) and the Navy to operate and sustain the Aegis Ballistic Missile Defense (BMD) Block 04 System.

Background

The Aegis BMD Block 04 provides for modifications to the Aegis Cruisers and Destroyers and Standard Missile (SM-3) to engage ballistic missiles and to provide Long-Range Surveillance and Track (LRS&T) support to the BMDS. This adds a mission to the existing in-service Aegis Fleet, leveraging a significant U.S. Navy investment in infrastructure. The Missile Defense Agency (MDA), the Navy, and the COCOMs have been actively working to analyze and define plans for Operations and Sustainment responsibility for the BMDS Block 04 operational baseline functions, such as manning, force protection, installation costs and support. For the Navy, this is the transition of Aegis BMD Block 04 capability for Operations and Sustainment support only, not for the procurement of additional systems or missiles.

MDA plans include outfitting up to eighteen ships with the Aegis BMD Block 04 capability. Initial installations have been completed on several Cruisers and Destroyers. Installations will be accomplished on the remaining ships prior to completion of the transition process. Installations are being completed in coordination with the Naval Sea Systems Command (NAVSEA), Program Executive Office Integrated Warfare Systems (PEO IWS), Program Executive Office Ships (PEO SHIPs), and the ships' cognizant operational commanders. Aegis BMD will continue as a part of the BMDS and future upgrades will be developed by MDA. Missile procurement will also be executed by MDA. MDA will conduct Flight Test Missions (FTM) 8-14 under the observation of Commander, Operational Test and Evaluation Forces (COMOPTEVFOR) and Director of Operational Test and Evaluation (DOT&E).

Aegis BMD capabilities are being installed on designated ships. Open Issues identified below are not considered critical to transition efforts currently being worked.

Open Issue

Discussion: MDA Memorandum to USD (AT&L) endorsed by ASN (RD&A) and DOT&E summarizing the plan for Aegis BMD Block 04 transition, and documenting the following:

a. Decision authorities in the DoD for approval of Transition and Transfer of the Aegis BMD Block 04 capability.
b. Missile procurement responsibilities.

c. Navy budgetary authority to include Aegis BMD Block 04 operation and sustainment in Navy POM submissions.
d. Testing and evaluation agreements by MDA, DOT&E and OPTEVFOR on Aegis BMD Block 04 capability.
e. Transition/Transfer the Aegis BMD Block 04 System IAW this Annex and supporting documentation.

Impact: Inability to support BMDS Mission with Aegis BMD configured ships.

Recommendation: Complete staffing of cost share agreement and jointly agreed to and approved Navy-MDA USD (AT&L) memorandum.

15.3. UEWR Executive Summary (Annex C)

The purpose of this plan is to document the necessary actions and responsibilities associated with the transition of the AN/FPS-132 Upgraded Early Warning Radar (UEWR) programmatic and sustainment responsibilities for transfer from the Missile Defense Agency (MDA) to the United States Air Force (USAF) in FY09. This plan assumes the Air Force is successful in securing adequate funding through the FY08-13 Program Objective Memorandum (POM) process. The plan preserves the integrity of the legacy (missile warning and space surveillance) missions of the radars while providing comprehensive support for the new missile defense mission. This plan does not address the Test Control Network (TCN), GMD Communications Network (GCN), or Embedded Test (ET) components installed at Beale, Fylingdales, and Thule sites.

The MDA UEWR program modifies three AN/FPS 123 Early Warning Radars (EWRs) (Beale, Fylingdales, and Thule) to support missile defense as well as the legacy missions. MDA developed and will install upgrades to the EWRs at Beale, Fylingdales, and Thule (scheduled for completion in CY09). The two remaining EWR radars at Clear and Cape Cod will be upgraded by the USAF to establish a more robust missile defense capability. The UEWR retains the legacy array faces and selected radar equipment sub-systems, and adds state-of-the-art signal and data processing equipment and rewritten software, primarily using modern software language.

Prior to the USAF accepting programmatic responsibilities for the UEWR from MDA, the Single Manager (SM) will establish an affordable logistics support infrastructure to sustain the UEWR; a common baseline for Beale, Fylingdales, and Thule; and a production capability based on a common baseline that enables the USAF to procure upgrades for Clear and Cape Cod.

Transition issues that remain to be resolved include: 1) defining what support infrastructure (principally the System Programming Agency (SPA) and technical data) will transfer to the Air Force and the process for transferring spares and support equipment, 2) finalizing a change control agreement that integrates the existing United States Strategic Command (USSTRATCOM) and MDA processes, to include funding responsibilities for changes, 3) synchronizing the MDA and USAF POM submissions to prevent the appearance of overlap and enhance prospects for approval, 4) satisfying USAF requirements for a common hardware and software baseline at all three sites to ensure supportability and reduce sustainment costs, and 5) ensuring the USAF has a means to procure upgrades at Clear and Cape Cod..

This plan outlines requirements of $293M to execute MDA responsibilities from FY07-13, and $647M in USAF requirements, which includes installation of UEWRs at Clear and Cape Cod.

	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	Total
Total Requirement for CLS and Sustainment	15	26	80	37	34	53	41	42	328
MDA Funding (PB07)	15	26	36	0	0	0	0	0	77
Proj BMDS Upgrades (MDA)**				2	2	2	2	2	10
USAF POM	0	0	44	35	32	51	39	40	241

15.4. Cobra Dane Upgrade Executive Summary (Annex D)

The purpose of this plan is to document the necessary actions and responsibilities associated with the transition and transfer of COBRA DANE Upgrade (CDU) programmatic, operations and sustainment responsibilities from the Missile Defense Agency (MDA/GMD) to the USAF. Transfer to the USAF is planned for October 2007 (FY08) with MDA continuing to provide Contractor Logistics Support (CLS) funding through FY13. At transfer, the USAF will fund all base support costs.

The CDU upgrade was completed by MDA/GMD in September 2004 and a missile defense limited defensive capability was declared in October 2004. CDU is currently in a sustainment/transition mode with the USAF sustaining the legacy mission hardware and software and MDA providing both hardware and software support for Missile Defense-unique elements through FY 2007. MDA will provide contract coverage for CLS until transfer in October 2007. During this transition to transfer phase, the technical maturity of the integrated software baseline (Legacy and Missile Defense) and communications interfaces will mature sufficiently to allow USSTRATCOM certification of all missions. A joint configuration management process is being developed to ensure a single MDA and USAF integrated software baseline is maintained during the transition period as well as beyond actual transfer.

CDU issues that remain to be resolved include: 1) defining manpower requirements to support missile defense operations; 2) MDA and the USAF reaching final agreement on the joint configuration management process; 3) resolution of funding requirements for Base Operations and an Intrusion Detection System (IDS) for Eareckson AS; 3) USAF completion of the Multi-Mission Concept of Operations (CONOPS); 4) USAF designation of MAJCOM responsibilities for executing CDU; and 5) joint MDA/USAF development of contract strategy for CLS during the FY08-13 time period.

The funding summary below shows estimated MDA and USAF FY06-13 funding requirements to execute this plan:

	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	TOTAL
CLS	6.2	6.2	4.7	4.4	4.1	3.7	3.5	3.4	36.2
BOS	5.6	8.4							14.0
IDS		5.8							5.8
Total MDA Cost	**11.8**	**20.4**	**4.7**	**4.4**	**4.1**	**3.7**	**3.5**	**3.4**	**56.0**

MDA Funding Requirements ($M)

	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	TOTAL
BOS	3.8	0	9.0	9.1.	9.2	9.3.	9.4	9.5	59.3
Security Sustainment			.2	.2	.2	.2	.2	.2	1.2

USAF Funding Requirements ($M)

15.5. FBX-T Executive Summary (Annex E)

The Forward Based X-Band Radar – Transportable (FBX-T) is a transportable, X-Band, THAAD class, phased array radar. It provides the Ballistic Missile Defense System (BMDS) with improved search, detection, and tracking capability in the boost and post-boost phase of Ballistic Missile (BM) flight. This capability contributes to the expansion of the BMDS battlespace by providing earlier target tracking information to the Command, Control / Battle Management / Communications (C2BMC) for engagement by other BMDS sensors and weapons.

Army was recommended as Lead Service for FBX-T at the 19 January 2006 Joint Requirements Oversight Council (JROC). Preliminary discussions between the Missile Defense Agency (MDA) and the Army have taken place, and Army representatives conducted a site survey for the first FBX-T deployment in conjunction with MDA personnel. It is anticipated that the Army will provide criteria for FBX-T transition, transfer, and associated dates. However, the transition of specific responsibilities and the timing thereof has yet to be negotiated between the Army and MDA. Moreover, the timing for beginning the transition process has not been determined nor whether FBX-T will actually transfer to the Army.

~~(FOUO)~~ The MDA Sensors Directorate (MDA/SN) President's Budget (PB) 07 funding for FBX-T Operations and Support (O&S) is shown in Table ES-1 below. All MDA funds are Research, Development, Test & Evaluation (RDT&E) funds. The MDA/SN budget includes funding for Contractor Logistics Support to operate and maintain the deployed radars, site physical security, spares, integrated logistics support infrastructure/depot support, and site maintenance through the end of FY 2013. These figures do not include one-time costs for deployment and site preparation. Budget requirements are subject to change depending on where the radar sites are located and what facilities/support can be negotiated locally with in-theater commands and or the host nation. Funding breakout is provided in Section 9.

$ in Millions	FY06	FY07	FY08	FY09	FY10	FY11	* FY12	* FY13
MDA/SN FBX-T Operations & Support	37.6	47.2	62.1	67.0	88.8	105.1	107.3	109.6

Note: * FY12 & FY13 not included in PB07 Budget

Table ES-1. FBX-T O&S Estimate ~~(FOUO)~~

15.6 SBX Executive Summary (Annex F)

Purpose: Document roles, responsibilities, resources, and schedules, along with issues among the Missile Defense Agency (MDA), Combatant Commander (COCOM), and lead service (when designated) to support operations and sustainment of the Ground-Based Midcourse Defense (GMD) Sea-Based X-Band Radar (SBX-1). SBX-1 will attain Capability Available for Limited Defensive Capability (LDC) in early 2006 and will also be used by MDA for development activities. Transition to SBX operations in the spring of 2006 will provide defensive "capability available" as part of the BMDS.

A lead service for transition and transfer of responsibilities for operation and sustainment has not been identified. However, the X-band Radar (XBR) Project Office (PO) believes SBX-1 is <u>NOT a good candidate for transition</u> during the Program Objective Memorandum (POM) time frame, FY 08-13. It is a unique asset and will most likely remain an MDA responsibility for its lifecycle. Known <u>unfunded requirements for future blocks are provided in section 5.2,</u> and additional unfunded requirements may arise when a lead service is identified. Technically mature operations such as security aboard the vessel may transition to a service before a lead service is identified. Also, MDA reengineering decisions on a joint depot with Theater High-Altitude Area Defense (THAAD) and Forward-Based X-Band (FBX) Radar could impact SBX-1 transfer. The single <u>executive interest</u> issue is identification of a lead service, and other issues will flow from resolution of that issue. Until a lead service is designated, mutually agreed upon transition planning such as Force Protection/Security, POM input development and infrastructure planning and development cannot begin.

Background: The President and Congress committed to deploying a Ballistic Missile Defense System (BMDS) as soon as technologically possible. Under National Security Presidential Directive (NSPD) -23, dated December 16, 2002, President Bush directed that this capability be fielded by October 2004. In response, MDA modified the test bed contract with the Boeing Company to allow for manufacture and deployment of major components in conjunction with the test bed spiral development program. This LDC is intended to support robust development and testing while providing defense against attack by a limited number of ballistic missiles.

The GMD Joint Program Office (JPO) will deliver a missile defensive capability in a block approach, incrementally improving upon the tactical configuration of the BMDS. Block 2004 includes SBX-1. Follow-on blocks are expected to improve SBX-1 with the incorporation of Unfunded Requirements (UFRs) in section 5.2.

The SBX-1 is breaking new ground from acquisition to operations. While lessons learned and past experience from comparable technology programs have application to some features of the XBR and integration with a Sea-Based Platform, it does not have a service development and deployment legacy. Accordingly, SBX-1 is confronted with challenges in fielding, integrating, and command that would not be true in a more conventional service acquisition program. It is this uniqueness that gives rise to potential issues related to transition and transfer to a service.

15.7 GBI/GFCC Executive Summary (Annex G)

Purpose: To document the responsibilities, resources, and schedules required among MDA, STRATCOM, and the Services to operate and sustain the Ground-Based Midcourse Defense (GMD) system Ground-Based Interceptor (GBI) and GMD Fire Control and Communication (GFC/C) components, as well as to highlight outstanding issues.

Background: The Army is the lead service for operation of GBI and GFC/C. MDA provides Program Management and sustains the system through the Prime Contractor. Contractor Support will be funded and executed by MDA through the FYDP (FY13). The current GMD Prime Contract has options for logistics support through CY07. Follow-on sustainment (FY08-13) is TBD and will be influenced by pending Acquisition Strategy decisions. Base Operations and Support (BASOPS) Functions for the operational sites will transition to the Services prior to FY13 (see Figure 1). The GMD program strategy is spiral development utilizing Research, Development, Test, and Evaluation (RDT&E) funded block upgrades to deliver operational capability, and is still primarily in development and risk reduction. National Security Presidential Directive (NSPD)-23 of December 16, 2002 directed the fielding of the GMD limited defensive capability, which was achieved in September 2004. GMD assets will be used for both DT/OT and military operations.

(b)(5)

[redacted]

Issues

- Potential GMD Component Acquisition Strategy changes impact, and must consider sustainment and transition strategies.
- Projected Sustainment Funding Shortfalls and impact on Readiness and Spiral Development.

$ in Millions	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	Total
GBI & GFC/C CLS Total Reqts	173	411	440	401	332	344	345	356	2801
Sustainment Funding (PB07)	173	411	324	400	332	344	TBD	TBD	1984+TBD
Unfunded	0.0	0.0	116*	0.0	0.0	0.0	TBD	TBD	116+TBD

Figure 2 - Sustainment Costs

- Complete agreement(s) have not been reached on funding responsibilities for BASOPS and Physical Security assets. At Eareckson Air Station (EAS), immediate FY06 shortfall is $1.8M.
- Policy on Outyear Transfer of System ownership or CLCS has not been agreed to by all stakeholders.

15.8 C2BMC Executive Summary (Annex H)

The purpose of this Ballistic Missile Defense System (BMDS) Command & Control Battle Management & Communications (C2BMC) Transition – Transfer Plan is to provide an understanding of the resources, design, development, integration, fielding and sustainment activities of the Missile Defense Agency (MDA) and Missile Defense National Team B (MDNTB or NTB) to support C2BMC and identify initial planning to transition and transfer this capability to a Service and/or Agency. Currently there has been no Service identified as the "Lead Service" for C2BMC to transition/transfer and Joint Forces Component Command – Integrated Missile Defense (JFCC-IMD) has been identified as the "user representative". Accordingly, there are no plans to transition or transfer C2BMC to a Service at this time, however there is an initiative where portions of C2BMC (e.g. Initial Qualification and Continuation Training and Equipment Maintenance) may transition to another entity/agency.

15.9 STSS Executive Summary (Annex I)

The Space Tracking and Surveillance System (STSS) is a Missile Defense Agency (MDA) program for tracking ballistic missiles during all phases of flight to enable successful engagement by MDA weapon systems. STSS extends the capability of the Ballistic Missile Defense System (BMDS) by providing accurate and timely track and supporting data for ballistic missile attacks on a global basis. The goals for the STSS system include BMDS feature aided tracking, discrimination, tactical parameter data on threat missiles including missile typing and hit/kill assessment inputs.

STSS is not a candidate for transition in the time period of the 08 POM (FY 08-13), though it will be a candidate for the 10 POM (FY 10-15). Transition planning, and allocation of accompanying funding will need to take place in the years preceding such a transition. USAF is the lead Service for STSS.

One significant change that will take place upon transition is the migration from operation from the Missile Defense Space Experimentation Center (MDSEC) to a yet to be specified USAF operating location. The USAF ground station facility will require funding in the FY12-13 timeframe. MDA and USAF have initiated discussions that will result in a better understanding of this issue.

15.10. ABL Executive Summary (Annex J)

The Airborne Laser Program will design, build, test, and eventually field a megawatt-class chemical-oxygen-iodine laser mounted aboard a Boeing 747-400F aircraft. ABL's primary mission will be to acquire, track, and kill enemy ballistic missiles (BMs) during the boost phase of flight. Destroying ballistic missiles in the boost phase means threats are eliminated before having an opportunity to deploy reentry vehicles, sub-munitions, or countermeasures.

ABL integrates three major subsystems (Laser; Beam Control; and Battle Management, Command, Control, Communications, Computers and Intelligence (BMC4I)) into a modified commercial Boeing 747-400 aircraft. The ABL program also includes ABL-specific ground support equipment.

The development of the first ABL weapon system test bed will be accomplished by incrementally stepping through all the key knowledge points (increasing degrees of integration and testing of the integrated weapon system denoting significant levels of accumulated understanding) that confirm the ABL's viability.

This annex is organized to highlight the steps necessary to initiate transition and complete the transfer of the **ABL capability, platforms, and program** to the Air Force (see Section 2.1 Facts and Key Transition Events). The KTEs are:

- Initiate Transition Planning of ABL for eventual transfer to USAF
- Transition an initial ballistic missile defensive capability after system demonstration.
- Deliver an initial operational platform to the USAF
- Transfer the ABL program to the USAF

This annex further describes the ABL program and system, its current status in development, and the organizational responsibilities expected of the Missile Defense Agency (MDA), the United States Air Force (USAF), and Combatant Commanders (COCOMs).

Executive Highlights:

- ABL is not a candidate for transition during the FY08-13 POM timeframe.
- There are currently no known unfunded requirements for MDA or the USAF; however, planning for the 2nd Test ABL (T-2) is under revision while the ABL program focuses on near term knowledge points leading up to a successful lethal demonstration in 2008 by the 1st aircraft (T-1).
- There are no open executive-level issues for ABL.

Funding:

The current MDA fiscal environment focuses the ABL T-1 program on near term knowledge points before any investment is made on the second aircraft (T-2). The initial funding for T-2 has slipped from FY07 to FY09 to reflect this near term focus philosophy/direction. Air Force funding for ABL Production activities is also under revision and may slip accordingly.

MDA.

Fiscal Year	2004	2005	2006	2007	2008	2009	2010	2011
Total Funding ($M)		$447.9	$454.7	$598.9	$542.6	$417.4	$416.4	$647.8

Air Force.

Fiscal Year	2004	2005	2006	2007	2008	2009	2010	2011
Total Funding ($M)		$0	$0	$0	TBD	TBD	TBD	TBD

Key dates through the remainder of the ABL Test Schedule are shown below. The dates for the 2nd aircraft are **"To Be Reviewed (TBR)"** pending lethal shootdown consistent with the MDA/AL funding allocation as of 01 Feb 2006.

	Approx. Date
Industrial Sustainment Contract	FY07
ABL T-1 Capability Increment 1 Demonstration (Shootdown):	NET 2008
ABL T-2 "Green" Aircraft Order	TBR
Long-Lead Procurement Contract	TBR
Procurement of "Green" aircraft for first production ABL (ABL P-1)	TBR
ABL T-2 System Demonstration (Shootdown)	TBR
ABL P-1 Delivery	TBR
ABL P-2 to P-7 Delivery	TBR

Note: all T-2 and Production activities are predicated on meeting T-1 knowledge points and ultimately lethal demonstration.

15.11. KEI Executive Summary (Annex K)

(U) Kinetic Energy Interceptors (KEI) will be a land-mobile, rapidly-transportable, hit-to-kill missile defense element with the ability to engage and defeat Medium Range Ballistic Missiles (MRBMs), Intermediate Range Ballistic Missiles (IRBMs), and Inter-Continental Ballistic Missiles (ICBMs) in the boost, ascent, and midcourse phases of flight. KEI will complement and augment other elements of the BMDS. It will protect the U.S. homeland, our forward-deployed military forces, and friends and allies. The land-mobile KEI element is comprised of three main components: a fire control component, a launcher component, and an interceptor component.

(U) The land-mobile KEI is in the early stages of a Development and Test (D&T) phase that will result in a Block 14 missile defense capability. As a result, it is not a candidate for transfer during the FY08 POM window (i.e., FY08-13). Transition of any KEI capabilities during that time period is to be determined.

~~(FOUO)~~ Full development of a sea-mobile KEI is not part of the program baseline. However, the KEI element is being designed to be common and compatible with a sea-based environment. A detailed Alternatives Assessment is being conducted by the Missile Defense Agency (MDA) and the Navy in 2005/2006 to determine the optimum interim and long-term platforms for sea-basing KEI. Among the platforms being assessed are: DDG-51 class combatants, SSBN and SSGN submarines, LPD-17 class support ships, and large commercial vessels such as container ships.

~~(FOUO)~~ The one open transition and transfer issue facing KEI is that a lead Service has not been formally identified for either the land or sea-mobile variant. If not resolved by the spring of 2006, this issue will begin to adversely affect the land-mobile KEI's design, operational test planning, and DOTMLPF preparations. For example, critical design decisions will be made during the preparations for the FY07 System Design Review without any official input from a lead Service. A 26 August 2005 memo from the Commander of USSTRATCOM recommends the Army as lead for the land-mobile KEI and the Navy as lead for the sea-mobile KEI, and if those recommendations are implemented, this issue will be closed.

~~(FOUO)~~ No decision has yet been made concerning production of KEI units. Given this and the lack of a lead Service designation, most of the details concerning transition or transfer of KEI to a Service are to be determined. It is therefore not possible at this time to identify any FY08 POM unfunded requirements relating to transition and transfer activities, for either MDA or a Service.

~~(FOUO)~~ Notwithstanding the lack of a lead Service designation, valuable transition interactions are occurring under the auspices of the Joint Force Component Command – Integrated Missile Defense (JFCC-IMD).

15.12. PAC-3 MEADS CAP Executive Summary (Annex L)

~~(FOUO)~~ The CAP Annex updates the March 2003 Under Secretary of Defense (Acquisition, Technology, and Logistics) (USD(ATL))-approved PAC3 Transfer and MEADS Realignment Plan from MDA to the Army. The Annex also provides a forward look as both the BMDS and CAP programs evolve.

~~(FOUO)~~ Although the Army is now responsible for PAC-3 procurement and the PAC-3/MEADS combined aggregate development program, MDA remains responsible for the BMDS'configuration control, interoperability and integration efforts. The Army and MDA continue to work together to ensure the successful integration of the PAC-3/MEADS capabilities into the BMDS as per the Mar 03 PAC3 Transfer and MEADS Realignment Plan. The Army has been an active participant in MDA's Configuration Control Board (CCB) process, as well as with all relevant systems engineering and technical coordination processes.

~~(FOUO)~~ Regarding current funding, MDA approved $5.82M (FY05: $.42M received; FY06: $2.8M; FY07: $1.6M; FY 08: $1M) for the Lower Tier Project Office (LTPO) to execute an Upper Tier Debris Mitigation Engineering Change Proposal (ECP) that will be implemented in PATRIOT Post Deployment Build (PDB)-6.5 available for BMDS Block 08. Regarding future funding, MDA plans to provide LTPO up to $4M (ROM) for FY06 and $3.75M for FY07 for LTPO support of BMDS RDT&E efforts. As of 1 Feb 06, MDA provided LTPO an initial input of $1M in FY06 funding for BMDS support activities detailed in section 9. For POM 08-13, MDA plans to provide LTPO a total ROM of $25M for support of BMDS RDTE efforts. See sections 3.1 and 9 for additional details regarding LTPO's future funding requirements The CAP Annex will codify an agreement in principle for MDA funding, with the specific details (amount, activities, etc) codified in another funding-related agreement updated annually (ie, MDA Program Management Directive). MDA provided

~~(FOUO)~~ The Army will continue to inform MDA of CAP-related issues impacting the BMDS via the MDA CCB process and other venues (ie, periodic System Element Reviews, Army/MDA Board of Director meetings, etc). The Army Liaison Office at MDA will continue to serve as the primary focal point for facilitating Army/MDA information flow and issue resolution involving the CAP and the BMDS.

15.13. SBIRS Executive Summary (Annex M)

This annex is different from the other annexes in this plan, as SBIRS is currently and will continue to be a USAF program. No transfer is anticipated between the USAF and MDA. The Missile Defense Agency has funded the upgrade of certain SBIRS software and hardware features to satisfy BMDS requirements, and MDA and the USAF have developed an Interface Control Document which defines the format in which SBIRS will provide BMDS components with Early Warning data. MDA and the USAF will work together to develop additional SBIRS software and hardware features to meet missile defense needs as appropriate.

Ballistic Missile Defense System (BMDS) Transition and Transfer Plan

Annex A

Terminal High Altitude Area Defense (THAAD)

Missile Defense Agency/TH
106 Wynn Drive
Huntsville, AL 35806

~~Distribution D. Distribution authorized to DoD and U.S. DoD Contractors only due to technical and cost content (25 Jan 06). Other requests for this document shall be referred to THAAD Project Office, P.O. Box 1500, Huntsville, AL 35807-3801~~

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BMDS Transition and Transfer Plan
Annex A
THAAD

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APPROVALS

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EXECUTIVE SUMMARY

Terminal High Altitude Area Defense (THAAD) Annex to the Ballistic Missile Defense System (BMDS) Transition and Transfer Plan

THAAD is a ground-based, rapidly-transportable, forward-deployable terminal missile defense system being fielded to protect the homeland, forward-deployed military forces, friends, and allies from ballistic missiles. As an element of the BMDS Terminal Defense segment, THAAD will provide the opportunity to conduct endo-atmospheric and exo-atmospheric engagements against ballistic missiles that were not destroyed earlier in boost or midcourse phases of flight by other BMDS Elements. THAAD will detect, track, engage, and destroy Short and Medium Range Ballistic Missiles as a threshold capability and Intermediate Range Ballistic Missiles and Intercontinental Ballistic Missiles as an objective capability.

MDA will deliver the first THAAD Fire Unit to the Army in FY09 with the second Fire Unit scheduled for delivery in FY10. These THAAD Fire Units consist of three Launchers; 24 Missile Rounds; one THAAD Fire Control/Communications (TFCC) Component; one Radar Component; and Peculiar Support Equipment. THAAD Fire Units #1 and #2 will have the capability to operate autonomously, to be cued via Link-16 and to cue other elements via Link-16. Link-16 messages from the THAAD Element will also be received by the BMDS Command and Control, Battle Management, and Communications (C2BMC) to provide situational awareness.

Missile Defense Agency (MDA) will resource the fielding of a THAAD capability including: mission peculiar equipment; Associated Support Items of Equipment (ASIOE); development of Operational Concepts; and development of Doctrine, Tactics, Techniques, and Procedures. MDA will resource and conduct New Equipment Training, and Replacement Training, and resource Collective Training conducted by the Army in preparation for a Force Development Experimentation/Limited User Test (FDE/LUT). MDA is responsible for providing support to the THAAD peculiar equipment (Radars, Missile Rounds, Launchers, TFCC, etc) and has committed to fully funding Contractor Logistics Support (CLS) through FY11. In FY12/13 MDA will fund CLS as it relates to consequences of design defect issues and the approved THAAD Operational Mode Summary/Mission Profile (OMS/MP). The OMS/MP describes unit activity related to all training and operations. MDA will fund THAAD mission peculiar equipment support to the level of activity defined in the OMS/MP. The Army will be responsible for any support to THAAD mission peculiar equipment that results from training and operations beyond that identified in the OMS/MP.

The Army will be responsible for providing Common Support Equipment (CSE), manning the fielded THAAD capability, and for the Operation and Support (O&S) costs associated with the CSE through FY13. The Army will include budgeting in the Program Objective Memorandum (POM) for FY10-15 to begin full THAAD logistics support in FY14.

The U.S. Strategic Command (STRATCOM) will be responsible for providing overall planning, coordination, and integration of THAAD capabilities among the Geographic Combatant Commands.

THAAD will be transitioned to the Army using current existing policy. MDA will support the Army when it conducts a review of the THAAD Acquisition, Requirements, and Resources associated with the Transition. It is recommended the Army Acquisition Executive (AAE) participate in the MDA Contract Control Board (KCB) when the authority to proceed with the contract award for two Fire Units is requested. Should the Department of Defense (DoD) decide that additional THAAD procurement is necessary based on Warfighter requirements, an appropriate decision process, in accordance with established policy, will be implemented.

Table ES 1.0 shows a summary of MDA and Army funding and manning requirements. The Army funding requirements are estimates. MDA will continue to refine the estimates for Army resourcing in close coordination with the Deputy Assistant Secretary of the Army for Cost and Economics (DASA-CE).

$ in Millions	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
MDA RDT&E Fun to Procure Two Fir Units	0	0	184.4	334	135.7	203.9	0	0	0
MDA RDT&E Fun for FDE/LUT*	0	1.9	2	2	5	6.2	2.4	0	0
MDA RDT&E Fun for Interim Contrac Support (O&S)	0	0	0	0.5	4	9	14	(16)	(16)
Army Procurement Requirements	0	0	0	(10)	(10)	0	0	0	0
Army O&S Funds CSE and ASIOE	0	0	0	0	(4)	(4)	(8)	(8)	(8)
Army: Soldier Allocations	22	22	22	95**	190**	190**	285**	TBD**	TBD**

MDA numbers reflect PB07 budget
Figures in (red font) are not included in current POMs
*Figures do not include any dedicated flight testing based on schedule DT/OT tests
**Pending Total Army Analysis-13 (FY08-11 approved in Total Army Analysis-11)

Table ES 1.0 ~~(FOUO)~~ Funding and Manning Requirements

THAAD spiral development will continue with Block 08, Block 10, and Block 12 capabilities growth; therefore, programmatic transfer of the THAAD Program from MDA to Army will not occur. The THAAD Transition Annex does not address additional Fire Unit requirements beyond the first two.

Issues (See Section 3.0 for details)

- No senior-level decision process in place to direct transition of THAAD.
- Army CSE and O&S costs are currently unbudgeted in the POM.
- MDA CLS/Interim Contractor Support (ICS) for FY12 and FY13 unbudgeted by MDA.

Terminal High Altitude Area Defense (THAAD) ANNEX

1.0 PURPOSE

The purpose of the THAAD Annex to the BMDS Transition and Transfer Plan is to document agreements among MDA, STRATCOM, and the Army (as lead Service) to execute the delivery of THAAD BMDS capabilities from MDA to the Army for employment by Combatant Commanders (COCOMs). This annex identifies the roles, responsibilities, resources, and schedules required among MDA, STRATCOM, and the Army to support the manufacture, fielding, and sustainment of two THAAD Fire Units. A set of managerial principles was jointly developed to guide the actions of the organizations as they team together to deliver the Fire Units. These principles are listed in Appendix A. MDA will deliver the first THAAD Fire Unit to the Army in FY09 with the second Fire Unit scheduled for delivery in FY10. MDA and the Army will execute delivery of these Fire Units using a teaming approach. While MDA will retain programmatic authority and responsibility for incrementally developing and fielding advanced THAAD capabilities, the Army will be responsible for providing CSE, manning fielded the THAAD capabilities, and for the O&S of fielded CSE and ASIOE.

THAAD will be transitioned to the Army under existing policy. MDA will support the Army when it conducts a review of the THAAD Acquisition, Requirements, and Resources associated with the Transition. It is recommended the AAE will participate in the MDA KCB when the authority to proceed with the contract award for two Fire Units is requested. Should the DoD decide that additional THAAD procurement is necessary based on Warfighter requirements, an appropriate decision process, in accordance with current policy, will be established.

2.0 FACTS ASSOCIATED WITH FIELDING OF TWO FIRE UNITS

2.1 MDA will continue to manage the THAAD Program; manage configuration, fund for and build Research, Development, Test & Evaluation (RDT&E) fielding assets, and evolve/develop growth capabilities.

2.1.1 MDA will fund the acquisition of two THAAD Fire Units.

2.1.2 MDA is responsible for providing support to the THAAD peculiar equipment (Radars, Missiles, Launchers, TFCC, etc) and has committed to fully funding CLS through FY11. In FY12/13 MDA will fund CLS as it relates to consequences of design defect and the approved OMS/MP. The OMS/MP describes unit activity related to all training and operations. MDA will fund THAAD mission peculiar equipment support to the level of activity defined in the OMS/MP. The Army will be responsible for any support to THAAD mission peculiar equipment that results from training and operations beyond that identified in the OMS/MP.

2.2 The Army is the gaining Service for THAAD.

2.3 The Army will man, operate, and support THAAD Fielded capabilities.

2.4 The Army will be responsible for providing CSE manning the fielded THAAD capability, and for the O&S costs necessary to provide support for the CSE through FY13. The Army will include budgeting in the POM for FY10-15 to begin full THAAD logistics support in FY14.

2.5 Base Operations/Base Support costs at Ft. Bliss, and operational mission costs for the THAAD Fire Unit(s) will be the responsibility of the Army.

2.6 A Materiel Release Review Board process will be required to support the THAAD Fire Unit Fieldings.

2.7 The Army has Materiel Release Authority. MDA will be responsible for developing and/or coordinating supporting documentation as required by the Army.

2.8 There will be no Milestone C decision associated with the first two THAAD Fire Unit Fieldings.

3.0 ISSUES

3.1 No senior-level process in place to direct transition of THAAD.

3.1.1 **<u>Discussion:</u>** There is no established process for an OSD/DoD level decision to approve and direct THAAD transition.

3.1.2 **<u>Impact:</u>** Jeopardizes timely decisions to effect transition for THAAD. Transition approval decision is required no later than 1 March 2006.

3.1.3 **<u>Recommendation:</u>** Develop an appropriate senior-level decision review process.

3.1.4 **<u>Closure:</u>** A senior-level decision review process is established to direct MDA and the Army with respect to THAAD.

3.2 Army CSE and O&S costs are currently unbudgeted in the POM.

3.2.1 **<u>Discussion:</u>** CSE and O&S are unfunded requirements in the FY06-11 POM. CSE and O&S are required to support two THAAD Fire Units.

3.2.2 **Impact:** No CSE or O&S funding in the Army 08-13 POM submission and lack of equipment and logistics support needed for THAAD fielding will result in an incomplete Total Package Fielding (TPF) for the two Fire Units.

3.2.3 **Recommendation:** Army budget CSE and O&S in the FY08-13 POM.

3.2.4 **Closure:** Army fund CSE and O&S requirements in the FY08-13 POM.

3.3 MDA CLS/ICS funding for FY12 and FY13 is unbudgeted MDA.

3.3.1 **Discussion:** MDA will fund CLS/ICS through FY11 and fund for consequences of design and the approved operational mode summary/mission profile in FY12/13.

3.3.2 **Impact:** Inability to support THAAD Fire Units.

3.3.3 **Recommendation:** MDA will fund, in the FY08-13 POM, required CLS/ICS in FY12/13 as described in this Annex.

3.3.4 **Closure:** MDA budget CLS/ICS through FY13 in the 08-13 POM.

4.0 SYSTEM DESCRIPTION

THAAD is a ground-based, rapidly-transportable, forward-deployable terminal missile defense system being fielded to protect the homeland, forward-deployed military forces, friends, and allies from ballistic missiles. As an element of the BMDS Terminal Defense segment, THAAD will provide the opportunity to conduct endo-atmospheric and exo-atmospheric engagements against ballistic missiles that were not destroyed earlier in boost or midcourse phases of flight by other BMDS Elements. THAAD will detect, track, engage, and destroy Short and Medium Range Ballistic Missiles as a threshold capability and Intermediate Range Ballistic Missiles and Intercontinental Ballistic Missiles as an objective capability.

A THAAD Fire Unit consists of three Launchers, 24 Missile Rounds, one TFCC, one Radar Component, and Peculiar Support Equipment (Figure 4.1). (This may not be representative of the Army's objective configuration.)

THAAD Fire Units #1 and #2 will have the capability to operate autonomously, to be cued via Link-16, and to cue other elements via Link-16. The BMDS C2BMC can receive THAAD Element Link-16 messages to provide situational awareness. The BMDS Engagement Sequence Groups (ESGs) supported by the THAAD Fire Units #1 and #2 are THAAD Interceptor Engage on THAAD Radar and Standard Missile-3 (SM-3) Launch on THAAD Radar (Link-16).

The THAAD capabilities will continue to evolve in future Block upgrades. Capability upgrades are outside the scope of this transition annex.

Figure 4.1 THAAD Fire Unit Components

4.1 THAAD Launcher Component

The Launcher is a mobile tactical element of the THAAD Fire Unit and is used to transport, aim, and launch THAAD Missiles. The Launcher is comprised of two prime items: the Transporter and the Missile Round Pallet (See Figure 4.2).

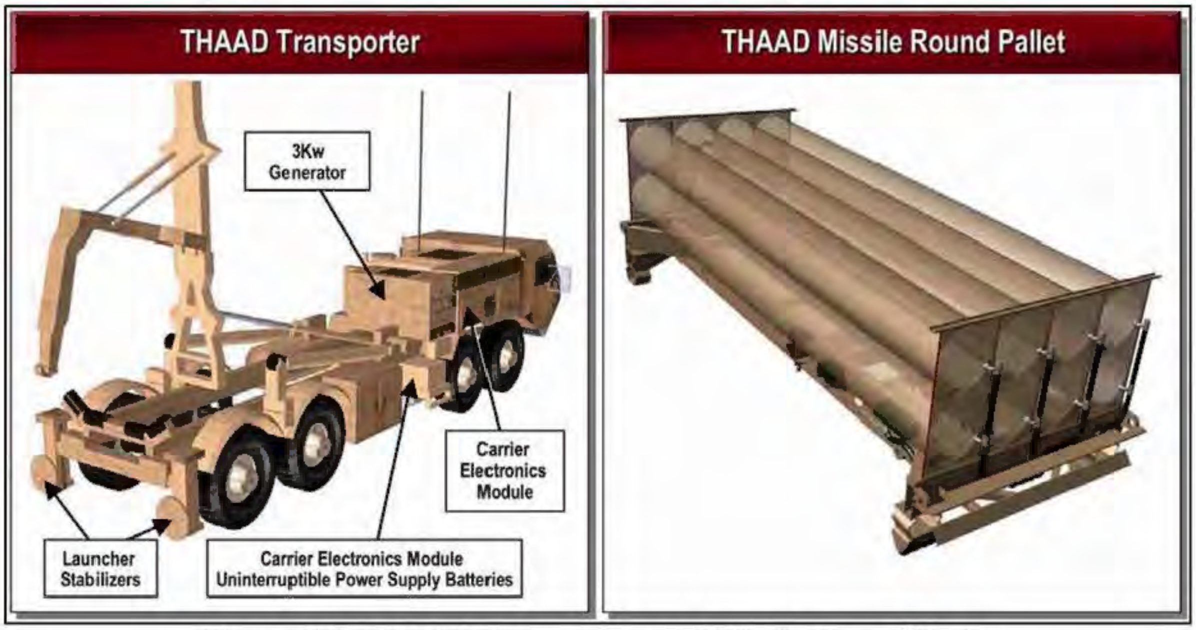

Figure 4.2 THAAD Transporter and Missile Round Pallet

4.1.1 THAAD Transporter

The Transporter provides the principal means of missile transportation and serves as a stabilized missile launch platform. The Transporter is based upon the U.S. Army M1120 Heavy Expanded Mobility Tactical Truck-Load Handling System variant. Modifications made to the M1120 to accommodate the THAAD Missile Round Pallet included a launch stabilization system, electrical interfaces, and a THAAD unique carrier electronics module. The carrier electronics module is the control center for the Launcher. It monitors and reports real-time launcher and missile status to the TFCC over a fiber optic link. Other features include a dynamic power architecture comprised of an on-board 3Kw Generator set/commercial input power source, and an on-board Uninterruptible Power Supply.

4.1.2 THAAD Missile Round Pallet

The Missile Round Pallet is a modular platform designed to support and secure THAAD Missile Round Canisters. The Missile Round Pallet provides physical connectivity and mating for the missile canisters during storage, transport, and tactical operations. The Missile Round Pallet incorporates an automated Azimuth Determination Unit to provide the orientation relative to the Launcher's local coordinates.

4.2 Missile Round

The THAAD Fire Units #1 and #2 Configuration missile round is a certified round made up of a strong, lightweight missile canister and an interceptor consisting of a single-stage booster and a kill vehicle with homing, hit-to-kill capability. The canister serves as a non-reusable housing and launch tube providing environmental protection for the interceptor. The interceptor rocket motor provides all of the boost impulse for the interceptor. The interceptor uses an active thrust vector actuation system, two axis rate sensors, and a deployable flare located at the aft end of the booster to provide stability and controllability during powered flight. The kill vehicle provides for high-aim point accuracy intercepts and destroys its target through the transfer of kinetic energy upon impact. The kill vehicle consists of an infrared seeker, an inertial measurement unit, a mission computer, avionics flight software, a divert and attitude control system, and a communication system. The interceptor, when integrated with the canister, makes up the missile round (Figure 4.3).

(b)(3):10 USC § 130

[redacted]

4.3 THAAD Fire Control/Communications

The role of the TFCC is to provide capabilities to conduct THAAD Fire Unit operations. The TFCC integrates the Launcher and the Radar and provides the planning, control, coordination, execution, and communications necessary to fulfill the THAAD mission in a coherent and fully integrated fashion. In addition, TFCC is interoperable with external air and missile defense and intelligence systems and agencies and will be integrated into BMDS. The TFCC functions involve planning the missile defense battle (force operations) and those activities associated with the actual conduct of the missile defense battle (engagement operations). The TFCC is composed of the Tactical Operations Station, the Launch Control Station, and the Station Support Group (Figure 4.4). These three components together are called the Tactical Station Group. A THAAD Fire Unit includes two Tactical Station Groups. The dual Tactical Station Group configuration is standard with one Tactical Station Group performing engagement operations and the other performing force operations functions. The Tactical Station Group can be rapidly reconfigured for engagement operations and/or force operations in the event of equipment failure/malfunction or to continue operations during relocation. A single Tactical Station Group is capable of performing both engagement operations and force operations functions. The TFCC will be capable of site centered operations; that is, it can control collocated Radar and Launchers.

Figure 4.4 THAAD Fire Control/Communications

4.4 Radar Component

The THAAD Radar is an X-Band, solid state, phased array radar capable of tracking multiple threats and multiple interceptors during engagements. The THAAD Radar uses fence, volume, and cued search modes, and provides surveillance, acquisition, track, discrimination, missile communications, and hit assessment for the TFCC.

The THAAD Radar Component is a transportable system composed of the following major end items: Antenna Equipment Unit, Electronic Equipment Unit, Cooling Equipment Unit, and the Prime Power Unit (Figure 4.5).

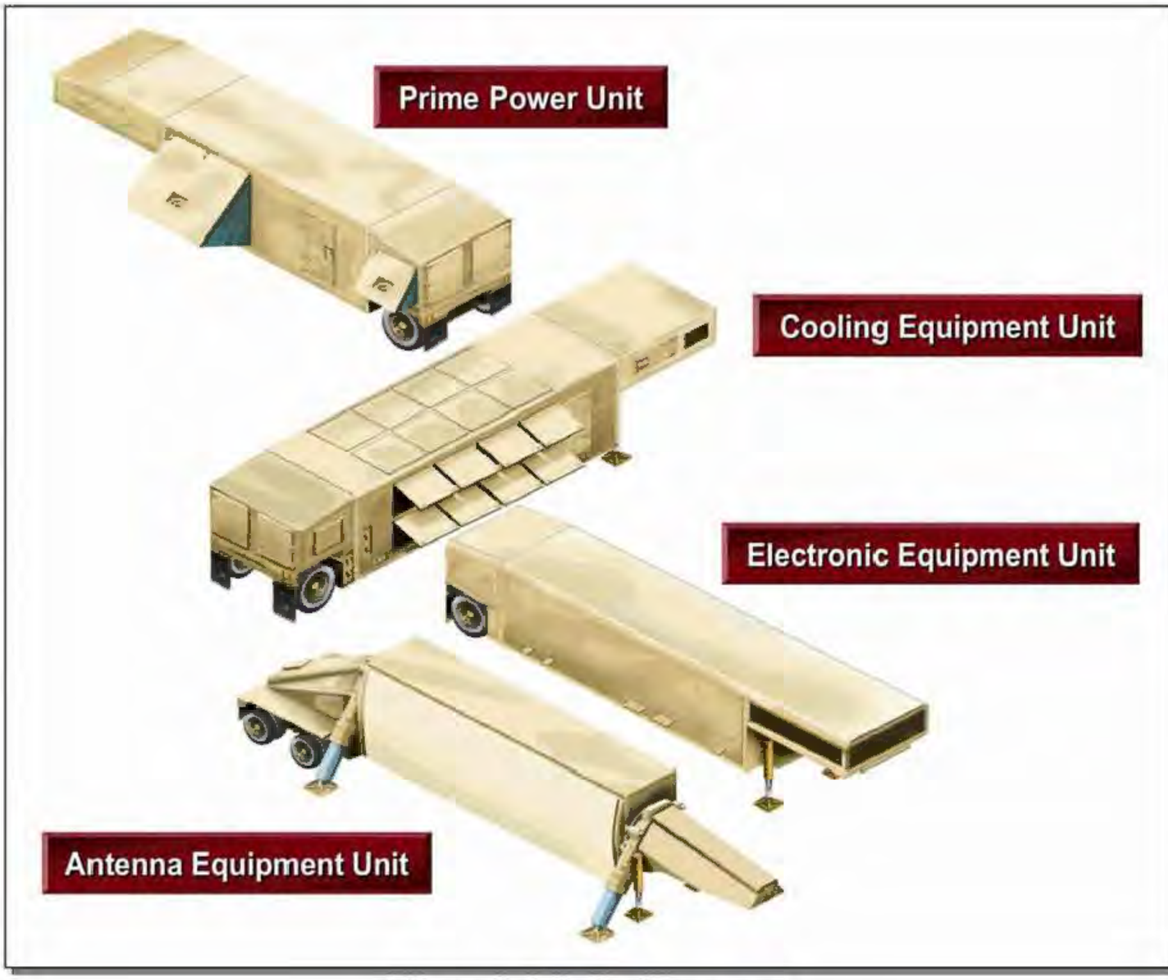

Figure 4.5 Radar Component

4.4.1 Antenna Equipment Unit

The Antenna Equipment Unit transmits and receives radio frequency energy to support search, track, and interceptor uplink/downlink. The Antenna Equipment Unit includes the capability to transmit multiple radio frequency beams sequentially and receive beams simultaneously.

4.4.2 Electronic Equipment Unit

The Electronic Equipment Unit is an environmentally controlled shelter housing the electronic equipment used to generate the timing and control signals required of radar operation and signal processing. Two maintenance terminals, referred to as the Control and Display Workstations, are located in a separate maintainer's area within the Electronic Equipment Unit. The Radar interface to the TFCC provides both digital and voice communications, and the interface to the Missile provides in-flight digital communications. Within the THAAD Radar, an inter-shelter communications system provides non-secure voice communications between the maintainer/operators in the Electronic Equipment Unit and those working at the other shelters.

4.4.3 Cooling Equipment Unit

The Cooling Equipment Unit is a fully integrated trailer system, providing complete system cooling and power distribution for the THAAD Radar System.

4.4.4 Prime Power Unit

The Prime Power Unit is a transportable engine alternator system which provides prime power for the Antenna Equipment Unit, Electronic Equipment Unit, and Cooling Equipment Unit.

4.5 Peculiar Support Equipment

The THAAD Peculiar Support Equipment hardware for Fire Units #1 and #2 will consist of a Battery Support Center, an Interim Contractor Support System, and Missile Divert Attitude Control System (DACS) fuel Active Leak Sensor System.

4.5.1 Battery Support Center

The THAAD unit level maintenance and supply support for Fire Units #1 and #2 will be provided by the Battery Support Center (Figure 4.6). The Battery Support Center consists of the Battery Logistics Operations Center, Spares Transport Shelter, two Mobile Support Trucks, Deployable Rapid Assembly Shelter (DRASH) HP2C (Heating, Ventilation, and Air Conditioning (HVAC)/Generator set). The Battery Support Center equipment will be operated by the THAAD Enhanced Operator/Maintainer. There is one Battery Support Center per THAAD Fire Unit. The Battery Support Center provides workspace, unit level spares, communications equipment and computer resources required to support the management and coordination of all THAAD maintenance and supply operations. The Battery Support Center will provide the communications assets to support tele-maintenance, video tele-conferencing, battlefield tele-conferencing, and voice communications. The THAAD Battery Logistics Operations Center consists of an environmentally controlled one side expandable S-784/G International Organization for Standardization (ISO) Shelter. The Battery Logistics Operations Center will utilize the Family of Medium Tactical Vehicles Load Handling System as the prime mover. The Battery Logistics Operations Center shelter will serve as the focal point or clearinghouse for all THAAD Battery maintenance both scheduled and unscheduled. The Spares Transport Shelter will provide storage for all THAAD spare parts authorized for removal and replacement at the unit level. The Spares Transport Shelter will be transported on the Family of Medium Tactical Vehicles Load Handling System Trailer and towed behind the Battery Logistics Operations Center. The THAAD Mobile Support Truck is used to transport tools, test equipment, communications equipment, and repair parts from the Battery Support Center to remotely deployed THAAD mission equipment. The Mobile Support Truck will utilize the High Mobility Multi-Purpose Wheeled Vehicle (HMMWV) Cargo Bed Cover mounted on an M1152 Up-armored HMMWV.

Figure 4.6 Battery Support Center

4.5.2 Interim Contractor Support System

The Interim Contractor Support System (Figure 4.7) is designed to support contractor technicians deployed to the theater of operations as a depot forward support cell. The contractor support system will be developed as a modular support package capable of being responsive to the changing logistical needs of the deployed force. Depending upon mission needs, the contractor support system can easily integrate into an intermediate support base and push forward support as needed through a larger distribution-based logistics system or rapidly move directly into theater and begin immediate sustainment operations under even the most spartan conditions. It will provide in-theater storage and distribution of spare and repair parts, tools, test equipment, satellite communications capability for tele-maintenance, video tele-conferencing, radar file transfer via the Data Reduction Network, Non-Secure Internet Protocol Router Network/Secret Internet Protocol Router Network connectivity, and remote supply and support functionality. It will consist of a spares/communications transport shelter as well as a mobile support center and contact maintenance vehicles. The Interim Contractor Support System is not part of a Modified Table of Organization and Equipment. It will not be issued to the Government.

Figure 4.7 Interim Contractor Support System

4.5.3 Missile Divert Attitude Control System Fuel Active Leak Sensor System

The Active Leak Sensor System detects divert and attitude control system propellant leaks when the THAAD Missile is in transport storage. Active and passive sensors within the canister detect leaks of hypergolic propellants during all stages of the Missile Round life cycle.

4.6 Training Devices

4.6.1 New Equipment and Replacement Training Devices

In support of THAAD New Equipment Training, the THAAD Prime Contractor will use established interim training devices: Radar March Order and Emplacement Trainer, the User System Operator Trainer, the Radar Training Lab, Missile Round Pallet Trainers, and a Missile Round Trainer.

A Practical Explosive Ordnance Disposal System Trainer and Classroom Explosive Ordnance Disposal System Trainer will be provided to the Explosive Ordnance School at Eglin Air Force Base, to support training of explosive ordnance disposal specialists.

4.6.2 Unit Training Devices

Each Fire Unit will be provided a TFCC embedded training capability, 24 missile round trainers, and three missile round pallets for sustainment training.

Figure 4.8 depicts the THAAD training devices. See Section 8, Figure 8.1, Acquisition Strategy for THAAD Fire Unit Fieldings, for delivery dates.

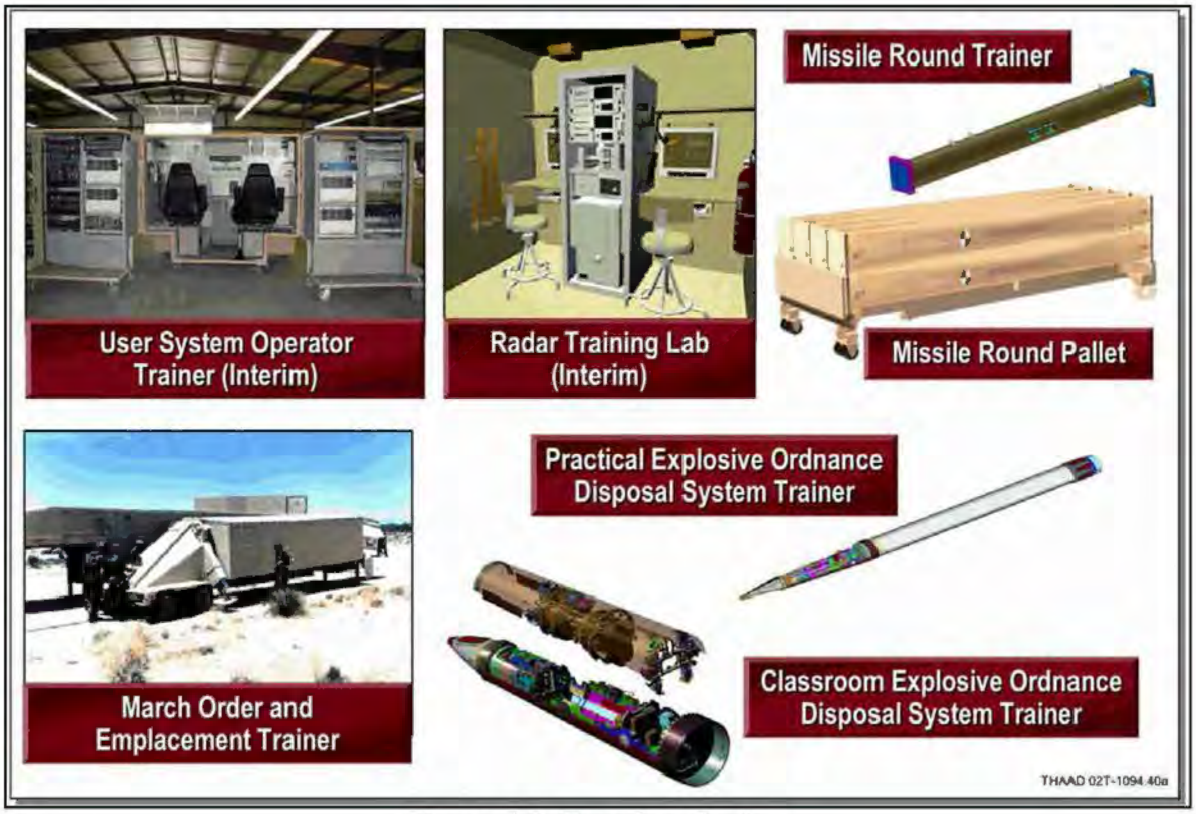

Figure 4.8 Training Devices

4.7 Maintenance

The THAAD peculiar system hardware will utilize a two-level maintenance concept consisting of field and sustainment. CSE and ASIOE will be sustained through the existing military support structure. The THAAD logistics support concept maximizes the capabilities of the enhanced operator/maintainers and then augments that capability with the contractor who provides maintenance support.

The enhanced operator/maintainers will perform test, inspection, preventive maintenance checks and services, and verify system line replaceable unit operations. Field-level maintenance, such as fault isolation, and removal and replacement of THAAD line replaceable units, will be limited to the capabilities of the Block 08 diagnostics. Interim Contractor Support personnel will accomplish all maintenance and support tasks relative to commercial-off-the-shelf and THAAD peculiar items beyond the capability of the enhanced operator/maintainer and extending through sustainment-level repair.

5.0 PROGRAM STATUS

5.1 Current Program

THAAD spiral development program will provide a robust capability designed to defeat Short and Medium Range Ballistic Missiles as a threshold capability and

Intermediate Range Ballistic Missiles and Intercontinental Ballistic Missiles as an objective capability. THAAD will provide a flexible, hit-to-kill capability in the endo-atmospheric and exo-atmospheric regions in the threat's terminal phase of flight. The development provides:

(1) Test interceptors capable of intercepting ballistic missiles in the endo-atmospheric and exo-atmospheric regions (with a test instrumentation package on board),

(2) A THAAD Radar with initial discrimination capability, and

(3) A TFCC, with Limited Tactical Digital Information Link and Defense Design Planner.

Initial capability development will provide THAAD Interceptor Engage on THAAD Radar and SM-3 Launch on THAAD Radar (Link-16) engagement sequence group capabilities. The initial development also provides the capability for limited engagement coordination with other BMDS Link-16 Elements. The TFCC will also receive Link-16 messages and provide situational awareness to the BMDS. Flight tests for the THAAD Interceptor begin in FY06 and continue into FY09 with a total of seventeen flight tests.

THAAD capability development evolves to provide a more robust capability to the BMDS. Included in the development are: enhancements to the radar discrimination due to incorporation of advanced algorithms, the completion of minimum implementation Link-16 message set allowing full integration of THAAD in the Link-16 network, a more robust communications protocol with the BMDS C2BMC which will allow THAAD to provide additional threat information to the BMDS and to receive cues from the BMDS C2BMC from those elements/components which are not Link-16 capable; a flexible firing doctrine; and the ability to operate and survive in a full spectrum of tactical missile environments. To facilitate tactical employment by soldiers, the development effort also includes TFCC embedded training, defense planning, and expanded interoperability using Link-16 and United States Message Text Format message set with BMDS and authorized engagement coordination with Patriot.

THAAD's current development program culminates in demonstrated capabilities in both endo-atmospheric and exo-atmospheric battlespace against the full spectrum of adversarial ballistic missiles as described above. THAAD's development is a foundation for the acquisition and delivery of Fire Units to support operational assessment and fielding of a BMDS capability useful to the combatant commanders and services.

MDA has resourced the acquisition and fielding of two THAAD Fire Units with the capability to support Air and Missile Defense Task Force operations and BMDS ESGs. MDA plans to award the contract for the Fire Units at least two years prior to fielding in order to allow sufficient lead time for the manufacture and delivery of end item hardware, software, initial spares, flyaway packages, unique item tracking technology, and applicable engineering services.

5.2 Future Development

The future capabilities described in this section are not to be considered as part of the THAAD Fire Units #1 and #2 deliveries to the Army.

THAAD capability development will eventually allow other BMDS Elements to conduct engagement sequences using THAAD Components; thereby, expanding BMDS baseline ESGs. These additional ESGs will include SM-3 Engage on THAAD, Ground Based Interceptor (GBI) Launch on THAAD, and GBI Engage on THAAD via BMDS. Collaborative radar hardware and software development efforts are provided to support both the THAAD and Forward Based X-Band-Transportable (FBX-T) Radars.

Other near term THAAD capabilities will include remote operation of THAAD Launchers beyond Line of Sight, launching THAAD Missiles based on information from non THAAD Sensors, reporting of non-threatening ballistic missiles to the BMDS, and the synchronizing of the THAAD and FBX-T Radars to form a BMDS Common Transportable Radar.

Additional THAAD development will provide for THAAD Interceptor's Engage on Remote sensor capability, an improved booster with a second stage, enhanced seeker, robust multi-frequency interceptor communications; and improvements to the THAAD Radar through incorporation of advances in the development of the X-band Receive/Transmit unit. These capabilities will significantly contribute to the BMDS mission of defense of the homeland against asymmetric threats, defense of deployed forces, and defense of friends and allies.

6.0 ORGANIZATIONAL RESPONSIBILITIES - DOCTRINE, ORGANIZATION, TRAINING, MATERIEL, LEADERSHIP AND EDUCATION, PERSONNEL, FACILITIES, SECURITY, TEST STRATEGY, AND SUPPORTABILITY STRATEGY

6.1 Doctrine

Joint Publications 3-01 Countering Air and Missile Threats, 3-26 Homeland Security, and 3-26.1 Homeland Defense will be the basis for THAAD doctrinal products in a joint environment, and THAAD Field Manual (Draft) 3-01.91 provides the basis for THAAD operations. STRATCOM, as the coordinating authority to represent the interest of all COCOMs, will generate Concept Plans. Draft Doctrine, Tactics, Techniques and Procedures were previously developed and will continue to be further defined by the U.S. Army Air Defense Artillery School (USAADASCH) Directorate of Training, Doctrine, and Leader Development through assessments of THAAD capabilities and lessons learned from Warfighter exercises. Additional Air and Missile Defense field manuals and Joint Publications will be updated as each THAAD Block Capability is reached.

6.1.1 <u>Missile Defense Agency Responsibilities</u>

- Provide funding to support the development of Operational Concepts to support the first two THAAD Fire Units.
- Provide funding to support the development of Doctrine, Tactics, Techniques, and Procedures to support the first two THAAD Fire Units.

6.1.2 <u>Army Responsibilities</u>

- Provide THAAD capabilities input to Joint Publications 3-01 Countering Air and Missile Threats, 3-26 Homeland Security, and 3-26.1 Homeland Defense.
- Develop the Concept of Operations to support the THAAD Fire Units, in coordination with STRATCOM *[SD 508-6]*.
- Develop Doctrine, Tactics, Techniques, and Procedures in support and development of FM 3-01.91, to support the THAAD Fire Units, in coordination with STRATCOM *[SD 508-6]*.

6.1.3 <u>STRATCOM Responsibilities</u>

- Include Layered Missile Defense in the Prioritized Capabilities List.
- Develop War Plans that include THAAD Fire Units *[DoDD 5134.9]*.
- Provide Joint Doctrine, Concept of Operations, Directives and Tactics, Techniques, and Procedures developed in coordination with Services and other COCOMs for employment of the BMDS *[SD 508-6]*

6.2 Organization

The Army will develop the required organizational structure for the THAAD Fire Units. The THAAD Fire Units will be fielded as U.S. Army Forces Command Modified Table of Organization and Equipment organizations. Fire Unit requirements are currently identified in the Unit Reference Sheets and provide the basis for the development of the initial Modified Table of Organization and Equipment. The force structure requirements to support the organization were developed as a part of Total Army Analysis-11 and will be refined in future development cycles.

6.2.1 <u>Missile Defense Agency Responsibilities</u>

- Submit Basis of Issue Plan and Qualitative and Quantitative Personnel Requirements Information Feeder Data *[AR 71-32]*.

6.2.2 <u>Army Responsibilities</u>

- Develop the required organizational structure (Table of Organization and Equipment/Modified Table of Organization and Equipment) for THAAD Fire Units *[AR 71-32]*.
- Develop the Basis of Issue Plan and Qualitative and Quantitative Personnel Requirements Information *[AR 71-32]*.
- Develop the Force Alignment and Stationing Package which will assign the THAAD Fire Units to a parent organization.

- Validate and prioritize organization requirements.
- Resource THAAD personnel requirements in Total Army Analysis process.

6.3 Training

The training for the THAAD Fire Unit fieldings will consist of New Equipment Training, Collective Training, Replacement Training, and Unit Sustainment Training supported by embedded training and non-embedded training devices. Training will consider the results of lessons learned, System Manpower and Personnel Integration Management Plan issues and concerns, and Task and Skills Analysis. Distributed Interactive Simulation, High Level Architecture, Synthetic Theater of War capabilities are not embedded in the initial Fire Units.

6.3.1 Missile Defense Agency Responsibilities

- Provide New Equipment Training and Follow-on Replacement Training (to include training materials) for the two Fire Units, in accordance with U.S. Army Training and Doctrine Command (TRADOC) Regulation 350-70, through FY13.
- Fund the development of STP 44-14E14-SM-TG THAAD TFCC Operator/ Maintainer; STP 44-14J14-SM-TG Tactical Operations Center Enhanced Operator/Maintainer; and STP 44-14T14-SM-TG THAAD Launcher Enhanced Operator/Maintainer Manuals.
- Fund the development of Army Training Evaluation Program (ARTEP) 44-697-10-DRILL Crew Drills for the THAAD Radar; ARTEP 44-697-11 DRILL Crew Drills for the THAAD Launcher and Tactical Missile Reload; and ARTEP 44-697-12-DRILL Crew Drills for the TFCC Manuals.
- Fund the development of ARTEP 44-697-30-MTP Mission Training Plan for the Air Defense Artillery Battery, THAAD.
- Fund and develop inclusion of THAAD considerations in Above Element Training given by the Joint National Integration Center (JNIC) BMDS Training Center to operators and staffs across the BMDS.
- Fund, consistent with POM submissions, Collective Training for FDE/LUT.
- Develop and deliver training devices to support THAAD Fire Units (See Section 4.6).
- Fund and develop THAAD Advanced Courses to include THAAD's impact to other segments of BMDS (See Appendix C).
- Fund Doctrine and Tactics Training Development as a part of New Equipment Training.
- Fund and develop THAAD contribution to the Distributed Multi-Echelon Training System (DMETS) to include interaction with BMDS C2BMC and other Elements in support of BMDS Collective Training.

6.3.2 Army Responsibilities

- Develop STP 44-14E14-SM-TG TFCC Enhanced Operator/ Maintainer; STP 44-14J14-SM-TG Tactical Operations Center Enhanced Operator/Maintainer; and STP 44-14T14-SM-TG THAAD Launcher Enhanced Operator/Maintainer Manuals.
- Develop ARTEP 44-697-10-DRILL Crew Drills for the THAAD Radar; ARTEP 44-697-11 DRILL Crew Drills for the THAAD Launcher and Tactical Missile Reload; and ARTEP 44-697-12-DRILL Crew Drills for the TFCC Manuals.
- Develop ARTEP 44-697-30-MTP Mission Training Plan (standard for qualification and certification) for the Air Defense Artillery Battery, THAAD.
- Conduct Collective Training for FDE/LUT with assistance from MDA.
- Develop THAAD System Training Plan.
- Conduct the THAAD Advanced Courses, to include THAAD's impact to other segments of the BMDS.
- Training Accreditation *[TRADOC Regulation 350-18].*
- Validate and prioritize training requirements.
- Conduct crew certification.
- Fund and conduct Replacement Training after FY13.
- Conduct Doctrine and Tactics Training.

6.3.3 STRATCOM Responsibilities

- Identify Mission Essential Task Lists, training needs, opportunities, and parameters for the BMDS *[SD 508-6].*
- Utilize MDA-developed (e.g. DMETS) tools to plan and conduct multi-component, multi-echelon collective training events which involve THAAD, in coordination with the Army. *[SD 508-6].*

6.4 Materiel

MDA will resource and field two (2) THAAD Fire Units to include concurrent/initial spares and repair parts. The Army will resource CSE (See Appendix B) and operations and support of the CSE and the ASIOE (See Appendix B). The ASIOE will be provided by the THAAD Project Office and are required to assemble and deliver a single Total Package Fielding.

The THAAD Fire Units chain of ownership will be established with the following process. MDA will sign the DD250 from the Prime Contractor. MDA will transfer THAAD equipment (Total Package Fielding) to the Army using DD1149 for the FDE/LUT. At the conclusion of this test, the Army Test and Evaluation Command (ATEC) will complete its Capabilities Assessment Report (CAR) in support of the Materiel Release Review Board process. After Materiel Release has been approved, the Army will assume property accountability for all THAAD Unit Set Equipment under Army Regulations (AR) (AR 710-1 and AR 710-2). The Army will then man and operate the system for operational purposes and will sustain the CSE and Associated Items of

Support Equipment. In the event MDA requires an upgrade to the system or to utilize the system for BMDS-level testing, the MDA Operations Center will coordinate with the Army and COCOMs to obtain access and coordinate schedule synchronization to minimize any negative operational impact to the Warfighters.

6.4.1 Missile Defense Agency Responsibilities

- Resource and deliver two (2) THAAD Fire Units to the Army. (See Appendix B for specific equipment)
- Provide Total Life Cycle System Management.
- Fund, consistent with POM submissions, CLS of THAAD peculiar hardware, software and commercial-off-the-shelf equipment for the first two Fire Units through FY13.
- Conduct senior-level decision review for THAAD transition.
- Provide Post Deployment Software Support.
- Fulfill safety and respective transport mode certifications required for THAAD system transportability approval.
- Establish the contract for the logistics support of two THAAD Fire Units.
- Obtain Materiel Release Approval *[AR 700-142]*.
- Obtain Insensitive Munitions Compliance or Waiver. (Approval Insensitive Munitions Plan)
- Obtain munitions Final Hazard Classification.
- Complete Total Package Fielding.
- Develop Materiel Fielding Plan using AR 700-142 as a guide.
- Obtain Type Classification for THAAD Fire Units.
- Develop, deliver, and maintain Interactive Electronic Technical Manuals.
- Obtain Link-16 certification from Joint Interoperability Test Center.
- Coordinate the testing and certification and accreditation of all new configuration updates with the Warfighter.
- Control MDA-unique hardware/CDU software configuration baselines, while coordinating all spiral software releases with the Warfighter.
- Incorporate approved operational baseline configuration changes as part of an integrated build whenever possible.
- Coordinate, review, evaluate, integrate, and test all operational baseline changes proposed by the Warfighter.
- Support the development for THAAD follow-on procurement as required.
- Maintain Configuration Management for THAAD Fire Units, including correction of design flaws and latent defects, and capability upgrades.

6.4.2 Army Responsibilities

- Provide CSE. (See Appendix B for specific equipment)
- Provide O&S for the CSE and ASIOE of the first two Fire Units. (See Appendix B for specific equipment)

- Provide a THAAD CPD in accordance with the Joint Capabilities Integration Documentation System process *[CJCS 3170.01]*.
- Develop a Mission Support Plan *[AR 700-142]*.
- Validate and prioritize equipment requirements.
- Validate and prioritize sustainment requirements.
- Resource O&S for THAAD Fire Units in the FY10-15 POM.
- Include for consideration in the POM for FY10-15 to begin fully funding THAAD logistics support in FY14.

6.5 Leadership and Education

Formal leader development is the responsibility of TRADOC and is conducted at TRADOC proponent schools for officers, warrant officers, non-commissioned officers, and enlisted personnel. The USAADASCH schedules numerous courses annually to enhance leadership skills for Soldiers preparing to assume leadership positions in tactical units.

6.5.1 Missile Defense Agency Responsibilities

- Include THAAD in BMDS Training and Education Program.

6.5.2 Army Responsibilities

- Develop and incorporate THAAD training into Officer Education, Non-Commissioned Officer Education, and Warrant Officer Education Systems.

6.5.3 STRATCOM Responsibilities

- Train and certify Headquarters personnel for command-specific BMDS-related duties *[SD 508-6, SD 508-8]*.

6.6 Personnel

The THAAD System will be operated and maintained by enhanced operators/maintainers at the unit. Other appropriate military occupational specialty soldiers will be assigned as defined in the Modified Table of Organization and Equipment. The Army has resourced soldiers to support these requirements and will refine manpower requirements in future Total Army Analysis and as a part of the Modified Table of Organization and Equipment development document. THAAD military occupational specialties are shown in Appendix D. Interim Contractor Support personnel will provide system maintenance and supply support above the unit's capability. The Interim Contractor Support technicians will provide logistics support to fielded THAAD Fire Units.

6.6.1 <u>Missile Defense Agency Responsibilities</u>

- Support development of the Army Manpower Estimate Report.

6.6.2 <u>Army Responsibilities</u>

- Develop the Army Manpower Estimate Report.
- Provide Military Occupational Specialty qualified soldiers for O&S of Fire Units #1 and #2. (See Appendix D)
- Validate and prioritize manpower and personnel requirements.

6.7 Facilities

Facilities requirements are the responsibility of both MDA and the Army. Details of these responsibilities are identified below.

6.7.1 <u>Missile Defense Agency Responsibilities</u>

- Fund, Design, and Construct Interim Training Classrooms, Instructor Stations, and User Operator Trainer Facilities at Ft. Bliss.

6.7.2 <u>Army Responsibilities</u>

- Provide housing and administrative facilities for THAAD Fire Unit soldiers.
- Provide missile storage facilities.
- Provide Fire Unit Operator and Maintainer Facilities to include Interim Contractor Support Facilities at Ft. Bliss.
- Validate and prioritize facilities requirements.

6.8 Security

Security encompasses the life of the system from research and development through fielding, to decommissioning. Security is the responsibility of all Government organizations. Below are specific areas related to the fielding of the two THAAD Fire Units.

6.8.1 <u>Missile Defense Agency Responsibilities</u>

- Develop and implement the System Security Classification Guide.
- Develop and implement the Program Protection Plan.
- Develop and implement the Technical Assessment Control Plan.
- Develop and implement Information Assurance policies and procedures in accordance with Department of Defense Information Technology, Security, Certification, and Accreditation Process (DITSCAP).
- Ensure appropriate Department of Defense (DoD) and Army Information Assurance requirements are tested and implemented.

6.8.2 Army Responsibilities

- Develop appropriate security standing operating procedures and policies
- Develop Operations Security Plans.
- Train all soldiers in security awareness and program protection.
- Ensure proper storage of Communication Security (COMSEC) devices and documents.
- Provide appropriate levels of security when in training areas.
- Provide appropriate levels of security when in garrison.
- Provide appropriate levels of security when deployed.

6.8.3 STRATCOM Responsibilities

- Coordinate with the Army, Geographic COCOMs, and MDA/TH to develop Operations Security Plans.
- Coordinate with the Army, Geographic COCOMs, and MDA/TH to develop policies and procedures for securing THAAD Fire Units when deployed.
- Coordinate with appropriate Geographic COCOMs to train all personnel in security awareness and program protection.
- Coordinate with the Army and Geographic COCOMs to provide necessary and appropriate additional security beyond that which the unit can achieve.

6.9 Test Strategy

The overall goal of the THAAD Developmental Test & Evaluation Program is to reduce risk, characterize component and element capabilities, and support BMDS and Army System of Systems integration using the spiral/block development process. A central supporting theme of the program includes ever-increasing User involvement in test events as described in the Development Master Test Plan. The THAAD strategy supports spiral/block capability development and will be based on the Army's THAAD Capability Production Document (CPD). The CPD serves as the primary authoritative source of Fire Units #1 and #2 capabilities that ATEC will test and evaluate. The ATEC may rely on other supporting documents to provide details not found in the CPD. Conflicts between capability statements in the CPD and other program documentation will be reconciled in favor of the CPD. The sum of individual evaluations will culminate with the operational evaluation of THAAD Block 08 capabilities using Fire Unit #1. By increasing User involvement in this program, which employs a combination of critical component level tests and demonstrations, the element level capability demonstrations and tests will expand the Army's confidence and competence to a point where THAAD capabilities can be delivered. Soldiers involved will be trained and certified. Certification will be captured on test readiness statements prior to their participation in any test or demonstration. Safety releases will also be required to allow soldiers to operate the equipment as well as to specify the required training.

The THAAD Project Office may be directed to perform an emergency activation of limited THAAD capabilities with either Block 04 or 06 assets. Test and assessment requirements for emergency activation will be addressed in the emergency activation plans. The definitions of the individual modules that support incremental capability assessments and Fire Units #1 and #2 development are contained in Appendix E. The ATEC will provide an addendum to the assessment database that reflects the most current capabilities at the time of an incremental assessment.

In support of the delivery of THAAD Fire Unit capability, the ATEC will function as the Operational Test Agency to develop measures of effectiveness and measures of performance as a provision of its continuous evaluation process. These measures will answer the critical issues and criteria developed from the key performance parameters of the CPD. This document will be part of the ATEC's Capabilities Assessment Plan (CAP). The CAP will define the data requirements and the evaluation strategy that will be employed to provide a Risk Assessment Report and CAR for the transition period. The Risk Assessment Report will be used to support the THAAD Transition Decision Review Process. The CAR will be used to incrementally characterize the THAAD capability that is to be developed and delivered. The THAAD Test and Evaluation strategy will be comprehensive and will maximize operational realism whenever possible. The ATEC evaluators will be resourced by MDA to support their operational assessment needs and will be provided all available test data to complete the Risk Assessment Report and CAR.

A key part of the THAAD test and evaluation strategy is the employment of the continuous evaluation concept. The first step in this process is the development of the THAAD CAP. Data collected during flight tests, ground tests and demonstrations, and Live Fire Test and Evaluation (LFT&E) events conducted on developmental hardware, as well as the results of the FDE/LUT will be consolidated in an evaluation database. This data along with data collected during the continuous evaluation process will be compiled and assessed in the CAR in support of the Materiel Release Process.

6.9.1 Missile Defense Agency Responsibilities

- Fund development of the operational issues and criteria, critical operational issues and criteria, CAP and CAR.
- Plan for and conduct flight testing with operational realism where appropriate.
- Plan for and conduct Government ground testing with operational realism where appropriate.
- Fund, plan for, and conduct LFT&E (e.g. sled, light gas gun, modeling and simulation).
- Fund Government and Contractor support to a FDE/LUT.
- Fund, schedule, and conduct Regression Testing to verify that any system hardware or software changes do not adversely affect the Missile Defense performance. Costs for Regression Testing will be developed and captured in appropriate planning documents.
- Fund development of the evaluation database in support of the CAP.

6.9.2 Army Responsibilities

- Develop a CAP, and obtain Director of Operational Test and Evaluation (DOT&E) concurrence with the plan.
- Provide Risk Assessment Report.
- Plan for and conduct FDE/LUT
- Provide a Fire Unit CAR which will include lethality LFT&E. If necessary provide module 1/2 assessment reports.
- Develop operational issues and criteria to be used during the FDE.
- Develop critical operational issues and criteria to be used during the LUT.
- Periodicaly update the evaluation database.

6.9.3 STRATCOM Responsibilities

- Monitor testing program and provide input as appropriate.

6.10 Supportability Strategy

The THAAD Supportability Strategy identifies supportability requirements, constraints and establishes MDA and Army responsibilities. Complete details of THAAD Fire Unit supportability are contained in THAAD Supportability Strategy.

6.10.1 Missile Defense Agency Responsibilities

- Develop the THAAD Supportability Strategy consistent with AR 700-127.
- Develop two-level maintenance support for THAAD consistent with Army Policy.
- Provide sustainment Level Maintenance through Interim Contractor Support and Interim Contractor Support teams to support THAAD peculiar and commercial off-the-shelf equipment.
- Interim Contractor Support teams will follow "Army Contractor on the Battlefield" policies.
- Provide certified Missile Rounds.
- Fund first destination transportation cost to initial storage facility.
- Develop Missile handling and storage procedures.

6.10.2 Army Responsibilities

- Support all Common Support and Army ASIOE within existing Army logistics systems.
- Provide field-level maintainers for all THAAD on-equipment maintenance and support.
- Fund second destination transportation for Fire Unit movement including missiles.

6.10.3 STRATCOM Responsibilities

- Coordinate with the Army and Geographic COCOMs to assure supportability for THAAD when deployed.

7.0 CONTRACT STATUS

7.1 Current Development Contract

The key tasks for THAAD development are to build, test, and verify a THAAD initial capability and develop and test THAAD's interface with the TFCC. The current development program encompasses the hardware/software development effort and capabilities to include obsolescence, risk reduction, and transportation testing to be achieved and/or demonstrated through the flight and ground testing programs. The period of performance of this contract is 3QFY00-2QFY09. The contract will be extended for Electromagnetic Environmental Effects/Block Qualification Test effort only for the period March 2009-September 2009.

7.2 Fire Unit Hardware Contract

MDA has resourced the acquisition and fielding of two THAAD Fire Units with the capability to support Air and Missile Defense Task Force operations and BMDS ESGs.

The contract award for the first two Fire Units is scheduled for 1QFY07. MDA plans to award the Fire Units contract at least two years prior to fielding in order to allow sufficient lead time for the manufacture and delivery of end item hardware, software, initial spares, flyaway packages, unique item tracking technology, and applicable engineering services.

7.3 Fire Unit Fielding Support

Based on early flight test successes, the THAAD Interim Contractor Support contract is scheduled to be awarded prior to the first fielding. This contract will provide fielding and sustainment support for the THAAD Fire Units #1 and #2 during the period of performance of 1QFY08-4QFY13. Upon contract award, the contractor shall begin staffing, resourcing, and training personnel to provide the interim contractor support effort as outlined in the THAAD Supportability Strategy, New Equipment Training, Assignment Oriented courses, Materiel Fielding, post deployment software support, system integration and checkout, and other development test/operational test activities, as needed.

Upon receipt of the total package fielding, the Army will perform system integration and checkout, collective training, force deployment evaluation, and applicable development test/operational test activities. MDA and the Interim Contractor Support team will assist the Army, as needed, with these activities. Fielding support beyond the development test/operational test activities is outlined in the THAAD Supportability Strategy.

8.0 PLAN FOR TRANSITION ACTIONS/MILESTONES

Figure 8.1, THAAD Transition Master Schedule, depicts activities and events leading to successful delivery of two THAAD Fire Units in FY09 and FY10 respectively. This schedule is a living document and will be updated and refined as necessary.

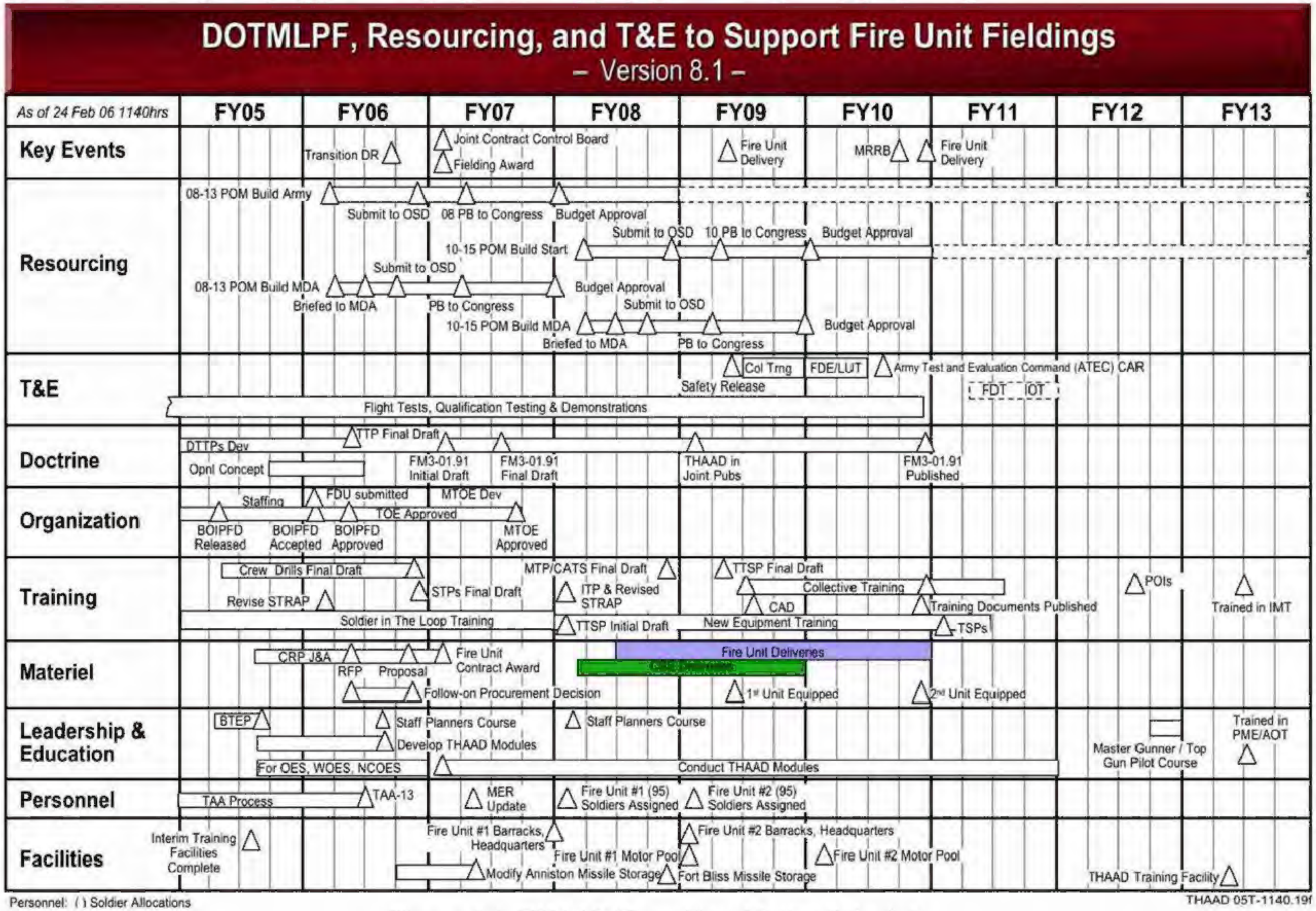

Figure 8.1 THAAD Transition Master Schedule

9.0 FUNDING SUMMARY

9.1 Research, Development, Test & Evaluation Requirements

Per the Mini-POM, MDA will fund the manufacture of the THAAD Fire Units and CLS through FY11, in accordance with Acting Director, MDA memorandum dated 9 July 2004. These figures are listed in Table 9.1 FY07-11. MDA will continue to fund CLS for THAAD mission peculiar equipment in FY12 and FY13 for any support relating to consequences of design defect and to the approved OMS/MP level. The figures in FY12-13 are pre-decisional estimates and are not in the current MDA budget.

Table 9.1 ~~(FOUO)~~ MDA Research, Development, Test & Evaluation

$ in Millions	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
MDA RDT&E Fund to Procure Two Fire Units	0	0	184.4	334	135.7	203.9	0	0	0
MDA RDT&E Fund for FDE/ LUT*	0	1.9	2	2	5	6.2	2.4	0	0
MDA RDT&E Fund for Interim Contract Support	0	0	0	0.5	4	9	14	(16)	(16)

Numbers reflect PB07 budget
Figures in (red font) are not included in current POMs
*Figures do not include any dedicated flight testing based on schedule DT/OT tests

Requirements – Breakout (Then Year $)

9.2 Army Procurement Requirements

The procurement of CSE is necessary to support the THAAD Fire Units and the estimated figures for this requirement are reflected in Table 9.2. The Army recognized the $9.7 million bill during the FY06-11 POM build as a Band-2 unfunded requirement. During the FY07-11 Mini-POM, the $9.7 million requirement in FY08 and the $10 million requirement in FY10 were not recognized as part of the Budget Change Proposal/Program Change Proposal submission. The total CSE requirement should be recognized during the FY08-13 POM build. These are current pre-decisional estimates, MDA and the Army will continue to refine amounts in close coordination with the DASA-CE.

$ in Millions	FY07	FY08	FY09	FY10	FY11	FY12	FY13
Army Procurement Requirement	0	(10)	(10)	0	0	0	0
Figures in(red font)are not included in current POMs							

Table 9.2 ~~(FOUO)~~ Army Procurement Requirements – Breakout (Then Year$)

9.3 Army Operations and Support Requirements

The Army will address O&S funding requirements in the FY08-13 POM. The estimated figures in Table 9.3 will fund the O&S for THAAD CSE. Operations and Support costs include funding for sustaining, training, organizing, and installations. These are current pre-decisional estimates, MDA and the Army will continue to refine amounts in close coordination with the DASA-CE.

$ in Millions	FY07	FY08	FY09	FY10	FY11	FY12	FY13
Army O&S Funds for CSE and ASIOE	0	0	(4)	(4)	(8)	(8)	(8)
Figures in(red font)are not included in current POMs							

Table 9.3 ~~(FOUO)~~ Operations and Support Cost – Breakout (Then Year $)

9.4 Personnel Requirements

Table 9.4 lists soldier requirements approved in Total Army Analysis-11.

	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
Army: Soldier Allocations	22	22	22	95*	190*	190*	285*	TBD*	TBD*
* Pending Total Army Analysis-13 (FY08-11 approved in Total Army Analysis -11)									

Table 9.4 ~~(FOUO)~~ Personnel Requirements

10.0 AGREEMENTS/COMMITMENTS

MDA, STRATCOM, and the Army will continue to work together to ensure Warfighter perspectives and concerns are reflected in the development of THAAD BMDS capabilities. Full and effective communication and coordination between MDA, STRATCOM, and the Army are essential to add the THAAD BMDS capability to the national inventory.

Installation Service and Support Agreements (ISSA) will be coordinated and prepared as necessary between MDA, the Army and other Commands and Agencies providing support.

11.0 REFERENCES

1. Secretary of Defense Memorandum for Deputy Secretary of Defense, Subject: Missile Defense Program Direction, dated 2 January 2002

2. Undersecretary of Defense Memorandum for Director Missile Defense Agency, Subject: Ballistic Missile Defense Program Implementation Guidance, dated 13 February 2002

3. Acting Director, Missile Defense Agency Memorandum, Subject: Interim Contractor Support (ICS) Funding for Ballistic Missile Defense System (BMDS), dated 9 July 2004

4. Department of Defense Instruction (DoDI) 5000.2, Operation of the Defense Acquisition System, dated 12 May 2003

5. Department of Defense Directive (DoDD) 5134.9, Missile Defense Agency, dated 9 October 2004

6. Army Regulation (AR) 70-1, Army Acquisition Policy, dated 31 December 2003

7. AR 71-32, Force Development and Documentation – Consolidated Policy, dated 3 March 1997

8. AR 350-1, Army Training and Education, dated 9 April 2003

9. AR 700-142, Materiel Release, Fielding, and Transfer, dated 26 July 2004

10. Department of the Army (DA) Pamphlet 70-3, Appendix XXIV, Guide for Preparation of Army Acquisition Programs for Review by the Army Systems Acquisition Review Council (ASARC) and the Major Automated Information System Review Council (MAISRC), dated 15 July 1999

11. DA Pamphlet 700-142, Instructions for Materiel Release, Fielding, and Transfer, dated 2 August 2004

12. Chairman of the Joints Chief of Staff Instruction (CJCSI) 3170.01D Joint Capabilities Integration and Development, dated 2 March 2004

13. Total Army Analysis (TAA) – 11

14. STRATCOM Directive (SD) 508-8, Strategic Command Directive, Operations, Planning, and Command and Control, Ballistic Missile Defense System Qualification and Certification Program, dated 23 July 2004

15. SD 508-6, Strategic Command Directive, Operations, Planning, and Command and Control, Missile Defense Education and Training System, TBP

16. THAAD Supportability Strategy, dated December 2005

17. TRADOC Regulation 350-70, Systems Approach to Training Management, Processes, and Products, dated 9 March 1999

18. TRADOC Regulation 350-18, The Army School System (TASS), dated 26 May 2000

19. AR 710-1, Centralized Inventory Management of the Army Supply System, dated 6 September 2005

20. AR 710-2, Supply Policy Below National Level, dated 8 July 2005

21. AR 700-127, Integrated Logistics Support, dated 10 November 1999

12.0 ACRONYMS

AAE	Army Acquisition Executive
AR	Army Regulation
ARTEP	Army Training Evaluation Program
ASIOE	Associated Support Items of Equipment
ATEC	Army Test and Evaluation Command
BMDS	Ballistic Missile Defense System
C2BMC	Command and Control, Battle Management, and Communications
CAP	Capabilities Assessment Plan
CAR	Capabilities Assessment Report
CJCSI	Chairman of the Joints Chief of Staff Instruction
CLS	Contractor Logistics Support
COCOM	Combatant Command
COMSEC	Communication Security
CPD	Capability Production Document
CSE	Common Support Equipment
DA	Department of the Army
DACS	Divert Attitude Control System
DASA-CE	Deputy Assistant Secretary of the Army for Cost and Economics
DITSCAP	Department of Defense Information Technology, Security, Certification, and Accreditation Process
DMETS	Distributed Multi-Echelon Training System
DoD	Department of Defense
DoDD	Department of Defense Directive
DoDI	Department of Defense Instruction
DOT&E	Director of Operational Test and Evaluation
DOTMLPF	Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities
DRASH	Deployable Rapid Assembly Shelter
ESG	Engagement Sequence Group

FBX-T	Forward Based X-Bases-Transportable
FDE	Force Development Experimentation
GBI	Ground Based Interceptor
HVAC	Heating, Ventilation, and Air Conditioning
HMMWV	High Mobility Multi-Purpose Wheeled Vehicle
ICS	Interim Contractor Support
ISO	International Organization for Standardization
JNIC	Joint National Integration Center
ISSA	Installation Service and Support Agreements
KCB	Contract Control Board
LFT&E	Live Fire Test and Evaluation
LUT	Limited User Test
MDA	Missile Defense Agency
O&S	Operation and Support
OMS/MP	Operational Mode Summary/Mission Profile
OSD	Office of the Secretary of Defense
POM	Program Objectives Memorandum
RDT&E	Research, Development, Test & Evaluation
SD	STRATCOM Directive
SM-3	Standard Missile-3
STRATCOM	U.S. Strategic Command
TAA	Total Army Analysis
T&E	Test and Evaluation
THAAD	Terminal High Altitude Area Defense
TFCC	THAAD Fire Control/Communications
TPF	Total Package Fielding
TRADOC	U.S. Army Training and Doctrine Command
USAADASCH	U.S. Army Air Defense Artillery School

13.0 DEFINITIONS

- **Combatant Commanders** – a commander in chief of one of the unified or specified combatant command established by the president (Joint Pub 1-02)
- **Commercial-off-the-Shelf (COTS)** – a product that is used "as-is." COTS products are designed to be easily installed and to interoperate with existing system components.
- **DD 250** – Material Inspection and Receiving Report
- **DD 1149** – Requisition and invoice shipping document
- **Fire Unit** – Three Launcher, 24 Missile Rounds, one TFCC Component, one Radar Component, and Peculiar Support Equipment
- **Interim Contractor Support (ICS)** - providing total or partial logistics support until a government maintenance capability is developed. ICS includes the burden cost of contract labor, material, and assets used in providing temporary logistics support to a weapon system, subsystem, and associated support equipment.
- **Intermediate Range Ballistic Missile** – ballistic missile with a range from 3000 to 5500 kilometers
- **Material Release** – the process of planning, coordinating, and executing the deployment of a material system and its support. (AR 700-142)
- **Medium Range Ballistic Missile** – ballistic missile with a range from 1000 to 3000 kilometers
- **New Equipment Training** - the initial transfer of knowledge on the operation and maintenance of new equipment to testers, trainers, users, and support personnel during the development, production, and fielding of new, modified, or improved equipment and related training devices. (U.S. Army Aviation and Missile Command) (http://immcweb.redstone.army.mil/immcpublic/rd/net/index.html)
- **Operational Mode Summary/Mission Profile** – describes unit activity related to all training and operations. It is characterized by listing activities (Field Training Exercises, Command Post Exercises, Army Training Evaluation Program, etc) by number of activities, days, and hours of operation.
- **Replacement Training** – institutional training provided to new soldiers assigned to the unit
- **Short Range Ballistic Missile** – a ballistic missile with a range up to 1000 kilometers
- **Total Army Analysis** – a phased force structure analysis process used to examine the projected Army force from both the qualitative and quantitative perspectives. (AR 71-11)
- **Total Life Cycle Management** – the implementation, management, and oversight, by the designated Program Manager, of all activities associated with the acquisition, development, production, fielding, sustainment, and disposal of a DoD weapon system across its life cycle.

- **Total Package Fielding** – the Army's standard material fielding process for new or modified systems designed to provide a consolidated support package of equipment and material to the using unit. (AR 700-142)

14.0 FIGURES AND TABLES

APPENDIX A – MDA-ARMY TEAMING PRINCIPLES

- **Overarching**
  - THAAD Transition will use an MDA/Army "Teaming" approach to facilitate and deliver Terminal Defense capabilities and ensure Warfighter success.
  - THAAD Element Program Manager will serve as the THAAD Total Life-Cycle System Manager.
  - Army will leverage MDA-developed THAAD capabilities.
  - As designated Service, Army will man, operate, and support THAAD.
- **Fielding Limited Quantities**
  - MDA will manage and resource the delivery of limited THAAD Fielding assets.
  - THAAD Element Program Manager will manage and execute the program to deliver to the Army a terminal defense capability including, THAAD Fire Units, doctrine, training, and life-cycle support for THAAD peculiar equipment.
  - Army will provide Soldiers to operate THAAD Fire Units, provide CSE, support to CSE, organization, leadership, and facilities.

~~(FOUO)~~ APPENDIX B – TABLE OF ORGANIZATION AND EQUIPMENT

The following table lists the THAAD Mission Peculiar Equipment, ASIOE, and CSE. This equipment will appear in the THAAD Table of Organization and Equipment/Modified Table of Organization and Equipment. The table lists the Government Line Item Number (LIN), nomenclature, quantity, procurement responsibility, and sustainment responsibility. All of the equipment listed in this appendix will be provided to the Army under the Total Package Fielding process. Regardless of who pays for the item of equipment, the THAAD Project Office will submit the requisitions and manage the collection and checkout of all of the equipment before delivering the total package to the Army.

The table is organized to capture all items of equipment and who is responsible for providing that equipment. The Procure column designates who is responsible for funding or providing the equipment. The Sustainment column designates who is responsible for providing operations and support for the equipment. The MDA is represented by a blue background and "MDA" in the block. The Army is represented by a green background and "Army" in the block. The table structure includes, under the heading THAAD Equipment, THAAD Mission Peculiar Equipment (white background with black lettering). Bold lettering indicates the Major Component and standard lettering indicates major sub-components. The ASIOE (highlighted in yellow) are listed directly below the associated major end item. Army provided CSE appears under that heading in white background and standard black lettering.

LIN	NOMENCLATURE	QTY	Procure	Sustainment
	THAAD EQUIPMENT			
Z00577	**TACTICAL OPERATIONS CENTER (TOC): TFCC**	**1**	**MDA**	**MDA**
Z04973	LAUNCH CONTROL STATION (LCS): THAAD	2	MDA	MDA
C89480	CAMOUFLAGE NET SYSTEM RADAR SCATTERING: AN/USQ-159	4	MDA	Army
D78555	DATA TRANSFER DEVICE: AN/CYZ-10	4	MDA	Army
R34974	RADIO SET: AN/GSQ-240A	2	MDA	Army
R45543	RADIO SET: AN/VRC-92F(C)	2	MDA	Army
R57606	RADIO SET: AN/PSC-5	2	MDA	Army
T40405	TAPE READER GENERAL PURPOSE: KOI-18/TSEC	2	MDA	Army
T45408	TELEPHONE DIGITAL NON-SECURE VOICE: TA-1035/U	2	MDA	Army
T61630	TRUCK UTILITY: EXPANDED CAPACITY 4X4 W/E HMMWV M1113	2	MDA	Army
Z99990	SECURE TERMINAL EQUIPMENT: STE TACTICAL DESK/FILE	4	MDA	Army
Z00386	STATION SUPPORT GROUP (SSG): THAAD	2	MDA	MDA
C54995	CABLE ASSEMBLY FIBEROPTIC: CX-13295()/G	2	MDA	Army
C63645	CABLE ASSEMBLY SPECIAL PURPOSE ELECTRICAL: CX-1123	2	MDA	Army
MDA	Army	THAAD ASIOE		

LIN	NOMENCLATURE	QTY	Procure	Sustainment
C89480	CAMOUFLAGE NET SYSTEM RADAR SCATTERING: AN/USQ-159	8	MDA	Army
G26890	DISTRIBUTION BOX: J-1077/U	6	MDA	Army
G78374	GENERATOR SET: DIESEL ENG TRLR -MTD 15KW 60HZ	4	MDA	Army
R59023	REELING MACHINE CABLE HAND: RL-31	4	MDA	Army
R68044	RADIO SET: AN/VRC-90F	4	MDA	Army
T61630	TRUCK UTILITY: EXPANDED CAPACITY 4X4 W/E HMMWV M1113	4	MDA	Army
Z77315	TACTICAL OPERATIONS STATION: (TOS) THAAD	2	MDA	MDA
C89480	CAMOUFLAGE NET SYSTEM RADAR SCATTERING: AN/USQ-159	4	MDA	Army
G78374	GENERATOR SET: DIESEL ENG TRLR -MTD 15KW 60HZ	2	MDA	Army
T45408	TELEPHONE DIGITAL NON-SECURE VOICE: TA-1035/U	2	MDA	Army
T61630	TRUCK UTILITY: EXPANDED CAPACITY 4X4 W/E HMMWV M1113	2	MDA	Army
Z99990	SECURE TERMINAL EQUIPMENT: STE TACTICAL DESK/FILE	6	MDA	Army
Z00582	**THAAD: LAUNCHER**	**3**	**MDA**	**MDA**
Z92823	MISSILE ROUND PALLET: (MRP) THAAD	3	MDA	MDA
Z82646	TRANSPORTER	3	MDA	MDA
Z57500	IMPROVED POSITION AZIMUTH DETERMINING SYSTEM	1	MDA	MDA
C54995	CABLE ASSEMBLY FIBER OPTIC: CX-13295()/G	3	MDA	Army
C89480	CAMOUFLAGE NET SYSTEM RADAR SCATTERING: AN/USQ-159	6	MDA	Army
D78555	DATA TRANSFER DEVICE: AN/CYZ-10	3	MDA	Army
G18358	GEN SET: DED SKID MTD 3KW 60HZ	3	MDA	Army
N95862	NAVIGATION SET SATELLITE SYSTEMS	3	MDA	Army
R68146	RADIO SET: AN/VRC-91F(C)	3	MDA	Army
T92889	TEST SET: ELECT SYS AN/PSM-95	1	MDA	Army
Z00581	**THAAD RADAR**	**1**	**MDA**	**MDA**
Z05702	ANTENNA EQUIPMENT: (AE)THAAD-RADAR	1	MDA	MDA
A22496	AIMING CIRCLE	1	MDA	Army
C89480	CAMOUFLAGE NET SYSTEM RADAR SCATTERING: AN/USQ-159	5	MDA	Army
N95862	NAVIGATION SET SATELLITE SYSTEMS	1	MDA	Army
R68044	RADIO SET: AN/VRC-90F	1	MDA	Army
T61239	TRUCK TRACTOR: MTV W/E	1	MDA	Army
Z19584	COOLING EQUIPMENT UNIT: (CEU) THAAD-RADAR	1	MDA	MDA
C89480	CAMOUFLAGE NET SYSTEM RADAR SCATTERING: AN/USQ-159	5	MDA	Army
R68044	RADIO SET: AN/VRC-90F	1	MDA	Army
T61239	TRUCK TRACTOR: MTV W/E	1	MDA	Army
Z38235	ELECTRONIC EQUIPMENT UNIT: (EEU) THAAD-RADAR	1	MDA	MDA
C89480	CAMOUFLAGE NET SYSTEM RADAR SCATTERING: AN/USQ-159	5	MDA	Army
D78555	DATA TRANSFER DEVICE: AN/CYZ-10	1	MDA	Army

MDA	Army	THAAD ASIOE

LIN	NOMENCLATURE	QTY	Procure	Sustainment
R45543	RADIO SET: AN/VRC-92F	1	MDA	Army
R68044	RADIO SET: AN/VRC-90F(C)	1	MDA	Army
T61239	TRUCK TRACTOR: MTV W/E	1	MDA	Army
Z75894	PRIME POWER UNIT: (PPU) THAAD-RADAR	1	MDA	MDA
C89480	CAMOUFLAGE NET SYSTEM RADAR SCATTERING: AN/USQ-159	2	MDA	Army
R68044	RADIO SET: AN/VRC-90F(C)	1	MDA	Army
T58161	TRUCK TANK: FUEL SERVICING 2500 GALLON 8X8 HEAVY	2	MDA	Army
T61239	AKZ TRUCK TRACTOR: MTV W/E	1	MDA	Army
Z00747	**BATTERY SUPPORT CENTER: (BSC) THAAD**	**1**	**MDA**	**MDA**
Z35461	BATTERY LOGISTICS OPERATION CENTER: (BLOC)	1	MDA	MDA
R45543	RADIO SET: AN/VRC-92F	1	MDA	Army
T96496	TRUCK CARGO: HEMTT LHS	1	MDA	Army
Z99990	STE TACTICAL DESK FILE	2	MDA	Army
C89480	CAMOUFLAGE NET SYSTEM RADAR SCATTERING: AN/USQ-159	4	MDA	Army
S01359	S-786/G (PN:5-4-3201) SHELTER 2-SIDE EXPANDABLE	1	MDA	Army
Z42175	MOBILE MONITORING STATION (MMS)	1	MDA	MDA
N95862	NAVIGATION SET SATELLITE SYSTEMS: AN/PSN-11	1	MDA	Army
T61630	TRUCK UTILITY: EXPANDED CAPACITY 4X4 W/E HMMWV M1113	1	MDA	Army
Z99990	STE TACTICAL DESK FILE	1	MDA	Army
01-494-7124	S-842/G V5 SHELTER, NON-EXPANDABLE	1	MDA	MDA
C89480	CAMOUFLAGE NET SYSTEM RADAR SCATTERING: AN/USQ-159	2	MDA	MDA
NYA	AN/PRC-117F (with Installation Kit)	1	MDA	Army
Z65468	MOBILE SUPPORT TRUCK (MST)	2	MDA	Army
C54995	CABLE ASSEMBLY FIBER OPTIC: CX-13295 ()/G	4	MDA	Army
N95862	NAVIGATION SET SATELLITE SYSTEMS: AN/PSN-11	2	MDA	Army
R68044	RADIO SET: AN/VRC-90F	2	MDA	Army
T61630	TRUCK UTILITY: EXAPNDED CAPACITY 4X4 W/E HMMWV M1113	2	MDA	Army
Z99990	STE TACTICAL DESK FILE	2	MDA	Army
01-494-7124	S-842/G V5 SHELTER, NON-EXPANDABLE	2	MDA	Army
NYA	AN/PRC-117F (with Installation Kit)	2	MDA	Army
C89480	CAMOUFLAGE NET SYSTEM RADAR SCATTERING: AN/USQ-159	4	MDA	Army
P/N T2-93040GSA	TRAILER MOUNTED H2PC 8 TON ECU & 20Kw GEN SET DHS SYSTEMS	2	MDA	Army
TBD	**TRAINING DEVICES**	**3**	MDA	Army
Z92823	MISSILE ROUND PALLET: (MRP) THAAD	3	MDA	Army
TBD	MISSILE ROUND TRAINER: (MRT) THAAD	24	MDA	MDA
COMMON SUPPORT EQUIPMENT				
A33020	ALARM: CHEMICAL AGENT AUTOMATIC M22	4	Army	Army

MDA	Army	THAAD ASIOE

LIN	NOMENCLATURE	QTY	Procure	Sustainment
A79381	ANTENNA GROUP: OE-254()/GRC	2	Army	Army
B49272	BAYONET-KNIFE: W/SCABBARD FOR M16A1 RIFLE	95	Army	Army
B60351	BORESIGHTING EQUIPMENT WEAPON: SMALL ARMS M30	1	Army	Army
B67766	BINOCULAR: MODULAR CONSTRUCTION MIL SCALE RETICLE 7X50MM W/E	4	Army	Army
C05541	CONTROL RECEIVER-TRANSMITTER: C-11561(C)/U	3	Army	Army
C05701	MONITOR CHEMICAL AGENT:	2	Army	Army
C18446	COMPUTER SET: DIGITAL OL-582/TYQ	2	Army	Army
C18514	COMPUTER SET: DIGITAL OL-583/TYQ	1	Army	Army
C32887	CLEANER STEAM PRESSURE JET TRAILER MOUNTED	1	Army	Army
C38422	BURNER UNIT GASOLINE FIELD RANGE OUTFIT: W/COMPONENTS	3	Army	Army
C41064	COMMAND SYSTEM: TACTICAL AN/USC-55A	1	Army	Army
C62375	BATTERY CASE: Z-AIJ-E1	1	Army	Army
C68719	CABLE TELEPHONE: WD-1/TT DR-8 1/2 KM	14	Army	Army
C69541	CABLE TELEPHONE WF-16/U	3	Army	Army
C89480	CAMOUFLAGE SCREENING SYSTEM: AN/USQ-150(V)	48	Army	Army
D41659	DRIVERS ENHANCERS: AN/VAS-5	44	Army	Army
D60801	DIGITAL NON-SECURE VOICE TERMINAL W/DIGITAL DATA PORT: TA-1042A/	8	Army	Army
D78555	DATA TRANSFER DEVICE: AN/CYZ-10	8	Army	Army
D82404	DECONTAMINATING APPARATUS: PWR DRVN LT WT	1	Army	Army
E03826	ELECTRONIC TEST SET: TS-4348/UV	3	Army	Army
E32466	CLEANER STEAM PRESSURE JET: SKIDMTD 125 PSI MAX OIL HTD	1	Army	Army
E70064	COMP UNIT RCP: TRK 2 WHL PNEU TIRES GAS DRVN 5 CFM 175 PSI	1	Army	Army
F55553	DISTRIBUTION SYSTEM ELEC: 120V 1PH 60AMP	1	Army	Army
G02341	DETECTING SET MINE PTBL METALLIC (AN/PSS-11)	2	Army	Army
G11966	GEN SET: DED SKID MTD 5KW 60HZ	1	Army	Army
G18358	GEN SET: TACTICAL QUIET GENERATOR 3KW 60 HZ (SKID MOUNTED)	1	Army	Army
G36237	GENERATOR SET DIESEL: 60HZ AC	1	Army	Army
G74711	GEN SET: DED SKID MTD 10KW 60HZ	1	Army	Army
H00586	HEATER: DUCT TYPE PORTABLE 1200-00 BTUS	1	Army	Army
K47623	KY-99: MINTERM	1	Army	Army
K52926	HOSE ASSEMBLY: NONMETALLIC WATER USE W/PIN ORROCKER LUGWRENCHING	3	Army	Army
K53748	HOSE COT RUB LINE: M-F CPLG 1-1/2 IN 1-1/2 NPSH 25 FT LONG	4	Army	Army
K94880	INTERCOMMUNICATION STATION: LS-147/FI	1	Army	Army
L08724	JACK DOLLY TYPE HYDRAULIC: 10 TON CAPACITY	1	Army	Army
L28351	KITCHEN FIELD TRAILER MOUNTED: MTD ON M103A3 TRAILER	1	Army	Army
L44595	LAUNCHER GRENADE 40 MILLIMETER: SGLE SHOT RIFLE MTD DTCHBLE W/E	4	Army	Army
L63994	LIGHT SET GENERAL ILLUMINATION: 25 OUTLET (ARMY)	2	Army	Army

MDA	Army	THAAD ASIOE

LIN	NOMENCLATURE	QTY	Procure	Sustainment
L67964	LIGHTWEIGHT DIGITAL FACSIMILE: AN/UXC-7	1	Army	Army
L91975	MACHINE GUN CALIBER .50: HB FLEXIBLE (GROUND AND VEHICLE) W/E	2	Army	Army
M09009	MACHINE GUN 5.56 MILLIMETER: M249	10	Army	Army
M12418	MASK CHEMICAL BIOLOGICAL: M40	71	Army	Army
M18526	MASK CHEMICAL BIOLOGICAL: COMBAT VEHICLE	18	Army	Army
M39263	MACHINE GUN: LIGHT 5.56MM M249	4	Army	Army
M60449	MULTIMETER DIGITAL: AN/PSM-45	2	Army	Army
M74364	MOUNT GUN: RING CAL .50	2	Army	Army
M74823	MOUNT MACHINE GUN: MK64 MOD9	3	Army	Army
M75577	MOUNT TRIPOD MACHINE GUN: HEAVY CALIBER 50	5	Army	Army
M75714	MOUNT TRIPOD MACHINE GUN: 7.62 MILIMETER	4	Army	Army
M76101	MOUNTER AND DEMOUNTER PNEUMATIC TIRE: STATIONARY 56 TIRE SIZES	1	Army	Army
M92362	MACHINE GUN GRENADE 40MM: MK19 MOD III	3	Army	Army
N04596	NIGHT VISION SITE CREW SERVED WEAPON: AN/TVS-5	5	Army	Army
N05482	NIGHT VISION GOGGLE: AN/PVS-7B	86	Army	Army
N95862	NAVIGATION SET SATILLITE SYSTEMS: AN/PSN-11	16	Army	Army
P91756	PUMP CENTRF: GAS DRVN FRAME MTD 1-1/2 IN 65GPM 50 FT HD	1	Army	Army
P98152	PISTOL 9MM AUTOMATIC: M9	1	Army	Army
R14154	RANGE OUTFIT FIELD GASOLINE:	2	Army	Army
R20684	RADIAC SET: AN/VDR-2	5	Army	Army
R30925	RADIAC SET: AN/PDR-75	1	Army	Army
R31061	RADIAC SET: AN/UDR-13	8	Army	Army
R44999	RADIO SET: AN/VRC-89F(C)	1	Army	Army
R45543	RADIO SET: AN/VRC-92F(C)	1	Army	Army
R56742	REEL EQUIPMENT: CE-11	8	Army	Army
R59023	REELING MACHINE CABLE HAND: RL-31	1	Army	Army
R59160	REELING MACHINE CABLE HAND: RL-39	26	Army	Army
R68044	RADIO SET: AN/VRC-90F(C)	9	Army	Army
R95035	RIFLE 5.56 MILLIMETER: M16A2	84	Army	Army
S30982	SHOP SET CONTACT MAINTENANCE TRUCK MOUNTED: ORD	1	Army	Army
S33399	SANITATION CENTER: FOOD	1	Army	Army
S64488	SPEECH SCTY EQUIP DIGITAL SUBSCRIBER VOICE TERMINAL: TSEC/KY-68	9	Army	Army
T07532	TENT: EXTENDABLE MODULAR 16X20 UTILITY FOREST GREEN TYPE VII	1	Army	Army
T24660	SHOP EQUIPMENT AUTOMOTIVE MAINT AND REPAIR: FM BASIC LESS POWER	1	Army	Army
T25619	SHOP EQUIPMENT AUTO MAINT AND REPAIR: FM SUPPL NO 1 LESS POWER	1	Army	Army
T25726	TONE-SIGNALLING ADAPTER: TA-977( )/PT	1	Army	Army

MDA	Army	THAAD ASIOE

LIN	NOMENCLATURE	QTY	Procure	Sustainment
T28688	TOOL KIT: GENERAL MECHANIC'S	6	Army	Army
T31872	TELEPHONE WIRE WITH REEL: MX-10891/G	12	Army	Army
T49947	TENT: LIGHTWEIGHT MAINTENANCE ENCLOSURE (LME)	1	Army	Army
T55957	TERMINAL RADIO-TELEPHONE MOBILE SUBSCRIBER: AN/VRC-97	1	Army	Army
T60081	TRUCK CARGO: 4X4 LMTV W/E	7	Army	Army
T61494	TRUCK UTILITY: CARGO/TROOP CARRIER 1-1/4 TON 4X4 W/E (HMMWV)	9	Army	Army
T61908	TRUCK CARGO: MTV W/E	1	Army	Army
T62350	TEST KIT MASK PROTECTIVE: M41	1	Army	Army
T77499	TEST SET ELECTRONIC SYSTEMS: AN/PSM-80(V)2	1	Army	Army
T92889	TEST SET: ELECT SYS AN/PSM-95 FOR SOLDIERS PORT ON-SYS REP TOOL	2	Army	Army
T93484	TRUCK VAN: LMTV W/E	1	Army	Army
T95555	TRAILER CARGO: MTV W/DROPSIDES M1095	1	Army	Army
T95992	TRAILER CARGO: HIGH MOBILITY 3/4 TON	3	Army	Army
T96564	TRAILER FLAT BED: M1082 TRLR CARGO LMTV W/DROPSIDES	2	Army	Army
U81707	SWITCHBOARD TELEPHONE MANUAL: SB-22/PT	2	Army	Army
U89185	UTILITY RECEPTACLE:	1	Army	Army
R14154	RANGE OUTFIT FIELD GASOLINE:	2	Army	Army
V12141	TANK AND PUMP UNIT LIQUID DISPENSING TRUCKMOUNTING	1	Army	Army
V19950	TANK UNIT LIQUID DISPENSING TRAILER MOUNTING	1	Army	Army
V31211	TELEPHONE SET: TA-312/PT	12	Army	Army
V98788	POWER SUPPLY VEHICLE: HYP-57/TSEC	1	Army	Army
W02526	TESTER AIR FLOW: USED ON VEHICLES W/GAS PARTICULATE FILTER UNITS	1	Army	Army
W32593	SHOP EQUIPMENT AUTO MAINT AND REPAIR: OM COMMON NO 1 LESS POWER	1	Army	Army
W32867	SHOP EQUIPMENT AUTO MAINT AND REPAIR: ORG SUPPL NO 1 LESS POWER	1	Army	Army
W34648	TOOL KIT CARPENTERS: ENGINEER SQUAD W/CHEST	1	Army	Army
W51910	TOOL KIT SMALL ARMS REPAIRMAN: ORDNANCE	1	Army	Army
Z36683	TRAILER TANK WATER: 900 GAL 5 TON W/E	1	Army	Army

MDA	Army	THAAD ASIOE

APPENDIX C – TRAINING AND LEADERSHIP AND EDUCATION COURSES IN SUPPORT OF THAAD FIRE UNIT TRANSITION

Items (1) through (9) below are part of New Equipment Training

(1) THAAD Fire Control/Communications Enhanced Operator/Maintainer (14E)
This five-week course will provide training in the Operation/Maintenance of the THAAD Tactical Operations Station. Successful completion of this course will enable the student to perform all required tasks on the TFCC equipment and systems integration. The course will consist of Lectures and Computer Based Trainer lessons and supported by demonstrations and hands-on exercises using operational equipment and Non-Embedded Training Devices.

(2) Radar Enhanced Operator/Maintainer Course (14E)
This five-week hands-on course will provide training in the Operation/Maintenance of the THAAD Radar. Successful completion of this course will enable the student to perform all required tasks on the THAAD Radar System. The course will consist of Lectures and Computer Based Trainer lessons and supported by demonstrations and hands-on exercises using operational equipment and Non-Embedded Training Devices.

(3) Prime Power Unit Operator/Maintainer (21P/14E)
This two-week hands-on course will provide training in the operation/maintenance of the THAAD Prime Power Unit. Successful completion of this course will enable the student to operate and maintain the Prime Power Unit. The students will be taught to identify proper system function, operator and maintainer actions. A lecture/demonstration method of instruction will be used with Computer Based Trainer lessons employed to supplement classroom portions of the course.

(4) Launch Control Station Operator/Maintainer (14J)
This two-week hands-on course will provide training in the operation/maintenance of the THAAD Launch Control Station. Successful completion of this course will enable the student to perform all required tasks on the THAAD Launch Control Station equipment and systems integration. The course will consist of Lectures and Computer Based Trainer lessons and supported by demonstrations and hands-on exercises using operational equipment and Non-Embedded Training Devices.

(5) Launcher Enhanced Operator/Maintainer (14T)
This two-week hands-on course will provide training in the operation/maintenance of the THAAD Launcher. Successful completion of this course will enable the student to perform all required tasks on the Launcher. A lecture/demonstration method of instruction will be used with Computer Based Trainer lessons employed to supplement classroom portions of the course.

(6) Technical Orientation Course
This is a one-week technical familiarization training for exercise participants on THAAD Operations. The students will be given classroom instruction on the principles of operation and maintenance of the THAAD System and will learn system capabilities, force and engagement operations using the User System Operator Trainer.

(7) Key Personnel Course
This is a two-week technical training for key personnel on THAAD operations and maintenance. The students will be taught the THAAD Component and System functionality, employment, deployment, and fielding considerations. Interoperability with other TMD Systems will be addressed. A lecture/demonstration method of instruction will be used with Computer Based Trainer lessons employed to supplement classroom training.

(8) Staff Planners Training Course
This course will familiarize officers and senior non-commissioned officers at Ft. Bliss, the Department of the Army, and appropriate Combatant Commands with the THAAD System. Instructional material will include THAAD System description, capabilities, limitations, and deployment and employment considerations. The two or three-day course will be conducted in a seminar format employing multimedia presentations.

(9) Tactical Operations Course
The THAAD Tactical Operations Course is an extension of the doctrine and tactics training intended to provide THAAD Fire Control operators and battalion staff officers/non-commissioned officers with an in-depth understanding of the optimal operations of the THAAD System. Soldiers must be graduates of the appropriate THAAD New Equipment Training Courses/Initial Military Training. The Tactical Operations Course will prepare qualified soldiers for follow-on individual and crew-level certification. Soldiers are evaluated in a comprehensive end of course practical exercise/written exam.

(10) Leadership Development Training
THAAD provides instruction as part of the BMDS Training and Education Program for COCOM staffs and other Warfighters. This instruction provides a high level view of THAAD component capabilities and limitations and a discussion of THAAD overall system capabilities. The instruction is focused on a THAAD engagement to give the students an overview understanding of THAAD's contributions to the Ballistic Missile Defense System.

Items (11) and (12) below are part of THAAD Advanced Training

(11) Master Gunner Course
The THAAD Master Gunner Course is designed to develop expert skills and provide a comprehensive understanding of the operations, planning, and training of a THAAD unit. It trains experts on the technical and tactical skills necessary to analyze defense design, develop training plans, and evaluate THAAD units' training processes. Students develop training processes and plans to assist the unit in achieving the THAAD Gunnery Program gates from Table I through XII. Graduates will be able to provide expert advice to unit commanders on the capabilities and limitations of the THAAD weapon system. The student will be required to design and implement defense architectures to employ air and missile defense weapons system using the strategies of the contemporary operating environment in the following areas: operations, planning, training, and evaluation. This course will train THAAD enlisted soldiers to be the master trainers for their units on all aspects of the THAAD Gunnery Program.

(12) Top Gun Course
The THAAD Top Gun Course prepares students assigned to THAAD units and selected air and missile defense staffs with a "graduate degree" level of knowledge in joint air and missile defense operations/defense design through an intensive series of educational experiences focused on the art and science of threat analysis, mission definition, and defense design. The curriculum centers upon defense design, development of training scenarios for employing state-of-the-art simulation, mission rehearsal, development of training methodology to test and rehearse the operations plan/ defense design, senior evaluator role and functions, role of THAAD master gunner, fratricide prevention, joint processes, battle management, THAAD screen settings, and situational awareness. Rigid certification standards apply to the THAAD Top Gun Course allowing successful graduates the ability to teach this information to their gaining units in a train-the-trainer mode using training aids provided during and after the course.

APPENDIX D – PERSONNEL ROSTER
(Draft Effective December 2005, Approval Expected 4QFY06)

LINE/LIN	DESCRIPTION	GRADE	MOS	TOE REQUIRED	MTOE AUTHORIZED
PARA 01	**BATTERY HEADQUARTERS**				
01	COMMANDER	O3	14A00	1	1
02	EXECUTIVE OFFICER	O2	14A00	1	1
03	FIRST SERGEANT	E8	14Z5M	1	1
04	FORWARD SIGNAL SPT NCO	E6	25U3O	1	1
05	FOOD OPNS SGT	E6	92G3O	1	1
06	SUPPLY SGT	E6	92Y3O	1	1
07	NBC NCO	E5	74D2O	1	1
08	FIRST COOK	E5	92G2O	1	1
09	DECONTAMINATION SP	E4	74D1O	1	1
10	PERSONNEL ADMIN SPEC	E4	42A1O	1	1
11	COOK	E4	92G1O	1	1
12	ARMORER/SUPPLY SP	E4	92Y1O	1	1
13	VEHICLE DRIVER	E3	14T1O	2	2
14	COOK	E3	92G1O	1	1
	PARAGRAPH TOTAL			**15**	**15**
PARA 02	**FORCE PROTECTION SECTION**				
01	SECTION LEADER	E6	14T3O	1	1
02	TEAM LEADER	E5	14E2O	1	1
03	TEAM LEADER	E5	14T2O	2	2
04	VEHICLE DRIVER/GUNNER	E4	14E1O	2	2
05	VEHICLE DRIVER/GUNNER	E4	14T1O	2	2
06	VEHICLE DRIVER/GUNNER	E3	14E1O	2	2
07	VEHICLE DRIVER/GUNNER	E3	14T1O	2	2
	PARAGRAPH TOTAL			**12**	**12**
PARA 03	**FIELD MAINTENANCE SECTION**				
01	UNIT MNT OFFICER (LT)	W2	915A0	1	1
02	MOTOR SERGEANT	E7	63X4O	1	1
04	POWER PLANT OPR	E6	21P3OS2	1	1
05	SENIOR MECHANIC	E6	63B3O	1	1
06	POWER PLANT OPR	E5	21P2OS3	1	1
07	PWR-GEN EQUIP REP	E5	52D2O	1	1
08	LT WH VEH MECHANIC	E5	63B2O	1	1
09	PETRL HVY VEH OPR	E5	92F2O	1	1
10	EQUIP REC/PARTS SP	E5	92A2O	1	1
11	INFO TECH SPT SPC	E4	25B1O	1	0
12	SIGNAL SPT SYS MAINT	E4	25U1O	1	0
13	UTILITIES EQUIP REP	E4	52C1O	1	1
14	LT WH VEH MECHANIC	E4	63B1O	2	1
15	RECOVERY VEH OPR	E4	63B1O	1	1
16	PETRL HVY VEH OPR	E4	92F1O	3	1
17	EQUIP REC/PARTS SP	E4	92A1O	1	1
18	PWR-GEN EQUIP REP	E3	52D1O	1	1
19	LT WH VEH MECHANIC	E3	63B1O	2	2
20	PETRL LT VEH OPR	E3	92F1O	1	1
	PARAGRAPH TOTAL			**23**	**18**
PARA 04	**FIRE CONTROL PLT HQ**				
01	PLATOON LEADER	O2	14A00	1	1
02	CMD&CONTROL SYS INT	W2	140A0	1	1
03	PLATOON SERGEANT	E7	14J4O	1	1
04	LCS SECTION CHIEF	E6	14J3O	1	0
05	SENIOR LCS OPERATOR	E5	14J2O	1	0
06	LCS OPERATOR	E4	14J1O	4	0
07	LCS OPERATOR	E3	14J1O	3	0
08	VEHICLE DRIVER	E3	14J1O	1	1
	PARAGRAPH TOTAL			**13**	**4**

LINE/LIN	DESCRIPTION	GRADE	MOS	TOE REQUIRED	MTOE AUTHORIZED
PARA 05	**FIRE CONTROL SECTION**				
01	AMD SYS TACT/TECH	W2	140E0	2	2
02	FIRE CONTROL SECTION CHIEF	E6	14E3O	2	2
03	SENIOR FIRE CONTROL OPERATOR	E5	14E2O	2	2
05	FIRE CONTROL OPERATOR	E4	14E1O	4	4
05	LCS OPERATOR	E4	14J1O	3	3
07	FIRE CONTROL OPERATOR	E3	14E1O	4	4
07	LCS OPERATOR	E3	14J1O	3	3
	PARAGRAPH TOTAL			**20**	**20**
PARA 06	**BATTERY LOGISTICS OPERATIONS SECTION**				
01	AMD SYS TACT/TECH	W2	140E0	1	1
02	EQUIP REC/PARTS SP	E5	92A2O	1	1
03	EQUIP REC/PARTS SP	E4	92A1O	1	1
04	INFO SYS SP	E4	25B1O	1	1
05	SIGNAL INFO SVC SP	E4	25U1O	1	1
06	SUPPORT TM CREWMEMBER	E4	14E1O	2	2
07	SUPPORT SEC CREWMEMBER	E4	14T1O	2	2
	PARAGRAPH TOTAL			**9**	**9**
PARA 07	**SENSOR PLATOON HQ**				
01	PLATOON LEADER	O2	14A00	1	1
02	PLATOON SERGEANT	E7	14E4O	1	1
03	VEHICLE DRIVER	E3	14E1O	1	1
	PARAGRAPH TOTAL			**3**	**3**
PARA 08	**(X2) RADAR SECTION**				
01	SECTION CHIEF	E6	14E3O	2	1
02	RDR OP/MAINT TM LDR	E6	14E3O	1	0
03	POWER PLANR OPER	E6	21P3O	2	1
04	RDR OP/MAINT SH LDR	E5	14E2O	2	1
05	RDR OP/MAINT SH LDR	E5	14E2O	1	1
06	SENIOR LCS OPERATOR	E5	14J2O	1	0
07	POWER PLANR OPER	E5	21P2O	2	1
08	RDR OP/MAINT CMBR	E4	14E1O	6	3
09	LCS OPERATOR	E4	14J1O	1	0
10	RDR OP/MAINT CMBR	E3	14E1O	6	3
11	LCS OPERATOR	E3	14J1O	1	0
	PARAGRAPH TOTAL			**25**	**11**
PARA 09	**LAUNCHER PLT HQ**				
01	PLATOON LEADER	O2	14A00	1	1
02	PLATOON SERGEANT	E7	14T4O	1	1
03	VEHICLE DRIVER	E3	14T1O	1	1
	PARAGRAPH TOTAL			**3**	**3**
PARA 10	**(X3) LAUNCHER SECTION**				
01	LAUNCHER SEC CHIEF	E6	14T3O	3	1
02	SR MISSILE HNDLR/DVR	E5	14T2O	6	2
03	ASST LAUNCHER SEC CH	E5	14T2O	3	1
04	MISSILE HNDLR/DRIVER	E4	14T1O	6	2
05	LAUNCHER CREWMEMBER	E4	14T1O	6	2
06	MISSILE HNDLR/DRIVER	E3	14T1O	6	2
07	LAUNCHER CREWMEMBER	E3	14T1O	6	2
	PARAGRAPH TOTAL			**36**	**12**
	UNIT TOTAL			**159**	**107**

APPENDIX E – THAAD ELEMENT INCREMENTAL CAPABILITIES DEVELOPMENT AND MODULE DEFINITION

The intent of the THAAD test strategy is to facilitate early and continuous test and evaluation integrated throughout the Defense Acquisition process. This is accomplished through parallel testing and data collection whenever possible by identifying Developmental Tests where the data may have value for the Operational Evaluator and Tester in order to minimize the number of tests conducted. This strategy requires coordination with the Operational Test Agency and the User to identify capabilities and ensure the planned tests (Ground and Flight Tests) and demonstrations produce the required data through the Data Analysis and Reporting Team process. It also requires that the THAAD Project Office remain cognizant of MDA's intent to have an emergency capability for surveillance and the capability to respond to an asymmetric (Short and Medium Range Ballistic Missile) threat using the research and development configured equipment prior to the delivery of the Fire Unit #1 to the Army. This would necessitate a potential modular capability assessment on the path to Fire Unit #1 evaluation. The THAAD Project Office acknowledges that the THAAD Element may have limited capabilities at Modules 1 and 2, and these limited capabilities may provide military utility. To support this concept, the following identification of THAAD modules and the definitions for each will be used. These modules comply with and support the Army position of delivering production configuration Fire Units. They also support the MDA defined incremental assessment for capabilities of a surveillance mission and/or a deployment in response to an asymmetric (Short and Medium Range Ballistic Missile) threat.

The THAAD CPD being developed by the USAADASCH Directorate of Combat Developments identifies the needed Fire Units #1 and #2 capabilities. The ATEC will use the THAAD CPD and critical operational issues and criteria in the development of the THAAD CAP. After the completion of the Developmental Test program, FDE/LUT the ATEC will produce a THAAD CAR that will articulate the capabilities of production configuration Fire Unit. The ATEC may be asked to produce limited CARs in support of attaining a military utility assessment for Modules 1 and/or 2 using the available data.

Identification of and Definitions of Modules

Module 1

Represents an incremental capability of a limited THAAD element surveillance capability, at a location to be determined, using test assets. This THAAD element configuration will consist of a THAAD Radar and Fire Control Unit. The approximate time frame is from March 2005 until production configuration Fire Unit #1 is delivered to the Army in FY09. The ATEC may be asked to provide a limited CAR based on available data. Evaluation of this module/capability will support early assessment for hardware similar to Fire Unit #1.

Module 2

Represents an incremental capability of a partially complete THAAD element in response to the asymmetric (Short and Medium Range Ballistic Missile) threat, using test assets, at a location to be determined. This THAAD element configuration will consist of the Radar, Fire Control at least one Launcher, and available test missiles. The approximate time frame is after the successful completion of test firing mission #6 (FTT-6) until production configuration Fire Unit #1 is delivered to the Army. The ATEC may be asked to provide a limited CAR based on available data. Evaluation of this module/capability will continue to support early assessment for hardware similar to Fire Unit #1.

Module 3

Represents a capability of the THAAD capabilities as documented in the CPD. THAAD Element configuration is defined in THAAD Transition Annex Section 4.0. This Module is the delivery of a complete production configuration THAAD element Fire Unit #1 to the Army.

The Module 3 assessment constitutes a delta of capabilities not fully achieved and not assessed in Modules 1 and 2. The THAAD CPD areas that support production readiness are not required (but may be assessed early when possible) in the THAAD CAP to support transition activities. Table E-1 depicts the data collection opportunities available during each module.

			Module 1	Module 2	Module 3
	Soldier	HW			
R & D	Yes	04	Flight Tests 1-5 Engineering Tests	Flight Tests 6-17, Ground Test Block Qualification Testing, Demonstrations	DT/OT flight test Ground Test Block Qualification Testing
Fire Unit 1	Yes	06			FDE/LUT

Table E-1

~~FOR OFFICIAL USE ONLY~~

BALLISTIC MISSILE DEFENSE SYSTEM
TRANSITION PLAN

Annex B
Aegis Ballistic Missile Defense
(Aegis BMD)

Missile Defense Agency/AB
7100 Defense Pentagon
Washington, DC 20301-7100

BMDS Transition Plan
Annex B
Aegis Ballistic Missile Defense

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Purpose

This annex documents the responsibilities, resources, and schedules required among MDA, Combatant Commanders (COCOM's) and the Navy to operate and sustain the Aegis Ballistic Missile Defense (BMD) Block 04 System.

Background

The Aegis BMD Block 04 provides for modifications to the Aegis Cruisers and Destroyers and Standard Missile (SM-3) to engage ballistic missiles and to provide Long-Range Surveillance and Track (LRS&T) support to the BMDS. This adds a mission to the existing in-service Aegis Fleet, leveraging a significant U.S. Navy investment in infrastructure. The Missile Defense Agency (MDA), the Navy, and the COCOMs have been actively working to analyze and define plans for Operations and Sustainment responsibility for the BMDS Block 04 operational baseline functions, such as manning, force protection, installation costs and support. For the Navy, this is the transition of Aegis BMD Block 04 capability for Operations and Sustainment support only, not for the procurement of additional systems or missiles.

MDA plans include outfitting up to eighteen ships with the Aegis BMD Block 04 capability. Initial installations have been completed on several Cruisers and Destroyers. Installations will be accomplished on the remaining ships prior to completion of the transition process. Installations are being completed in coordination with the Naval Sea Systems Command (NAVSEA), Program Executive Office Integrated Warfare Systems (PEO IWS), Program Executive Office Ships (PEO SHIPs), and the ships' cognizant operational commanders. Aegis BMD will continue as a part of the BMDS and future upgrades will be developed by MDA. Missile procurement will also be executed by MDA. MDA will conduct Flight Test Missions (FTM) 8-14 under the observation of Commander, Operational Test and Evaluation Forces (COMOPTEVFOR) and Director of Operational Test and Evaluation (DOT&E).

Aegis BMD capabilities are being installed on designated ships. Open Issues identified below are not considered critical to transition efforts currently being worked.

Open Issue

1. MDA Memorandum to USD (AT&L) endorsed by ASN (RD&A) and DOT&E summarizing the plan for Aegis BMD Block 04 transition, and documenting the following:

    a. Decision authorities in the DoD for approval of Transition and Transfer of the Aegis BMD Block 04 capability.
    b. Missile procurement responsibilities.
    c. Navy budgetary authority to include Aegis BMD Block 04 operation and sustainment in Navy POM submissions.
    d. Testing and evaluation agreements by MDA, DOT&E and OPTEVFOR on Aegis BMD Block 04 capability.
    e. Transition/Transfer the Aegis BMD Block 04 System IAW this Annex and supporting documentation.

Impact: Inability to support BMDS Mission with Aegis BMD configured ships.

Recommendation: Complete staffing of cost share agreement and jointly agreed to and approved Navy-MDA USD (AT&L) memorandum.

BMDS Transition and Transfer Plan
Annex B
Aegis BMD

1. PURPOSE

This annex explains the plan for transfer of Block 04 capability of the Aegis Element of the Ballistic Missile Defense System (BMDS) to the Navy for Operations and Sustainment, including the proposed number of designated Navy Aegis Cruisers (CGs) and Navy Aegis Destroyers (DDGs) that will be capable of supporting the Aegis Ballistic Missile Defense (BMD) mission requirements. Actions and milestones, which must be completed prior to the transfer, are also described. Funding and sustainment responsibilities documenting MDA and Navy are summarized.

2. FACTS AND ASSUMPTIONS

A successful transition of Operations and Sustainment responsibility of the Aegis BMD Block 04 capability from MDA to the Navy is dependent on the successful completion of the programmatic events listed below, and the successful approval of the agreements and commitments contained in Section 10.

- Staff, approve, sign the Aegis BMD Block 04 Annex to the MDA BMDS Transition and Transfer Plan to establish and document agreements on approach and timelines.
- Staff, approve, and sign a joint Navy-MDA MOA which describes the SM-3 Block IA Missile Maintenance Plan and delineates funding responsibilities
- Forward the Aegis BMD Transfer Memorandum from MDA to USD (AT&L) via ASN (RDA) and DOT&E recommending the transfer of Operations and Sustainment to the Navy for POM 08 planning.
- Successfully conduct Aegis BMD FTMs 8 – 14 under the observation of COMOPTEVFOR and DOT&E.
- Receive testing reports (Operational Assessment and DT/OT) from COMOPTEVFOR, specifically interim and final DT/OT reports on demonstrated capability.
- Transition/Transfer the Aegis BMD Block 04 System IAW this Annex and supporting documentation.

2.1. Facts

2.1.1. Aegis BMD Block 04 is the first iteration of a series of Navy BMD capability upgrades being developed by MDA.

2.1.2. The Aegis BMD Program Office, in conjunction with OPNAV and PEO IWS, will determine the support required to maintain SM-3 Block IA missiles transferred. Estimated cost will include: recertification, transportation, sparing and the cost share between the Navy and MDA.

2.1.3. This Annex does not address:

2.1.3.1. End state missile inventory requirements.

2.1.3.2. Resourcing strategy for procurement of additional SM-3 Block IA missiles.

2.1.3.3. Incorporating Navy multi-mission capability into Aegis BMD ships for blocks beyond 04.

2.2. Assumptions

The conditions of Block 04 Transition apply only to the ship sets and SM-3 Blk IA missiles as defined in this document. The ultimate quantities of Aegis BMD capable ships and numbers of SM-3 Missiles will be based upon war fighter analysis and subsequent generated requirements.

2.2.1. MDA

2.2.1.1. Aegis BMD Block 04 transition will be supported by MDA until system transfer is completed. O&S funding responsibilities will transfer to the Navy based upon terms described in this annex and the supporting documentation of agreements.

2.2.1.2. During the transition period, MDA will continue to execute the R&D of Aegis BMD Block 04 per the post-PBD 753 plan, and delivery and certification of capability IAW Navy processes, including procurement; fabrication of shipsets, including equipment and computer programs; equipment installation and checkout; computer program authorization and certification; crew training; development and delivery of parts and technical documentation.

2.2.1.3. MDA is responsible for all developmental and operational testing. Test planning will be conducted with the full involvement and approval of COMOPTEVFOR and DOT&E.

2.2.1.4. MDA is responsible for the delivery of SM-3 Block IA missiles.

2.2.1.5. MDA and the Navy are jointly responsible for the configuration control of Aegis BMD Block 04 capability on Aegis Ships. MDA is responsible for configuration control of all Class 1 changes to the Aegis BMD Block 04 operational system. MDA will work through the approved Navy configuration control process (SHIPMAIN) for any Aegis BMD Block 04 modifications after transfer. MDA is further responsible for funding present and future MDA initiated changes and any associated FOT&E or regression testing, including CP change requests (CPCRs) to B/L 3.6++, i.e., safety, changes in threat, upgrades, results of test events, etc.

2.2.1.6. Upon completion of transfer, MDA is responsible for funding research and upgrades to the Aegis BMD equipment and computer programs to support the BMD Mission.

2.2.2. Navy

2.2.2.1. The Navy will establish an organizational structure and sustainment concept for Aegis BMD Block 04 and POM for sustainment costs such as computer program maintenance, missile and VLS maintenance, training, spares and distance engineering agent(s) support.

2.2.2.2. Sustainment support will be provided via current Navy infrastructure.

2.2.2.3. Operational system maintenance will be conducted by the assigned ship's force and augmented as necessary with existing Navy infrastructure.

2.2.2.4. Aegis BMD and the Navy Standard Missile Program Office (PEO IWS 3.0) jointly determine the SM-3 logistics support requirements and the proposed funding allocation responsibilities between organizations. Funding responsibilities are codified in a joint Navy-MDA Memorandum of Agreement (MOA).

2.2.2.5. The Navy is responsible for configuration control of the Aegis Combat System (ACS). Changes will be processed through the current Navy ship configuration control process. The Navy is responsible for funding present and future Navy initiated changes and any associated FOT&E or regression testing, including CPCRs for legacy systems to B/L 5.3++, i.e., Link 16 Certification, EMI, SPY Radar Upgrades, ACS Upgrades, etc.

3. OPEN ISSUES

3.1. MDA Memorandum to USD (AT&L) endorsed by ASN (RD&A) and DOT&E summarizing the plan for Aegis BMD Block 04 transition, and documenting the following:

a. Decision authorities in the DoD for approval of Transition and Transfer of the Aegis BMD Block 04 capability.
b. Missile procurement responsibilities.
c. Navy budgetary authority to include Aegis BMD Block 04 operation and sustainment in Navy POM submissions.
d. Testing and evaluation agreements by MDA, DOT&E and OPTEVFOR on Aegis BMD Block 04 capability.
e. Transition/Transfer the Aegis BMD Block 04 System IAW this Annex and supporting documentation.

Impact: Inability to support BMDS Mission with Aegis BMD configured ships.

Recommendation: Complete staffing of cost share agreement and jointly agreed to and approved Navy-MDA USD (AT&L) memorandum.

4. PROGRAM/SYSTEM DESCRIPTION

14.1 Background

The Aegis BMD Block 04 capability evolved from the Aegis Lightweight Exo-Atmosphere Projectile (LEAP) Intercept Project (ALI). The Aegis BMD Block 04 capability provides exo-atmospheric intercept of ballistic missiles using the Aegis Combat System (ACS), the core of which is the Aegis Weapons System (AWS) and its major Elements: AN/SPY-1 Radar, Standard Missile-3 (SM-3), MK 41 Vertical Launch System (VLS) and existing Command and Control (C2) tactical data link network systems.

Block 04 Aegis BMD 3.6 capability was developed for installation on AWS Baseline (B/L) 5.3 ships. It is a combat system with limited multi-mission capability that performs

Long Range Surveillance and Track (LRS&T) in support of the BMDS and launches and guides the SM-3 missile to intercept a short-range ballistic missile (SRBM) or medium range ballistic missile (MRBM) exo-atmospheric threat.

The specific Aegis BMD Block 04 configuration addressed in this annex and referenced for transfer decisions is listed below and depicted in figures B-4.1 and B-4.2:

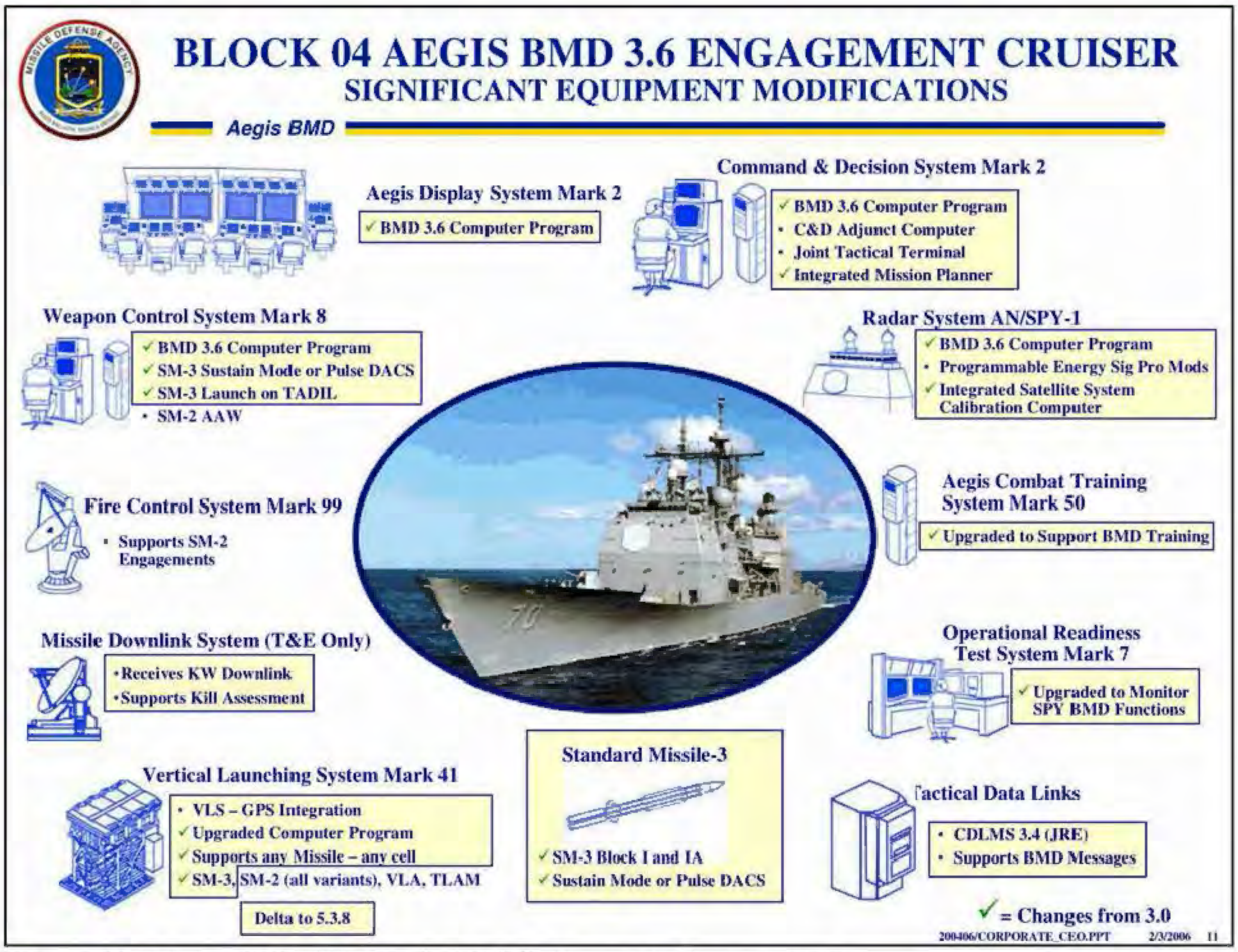

Figure B-4.1 Aegis BMD Block 04 CG Element Components

14.2 System Description

The Aegis Cruisers and Destroyers that perform the BMD mission have multi-warfare mission capability that most often will permit the ships to be multi-tasked. While performing the BMD mission, the ships will have reduced simultaneous/concurrent multi-mission capability. When not performing the BMD mission, the Aegis Cruisers and Destroyers are configured for the full mutli-mission capability available in the Aegis Combat System operational baseline.

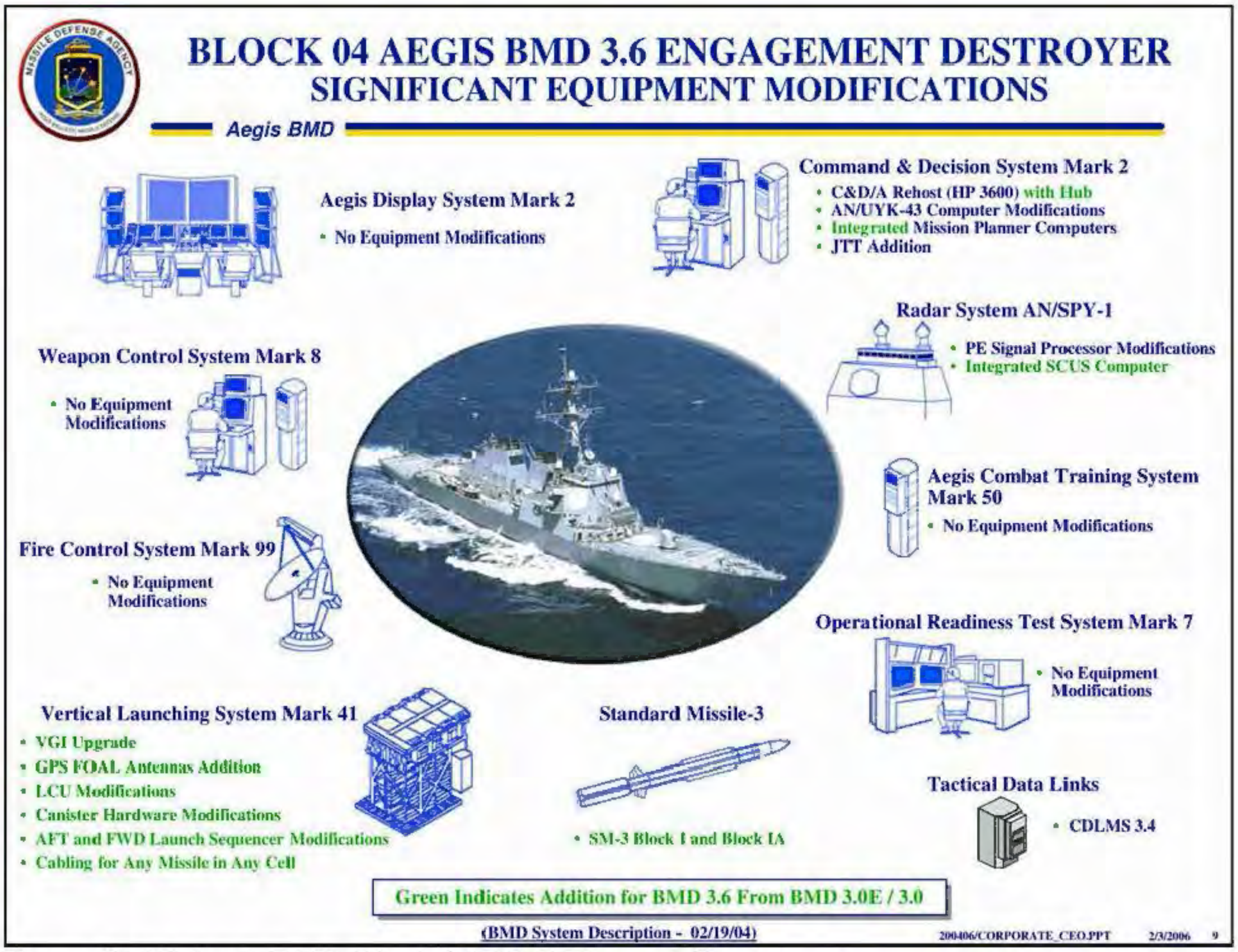

Figure B-4.2 Aegis BMD Block 04 DDG Element Components

4.2.1 MK 41 Vertical Launch System (VLS)

The MK 41 VLS is a fixed, vertical, multi-missile storage and firing system. This canister launching system provides a rapid-fire launch capability against ballistic, air, surface, and subsurface targets. It is a general-purpose system capable of stowing, selecting, initializing, and launching missiles from canister cells located in the launcher. The missile launcher Element of the ACS consists of two launchers with multiple eight-cell missile modules, one located forward and one located aft on the ship. The eight-cell module consists of an upright structure that provides vertical storage space for eight missile canisters. A deck and hatch assembly at the top of the module protects the missile canisters during storage; the hatches open to permit missile launches. Electronic equipment mounted on the eight-cell module monitors the stored missile canisters and the module components and assists in launching the missiles. The MK 41 VLS automatically selects, or allows the user to select, the proper missile cell for the missile type directed for launch and carries out initialization and launch of the missile from orders received from the Weapons Control System (WCS).

The MK 41 VLS is used to launch the SM-3 during a BMD engagement mission. A modified transportable MK 21 Mod 2 canister serves as storage and a launch rail for the SM-3 missile. The forward cover of the canister has been modified to enable the canister to accommodate the SM-3 length and still fit into the VLS. A VLS Global Positioning System (GPS) Integrator (VGI) system has been developed to provide the missile GPS Aided Inertial Navigation System (GAINS) with the necessary initialization data. A fiber optic distribution system, including the cables, connectors, and junction boxes, connect the VGI to the missile.

4.2.2 SM-3 Blk IA Missile

The Standard Missile-3 (SM-3) is a ship launched BMD weapon that is a derivative of the Standard Missile-2 (SM-2) surface-to-air guided missile. The SM-3 is a solid propellant, vertically launched, exo-atmospheric hit-to-kill missile launched from Aegis ships. The SM-3 uses the SM-2 Block IV MK 72 Booster and MK 104 Dual Thrust Rocket Motor for the first and second stages. The TERRIER LEAP design heritage is the basis for the Third Stage Rocket Motor and the fourth stage Kinetic Warhead with Solid Divert Attitude Control System.

4.2.3 AN/SPY -1 Radar

The AN/SPY-l Radar is the primary ballistic, air and surface search radar for the combat system. It is multifunction phased array radar which allows instantaneous electronic beam steering to perform search, automatic detection, transition to track, and track of ballistic, air and surface targets. Digital control, high power output, and advanced signal processing techniques are used to provide adaptive search and multi-target tracking. The radar system has a high track capacity; and is effective against a wide spectrum of target characteristics. The AN/SPY-1 Signal Processor has been upgraded for Programmable Energy (PE) waveforms with firmware changes to the PE Mode A-Scope Capability Module and wiring to support the Aegis BMD mission. The AN/SPY-l system consists of the Control Group, Signal Processor Group, Transmitter Group, Antenna Group, and Auxiliary Equipment Group. In-flight control of the SM-3 is provided by a SPY uplink/downlink to missile.

5. PROGRAM STATUS

5.1. Background

This Annex applies to the development of the Block 04 Aegis BMD computer programs and equipment for the LRS&T and Engagement missions. Aegis BMD 3.0.E is installed on eleven DDGs. Figure B-5.1 outlines the equipment installation and capability plan through CY 09.

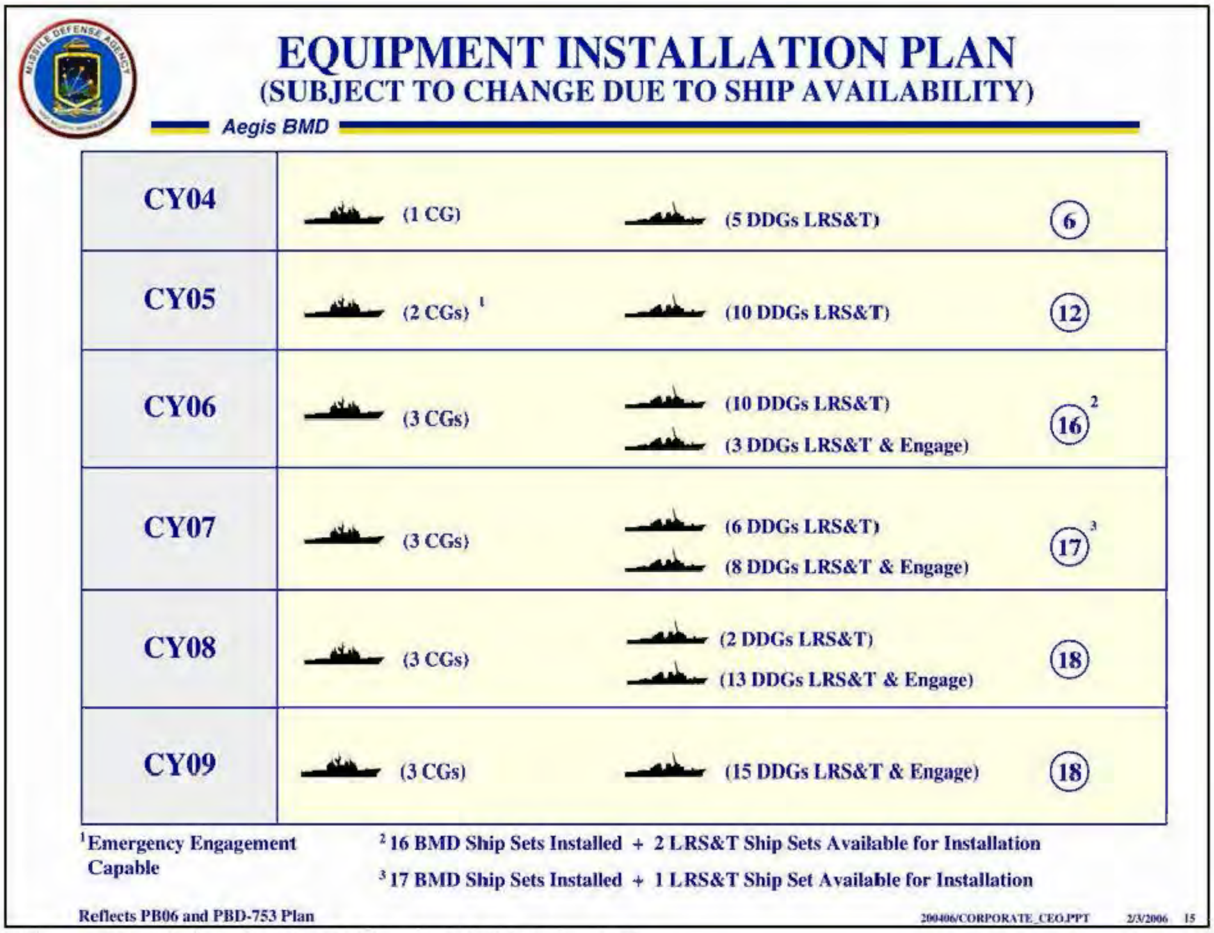

Figure B-5.1 Aegis BMD Block 04 Fielding Plan

Aegis BMD 3.0.E capability includes additional or new equipment and computer programs for the following Elements: Command and Decision/Adjunct (C&D/A), Processor, Mission Planner Computer/Computer Programs, Joint Tactical Terminal (JTT), Programmable Energy and Signal Processor modifications, and Common Data link Management System (CDLMS) supporting BMDS messages. The required computer program changes for system integration where made to C&D, AN/SPY-1 Radar, Weapons Control System (WCS), and the Aegis Display System (ADS). In conjunction with the ACS (5.3.8 B Heritage AN/UYK-43 Based plus C&D Adjunct Computers) this capability provides for target surveillance and detection autonomous or cued utilizing the Radar Resource (Mission) Planner, and staging a high quality track on the target.

14.2 Development and Installation

The Aegis Program Office has completed installing the Block 04 Aegis BMD 3.0 computer programs on USS LAKE ERIE (CG 70) and USS PORT ROYAL (CG 73).

Aegis BMD 3.0 is an authorized computer program to support emergency deployment of BMDS testbed capability. This configuration provides for both LRS&T (tracking ballistic missiles up to LRBMs) and Engagement capability for SRBMs and MRBMs.

The Aegis BMD 3.0E and 3.0 capabilities are essential development activities for delivery of the Aegis BMD Block 04 capability described in this Annex. MDA will upgrade all 18 BMD designated ships to the Aegis BMD 3.6 configuration in CY 06-09 pursuant to Fleet Maintenance availabilities schedules. The Aegis BMD 3.6 computer program is part of the Block 04 Ballistic Missile Defense System. Block 04 BMDS consists of two major capabilities, LRS&T and Engagement previously discussed. LRS&T provides the capability to detect and track long range ballistic missiles (LRBMs) and to report the track to the BMDS; thus sharing data with other BMDS Element, and providing fire control support to engagement Elements, as well as SM-3 engagement capability against SRBMs and MRBMs.

14.3 Integrated Logistic Support

Existing Navy infrastructure is being leveraged to deliver the Aegis BMD Block 04 capability. The Navy Ship Maintenance (SHIPMAIN) process has governed the installation of all BMD equipment. Ship Alterations (SHIPALTS) have been approved by NAVSEA, PEO Ships, and PEO IWS for BMD modifications to the existing Aegis B/L 5.3.8. Navy Integrated Logistic Support (ILS) certification has been granted by PEO SHIPS for the Aegis BMD SHIPALTs, Ordnance Alterations (ORDALTs). All new parts are being incorporated into the Navy Allowance Parts Lists (APL) and Consolidated Ships Allowance List (COSAL). Crew certifications are conducted by the Navy Afloat Training Group (ATG) on behalf of the Type Commander (TYCOM), Commander Naval Surface Force (COMNAVSURFOR). BMD Training is conducted by the Center for Surface Combat Systems (CSCS). The Aegis In-Service Engineering Agent (ISEA), Combat System Engineering Agent (CSEA) and Lifetime Support Engineering Agent (LSEA) provide life-cycle support of the Aegis BMD Weapon System. The Weapon System Explosive Safety Review Board (WSESRB) certifies the safety of the Aegis Weapon Systems BMD configurations.

14.4. Test and Evaluation

There are many test and evaluation events on the road to the transition of Block 04 Aegis BMD 3.6. Test and evaluation events will be carried out IAW the Aegis Ballistic Missile Defense Development Master Test Plan.

6. ORGANIZATIONAL RESPONSIBILITIES (DOTMLPF plus)

14.1. Doctrine

The Navy and MDA are coordinating, in conjunction with the COCOMs, the funding and development of tactical doctrine with Naval Warfare Development Center (NWDC). The operational use of Aegis ships equipped with Aegis BMD is determined by Fleet Commanders in response to requirements from COCOMs. The use of these ships to support MDA development and test events is determined by the Fleet Commander based on requests submitted by the Aegis BMD Program Directorate via the standard Fleet scheduling process. As Aegis BMD mission planning continues to evolve, Navy staff and MDA, in concert with the COCOMs and Fleet operating forces, are examining future requirements in a series of technical analyses, war games, and joint operational availability assessments. Navy and Aegis BMD planners consistently ensure that sensitivity to ship assignments are within overall force structure demands and costs are significant considerations in this work. This body of work will underpin future decisions concerning commitment of ships (and other assets) to the missile defense mission.

14.2. Organization

Commander, Naval Sea Systems Command, (COMNAVSEA) has established Aegis BMD as a field activity of the Naval Sea Systems Command in NAVSEA Notice 5400, dated 4 May 2005. Organizational relationships are described in the Operating Agreement between the Commander, Naval Sea Systems Command and Aegis Ballistic Missile Defense, dated 15 March 2004, and in the Aegis Ballistic Missile Defense Program Transition Plan, dated 30 October 2003, approved by ASN (RDA), 6 June 2004. Responsibilities related to Operation and Sustainment of Aegis BMD Block 04 are contained in the above documents and summarized in the below paragraphs.

6.2.1 MDA.

Within the Department of Defense, MDA is responsible for managing, directing and executing a single development program for all work needed to design, develop and test the Elements of an integrated BMDS. Director, MDA is the Acquisition Executive for the BMDS and the Elements that comprise the BMDS.

6.2.2 Navy.

PEO IWS and PEO SHIPS are the acquisition agents and lifecycle support managers of the Aegis Fleet. PEO IWS and PEO SHIPS are coordinating with the Aegis BMD Program Directorate (PD 452) to transition BMD capabilities on Aegis ships from the PD 452 managed research and development phase to the Navy managed Operation and Sustainment phase.

14.3. Training

Aegis BMD Program training is an integral part of the existing Aegis training program. This training includes instructor and BMDS crew training conducted in the classroom and onboard ship prior to or during a ship's availability. Existing training resources at the Combat System Engineering Development Site (CSEDS), Moorestown, NJ; CSCS, Dahlgren, VA, and CSCS Detachments West Coast Continental United States (CONUS), Hawaii and Japan training facilities and Surface Combat Systems Center (SCSC), Wallops Island, VA provide similar training support for the Aegis BMD Program. Aegis BMD Program training planning is based upon the BMD Master Training Strategy Plan, as well as an extension of existing Aegis training plans reflected in the CG 47-Class Guided Missile Cruiser Navy Training Systems Plan (NTSP), N86-NTSP S-30-7707G and the DDG 51-ARLEIGH BURKE-Class Guided Missile Destroyer NTSP, N86 S-30-8511G. NTSPs will be updated to reflect Aegis BMD Program-unique training information. MDA, a Service, or COCOM may mutually agree on exceptions to the roles set forth below.

6.3.1. MDA.

MDA will provide initial individual qualification training for Operation and Sustainment of Element equipment and computer programs the first time a user receives it, and for concepts, principles, and high-level policy considerations associated with employment of the BMDS. The foregoing includes updates as spiral development of the BMDS brings forth new information or other changes.

MDA will support the Services and COCOMs in their Title 10 USC responsibilities to perform crew, team and higher collective training, to train replacement personnel, and to maintain operational task proficiency.

MDA will fund the Navy for the initial development of and follow-on crew training for Aegis BMD designated ships and updates to the NTSP. MDA will also coordinate both Element and above Element training with CSCS/ATG/ Surface Warfare Development Group (SWDG)/Commander Fleet Forces Command (CFFC) and ensure that both USSTRATCOM and COMNAVSURFOR applicable training directives are utilized.

6.3.2. <u>Navy</u>

A Service or combatant command will train replacement operational personnel and maintain their operational task proficiency. The maintenance of operational proficiency includes the training of crew, team and higher collective tasks. These responsibilities complement the MDA responsibility to provide initial individual qualification (e.g., new equipment training, install training, initial individual qualification, and the like). The Navy will fund the conduct of BMD pipeline training to include sustainment, leadership, crew replacement, etc., IAW prescribed NTSP and doctrine

6.3.3. <u>USSTRATCOM</u>

United States Strategic Command (USSTRATCOM), supported by other organizations, is responsible for the institution and oversight of a training program for Global Missile Defense. MDA provides training in support of organizations with Title 10 United States Code (USC) authority that will employ the BMDS. For the purpose of avoiding gaps in BMDS training and ensuring coherence among all BMDS-related training programs, USSTRATCOM has delegated to MDA the responsibility for oversight and coordination of training plans and training development related to the BMDS and its parts. These training development and execution tasks will be performed by MDA organizations, Services, and COCOMs in a coordinated manner through adherence as referenced in MDA Directive 1025.1 dated October 14, 2004.

14.4. Materiel

6.4.1. <u>MDA</u>

Provides funding for development, sustainment, initial outfitting, filling supply support pipelines, total package fielding, SM-3 missiles, system installation & checkout, force development evaluation, unit sustainment, depot level maintenance, post deployment computer programs support, and sustaining supply support operations.

Prepares the Aegis BMD Program Objectives Memorandum (POM) and budget submissions, determines priorities and resources, and initiates and implements Congressional reprogramming actions. Fields the Aegis BMD program of work and reports the progress to the Navy. Fields Aegis BMD computer programs, systems upgrades, new installations, and Post Deployment Computer Programs Support (PDSS).

6.4.2. <u>Navy</u>

Presidential Budget (PB) 06 includes Navy funding to support MDA resourced Aegis BMD ships, including continued depot level capability, spares replenishment, and updates to existing supply documentation. As the Aegis BMD Block 04 3.6 Engagement capability is fielded and a missile maintenance plan is completed and agreed to, develop POM requirements to support the Aegis BMD mission.

14.5. Leadership

6.5.1. MDA.

Ensure Aegis BMD Leadership requirements are incorporated in MDA BMDS Programs.

6.5.2. Navy.

Formal Leader Development is the responsibility of the Navy and is conducted at schools for both officer and enlisted personnel.

14.6. Personnel

6.6.1. MDA.

Support the development of additional Aegis BMD manpower requirements using current operational manning and support concepts.

6.6.2. Navy.

Determine Aegis BMD manpower requirements using current operational manning and support concepts. Initial estimates of operational and maintenance manpower requirements for the Aegis Program are identified in the NAVSEA Ship Manning Documents (SMDs). PEO SHIPS evaluates existing manpower requirements resulting from Human-System Integration (HSI) analysis and SMD updates based on Aegis BMD-unique equipment operation and support functions. Current manning of Aegis ships is IAW the SMD and deemed sufficient to meet the needs of the Aegis BMD Block 04 mission.

14.7. Facilities

The Aegis BMD Program uses existing Navy shore operational, support and training facilities. Facilities plans for the Aegis BMD Program are based on operational, support, and training facilities presently employed on Aegis programs. PEO IWS, PEO SHIPS, Naval Surface Warfare Center Port Hueneme Division (NSWC PHD) the ISEA, NSWC Dahlgren Division (NSWC DD) the LSEA, and Lockheed Martin Maritime Systems & Sensors Division (LM MS2) the CSEA, continually evaluate the adequacy of these facilities for the Aegis BMD Block 04 developmental phase and subsequent phases; the results will be used toward facilities refinement. Existing facilities were evaluated as sufficient to develop and support Aegis BMD Block 04 requirements.

14.8. Security

The AWS is not a DoD STD 2167 system, as it predates DoD STD 2167 requirements. Nonetheless, Aegis computer program development complies with ISM 5000.22M requirements for a dedicated Security Mode System that is approved by DIS. The Aegis BMD program has invoked all applicable security specifications and guidelines developed by the government (e.g. DoD Directive 8500.1, "Information Assurance" and DoD Manual 5220.22-M, "The National Industrial Security Program Operating Manual"), including all appropriate contract clauses.

The Program Protection Plan (PPP), released 27 April 2000, addresses threats, vulnerabilities, counterintelligence measures, and costs for protection of the Critical Program Information (CPI). Aegis BMD CPI has been identified and approved. Their security, and the sources and nature of the threats against them are in the process of being verified through a Multi-Discipline Counter Intelligence (MDCI) investigation being conducted by the Naval Criminal Investigative Service (NCIS). The NCIS report, when received, will be incorporated into the PPP. Information Security is addressed in OPNAVINST S5513.2B-11, OPNAVINST S5513.3B-63 the AWS Security Classification guide of 3 May 1996, and the STANDARD Missile Security Classification Guide of 12 March 1998.

14.9. Test Strategy

6.9.1. <u>MDA.</u>

BMDS Component and Element testing includes developmental and operational testing. MDA is responsible, in close coordination with the Director of Operational Test and Evaluation (DOT&E), for all developmental testing & evaluation (DT&E), as well as all capability-based operational testing (OT) of the BMDS and all of its Elements.

MDA is responsible for operational testing of the BMD Weapon System. MDA is conducting DT-Assist phase and DT/OA. A DT/OT will be completed IAW the Aegis Ballistic Missile Development Master Test Plan, and with an OTA report supporting transition. This testing plan is documented in the MDA Integrated Master Test Plan (IMTP) for Block 04E/06A Flight Test Schedule dated 30 June 2005.

14.10. Supportability Strategy

The Aegis BMD Program uses the U.S. Navy supply support infrastructure. Previous and ongoing spares modeling serves as the basis for determining the AWS spares required to support initial phase ship installations. The program uses actual system configuration data to create the required Provisioning Technical Documentation (PTD). Formal provisioning of supply support is accomplished through established provisioning processes. The APL has been developed for the Block 04 configuration and delivered to the designated BMD ships. The Aegis BMD program must pay special attention to supply support for the respective Aegis BMD systems, subsystems, and equipment due to the risk of commercial-off-the-shelf (COTS) Obsolescence and Diminishing Manufacturing Sources (DMS). The Material Support Date (MSD) has been determined by NAVICP to be Oct 2007 (FY 08). On-Board Repair Parts and Installation and Check-out spares are provided as part of ORDALT/SHIPALT kits in support of the installation of the Aegis BMD capability in Aegis ships during their availabilities and their follow-on deployments, and funded by MDA. MDA has also procured wholesale spares to support replenishment efforts and spare bridge buys to support DMS requirements. All Block 04 assets and spares have been procured and upon completion of the transition phase will be delivered to the Navy. Aegis BMD Distance Engineering Support efforts are in place to support ships performing the BMDS Mission. For all unique BMD equipment, initial supply support is provided by the Worldwide Equipment Depot Operations Center (WEDOC) located at LM MS2, Moorestown, NJ. To complement supply support efforts, the Navy and MDA will monitor Engineering Change Proposals (ECPs) development and approval, and preparation of ORDALT/SHIPALT kits to ensure that all supply requirements are met and available when needed.

7. CONTRACT STATUS

MDA has contracts in place for the equipment and services for the Aegis BMD capability and SM-3 missile. These contacts will be modified to support future Block development. Specific Navy contracts to support Aegis BMD Block 04 sustainment after transfer will need to be determined.

8. PLAN FOR TRANSITION ACTIONS AND MILESTONES

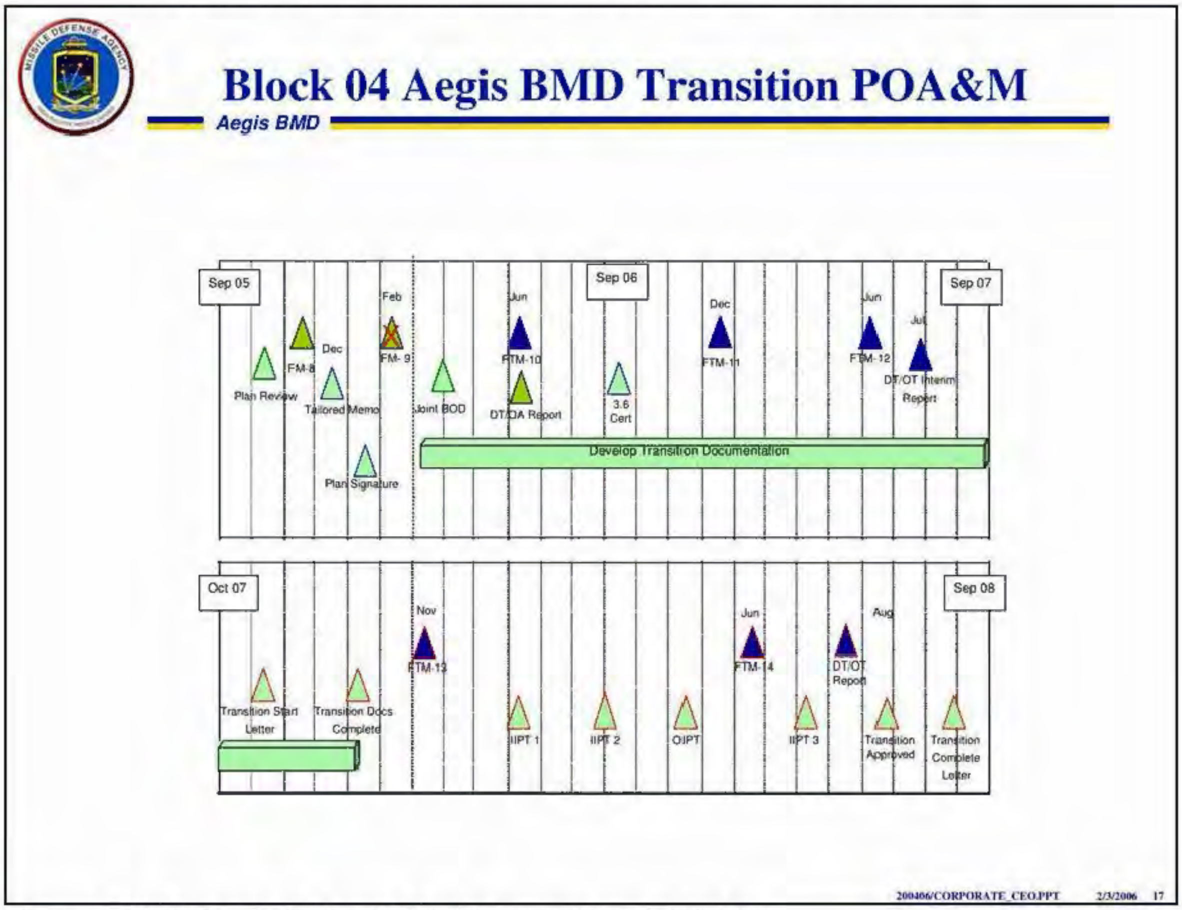

Figure B-8.1 Block 04 Aegis BMD Transition POA&M

9. FUNDING

The Navy Cruisers and Destroyers are multi-mission ships that are being enhanced to perform the Aegis BMD mission. The funding for these enhanced capabilities is depicted in figure B-9.1 and found in the Aegis BMD portion of MDA's Block 2004 and Block 2006 Ballistic Missile Defense Midcourse Defense Segment budget documents (R-Docs). Funding includes the fabrication of shipsets (equipment and computer programs), installation and checkout of equipment and computer programs, crew training, and development and delivery of parts, technical documentation, and training.

14.1. MDA

MDA is currently funding Aegis BMD specific initial costs such as: computer program maintenance, certification infrastructure, initial training, spares, engineering agents, BMD Test Events support and SM-3 Missile Maintenance. MDA has included O&S funding for Aegis BMD requirements in its Fiscal Year (FY) submissions.

Aegis BMD will deliver a certified organic engagement capability in designated Aegis ships starting in CY 2006. This will include the Aegis BMD 3.6 computer program and ship modifications to support an SM-3 Engagement capability. The SM-3 Block IA maintenance philosophy has been completed; costs allocated once they have been identified. MDA funding will maintain the required infrastructure, including configuration management for RDT&E efforts to meet O&S requirements, and evolving spiral capability. These resources will ensure that the Aegis BMD ships can be maintained through the end of the Future Year(s) Defense Program (FYDP), as they receive upgraded Block capabilities. MDA will retain the responsibility for the development of future Aegis BMD baselines.

14.2. Navy

The Navy team continues to work with MDA to refine Operation and Maintenance costs. The Navy and MDA, jointly and via the Navy-MDA Board of Directors, continue to discuss the long-range support requirements for Block 04 Aegis BMD modifications needed to support the BMDS mission.

The Navy funded in PB 06 the O&S (Operation and Maintenance Navy (O&MN)) to support Block 04 LRS&T ship modifications/operations. The Navy plans to submit a budget request to support the final Block 04 Aegis BMD 3.6 configuration, once agreements listed in section 10 are finalized.

PB 07 Aegis BMD (LRS&T + Engagement)
POM 08 SM 3 BLK IA Missile (Maintenance Only)

Aegis BMD "Operations and Support" Costs
TY $ In Millions

	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
ABMD	10.0	19.0	20.0	19.0	23.0	25.0	25.6	26.4
SM3 Maint	0	0	23.8	23.6	26.1	6.4	5.0	3.0

Note: All MDA funding is RDT&E

Navy BMD "Operations and Support" Costs
TY $ In Millions

	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
ABMD	13.0	24.0	24.0	25.0	23.0	24.0	24.5	25.0
SM3 Maint	0	0	2.9	3.4	5.7	7.0	9.1	11.9

Note: All Navy funding is O&MN

Figure B-9.1 Navy –MDA Block 04 Aegis BMD Funding Plans

10. AGREEMENTS AND COMMITMENTS

This section is to be used as a checklist to track reference documentation, implementation details and actions to be tracked during transition.

14.1. Signed and approved joint Navy-MDA memorandum to USD (AT&L) via ASN (RDA) and DOT&E summarizing the plan for Aegis BMD Block 04 transition, and calling out policy issues requiring decision contained in reference being developed.

14.2. Documentation providing Navy budgetary authority to include Aegis BMD Block 04 Operation and Sustainment in Navy POM submissions contained in reference being developed.

14.3. Co-signed joint Navy-MDA Memorandum of Agreement describing the SM-3 Block IA missile maintenance strategy and codifying funding responsibilities in reference being developed.

14.4. The decision that missile procurement responsibilities do not transfer for Aegis BMD Block 04 contained in reference being developed.

14.5. Operation Testing and evaluation agreements by MDA, DOT&E and OPTEVFOR on Aegis BMD Block 04 capability contained in reference being developed.

14.6. Positive testing reports (Operational Assessment and DT/OT) from COMOPTEVFOR, specifically interim and final DT/OT reports contained in reference(s) being developed.

14.7. Staffing and approval of this Aegis BMD Block 04 Annex to the MDA Transition and Transfer Plan to establish and document agreements on approach and timelines documented in reference being developed.

14.8. Documentation of the decision authorities with the DoD for approval for Transition and Transfer of the Aegis BMD Block 04 capability contained in reference being developed.

14.9. Agreement of contractual requirements for MDA and the Navy to implement this Transition and Transfer Plan Annex contained in reference being developed.

14.10. Formal designation by the Navy of a Program Management Office for the maintenance of the Aegis BMD Block 04 capability, and coordination with the Aegis BMD (PD 452) management structure contained in reference being developed.

14.11. Completion of the Transition Phase and Transfer the Aegis BMD Block 04 System IAW this Annex and supporting documentation documented in reference being developed.

11. REFERENCES

MDA Directive 1025.1 dated October 14, 2004.

CG 47-Class Guided Missile Cruiser NTSP, N86-NTSP S-30-7707G

DDG 51- Class Guided Missile Destroyer NTSP, N86-NTSP S-30-8511G.

12. ACRONYMS

ABMD - Aegis Ballistic Missile Defense

ACS - Aegis Combat System

ADS - Aegis Display System

ALI - Aegis Lightweight Exo-Atmosphere Projectile Intercept Project

APL - Allowance Parts List

ASN (RDA) – Assistant Secretary Navy for Research, Development and Acquisition

AWS - Aegis Weapons System

BMDS - Ballistic Missile Defense System

C&D/A - Command and Decision/Adjunct

C2 - Command and Control

CG - Aegis Cruiser

CDLMS - Common Data Link Management System

CFFC – Commander, Fleet Forces Command

COCOM - Combatant Commander

COMNAVSEA - Commander, Naval Sea Systems Command

COMOPTEVFOR – Commander, Operational Test and Evaluation Forces

CPI - Critical Program Information

CSEDS - Combat System Engineering Development Site

DDG - Aegis Destroyer

DIS – Defense Information System

DMS - Diminishing Manufacturing Sources

DOT&E – Director Operational Testing and Evaluation

ECP - Engineering Change Proposal

FTM - Flight Test Mission

FYDP - Future Year(s) Defense Plan

GAINS - GPS Aided Inertial Navigation System

HSI - Human System Integration

LRBM - Long Range Ballistic Missile

LRS&T - Long-Range Surveillance and Track

MSD - Material Support Date

MDA - Missile Defense Agency

MOA – Memorandum of Agreement

MP - Radar Resource (Mission) Planner

MDCI - Multi-Discipline Counter Intelligence

MRBM - Medium Range Ballistic Missile

NCSI - Naval Criminal Investigative Service

NTSP - Navy Training Systems Plan

NWDC - Naval Warfare Development Center

O&MN - Operation and Maintenance (Navy)

ORDALT – Ordnance Alteration

USD (AT&L) – Under Secretary Defense Acquisition, Technology and Logistics

OT - Operational Testing

PB - Presidential Budget

PDSS - Post Deployment Computer Programs Support

PE - Programmable Energy

POM - Program Objectives Memorandum

PPP - Program Protection Plan

R&D – Research and Development

SHIPALT – Ship Alteration

SM - Standard Missile

SMD - Ship Manning Document

SRBM – Short Range Ballistic Missile

SWDG - Surface Warfare Development Group

USSTRATCOM - United States Strategic Command

VGI - VLS Global Positioning System (GPS) Integrator

VLS - Vertical Launch System (VLS)

WCS - Weapons Control System

WEDOC - Worldwide Equipment Depot Operations Center

13. DEFINITIONS

Configuration Control – The systematic proposal, justification, evaluation, coordination, approval or disapproval of proposed changes, and the implementation of all approved changes in the configuration of a CI after formal establishment of its baseline.

Configuration Management – A discipline applying technical and administrative direction and surveillance to:

a. Identify and document of functional and physical characteristics of Configuration Items (CIs);

b. Audit the CIs to verify conformance to specifications; interface control documents and other contract requirements;
c. Control changes to CIs and their related documentation; and
d. Record and report information needed to manage CIs effectively, including the status of proposed changes and the implementation status of approved changes

Distance Support – Maximum use of the available connectivity and related technology, the surface force can best leverage the assistance of the existing shore support commands.

O&S – Operations and Sustainment or the support costs required to operate and maintain the BMDS.

Class 1 ECP Emergent (MIL-STD 480B) – Emergent Class 1 ECP's will have the same criteria as a Class 1 ECP, the justification code on the ECP will be marked (E) which for either of the following reasons;

a) To affect a change in operational characteristics which, if not accomplished without delay, may seriously compromise the national security.
b) To correct a hazardous condition, which may result in fatal or serious injury to personnel or in extensive damage to or destruction of equipment. A hazardous condition usually will require withdrawing the item from service temporarily, or suspension of the item operation, or discontinuance of further testing or development pending resolutions of the condition.

14. LIST OF FIGURES AND TABLES

14.4. Figures

BALLISTIC MISSILE DEFENSE SYSTEM
TRANSITION AND TRANSFER PLAN

Annex C

Upgraded Early Warning Radar (UEWR)

Missile Defense Agency/GMU
11 Eglin St
Hanscom AFB, MA 01731

EXECUTIVE SUMMARY

The purpose of this plan is to document the necessary actions and responsibilities associated with the transition of the AN/FPS-132 Upgraded Early Warning Radar (UEWR) programmatic and sustainment responsibilities for transfer from the Missile Defense Agency (MDA) to the United States Air Force (USAF) in FY09. This plan assumes the Air Force is successful in securing adequate funding through the FY08-13 Program Objective Memorandum (POM) process. The plan preserves the integrity of the legacy (missile warning and space surveillance) missions of the radars while providing comprehensive support for the new missile defense mission. This plan does not address the Test Control Network (TCN), GMD Communications Network (GCN), or Embedded Test (ET) components installed at Beale, Fylingdales, and Thule sites.

The MDA UEWR program modifies three AN/FPS 123 Early Warning Radars (EWRs) (Beale, Fylingdales, and Thule) to support missile defense as well as the legacy missions. MDA developed and will install upgrades to the EWRs at Beale, Fylingdales, and Thule (scheduled for completion in CY09). The two remaining EWR radars at Clear and Cape Cod will be upgraded by the USAF to establish a more robust missile defense capability. The UEWR retains the legacy array faces and selected radar equipment sub-systems, and adds state-of-the-art signal and data processing equipment and rewritten software, primarily using modern software language.

Prior to the USAF accepting programmatic responsibilities for the UEWR from MDA, the Single Manager (SM) will establish an affordable logistics support infrastructure to sustain the UEWR; a common baseline for Beale, Fylingdales, and Thule; and a production capability based on a common baseline that enables the USAF to procure upgrades for Clear and Cape Cod.

Transition issues that remain to be resolved include: 1) defining what support infrastructure (principally the System Programming Agency (SPA) and technical data) will transfer to the Air Force and the process for transferring spares and support equipment, 2) finalizing a change control agreement that integrates the existing United States Strategic Command (USSTRATCOM) and MDA processes, to include funding responsibilities for changes, 3) synchronizing the MDA and USAF POM submissions to prevent the appearance of overlap and enhance prospects for approval, 4) satisfying USAF requirements for a common hardware and software baseline at all three sites to ensure supportability and reduce sustainment costs, and 5) ensuring the USAF has a means to procure upgrades at Clear and Cape Cod..

This plan outlines funding requirements to execute MDA responsibilities from FY07-13, and USAF requirements which includes installation of UEWRs at Clear and Cape Cod.

TY $M	FY07	FY08	FY09	FY10	FY11	FY12	FY13	Total
Sustainment	2	23	25	24	25	25	26	150
Technology Refresh				8	26	14	14	62
Clear Upgrade		72	76	60	2	2	2	214
Cape Cod Upgrade			67	68	52	2	2	191
SPA Upgrades		21	9					30
Total Requirement	2	116	177	160	105	43	44	647

USAF Funding Requirements

TY $M	FY07	FY08	FY09	FY10	FY11	FY12	FY13	Total
Sustainment	22	23	2	2	2	2	2	55
Thule Upgrade	51	97	77					225
SPA Upgrade	2	11						13
Total Requirement	75	131	79	2	2	2	2	293

MDA Funding Requirements

MDA responsible only for FY06-08; legacy sensors transfer back to USAF FY09

** Projected possible requirement - MDA responsible for any BMDS improvement costs FY09 and beyond

1. PURPOSE

The purpose of this plan is to document the actions, responsibilities, and timelines associated with the transition period prior to transfer of the AN/FPS-132 Upgraded Early Warning Radar (UEWR) systems at Beale, Fylingdales, and Thule from the Missile Defense Agency (MDA) to the United States Air Force (USAF). Transition will result in two significant events, an Initial Operational Capability (IOC) declared separately at each site, and a Fully Operational Capability (FOC) declared simultaneously for all three radars. The transition period terminates with transfer and is expected to occur in conjunction with FOC. Details in this plan will form the basis for USAF and MDA Program Office Memorandum (POM) submittals for FY08-13. Based on the assumptions included in Section 2 below, the transfer is expected to occur in FY09.

2. FACTS and ASSUMPTIONS

2.1. Facts

The missile defense UEWR modification includes a Test Control Network (TCN), GMD Communications Network (GCN), and an Embedded Test (ET) capability. These systems are not addressed as part of this annex.

At turnover of operational use and organizational maintenance responsibilities, which coincides with IOC and United States Strategic Command (USSTRATCOM) certification, the UEWR becomes an operational weapon system and Air Force Space Command (AFSPC) assumes configuration control while MDA retains configuration management responsibility until transfer. After IOC all configuration changes will be submitted in accordance with the GMD/AFSPC Change Control Memorandum of Agreement (MOA) and USSTRATCOM configuration control processes.

Until transfer, MDA will continue to manage UEWR as a component within GMD. At operational acceptance, AF will control the system to ensure adequate integration across all mission requirements. Following transfer, AF will manage and control UEWR activities.

During the transition to transfer period MDA manages all aspects of the UEWR Program including sustaining engineering, and depot maintenance including hardware and software changes. Beginning with the transition period, USAF will provide base operations, security, site level maintenance, and manpower to operate the UEWR.

At transfer, the USAF will accept responsibility for base operational support and the full operational mission cost for MDA components transferred to USAF. (Note: UK is responsible for base operational support at Fylingdales). MDA will remain responsible for continuing missile defense development activities and change deployment activities.

Prior to transfer, a tailored configuration audit and any other activities required to validate the production baseline will be performed by the Air Force at each site.

The USAF position is that the following elements are required to be in place prior to transfer to enable long-term sustainment or to support FOC operations:

- Software support capability to minimize risk in software deployment and change implementation. This capability is required to confirm software and hardware changes (to include commercial off-the-shelf (COTS) repaired/replaced equipment) perform as required before introduction on the operational system. (See related issue in Para 3).
- USAF sustainment funding established (see Para 9).
- UEWR system technical data package (including re-procurement data for mission system and UEWR Simulator Tester (UST) developed items).
- A two years supply of spares at transfer to minimize operational downtime until normal spares acquisition can be established.
- Capability to operate, maintain, and sustain the UST at each site (includes training, technical data, and supply support).
- Establishment of Vandenberg Air Education and Training Command (AETC) UEWR Initial Qualification Training capability to enable replacement training of mission operators.

2.2. Assumptions

At transfer, funding responsibility for sustainment of all mission areas shifts to the USAF.

USAF and developer responsibilities after transfer will be finalized in a residual task list (AF Form 1261).

A condition for transfer is a stable common baseline and gaining Service ability to execute sustainment responsibility after transfer.

The Plan is based upon a USAF approved POM request to fund transfer activities beginning in FY08, with system transfer occurring at the start of FY09. MDA and USAF will POM to support respective transfer responsibilities.

The UEWR development string is available for simultaneous UEWR development and sustainment activities. Both before and after transfer, the ESC Single Manager (SM) will exercise control over resources for UEWR sustainment and development activities, however operational requirements shall take precedence. The SM will have capabilities in-place as required to sustain the UEWRs at transfer..

3. Issues

C-1 Transfer of Logistics Infrastructure from MDA to USAF

Discussion: The resources that are currently used to provide sustainment, including spares, support equipment, technical data, and depot infrastructure (development equipment string at Raytheon) are under the possession of the prime contractor.

Impact: Unless these resources are transferred to the USAF, they may not be able to exercise the control that is required to sustain the missile defense and legacy missions after transfer.

Recommendation: MDA and USAF develop a joint process for transfer of Integrated Logistics Support (ILS), including a SPA capability, to provide sustainment.

C-2 Change Control Process/Contract Coverage

Discussion: There is a requirement to maintain configuration control of the AN/FPS 132 Radar. MDA and USAF have existing configuration control processes in place for missile defense and legacy processes respectively.

Impact: These systems must interface to meet all mission needs and ensure that a common baseline is maintained. USAF policy requires all support infrastructure including an approved change control process to be in place beginning with Initial Operational Test and Evaluation (IOT&E) at Beale.

Recommendation: MDA and USAF complete the Configuration Control MOA defining the roles of each party and establishing the requirement for MDA contract coverage. This change control process must also interface with elements/components of missile defense to preserve mission integrity.

C-3 POM Synchronization

Discussion: The Air Force lost UEWR funding in the FY06-11 POM cycle because of disconnects between the Service and MDA POM submissions.

Impact: Inconsistencies between the MDA and USAF POM submissions jeopardize approval of funding essential to execution of this plan.

Recommendation: For the FY 08-13 POM cycle, both MDA and each lead service need to coordinate their POM submittals and both parties have to agree upon responsibilities to enhance the potential for successful POM requests. MDA and the Air Force need to work together to better synchronize funding inputs to reduce the chance that their funding requests become redundant. If the Air Force and MDA both submit POM requests consistent with Tables 9-1 and 9-2, this issue will be largely mitigated.

C-4 Common Hardware Baseline

Discussion: Because of the COTS nature of UEWR hardware, the Silicon Graphics, Inc. (SGI) data and signal processors at Beale are different models from those at Fylingdales. Thule (the final GMD acquisition) will likely have a third model. Sustainment of these processors is covered in GMD's Sustainment Development Plan Phase II (SDP-II) effort through support contracts with SGI and Sun Microsystems, Inc.
Impact: The Air Force has established a requirement that a common hardware baseline be in place at transfer in FY09 to ensure diminishing sources issues will not plague the Air Force during the first five years after transfer.
Recommendation: The Air Force position is that MDA must either provide funding to retrofit UEWR sites to a common hardware baseline, or else ensure COTS manufacturers will continue service contracts to support all COTS configuration items from transfer plus 5 years.

C-5 Production Roadmap

Discussion: USAF upgrades to Clear and Cape Cod are required both for technology refresh and to provide a more robust missile defense capability

Impact: Legacy mission capability at Clear and Cape Cod will be jeopardized without hardware and software upgrades, and missile defense capabilities will not be enhanced.

Recommendation: MDA and USAF develop a plan for procurement of upgrades at Clear and Cape Cod..

4. PROGRAM/SYSTEM DESCRIPTION

4.1. EARLY WARNING RADAR Legacy Systems

The EWR system comprises radars located at Beale AFB, Cape Cod AFS, Clear AFS, Thule AB, and RAF Fylingdales, U.K., which perform ITW/AA missions. The EWR at Fylingdales also supports a UK-unique mission.

4.2. AN/FPS-132 UEWR System

The current UEWR program modifies three EWR radars at Beale, Fylingdales, and Thule to support missile defense as well as the ITW/AA missions. The UEWR system retains the legacy array faces and selected radar equipment subsystems, and adds state-of-the-art signal and data processing equipment and a new software package, primarily utilizing modern software language. An UST is also included as an integral component of the UEWR. The UST is provided to support on site training, system analysis, embedded test, data reduction, and software testing.

4.3. UEWR Facility Modifications

Facility modifications to accommodate the UEWR are unique to each location.

5. PROGRAM STATUS

5.1. Accomplishments

The UEWR transition process has been in work since October 2002. Transition, software and budgetary meetings have been held regularly between GMU and USAF to schedule transition planning activities. The IOC/FOC Plan and Integrated Logistics Support Plan (ILSP) have documented criteria leading to IOC and FOC.

5.2. Current Program Status

The UEWR, a component of the GMD element of the Ballistic Missile Defense System (BMDS), is a spiral development program that is scheduled to achieve IOC at Beale in FY06. Fylingdales is scheduled to become operational in FY07, followed by a software retrofit at Beale. The Thule deployment is scheduled for FY09 with software retrofits subsequently installed at Beale and Fylingdales. The GMD/AFSPC Change Control MOA will be followed on all development and upgrades after Beale IOC.

5.3. Future Program Status

USAF plans to execute upgrades after transfer at Clear and Cape Cod.

Transfer of the AN/FPS-132 to the USAF is planned for FY09.

6. ORGANIZATIONAL RESPONSIBILITIES

6.1. Doctrine

USAF:

The existing AFSPC Concept of Operations (CONOPS) will continue to apply. As missile defense doctrine is refined, AFSPC will update the CONOPS as required.

USSTRATCOM:

Develop and implement operational plans to employ UEWRs for missile defense operations.

6.2. Organization

USAF:

UEWR deployment will not alter the existing AFSPC organizational structure.

6.3. Training

MDA:

Deliver a Type 1 Training Program and an AETC institutional training capability (equipment and materials).

USAF:

Develop and execute the USAF Training Plan.

6.4. Materiel

MDA:

Deliver technical data, spares, support equipment, depot level support, and other sustainment elements as specified in the Site IOC/FOC Plan.

Provide/fund final technical documentation for the UEWR and UST to include technical orders, operator manuals, check lists, training material, drawing and specification tree, interface design documents, and technical data for developed items.

USAF:

Compare and evaluate Reliability, Availability, and Maintainability (RAM) assessments and sparing, and provide recommendations.

Have a provisioning conference to ensure the proper spares are in place for operations.

Manage all UEWR mission hardware, firmware, software, facilities (except at Fylingdales), spares, and support equipment after transfer.

Operate the radars and provide on-site maintenance and training (except at Fylingdales), system analysis, data reduction, and software testing for each UEWR site.

6.5. Leadership Development

USAF:

There will be no change in command structure at AFSPC between EWR and UEWR as a result of this program.

6.6. Personnel

MDA:

Fund five additional USAF contract maintenance personnel at Beale until transfer. These personnel are required due to facility modifications that dispersed work centers.

USAF:

No changes to existing manpower or personnel requirements prior to transfer. After transfer, USAF assumes responsibility to fund additional maintenance personnel.

6.7. Facilities

MDA:

Complete facility modifications as defined in the Facilities Requirements Documents.

USAF:

Retain facility maintenance responsibility before, during and after transition.

6.8. Security

MDA:

Prior to transfer, MDA will share security responsibilities with the Air Force and with the Royal Air Force (RAF) at Fylingdales. This includes Information Assurance (IA), Communications Security (COMSEC), Operations Security (OPSEC), and Industrial Security. After UEWR transfers to the Air Force, MDA will continue to have a role in these areas so long as they control the Missile Defense Program.

USAF:

Provide physical security at Beale and Thule before and after transfer. Provide IA, COMSEC, OPSEC, and Industrial Security after transfer.

UK:

Provide physical security and cryptologic support at Fylingdales before and after transfer. The Ministry of Defence (MoD) will have additional joint responsibility for COMSEC and IA with respect to Fylingdales.

6.9. Test Strategy

UEWR is a USSTRATCOM/BMDS component originally upgraded as part of the GMD Element. For BMDS testing purposes, see the Ground-Based Interceptor/GMD Fire Control (GBI/GFC) Annex for details.

MDA:

The UEWR acquisition strategy is a spiral development concept where additional radars upgrades could occur as funding becomes available. Risk Management is addressed at all stages of development. At each spiral stage, the performance of the GMD and legacy systems will be evaluated.

The overall strategy for Certification of UEWRs for legacy operations and missile defense is to evaluate legacy operations in 2006, and missile defense operations on availability.

Test & Evaluation Master Plans (TEMP) were developed for both Beale and Fylingdales. The Test Planning Working Group is the vehicle used to assure user involvement.

MDA funds associated testing during the transition to transfer period. After transfer, MDA will only be responsible for upgrades and tests to the missile defense capability.

USAF:

Until transfer, the Air Force is only responsible for changes to the legacy requirements (outside the Prime Item Development Specification (PIDS)). After transfer, Air Force will support all UEWR system maintenance and required testing.

For Beale, Air Force Test and Evaluation Center (AFOTEC) is the Operational Test Authority (OTA). For Fylingdales, 17TS and HQ 3GP are the OTAs.

Declare IOC for all missions at each site once the requirements of the IOC/FOC Plan have been met.

USSTRATCOM:

Certify the Integrated Threat Warning/Attack Assessment (ITW/AA) and missile defense capabilities of the UEWR.

6.10. Supportability Strategy

MDA:

Coordinate POM input data related to the UEWR with AFSPC.

Correct all agreed BMD related hardware and software residual deficiencies at MDA expense.

Ensure a single software configuration for all sites.

Provide/fund Interim Contractor Support (ICS) during the transition to transfer period (i.e., Subject Matter Experts (SMEs), Operations System Support Center (OSSC), and depot maintenance to include software support/maintenance).

Provide a software support/maintenance capability to the USAF at transfer.

Remain as the Missile Defense Research and Development (R&D) agency and work through both the MDA configuration management process and the USSTRATCOM configuration control process. The USSTRATCOM configuration control process is specified in NUI 10-21, Change Control Management Process for NORAD/USSPACECOM Warfighting Support System (N/UWSS), 02 Jul 01. MDA's configuration management process is specified in the BMDS Change Processing Guide - Phases, Inputs, Outputs, Activities Performers and Actions, 01 June 04, and the USSTRATCOM Change Control process as specified in NUI 10-21 after operations acceptance. Changes will be processed as specified in the GMD/AFSPC Change Control MOA to execute any future missile defense modifications.

Process all configuration changes, regardless of source, in compliance with the GMD/AFSPC Change Control MOA.

Sustain GCN, ET, and TCN both before and after transfer.

USAF:

Accept responsibility for operations and organizational maintenance for each site in accordance with the IOC/FOC Plan.

Plan and program funding for long-term sustainment after transfer.

Retain the responsibility for depot level support for legacy hardware during and after transition.

Participate in the deficiency review board processes.

Process configuration changes in compliance with the GMD/AFSPC Change Control MOA.

Take over configuration management after transfer and retain responsibility for configuration control of the operational system, organizational maintenance, and operation of the UEWR. After transfer, the USAF will direct all aspects of logistics necessary to accomplish the supported missions including system engineering, sustaining engineering, and depot support.

7. CONTRACT STATUS

The following contracts are currently in place at Beale and Fylingdales:

7.1. Development Contracts

NMD Prime Contract (HQ0006-01-C-0001), Contract Line Item Number (CLIN) 0101 includes development, installation, and testing of the UEWR at Beale. This contract extends through FY07. Correction of deficiencies, spares, and missile defense system support (depot support) will be available under this contract in FY06 and FY07.

NMD Prime Contract, CLIN 0401 provides development and installation of the UEWR at RAF Fylingdales. This contract expires in late CY 05 and covers installation through Developmental Test and Evaluation (DT&E).

7.2. Sustainment Contracts

NMD Prime Contract, CLIN 0109, Special Studies, can be used to support unforeseen sustainment requirements as necessary.

NMD Prime Contract, Sustainment Development Program II (SDP-II) includes hardware depot level support and UST maintenance from 1 Oct 04 – 30 Dec 06 at Beale and Fylingdales, and a Fylingdales logistics package (spares, technical data, training, and UST) delivered in FY06-07. SDP-II is funded under the 500 series CLINs and includes an unfunded option year through 31 Dec 07.

- AFSPC has an existing operations and maintenance contract that includes the Beale and Thule UEWR. This contract is scheduled to be re-competed in FY06 under a solicitation for Operations, Maintenance and Support (OM&S)

for the Solid State Phased Array Radar System (SSPARS), Solicitation Fa2517-04-R-0016.

- Electronic Systems Center (ESC) has an existing contract for depot-level support, systems engineering, and sustaining engineering of the EWR system (Contract F19628-02-C-0010) in support of existing Air Force missions. This contract covers both EWR and UEWR radars through FY07, with options extending out until FY20.
- The RAF has an existing operations and maintenance contract at Fylingdales that is similar to the AFSPC contract at Beale, but also includes software maintenance for UK-unique mission applications. This contract, funded by the UK, was awarded in Apr 2004.

8. PLAN FOR TRANSITION ACTIONS/MILESTONES

8.1. Transition Timeline

Table 8.1 depicts all the necessary events to achieve combat capability at both Beale and RAF Fylingdales. The Thule UEWR is not yet on contract.

The following legend applies to Table 8-1, below:

CL 0101	= CLIN 0101 Prime Contractor Basic Contract
CL 0401	= CLIN 0401 Prime Contractor Basic Contract
AF	= United States USAF Sustainment Contract (ESC CLS)
21SW	= 21st Space Wing On-Site Contractor Support
SDP	= SDP II
SDP FO	= SDP II Option Year (in development)
UK	= United Kingdom
N/R	= Not Required
ISSUE	= Required, but funding/contract responsibilities not yet defined

	FY 05	FY 06	FY 07	FY 08
Beale				
Development, Install, DT&E	**---CL 0101---**	**---CL 0101[1]--**	**---CL 0101[1]--**	**N/R**
Spares Supply	**---CL 0101---**	**---CL 0101---**	**---CL 0101---**	**---SDP FO---**
On-Site Maint/Ops Spt: MDA	**---CL 0101---**	**---CL 0101[2]--**	**---CL 0101[2]--**	**N/R**
On-Site Maint/Ops Spt: USAF	**N/R**	**---21SW---**	**---21SW---**	**---21SW---**
Legacy Decommissioning	**---CL 0101---**	**---CL 0101[1]--**	**---CL 0101[1]--**	**N/R**
Depot Support	**---CL 0101--- --- SDP[3]---**	**---CL 0101--- --- SDP[3]---**	**---CL 0101--- --- SDP FO[3]---**	**---SDP FO---**
Correction of Deficiencies	**N/R**	**---CL 0101---**	**---CL 0101---**	**Issue[4]**
Technical Data Delivery	**---CL 0101[5]--**	**N/R**	**N/R**	**---SDP FO---**
UST Depot Support	**---SDP---**	**---SDP---**	**---SDP FO---**	**---SDP FO---**
UST On-Site Maint/Ops Spt	**---SDP---**	**---SDP---**	**---SDP FO---**	**---AF ---**
UST Delivery/Install/Checkout	**---CL 0101---**	**N/R**	**N/R**	**N/R**
UST Spares Supply	**N/R**	**Issue**	**Issue**	**Issue**
UST Technical Data Delivery	**N/R**	**N/R**	**Issue**	**N/R**
Type-1 Tng, Msn Ops	**---CL 0101---**	**N/R**	**N/R**	**N/R**
Type-1 Tng, Maint	**---CL 0101---**	**N/R**	**N/R**	**N/R**
Type-1 Tng, UST Ops	**---CL 0101---**	**N/R**	**N/R**	**N/R**
Type-1 Tng, UST Maint[6]	**N/R**	**N/R**	**Issue**	**N/R**
Future Modifications	**N/R**	**N/R**	**N/R**	**N/R**

Fylingdales[7]	FY 05	FY 06	FY 07	FY 08
Development, Install, DT&E	**---CL 0401---**	**N/R**	**N/R**	**N/R**
Spares Supply	**N/R**	**---SDP---**	**---SDP---**	**---SDP FO---**
On-Site Maint/Ops Spt	**N/R**	**Issue**	**Issue**	**-------UK--------**
Legacy Decommissioning	**N/R**	**N/R**	**Issue**	**N/R**
Correction of Deficiencies	**N/R**	**N/R**	**Issue[4]**	**Issue[4]**
Depot Support	**N/R**	**N/R**	**Issue**	**---SDP FO---**
Technical Data Delivery	**N/R**	**---SDP---**	**N/R**	**N/R**
Software Code Delivery	**N/R**	**Issue**	**---SDP---**	**N/R**
UST Delivery/Install/Checkout	**N/R**	**---SDP---**	**N/R**	**N/R**
UST On-Site Maint/Ops Spt	**N/R**	**Issue**	**---SDP---**	**-------UK--------**
UST Spares Supply	**N/R**	**N/R**	**---SDP---**	**---SDP FO---**
UST Depot Support	**N/R**	**N/R**	**---SDP---**	**---SDP FO---**
UST Technical Data Delivery	**N/R**	**---SDP---**	**N/R**	**N/R**
Type-1 Tng, Msn Ops	**N/R**	**Issue**	**---SDP---**	**N/R**
Type-1 Tng, Maint	**N/R**	**Issue**	**---SDP---**	**N/R**
Type-1 Tng, UST Ops	**N/R**	**Issue**	**---SDP---**	**N/R**
Type-1 Tng, UST Maint	**N/R**	**Issue**	**---SDP---**	**N/R**
Future Modifications	**N/R**	**N/R**	**N/R**	**N/R**
Thule[8]	FY 05	FY 06	FY 07	FY 08
Development, Install, DT&E	**N/R**	**TBD**	**TBD**	**N/R**
Spares Supply	**N/R**	**N/R**	**TBD**	**---SDP FO---**
On-Site Maint/Ops Spt	**N/R**	**N/R**	**TBD**	**---AF ---**
Legacy Decommissioning	**N/R**	**N/R**	**N/R**	**TBD**
Correction of Deficiencies	**N/R**	**N/R**	**TBD**	**Issue[4]**
Depot Support	**N/R**	**N/R**	**TBD**	**---SDP FO---**
Technical Data Delivery	**N/R**	**N/R**	**TBD**	**N/R**
Software Code Delivery	**N/R**	**N/R**	**TBD**	**N/R**
UST Delivery/Install/Checkout	**N/R**	**N/R**	**TBD**	**N/R**
UST On-Site Maint/Ops Spt	**N/R**	**N/R**	**TBD**	**---AF ---**
UST Spares Supply	**N/R**	**N/R**	**TBD**	**---SDP FO---**
UST Depot Support	**N/R**	**N/R**	**TBD**	**---SDP FO---**
UST Technical Data Delivery	**N/R**	**N/R**	**Issue**	**N/R**
Type-1 Tng, Msn Ops	**N/R**	**N/R**	**TBD**	**N/R**
Type-1 Tng, Maint	**N/R**	**N/R**	**TBD**	**N/R**
Type-1 Tng, UST Ops	**N/R**	**N/R**	**TBD**	**N/R**
Type-1 Tng, UST Maint	**N/R**	**N/R**	**TBD**	**N/R**
Future Modifications	**N/R**	**N/R**	**N/R**	**N/R**
AETC UEWR IQT Schoolhouse Training System			**Issue**	**Issue**

TABLE 8-1: Timeline – Contract Support and Identified Issue/TBD Areas

Notes:

1 - Beale mission system development, installation, and DT&E is scheduled for completion in FY05, but they are included on CLIN 0101 through FY 07.

2 - AFSPC Beale on-site contractor will perform most on-site maintenance starting FY 06, but MDA contractor support is on contract for FY 06-07 for additional support.

3 - Beale depot support is shared between CLIN 0101, SDP II, and SDP Option Year for the shown fiscal years.

4 - MDA by negotiation may be responsible for correction of some deficiencies after FOC.

5 - Technical data delivery for this entry is to support Beale IOC only.

6 - USAF will assume UST maintenance and operational support prior to FOC.

7 - Fylingdales may assume some emergency capability status prior to IOC, but no USAF or UK unit participation will be uniquely provided to include training and on-site maintenance.

8 - Missile defense modification for Thule AB is not currently defined by contracts.

8.2. Plan of Actions and Milestones

Table 8-2 below shows the scheduled activities necessary to achieve transfer in FY09. The funding requirements in Tables 9-1 and 9-2 are designed to support these activities.

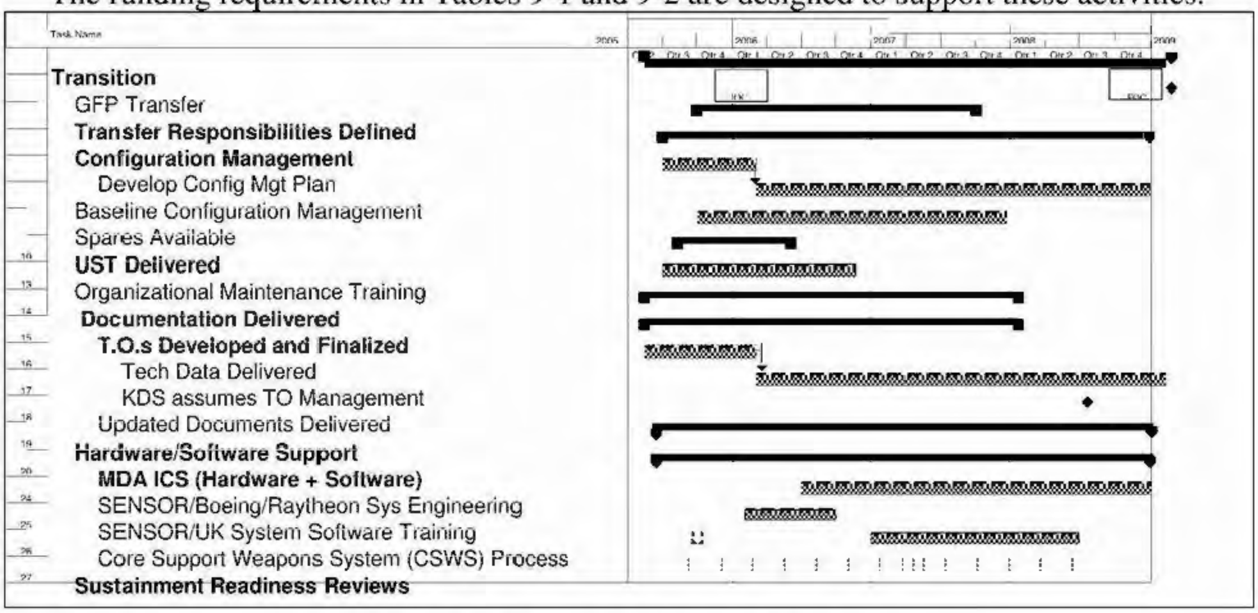

TABLE 8-2: Plan of Actions and Milestones

9. FUNDING SUMMARY

9.1. MDA Funding

Depot level support, testing and continued development through the transition period.

Sustainment elements as described above as well as any residual tasks after transfer.

Changes to UEWR driven by missile defense mission changes after transfer, to include regression testing for directly attributable missile defense related changes only.

9.2. USAF Funding

The sustainment posture required to execute its operational responsibilities is contained within the current USAF POM and Logistics Support Requirement Brochure managed by CC2SG/KDS.

Table 9-1 shows current MDA estimates and, where applicable, actual contract costs for MDA sustainment of the UEWR systems.

MDA CAIG Element	FY07	FY08	FY09	FY10	FY11	FY12	FY13
1.0 Unit Personnel							
1.1 Operations Personnel							
1.2 Maintenance Personnel							
1.3 Other Direct Support Personnel							
2.0 Unit Operations							
2.1 Operating Material							
2.1.1 Energy (Fuel, Petroleum, Oil and Lubricants [POL], Electricity)							
2.1.2 Training Munitions and Expendable Stores							
2.1.3 Other Operations Material							
2.2 Support Services							
2.3 Temporary Duty							
2.4 Security							
2.4.1 Anti-terrorist force protection							
2.4.2 Security							
3.0 Maintenance	6.1	6.7					
3.1 Organizational Maintenance and Support	1.0	1.0					
3.1.1 Consumables							

3.1.2 Repair Parts							
3.1.3 Depot Level Repairable items							
3.1.4 Contract Maintenance Services	1.0	1.0					
3.1.5 Other Unit Maintenance (e.g., Environmental Costs, Transportation, etc.)							
3.2 Intermediate Maintenance							
3.2.1 Government Material							
3.2.2 Government Labor							
3.2.3 Contractor Maintenance							
3.2.4 Other Intermediate Maintenance (e.g., Environmental Costs, Transportation, etc...)							
3.3 Depot Maintenance	5.1	5.7					
3.3.1 Government Depot Repair							
3.3.2 Contractor Depot Repair	5.1	5.7					
3.3.3 Other Depot Repair							
4.0 Sustaining Support	11.8	20.1					
4.1 System Specific Training							
4.1.1 System Specific Non-Operator Training							
4.1.2 System Specific Operator Training							
4.2 Support Equipment Replacement							
4.3 Operating Equipment Replacement							
4.4 Sustaining Engineering and Program Management	9.6	9.1					
4.5 Other Sustaining Support (e.g., SPA Upgrades)	2.2	11.0					
5.0 Continuing System Improvements	6.0	7.3	2.1	2.1	2.1	2.2	2.2
5.1 Hardware Modifications							
5.2 Software Maintenance & Modifications	6.0	7.3	2.1	2.1	2.1	2.2	2.2
5.2.1 Correction of Deficiencies	4.8	5.9					
5.2.2 Software Enhancements	1.2	1.4	2.1	2.1	2.1	2.2	2.2
6.0 Indirect Support							
6.1 Installation Support (e.g., ISSAs)							
6.2 Personnel Support							
6.2.1 Personnel Administration							
6.2.2 Personnel Benefits							
TOTALS	**23.9**	**34.1**	**2.1**	**2.1**	**2.1**	**2.2**	**2.2**

TABLE 9-1: MDA Funding Summary Table

Table 9-2 shows current USAF estimates and, where applicable, actual contract costs for USAF sustainment of the UEWR systems.

USAF UEWR CAIG Element	FY07	FY08	FY09	FY10	FY11	FY12	FY13
1.0 Unit Personnel							
1.1 Operations Personnel							
1.2 Maintenance Personnel							
1.3 Other Direct Support Personnel							
2.0 Unit Operations							
2.1 Operating Material							
2.1.1 Energy (Fuel, Petroleum, Oil and Lubricants [POL], Electricity)							
2.1.2 Training Munitions and Expendable Stores							
2.1.3 Other Operations Material							
2.2 Support Services							
2.3 Temporary Duty							
2.4 Security							
2.4.1 Anti-terrorist force protection							
2.4.2 Security							
3.0 Maintenance		0.8	3.8	3.8	4.0	5.6	7.2
3.1 Organizational Maintenance and Support							
3.1.1 Consumables							
3.1.2 Repair Parts							
3.1.3 Depot Level Repairable items							
3.1.4 Contract Maintenance Services							
3.1.5 Other Unit Maintenance (e.g., Environmental Costs, Transportation, etc.)							
3.2 Intermediate Maintenance							
3.2.1 Government Material							

3.2.2 Government Labor							
3.2.3 Contractor Maintenance							
3.2.4 Other Intermediate Maintenance (e.g., Environmental Costs, Transportation, etc...)							
3.3 Depot Maintenance		0.8	3.8	3.8	4.0	5.6	7.2
3.3.1 Government Depot Repair							
3.3.2 Contractor Depot Repair		0.3	3.3	3.2	3.4	5.2	7.2
3.3.3 Other Depot Repair		0.5	0.5	0.5	0.5	0.4	0.0
4.0 Sustaining Support		14.5	13.5	12.3	12.9	13.1	13.2
4.1 System Specific Training							
4.1.1 System Specific Non-Operator Training							
4.1.2 System Specific Operator Training							
4.2 Support Equipment Replacement							
4.3 Operating Equipment Replacement							
4.4 Sustaining Engineering and Program Management		14.5	13.5	12.3	12.9	13.1	13.2
4.5 Other Sustaining Support (e.g., Special Sustaining Test Requirements)							
5.0 Continuing System Improvements	2.0	7.6	8.0	8.1	7.8	6.5	5.5
5.1 Hardware Modifications							
5.2 Software Maintenance & Modifications	2.0	7.6	8.0	8.1	7.8	6.5	5.5
5.2.1 Correction of Deficiencies		4.9	8.0	8.1	7.8	6.5	5.5
5.2.2 Software Enhancements	2.0	2.7					
6.0 Indirect Support							
6.1 Installation Support (e.g., ISSAs)							
6.2 Personnel Support							
6.2.1 Personnel Administration							
6.2.2 Personnel Benefits							
TOTALS	**2.0**	**22.9**	**25.3**	**24.2**	**24.8**	**25.2**	**25.8**

TABLE 9-2: USAF Funding Summary Table

10. AGREEMENTS AND COMMITMENTS

10.1. ESC/MDA MOA

An existing MOA between the Commander, USAF Electronic Systems Center, and the Program Executive Officer, National Missile Defense, signed on 11 Jan 01 provides the authority for GMD to develop UEWRs at USAF radar sites. This agreement will have to be modified before transfer to redefine funding and developmental responsibilities.

10.2. US DoD/UK MoD MOU

The U.S. DoD/U.K. MoD BMD MOU Fylingdales Upgrade Annex, dated 12 June 2003, provides the framework for upgrading the Fylingdales EWR.

10.3. UEWR Support Concept (USC)

The USC provides the end state required for the UEWR systems after turnover and transfer have been completed. The USC was signed by HQ AFSPC/LCZ and ESC/NDB in November 2003.

11. REFERENCES:

11.1. Beale UEWR IOC/FOC Plan

AFSPC has a plan outlining the requirements that must be met for the Commander of AFSPC to declare IOC, and ultimately, FOC at Beale. Similar plans will be developed for Fylingdales and Thule.

11.2. GMD/AFSPC Change Control MOA.

This agreement integrates the GMD configuration control process for missile defense with the USAF configuration control process for the ITW/AA network.

11.3. Transition to Transfer Plan

This Transition to Transfer Plan will be reviewed annually and updated as required.

ATTACHMENT 1 – DEFINITIONS AND ACRONYMS

17TS	17th Test Squadron (OTA for RAF Fylingdales EWR)
AETC	Air Education and Training Command
AFOTEC	Air Force Operational Test & Evaluation Center
AFSPC	Air Force Space Command
AN/FPS-132	Surveillance Radar Central (Official Nomenclature for the UEWR)
BMDS	Ballistic Missile Defense Systems
CAMS	Core Automated Maintenance System; the standard USAF maintenance data collection system
CC2SG/KDS	EWR Sustainment Manager, located at Peterson AFB, CO
CISF	Centralized Integration Support Facility, the USAF software development capability currently used to support the EWR system
CLS	Contractor Logistics Support, includes hardware, software, and system/sustaining engineering
CLIN	Contract Line Item Number
COMSEC	Communications Security
Configuration Control	Approval Process for Changes, for UEWRs Accomplished via USSTRATCOM Change Control Processes.
Configuration Management	Process to effect changes after change approval, including modification design, development, and implementation as well as maintenance of deployed system configuration documentation.
CONOPS	Concept of Operations
COTS	Commercial-Off-the-Shelf
DT&E	Developmental Test and Evaluation
ESC/NDB	Previous USAF office symbol for the EWR/UEWR single manager; now CC2SG/KD
ET	Embedded Test

EWR	Early Warning Radar, which is the legacy system in place at Beale AFB, Cape Cod AFS, Clear AFS, RAF Fylingdales (UK), and Thule AB (Greenland)
FOC	Full Operational Capability
GBI	Ground-Based Interceptor
GCN	GMD Communication Network
GFC	GMD Fire Control
GFP	Government Furnished Property
GME	Directorate within the Missile Defense Agency, under the Ground-Based Midcourse Defense Element, that is responsible for engineering activities and software sustainment
GMU	Directorate within the Missile Defense Agency, under the Ground-Based Midcourse Defense Element, that is responsible for upgrading the EWRs for missile defense
HQ3 GP	Headquarters 3 Group, the RAF Fylingdales Operational Headquarters
HQ AFSPC/LCZ	Air Force Space Command/Space Sustainment Division
IA	Information Assurance
ICS	Interim Contractor Support
ILSP	Integrated Logistics Support Plan
IOC	Initial Operational Capability
IOT&E	Initial Operational Test and Evaluation
ITW/AA	Integrated Threat Warning/Attack Assessment
MDA	Missile Defense Agency
MOA	Memorandum of Agreement
MoD	Ministry of Defence
NMD	National Missile Defense
OM&S	Operations, Maintenance and Support
OPSEC	Operations Security
OSSC	Operations System Support Center

OTA	Operational Test Authority
PIDS	Prime Item Development Specification
POM	Program Office Memorandum
R&D	Research and Development
RAF	Royal Air Force
RAM	Reliability, Availability, and Maintainability
SDP II	Sustainment Development Program, Phase II
SM	Single Manager
SGI	Silicon Graphics, Inc
SME	Subject Matter Expert, Boeing provided technical experts equivalent to depot support for hardware and software at the deployed site as a temporary risk mitigation effort
SPA	System Programming Agency, provides software development/sustainment and hardware testing capability
SSPARS	Solid State Phased Array Radar System
Sustainment Readiness Reviews	Quarterly meetings to assess progress in achieving transition milestones
TCN	Test Control Network
TEMP	Test and Evaluation Master Plan
Transfer	Milestone where engineering responsibility for the UEWR system is passed from MDA to the USAF
Transition	Process of migrating the UEWR system from development into initial and final operational capability, and ending with transfer of the system to the USAF
Turnover	Milestone where responsibility for operations and organizational maintenance of the UEWR is passed from MDA to the USAF (or, at Fylingdales, the RAF)
Type 1 Training	Training (normally conducted by contractors) to qualify skilled level or supervisory/technician level personnel in maintaining and operating new or special equipment, or in new operational techniques and procedures

UEWR	Upgraded Early Warning Radar, a significant upgrade to the EWR that replaces approximately 85% of the radar hardware and 100% of the software
USAF	United States Air Force
USC	UEWR Support Concept
USSTRATCOM	United States Strategic Command
UST	UEWR Simulator Tester, which serves training functions and is used for software development and data reduction

DRAFT

BALLISTIC MISSILE DEFENSE SYSTEM

TRANSITION AND TRANSFER PLAN

Annex D

COBRA DANE Upgrade

(CDU)

Missile Defense Agency/GMU

11 Barksdale St

Hanscom AFB, MA 01731

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EXECUTIVE SUMMARY

The purpose of this plan is to document the necessary actions and responsibilities associated with the transition and transfer of COBRA DANE Upgrade (CDU) programmatic, operations and sustainment responsibilities from the Missile Defense Agency (MDA/GMD) to the USAF. Transfer to the USAF is planned for October 2007 (FY08) with MDA continuing to provide Contractor Logistics Support (CLS) funding through FY13. At transfer, the USAF will fund all base support costs.

The CDU upgrade was completed by MDA/GMD in September 2004 and a missile defense limited defensive capability was declared in October 2004. CDU is currently in a sustainment/transition mode with the USAF sustaining the legacy mission hardware and software and MDA providing both hardware and software support for Missile Defense-unique elements through FY 2007. MDA will provide funding for CLS until transfer in October 2007. During this transition to transfer phase, the technical maturity of the integrated software baseline (Legacy and Missile Defense) and communications interfaces will mature sufficiently to allow USSTRATCOM certification of all missions. A joint configuration management process is being developed to ensure a single MDA and USAF integrated software baseline is maintained during the transition period as well as beyond actual transfer.

CDU issues that remain to be resolved include: 1) defining manpower requirements to support missile defense operations; 2) MDA and the USAF reaching final agreement on the joint configuration management process; 3) resolution of funding requirements for Base Operations and an Intrusion Detection System (IDS) for Eareckson AS; 3) USAF completion of the Multi-Mission Concept of Operations (CONOPS); 4) USAF designation of MAJCOM responsibilities for executing CDU; and 5) joint MDA/USAF development of contract strategy for CLS during the FY08-13 time period.

The funding summary below shows estimated MDA and USAF FY06-13 funding requirements to execute this plan:

	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	TOTAL
CLS	6.2	6.2	4.7	4.4	4.1	3.7	3.5	3.4	36.2
BOS	5.6	8.4							14.0
IDS		5.8							5.8
Total MDA Cost	**11.8**	**20.4**	**4.7**	**4.4**	**4.1**	**3.7**	**3.5**	**3.4**	**56.0**

MDA Funding Requirements ($M)

	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	TOTAL
BOS	3.8	0	9.0	9.1.	9.2	9.3.	9.4	9.5	59.3
Security Sustainment			.2	.2	.2	.2	.2	.2	1.2

USAF Funding Requirements ($M)

COBRA DANE Upgrade
Transition and Transfer Plan

1. PURPOSE

This document addresses the planning activities required for the transition of COBRA DANE Upgrade (CDU) operations and sustainment activities from the Missile Defense Agency (MDA) to the USAF. Transfer will occur after certification and upon completion of formal transfer of operations and sustainment from MDA to the USAF (planned for October 2007). Figure 4.1 highlights hardware and software that will be transferred, and it is described in paragraphs 4.1.1 and 4.1.1.2. Paragraph 4.2 identifies GMD Fire Control and Communications (GFC/C) and Embedded Test Capability which are not subject to transfer under this annex.

2. FACTS and ASSUMPTIONS

2.1. Facts

The USAF will assign the Missile Defense mission to the current COBRA DANE Legacy USAF unit.

Designated Defense Satellite Communications Systems (DSCS) and Defense Red Switch Network (DRSN) equipment will transition to the Services beginning FY07 per existing agreements. The DSCS and DRSN at Eareckson Air Station (EAS) will transition to the Air Force.

There is Air Force Operations & Maintenance (O&M) contractor maintained DSCS and DRSN equipment located within the COBRA DANE facility and at the DSCS facilities on EAS.

There is MDA/GMD Prime Contractor maintained Long Haul Communications (LHC) and Communications Node Equipment (CNE) located within the COBRA DANE facility and the In Flight Interceptor Communication System (IFICS) Data Terminal (IDT) building.

2.2. Assumptions

MDA will continue to manage the GMD program after transfer of the CDU to the Air Force, including ownership and maintenance of Prime contractor GFC/C assets and Embedded Test (ET) Capability assets located at EAS. MDA will retain responsibility for the following functions: BMDS GMD Program Management, Systems Engineering, Configuration Management, Test and Evaluation, Fielding Assets, Sustainment, and evolving/developing capabilities. Sustainment of GFC/C with the exception of the designated DSCS and DRSN equipment will be funded and executed by MDA through the FYDP (FY13).

The Army is the Lead Service for GBI and GFC/C Operations. Eventual transfer (TBD) of GFC/C In-flight Interceptor Communication System (IFICS) Data Terminal (IDT) equipment will be to the Army.

MDA will continue to fund the COBRA DANE software development facility at Woburn, MA and the Prime Consolidated Integration Laboratory (PCIL) at Huntsville, AL.

MDA will attain COBRA DANE Upgrade software and hardware technical maturity, leading to United States Strategic Command (USSTRATCOM) certification of the missile defense capability prior to transfer.

The need for additional depot infrastructure is not anticipated. MDA is providing access to MDA contractor support equipment for software sustainment. Depot hardware support will be provided through the Commercial Off-The-Shelf (COTS) vendors

After transfer, any future missile defense enhancements will depend on the integrity of the software configuration baseline being maintained by the USAF, and be subject to potential loss of experienced missile defense government and prime contractor personnel.

Failure to fully coordinate any software changes by either the lead service or MDA could result in significant cost, schedule, and programmatic risk as well as mission degradation.

Air Force is responsible for BASOPS and security at EAS in accordance with Interservice Support Agreements (ISAs), MDA will provide Intrusion Detection capability as agreed at the Joint Requirements Oversight Council (JROC) meeting on 16 Jan 2006.

3. OPEN ISSUES

3.1. Manpower

Discussion: Elements within the Air Force who currently manage the COBRA DANE legacy mission believe that additional manpower is required at COBRA DANE to operate the missile defense mission in addition to performing legacy activities. Furthermore, the exact impact of the manpower shortfall upon missile defense will be unknown until USSTRATCOM certifies the missile defense mission in accordance with the Multi-Mission CONOPS.

Impact: If manning shortfalls exist, mission impacts could be experienced.

Recommendation: USAF assign MAJCOM responsibilities, finalize the Multi-Mission CONOPS, and verify manpower requirements.

3.2. Configuration Control of Hardware and Software Changes

Discussion: At COBRA DANE, there are continuing changes to both legacy and missile defense components in response to operational requirements. Consequently, both MDA and USAF have configuration control systems in place, and these systems must be merged to ensure that a common baseline is maintained. Upon certification of the mission, a joint configuration process must be in place that complies with both legacy and USSTRATCOM processes.

Impact: Unless there is a joint configuration plan that gives recognition to both legacy and missile defense changes, there is a possibility that changes will not be timely or will have an adverse impact on respective missions. Any future legacy or missile defense changes will also be subject to the integrity of the configuration management baseline.

Recommendation: MDA and USAF elements complete development of a Joint Configuration Management Plan defining the roles of each party. Approval of this document is required for operational acceptance and is a prerequisite for transfer. This plan must ensure that the hardware and software baseline is preserved without degradation to the legacy or missile defense missions both before and after transfer.

3.3. Resolution of Base Operations and Support Funding Requirements

Discussion: Base Operations and Support (BOS) costs include base provided services such as airfield operations, communications services, fire protection, facility construction, maintenance, and repair, utilities, environmental, mail services, food and lodging. BOS costs of the COBRA DANE Upgrade have not been listed out separately, but are included in the overall GMD BOS requirements of Eareckson Air Station including support of CDU, IDT, and BMDS communications infrastructure. Air Force and MDA responsibilities for BOS execution and funding are documented in yearly Interservice Support Agreements (ISAs). The current ISA in effect is ISA 36, 24 Nov 04, between MDA and the 611th ASG. As a condition of CDU transfer, the Air Force proposed the following arrangement for BOS funding at the JROC on January 16, 2006:

BOS Funding responsibility	FY06	FY07	FY08
MDA	5.6	8.4	-
AF	3.8	-	8.4

All EAS BOS funding responsibility transfers to the Air Force in FY08.

Additionally, the Air Force proposes that MDA provide $5.8M for security upgrades including an Intrusion Detection System prior to transfer. USSTRATCOM is the approval authority for determining if PHYSEC requirements are met prior to a BMDS asset transitioning to operational status as specified in USSTRATCOM Directive 538-1.

Currently, Eareckson does not meet the Air Force or USSTRATCOM requirements for a second line of detection but has increased the number of security forces to provide additional security. This requirement should be listed as a shortfall until MDA provides funding for IDS.

Impact: Unless MDA resolves these FY 07 funding shortfalls, transfer will be delayed.

Recommendation: MDA/TRB and AF negotiate MOA to document BOS funding and ensure POM inputs are submitted; MDA/SI negotiate MOA to document security agreements.

3.4. Missile Defense Multi-Mission CONOPS

Discussion: The Multi-Mission CONOPS gives recognition to both the legacy and missile defense missions. Finalization of the Multi-Mission CONOPS has been awaiting designation of a lead service. With the designation of the USAF as lead service, this activity can proceed. MDA and USAF command and control lines of authority need to be established and be responsive to USSTRATCOM missile defense requirements, legacy mission requirements, and continued missile defense enhancements.

Impact: Until finalization of the Multi-Mission CONOPS, the USSTRATCOM certification of the mission can not proceed and reporting processes may not be clearly defined.

Recommendation: USAF complete the Multi-Mission CONOPS and necessary MOAs.

3.5. MAJCOM Designation

Discussion: Lack of a USAF MAJCOM designation has impacted the ability of MDA to finalize organizational level responsibilities. With the designation of the USAF as lead service, transition responsibilities can only be finalized once a MAJCOM is assigned responsibility for the COBRA DANE missile defense mission.

Impact: Lack of designation of a responsible MAJCOM delays detailed transfer planning activities.

Recommendation: USAF designate a MAJCOM to enable completion of transition planning.

3.6. Development of EAS CLS Contract Strategy

Discussion: MDA is currently contracting through the GMD Prime Contractor for CLS services including hardware and software, and has coverage through FY07. CLS support for the missile defense mission is not defined beyond FY07. CLS is intended to provide sustainment for new missile defense hardware and software; it is not intended to cover any legacy hardware or software; there are currently resident contractor logistics personnel providing the required CLS support. The current legacy contractor has a viable organizational and depot infrastructure that may provide a more economical alternative than continued CLS through the GMD Prime Contractor.

Impact: Inadequate planning for continued CLS coverage could lead to loss of experienced contract personnel, or shortfalls in sustainment activities degrading missile defense mission capability.

Recommendation: USAF and MDA jointly develop a contract strategy to ensure CLS is maintained from FY08 through FY13. This strategy must give recognition to the USAF mandate to support the USSTRATCOM operational missile defense mission at COBRA DANE and MDA's continued responsibility to develop a missile defense capability in accordance with NSPD-23.

4. PROGRAM/SYSTEM DESCRIPTION

4.1. System Covered by this Plan

4.1.1. The COBRA DANE Upgraded Weapons System

The system consists of the AN/FPS 108 Radar, an existing weapons system under management responsibility of elements within the USAF, along with software and hardware that has been modified to add the missile defense mission capability. Modified BMDS software is resident on the AN/FPS 108 hardware. The Battle Management Command, Control and Communications (BMC3) Communications Processing Equipment (BCPE) contains hardware and software that has been added to provide an interface between the radar and the missile defense command and control network. The BCPE cabinet houses two BCPEs (to provide 100% redundancy), one connected to each of the legacy VAX 6640 Processors. Additionally, there is support equipment (including Sun Blade 150 Workstations), facility upgrades, and facility and BCPE spares. The upgraded components and spares are candidates for transition to the USAF, subject to the provisions of this plan. See Figure 4.1.

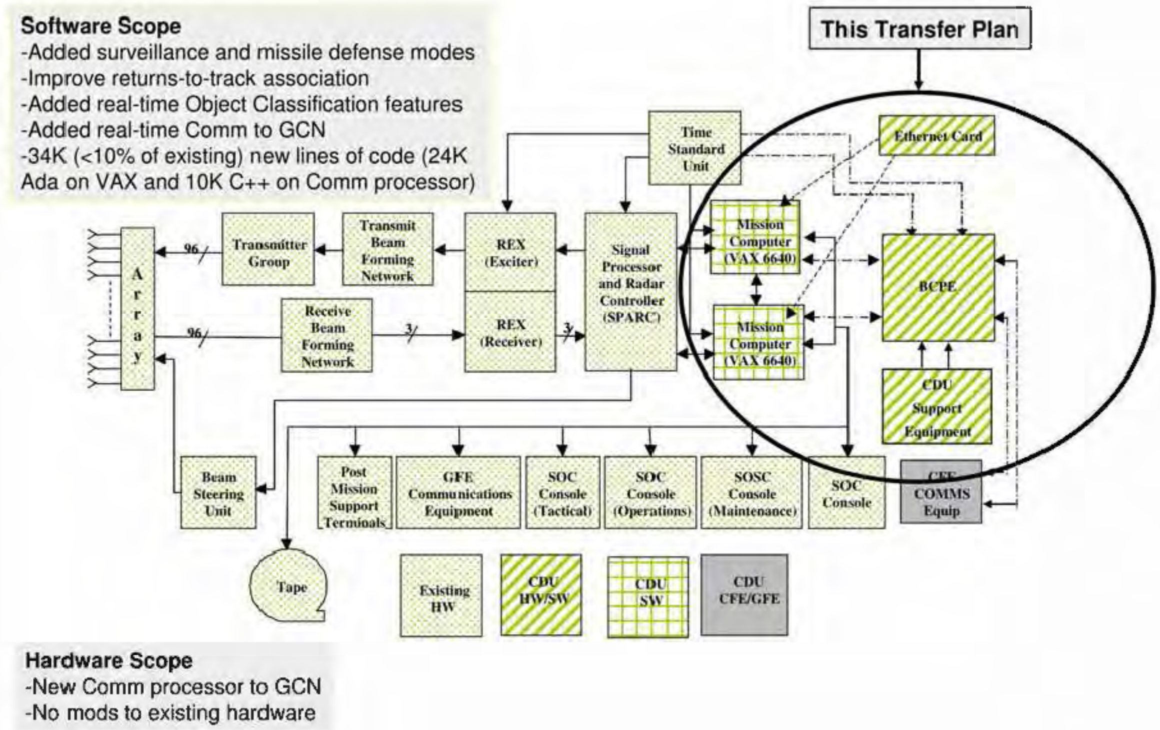


Figure 4.1 – Hardware/Software Architecture

4.1.1.1. AN/FPS 108 Radar Legacy System

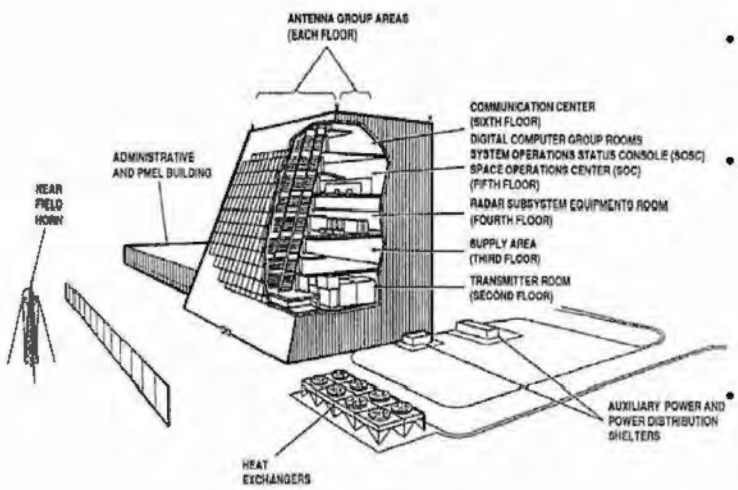
The AN/FPS 108 COBRA DANE L-band phased array radar located at Eareckson AS has a primary mission to collect intelligence data on missile tests within its field of view. The radar has a secondary mission to provide space surveillance and orbital debris data in support of the Air Force Space Command (AFSPC) Space Surveillance Network.

4.1.1.2. COBRA DANE Upgrade

This upgrade, provided by MDA, includes software enhancements for missile defense including object tracking and classification, software and hardware additions for communications through the BCPE, and miscellaneous facilities upgrades. With the incorporation of CDU, the corollary missile defense mission collects information on possible threat impacting events and transmits data to the GMD Fire Control Center. Threat impacting events are described as objects acquired in a radar fence that are projected to impact a defended area. Missile defense software changes were integrated with existing Computer Software Configuration Items (CSCI) for intelligence and secondary missions, thus making it essential that future changes be made in an integrated manner.

The CDU effort included construction/interface surveillance equipment for the COBRA DANE facility. The equipment included air handling units, an Electronic Security

System (cameras, sensors, monitors, and laptop), GMD Control Network Radio Frequency (GCN RF) shielded room, RF filters, electrical panels, transformers, fiber optic cable and conduits, and humidifiers. See Figure 4.2.



- **Sixth Floor**
  - **Construct New Shielded Comm Room**
- **Fifth Floor**
  - **Provide a Redundant UPS Feed to the Room**
  - **RF Filters ~~for~~ all new Power and Data Lines**
  - **Provide New Security Entry Control**
- **First Floor**
  - **Reinstate Entry Control Point (ECP)**
  - **Provide New Exterior Door Hardware**

Figure 4.2 – Radar Upgrade General Diagram

4.2. GMD Systems Not Covered by This Plan

4.2.1. GMD Fire Control and Communications (GFC/C)

The GFC/C Component provides battle management, command, control and communications, and operates in conjunction with the Integrated Tactical Warning and Attack Assessment (ITW/AA) network and other external supporting systems. The GFC/C integrates with the Space Based Infrared System (SBIRS), Aegis, UEWRs, CDU, SBX, and Ground-Based Interceptors (GBIs). The GFC/C Component includes six Products: the GMD Fire Control (GFC), GMD Communication Network (GCN), In-Flight Interceptor Communication System (IFICS), Test Exerciser (TEx), External System Interface (ESI), and the Launch Support System (LSS). Figure 4.3 below depicts the GFC/C architecture.

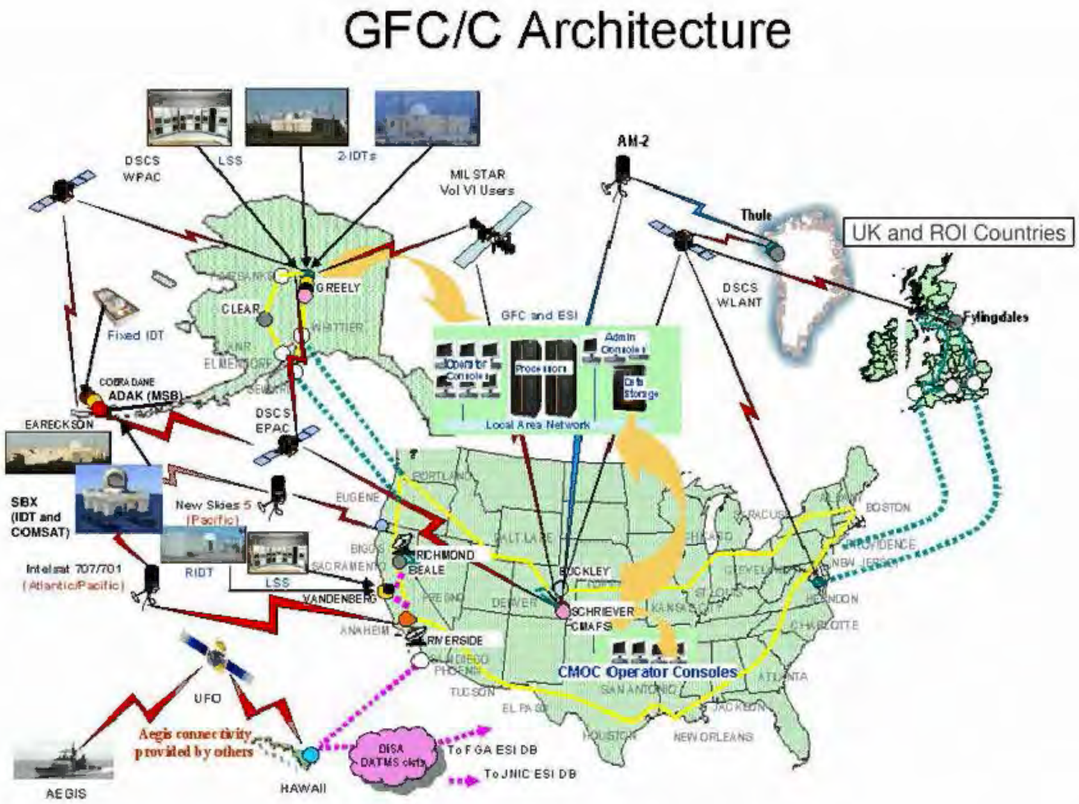


Figure 4.3 – GFC/C Architecture

4.2.1.1. GMD Fire Control and Communications (GFC/C) components on EAS

For GFC/C, there is one IDT and various associated GCN equipment at EAS.

In-Flight Interceptor Communication System (IFICS) - IFICS establishes and supports data communication links between the IFICS Data Terminals (IDTs) and the in-flight interceptors or EKVs. Currently a fixed IDT is located at EAS. The IDT provides communications support for the transmission of In-Flight Target Updates (IFTUs) from the GFC to the GBI and the reception of the In-Flight Status Reports (IFSRs) from the Interceptor to the GFC.

GMD Communications Network - At EAS, the GMD Communications Network (GCN) provides the required secure, survivable communications, and network management services between COBRA DANE, IDT and GMD Fire Control Nodes. The EAS GCN is composed of Long Haul Communications (LHC), Communications Node Equipment (CNE), and the GMD Voice Network (GVN). The LHC provides secure, reliable, multi-path, Wide Area Network (WAN) services using fiber optic cable and satellite communications (SATCOM). The Communications Node Equipment (CNE) and the NSM provide each GMD component access to the secure, survivable GMD WAN. The

CNE is the portion of the GCN product that provides communications interface to each GMD component. The NSM Collection Station, collocated with each CNE, provides local communications and GFC/C equipment performance monitoring, fault detection, isolation and resolution and status reporting.

4.2.2. Embedded Test Capability

Embedded Test (ET) provides a framework that accomplishes Distributed Ground Tests (DGTs), Integrated Mission Tests, Integrated Ground Tests (IGTs), and Recurring System Integrity Tests, and supports System Integrated Checkout, Pre-Mission Tests, and Integrated Flight Tests (IFTs). ET hardware and software are deployed at the GMD operational sites and at the System Test Laboratories to perform hardware-in-the-loop (HWIL) and software-in-the-loop (SWIL) testing.

The ET provides the GMD system with the capability to perform System and Subsystem Checkouts (SSCOs) as GMD components are installed and checked out at their deployed sites. As additional GMD components are checked out and integrated into the GMD system, System Integration Checkouts (SICOs) are performed. The ET controls the SICOs, stimulates the GMD components being integrated, and emulates the interfaces of any missing components.

Upon completion of the integration of the GMD components, the ET will control and provide the test data required for Recurring System Integrity Tests. The ET will further be used to execute a Test & Evaluation (T&E) predefined scenario to test the GMD system, collect the test data, and provide real-time analysis on the test data.

5. PROGRAM STATUS

5.1. Current Program Status

A CDU Limited Defensive Operations (LDO) was attained on 1 October 2004 and the program is currently in a sustainment phase with GMD providing support for missile defense hardware and software. Significant software activities have taken place since 1 October 2004 due to missile defense testing activities such as targets of opportunity, distributed ground tests, integrated ground tests, and a long range air launched target test. Continuing software changes are expected to be necessary through the duration of the present CLS effort until transfer.

5.2. The Way Ahead

CDU will be transferred to the USAF for operations and sustainment. Any Pre-Planned Product Improvements (P3I) which deliver additional radar capability in future spiral developments will be jointly approved by MDA and USAF through a joint configuration control processes. The USAF and MDA will meet monthly at the action officer level through Tiger Teams to develop a detailed roadmap for transfer in FY08.

A Quarterly executive level meeting between USAF and MDA will also be used to resolve issues impacting transfer activities.

BMDS GFC/C equipment listed in paragraph 4.2.1 will remain the responsibility of MDA through at least FY13 and will transfer with the GBI/ GFC/C program (TBD) to the Lead Service for the GBI/GFC/C as outlined in the GBI/GFC/C Transition Transfer Annex to the BMDS Transition plan.

6. ORGANIZATIONAL RESPONSIBILITIES

6.1. Doctrine

Doctrine includes involvement of a lead organization reportable to USSTRATCOM for the development, coordination, and certification of tactics, techniques and procedures for COBRA DANE. The Multi-Mission CONOPS will designate the USAF as lead organization reportable to USSTRATCOM for missile defense.

USSTRATCOM responsibilities:

Complete coordination of Multi-Mission CONOPS with the USAF.

USAF responsibilities:

Establish command and reporting structure and define responsibilities.

Develop, coordinate, and certify tactics, techniques, and procedures for the COBRA DANE missile defense mission.

Analyze and revise doctrine as necessary to reflect current GMD system design and capabilities, current USSTRATCOM CONOPS, and joint doctrine.

Conduct GMD tests and exercises in accordance with approved doctrine.

6.2. Organization

The impact of the CDU mission from an operations and maintenance perspective needs to be evaluated by the USAF. Once the mission is assigned to elements within the USAF who currently manage legacy missions at COBRA DANE, new operations and maintenance functions will be accommodated within the existing organizational structure. Currently, contractors provide the operations and maintenance. The crew concept as practiced by AFSPC for the UEWR is not employed.

USAF responsibilities:

Exercise management responsibility for CDU in the post-transfer period.

6.3. Training

Level 1 organizational level and maintenance training (on-the-job training (OJT)) was provided to elements within the USAF. That training has been adequate to support

LDO but may be insufficient to support USAF operations/certification. No depot training was provided, since the MDA concept is for life of the system contract depot support. The USAF will be responsible for any training required to establish a service depot support concept after transfer.

MDA responsibilities:

Conduct Type 1 operations and maintenance training

Provide a BMDS system familiarizations education course to the current COBRA DANE operators in support of near term operations.

USAF responsibilities:

Conduct follow-on training and any training required for certification and establishment of a service-unique support infrastructure.

6.4. Materiel

CDU hardware, software, and facility upgrades have been completed. Support equipment (workstations) and spares have also been provided by MDA/GMD to the USAF element that administratively manages COBRA DANE. However, there has not been any transfer of this materiel to the USAF.

MDA responsibilities:

Implement future COBRA DANE missile defense hardware and software P3I initiatives through a joint configuration management process.

Manage the MDA-unique hardware/CDU software configuration baseline while coordinating all spiral software releases with USAF legacy element.

Preserve the integrity of existing interfaces and mission capabilities during future developments.

Incorporate USAF legacy element approved operational baseline configuration changes as part of an integrated build whenever possible.

Develop, in conjunction with the USAF, a Joint Configuration Management Plan and participate in USAF configuration management forums.

Provide the logistics infrastructure necessary to maintain BMDS GMD GFC/C.

Maintain GFC/C equipment at EAS at least through FY13.

Maintain the On Site Support Center located at EAS at least through FY13.

USAF responsibilities:

Develop acquisition strategy in conjunction with MDA for contracted hardware and software support after transfer.

Work with MDA to develop an orderly process for incorporation of future missile defense initiatives while preserving the integrity of intelligence and space surveillance missions.

Ensure that the joint configuration management baseline is preserved.

Work with MDA to develop a Joint Configuration Management Plan and participate in MDA configuration management forums.

Maintain DSCS and DRSN equipment IAW MOA#173 at the start of FY07.

6.5. Leadership Development

As a part of the certification process, the USAF will conduct a capability assessment of the gaining organization for integrated missile defense/legacy missions.

6.6. Personnel

During the transition to transfer phase a requirement for additional on-site hardware and software contractor maintenance personnel was identified. Elements within the USAF currently providing COBRA DANE support to legacy missions have also identified an increase in personnel required for operations.

MDA responsibilities:

Work with the legacy element to identify any impact on personnel.

Provide support through contractual coverage for operations and support of the missile defense mission until transfer.

USAF responsibilities:

Program for any additional manpower requirements. The full impact of transfer activities upon personnel composition remains unknown.

Provide security force manpower at Air Force installations hosting GMD assets.

6.7. Facilities

A successful Beneficial Occupancy Date (BOD) was achieved for CDU in September 2004 when facility equipment was installed and accepted. Facilities spares were also provided to support the site. The USAF element which administratively manages COBRA DANE is performing operations and maintenance functions to include maintaining additional facility equipment.

MDA responsibilities:

Provide necessary facilities upgrades to support CDU, prior to transfer.

Transfer facility equipment identified in paragraph 4 to the USAF.

USAF element responsibilities:

Support maintenance and sustainment, after transfer.

6.7.1. Operational Facility Support

Operational Facility Support for GMD Facilities is provided to MDA IAW a negotiated Interservice Support Agreement (ISA) or MOA with the host installation. Funding responsibility will transfer to the AIR FORCE for specific support categories beginning in FY08. A listing of BASOPS functions is shown in Table 6.1

Eareckson AS, Alaska					
BASOPS Function (GMD Mission Facilities)	**Current Funding Provided By**	**Transition Yes/No**	**Transition Criteria**	**Transition Date**	**Proposed Funding Provided By**
Communication Services	MDA	Yes	PDM III	TBD	AF
Electronic Security System	MDA	Yes	POM Cycle FY08	TBD	AF
Facility Maintenance and Minor Repair	MDA	Yes	PDM III	TBD	AF
Fire Protection	MDA	Yes	PDM III	FY06	AF
Police Services	MDA	Yes	PDM III	FY06	AF
Safety	MDA	Yes	PDM III	FY06	AF
Secure Voice - Replacement COMSEC	MDA	Yes	PDM III	TBD	AF
Security Services	MDA	Yes	PDM III	FY06	AF
Utilities	MDA	Yes	PDM III	TBD	AF

Table 6.1 - GMD Operational Facility Support Transition Matrix

6.7.2. Mission Support Facilities

Mission Support Facilities for the GMD Program are owned by the host installation, but will be controlled by MDA until transfer. A listing of facilities at EAS is included in Table 6.2.

Location	Facility	Use
EAS	598	Lodging
EAS	600	MDA Admin Offices
EAS	611	Equipment Testing
EAS	618	Communications
EAS	3050	Storage & Warehousing

Table 6.2 - GMD Mission Support Facilities Matrix

6.8. Security

Authorization to operate for CDU was provided by elements within the USAF on 10 June 2005 with regard to protection level, connectivity, hardware, and software. This was based upon a review and evaluation of the System Security Authorization Agreement and the associated certification and testing report.

MDA responsibilities:

Achieve authorization to operate.

Negotiate responsibilities for security upgrade requirements derived from missile defense operations at Eareckson.

Provide intrusion detection system prior to transfer.

USAF responsibilities:

Keep authorization to operate current.

Revise security classification guidelines.

Manage the security program.

Provide security manpower (e.g., Guard Force, Information System Security Officer, and Organizational Assets such as FSO) and equipment for GMD assets at EAS.

Maintain security systems including Intrusion Detection System.

6.9. Test Strategy

CDU Developmental Test and Evaluation (DT&E) was completed 15 Sep 04 using Government approved Test Plans and Procedures. Similarly, the CDU Legacy Mission Operational Test and Evaluation (OT&E) was completed 31 Oct 2004 and was conducted in accordance with a Government approved test plan. Technical shortfalls identified during OT&E were resolved and document by GMU to Air Force and DIA. Secondary mission related testing was conducted as specified in AFSPC generated worksheets. COBRA DANE has participated in the following test activities, and will continue to be tested as a part of upcoming Distributed Ground Tests (DGTs) and Integrated Ground Tests (IGTs) to ensure interoperability with GMD:

SSCO and SICO – 5 8-29 July 2004

SICO – 6A	7-25 Nov 2004
SICO – 6B	23 Nov – 3 Dec 2004
SICO – 6B Upgrade	17-19 Dec 2004
GT04-2A Phase 1	14 Nov – 10 Dec 2005
GT04-2A Phase 2	Feb – late March 2006
LRALT FT04-5	26 Sep 2005

MDA responsibilities:

Fund the integration and site testing of MDA configuration changes for all supported missions.

Review, evaluate, integrate, and test all operational baseline changes proposed by the Air Force legacy element to ensure the missile defense mission is not impacted.

USAF responsibilities:

Perform regression testing of legacy mission, in accordance with CDU Configuration Management Plan.

6.10. Supportability Strategy

For the CDU, prior to establishment of LDO in October 2004, ILS elements including spares, technical manuals, OJT, and positional handbooks were provided for use by the legacy contractor in support of missile defense.

CDU is managed during its transition to transfer phase through MDA/GMD funded contractual actions for both hardware and software support. These contract activities will be in-place until transfer to the service is accomplished.

A support strategy for the post transfer period will be jointly established by USAF and MDA.

MDA responsibilities:

Fund and implement software correction of deficiencies from the CDU program for missile defense changes while preventing unacceptable degradation to legacy performance.

Transfer all CDU hardware and software identified in paragraph 4.1 to the USAF.

Provide contractual hardware and software sustainment for missile defense-unique items until transfer.

Prepare POM submittals for CLS in FY08-13.

Fund the CDU CLS program through FY13.

Continue to maintain the OSSC, IDT and GFC/C through FY13, as part of the GMD system.

Resource and provide CLS funding through the FYDP.

USAF responsibilities:

Prepare POM submittals as required to prepare for and support transition and sustainment including base support costs.

Provide sustainment contract coverage for legacy equipment and missile defense hardware and software as agreed with MDA.

Maintain DSCS IAW MOA #173 at the start of FY07.

7. CONTRACT STATUS

7.1. Missile Defense Agency Contracts

7.1.1. NMD Prime Contract (HQ0006-01-C-0001), Contract Item Line Number (CLIN) 0111

This CLIN provides Test Bed RDT&E, Non Construction including the development, installation and testing of COBRA DANE Upgrade hardware and software. The contract, funded with MDA 0400 funding, was completed in Sep 04.

7.1.2. NMD Sustainment Development Program II (SDP II), CLIN 0501 of GMD Prime Contract HQ0006-01-C-0001

This CLIN provides contractor on-site and off-site hardware support for the COBRA DANE Upgrade. The basic contract extends through Dec 2006 with a one year option. SDP-II is funded with MDA 0400 funds.

7.1.3. CTN/GMD/04-398 Modification P00181 for the COBRA DANE Upgrade Software and Mission Support, CLIN 0101

This CLIN provides for Engineering Change Proposal (ECP) 162. GMD Prime Contract HQ0006-01-C-0001 added COBRA DANE software, test, and operations support to the basic CLIN 0101 effort.

7.2. USAF Current Contracts/Initiatives for Legacy Equipment

7.2.1. COBRA DANE O&M contract F08650-01-C-0057

This is a 5 year, fixed price with award fee contract that will expire 31 Dec 2010. Missile Defense sustainment could be added to this effort upon completion of transition.

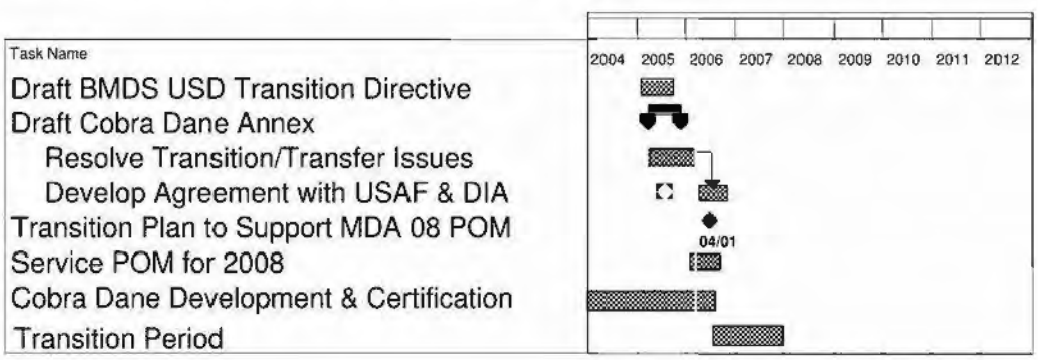
8. FUNDING SUMMARY

COBRA DANE CAIG Element	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
1.0 Unit Personnel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.1 Operations Personnel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.2 Maintenance Personnel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.3 Other Direct Support Personnel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.0 Unit Operations	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
2.1 Operating Materiel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.1.1 Energy (Fuel, Petroleum, Oil and Lubricants [POL], Electricity)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.1.2 Training Munitions and Expendable Stores	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.1.3 Other Operations Materiel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.2 Support Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.3 Temporary Duty	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
2.4 Security	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.4.1 Anti-terrorist force protection	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.4.2 Security	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.0 Maintenance	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1
3.1 Organizational Maintenance and Support	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0
3.1.1 Consumables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.1.2 Repair Parts	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.1.3 Depot Level Repairable items	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
3.1.4 Contract Maintenance Services	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9
3.1.5 Other Unit Maintenance (e.g., Environmental Costs, Transportation, etc.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.2 Intermediate Maintenance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.2.1 Government Materiel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.2.2 Government Labor	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.2.3 Contractor Maintenance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.2.4 Other Intermediate Maintenance (e.g., Environmental Costs, Transportation, etc...)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.3 Depot Maintenance	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
3.3.1 Government Depot Repair	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.3.2 Contractor Depot Repair	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
3.3.3 Other Depot Repair	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4.0 Sustaining Support	0.1	0.1	0.2	0.2	0.3	0.2	0.2	0.2
4.1 System Specific Training	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
4.1.1 System Specific Non-Operator Training	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4.1.2 System Specific Operator Training	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
4.2 Support Equipment Replacement	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4.3 Operating Equipment Replacement	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0

4.4 Sustaining Engineering and Program Management	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
4.5 Other Sustaining Support (e.g., Special Sustaining Test Requirements)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0 Continuing System Improvements	5.0	5.0	3.4	3.0	2.6	2.3	2.1	2.0
5.1 Hardware Modifications	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.2 Software Maintenance & Modifications	5.0	5.0	3.4	3.0	2.6	2.3	2.1	2.0
5.2.1 Correction of Deficiencies	4.3	4.3	2.9	2.6	2.2	2.0	1.8	1.7
5.2.2 Software Enhancements	0.7	0.7	0.5	0.4	0.4	0.3	0.3	0.3
6.0 Indirect Support	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6.1 Installation Support (e.g., ISSAs)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6.2 Personnel Support	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6.2.1 Personnel Administration	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6.2.2 Personnel Benefits	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTALS	**6.2**	**6.2**	**4.7**	**4.4**	**4.1**	**3.7**	**3.5**	**3.4**
GMD COBRA DANE BUDGET (GMD Sustainment Budget includes Depot HW repairs only 08-13)	**5.8**	**5.2**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
DELTA	-0.4	-1.0	-4.6	-4.3	-4.0	-3.6	-3.4	-3.3

8.1. SCHEDULE

This depiction shows the notional transition period.



9. PLAN FOR TRANSITION ACTIONS/MILESTONES

9.1. Transfer Date

Determination of the effective date for transfer will be based upon funding, the maturity of the system, and contractual considerations (including status of MDA SDP II (hardware) and COBRA DANE software (CLIN 0101) contract initiatives and any planned P3I initiatives). Transfer may be accomplished incrementally depending on the USAF capability to sustain missile defense upgrades. Transfer is currently planned for FY08.

9.2. Transition Milestones

The Transition Plan will address the accomplishment of specific milestones leading to transition. Key dates leading to transfer include:

- On site spares in-place: Dec 03
- Technical manual change pages completed: Apr 04
- Establishment of Beneficial Occupancy Date for CDU: Sep 04
- Declaration of Missile Defense LDO for Test Bed: Sep 04
- BCPE Technical Manual complete: Sep 04
- Completion of site level maintenance OJT: Sep 04
- Establishment of organizational level maintenance capability for CDU: Oct 04
- Establishment of post LDO missile defense hardware/software capabilities: Oct 04
- Complete COBRA DANE Software Configuration Management Plan: Mar 06
- Software certification (USSTRATCOM): TBD
- Establishment of CDU as operational baseline software for COBRA DANE (all missions): TBD
- Transfer of depot level support responsibility from MDA to the USAF: Oct 07

10. AGREEMENTS AND COMMITMENTS

10.1. MOA

An MOA between the United States Air Force, Director for Intelligence, Surveillance, and Reconnaissance, Defense Intelligence Agency and Program Director, Ground-Based Midcourse Defense, dated April 2002, established organizational relationships, responsibilities, and support activities for use of the AN/FPS 108 COBRA DANE radar in support of GMD program development testing for the COBRA DANE Upgrade. This MOA expired in July 2005.

MOA#173 between the 611th ASG and MDA covers the operation and maintenance of GFX at EAS.

10.2. Interservice Support Agreements to provide BASOPS:

ISA 36, 611th ASG, Eareckson AS, AK, 24 Nov 04

ISA 40, 3d Wing Support at Eareckson, AS, AK, 24 Nov 04

10.3. Joint Configuration Management Plan

A Joint Configuration Management Plan is being developed between the USAF legacy contract management organization and MDA/GMU to address configuration management and control of COBRA DANE. The content of the plan will be examined prior to transfer to ensure that it adequately addresses all roles and responsibilities in the post transfer environment.

11. ACRONYMS/DEFINITIONS

AFSPC - Air Force Space Command

BCPE - BMC3 Communications Processing Equipment

BMC3 - Ballistic Missile Command Control, and Communications

BOD - Beneficial Occupancy Date

BOS – Base Operating Support

CAIG – Cost Analysis Improvement Group

CAMS - Core Automated Maintenance System; the standard USAF maintenance data collection system

CC2SG/KDS - The EWR sustainment manager, currently located at Peterson AFB, CO

CDU- COBRA DANE Upgrade

CLIN - Contract Line Item Number

CLS - Contractor Logistics Support

Configuration Control - Approval process for changes

Configuration Management - Process to effect changes after change approval, includes modification design, development, and implementation as well as maintenance of deployed system configuration documentation.

CONOPS - Concept of Operations

CSCI - Computer Software Configuration Item

DGT - Distributed Ground Test

DSCS - Defense Satellite Communications System

DT&E - Developmental Test and Evaluation

ECP – Engineering Change Proposal

ESC/NDB - Previous USAF office symbol for the EWR/UEWR Single Manager; now CC2SG/KD

EWR - Early Warning Radar, which is the legacy system in place at Beale AFB, Cape Cod AFS, Clear AFS, RAF Fylingdales (UK), and Thule AS (Greenland)

GCN - Ground Control Node

GMD - Ground-Based Midcourse Defense element of the Missile Defense Agency

GME - The directorate within the Missile Defense Agency, under the Ground-Based Midcourse Defense Element, that is responsible for engineering activities and software sustainment

GMU - The directorate within the Missile Defense Agency, under the Ground-Based Midcourse Defense Element, that is responsible for upgrading the EWR and COBRA DANE radars for Missile Defense

IDO - Initial Defensive Operations (unspecified missile defense capability)

IDS – Intrusion Detection System

IFICS – In-Flight Interceptor Communications System

IGT – Integrated Ground Test

IOC - Initial Operational Capability

LDO – Limited Defense Operations

MOA – Memorandum of Agreement

MDA – Missile Defense Agency

NMD - National Missile Defense

OJT - On the Job Training

OT&E - Operations Test and Evaluation

PCIL – Prime Consolidated Integration Laboratory

PIDS - Prime Item Development Specification

POM – Program Office Memorandum

P3I - Pre-Planned Product Improvements

RF - Radio Frequency

SDP II - Sustainment Development Program, Phase II

SME - Subject Matter Expert, Boeing-provided technical experts equivalent to depot support for hardware and software at the deployed site as a temporary risk mitigation effort.

Sustainment Readiness Reviews - Quarterly meetings to assess progress in achieving transition milestones

Transfer - The milestone where engineering responsibility for the UEWR or COBRA DANE Upgrade is passed from MDA to the USAF

Transition - The process of migrating the UEWR or COBRA DANE system from development into Initial and Full Operational Capability, and ending with transfer of the system to the USAF

Type 1 Training - Training (normally conducted by contractors) to qualify skilled level or supervisory/technician level personnel in maintaining and operating new or special equipment, or in new operational techniques and procedures.

UEWR - Upgraded Early Warning Radar, a significant upgrade to the EWR that replaces approximately 85% of the radar hardware and 100% of the software

USSTRATCOM - United States Strategic Command

BALLISTIC MISSILE DEFENSE SYSTEM
TRANSITION AND TRANSFER PLAN

Annex E

Forward Based X-Band Radar – Transportable (FBX-T)

Missile Defense Agency/SN
7100 Defense Pentagon
Washington, DC 20301-7100

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~~FOR OFFICIAL USE ONLY~~

EXECUTIVE SUMMARY

The Forward Based X-Band Radar – Transportable (FBX-T) is a transportable, X-Band, THAAD class, phased array radar. It provides the Ballistic Missile Defense System (BMDS) with improved search, detection, and tracking capability in the boost and post-boost phase of Ballistic Missile (BM) flight. This capability contributes to the expansion of the BMDS battlespace by providing earlier target tracking information to the Command, Control / Battle Management / Communications (C2BMC) for engagement by other BMDS sensors and weapons.

Army was recommended as Lead Service for FBX-T at the 19 January 2006 Joint Requirements Oversight Council (JROC). Preliminary discussions between the Missile Defense Agency (MDA) and the Army have taken place, and Army representatives conducted a site survey for the first FBX-T deployment in conjunction with MDA personnel. It is anticipated that the Army will provide criteria for FBX-T transition, transfer, and associated dates. However, the transition of specific responsibilities and the timing thereof has yet to be negotiated between the Army and MDA. Moreover, the timing for beginning the transition process has not been determined nor whether FBX-T will actually transfer to the Army.

~~(FOUO)~~ The MDA Sensors Directorate (MDA/SN) President's Budget (PB) 07 funding for FBX-T Operations and Support (O&S) is shown in Table ES-1 below. All MDA funds are Research, Development, Test & Evaluation (RDT&E) funds. The MDA/SN budget includes funding for Contractor Logistics Support to operate and maintain the deployed radars, site physical security, spares, integrated logistics support infrastructure/depot support, and site maintenance through the end of FY 2013. These figures do not include one-time costs for deployment and site preparation. Budget requirements are subject to change depending on where the radar sites are located and what facilities/support can be negotiated locally with in-theater commands and or the host nation. Funding breakout is provided in Section 9.

$ in Millions	FY06	FY07	FY08	FY09	FY10	FY11	* FY12	* FY13
MDA/SN FBX-T Operations & Support	37.6	47.2	62.1	67.0	88.8	105.1	107.3	109.6

Note: * FY12 & FY13 not included in PB07 Budget

Table ES-1. FBX-T O&S Estimate ~~(FOUO)~~

1. PURPOSE

This document describes the Forward Based X-Band Radar–Transportable (FBX-T) and the current plan for its deployment, operations, and sustainment. Army was recommended as Lead Service by the Joint Requirements Oversight Council (JROC) on 19 January 2006. As of the date of this version, details regarding the transfer of functions and responsibilities remain to be determined. Once this has been done, this annex will again be revised to include these agreements. In the interim, this document is intended to provide a baseline to support further detailed planning as the system moves towards deployment and activation.

The FBX-T Transition and Transfer Annex follows the Doctrine – Organization – Training – Materiel – Leadership – Personnel – Facilities (DOTMLPF) construct implemented across the Missile Defense Agency (MDA) for all operational elements. This construct addresses the planning activities required to place an MDA asset into operation. Additionally, the plan provides information on the overall FBX-T program, including future developments, programmatic requirements, and contract status. As a result, this activation plan will provide MDA with a resource guideline to ensure that all requisite items required for FBX-T operations are identified and executed in accordance with BMDS requirements.

2. FACTS AND ASSUMPTIONS

The FBX-T Transition and Transfer Plan is intended to be generic and applicable to any FBX-T deployment under the following assumptions:

- FBX-T system requirements and performance are sufficiently stable to permit deployment and operational use.
- New FBX-Ts will initially be shipped to a testing location such as Vandenberg AFB for integration and test, after which they will be available for operational deployment.
- FBX-T deployment will occur at a base under the control of U.S. or host nation forces.
- When deployed in an operational mode, the radar will be manned continuously 24 hours/day. The Unified Combatant Commander having Operational Control (OPCON) or Tactical Control (TACON) of the radar will determine when the radar is required to radiate, which may vary according to readiness condition (REDCON). Downtime for scheduled maintenance will be as approved IAW STRATCOM Directive 538-1 (BMDS Asset Management) procedures.
- The FBX-T will be contractor operated (e.g., radar activation, software loading, basic diagnostics) and maintained (e.g., troubleshooting and line replaceable unit replacement). A military or government civilian supervisor will provide on-site

contractual supervision and conduct liaison with U.S. host command and host nation forces as required.

- FBX-T will be remotely controlled (e.g., mission planning, radar tasking, and cueing) from C2BMC suites located at COCOM facilities.
- MDA will coordinate with the COCOMs for the execution of system tests and upgrades.
- Asset protection beyond the capability of the dedicated FBX-T security team and internal security measures will be provided by the U.S. host command, the host nation, or both.
- MDA will maintain administrative control (ADCON) of the deployed FBX-T unless ownership of the FBX-T is passed to another DoD organization.
- MDA will fund radar development, deployment, operations, and support until such time as an agreed transfer of responsibilities to the Army as Lead Service occurs. As stipulated at the 19 January 2006 JROC, MDA will fund contractor logistics support (CLS) costs through FY2013. Resourcing for CLS after FY2013 has not been determined. MDA will fund all costs associated with deployment for FY2006 and FY2007.

3. OPEN ISSUES

3.1. Transfer of Responsibilities to Army as Lead Service

Discussion: As noted previously, Army was recommended as Lead Service for FBX-T at the 19 January 2006 JROC. Preliminary discussions with the Army have taken place, and Army representatives conducted a site survey for the first FBX-T deployment in conjunction with MDA personnel. It is anticipated that Army will provide criteria for transition, transfer, and associated dates. However, the transition of specific responsibilities and the timing thereof has yet to be negotiated between the Army and MDA. Moreover, the timing for beginning the transition process has not been determined nor whether FBX-T will actually transfer to the Army.

Impact: No impact in the near term – MDA will fund deployment and operations and support through FY2007. For the longer term, until Lead Service responsibilities are identified, Army cannot program funds, personnel, and equipment to support FBX-T operations.

Recommendation: Army and MDA establish and execute a process to determine the details of the transition.

4. PROGRAM/SYSTEM DESCRIPTION

~~(FOUO)~~ The FBX-T is a transportable, X-Band, THAAD class, phased array radar. It provides the BMDS with improved search, detection, and tracking capability in the boost and post-boost phase of Ballistic Missile (BM) flight. This capability contributes to the expansion of the BMDS battlespace by providing earlier target tracking information to the Command, Control / Battle Management / Communications (C2BMC) for engagement by other BMDS sensors and weapons.

~~(FOUO)~~ The radar will perform surveillance autonomously or as cued by other sensors. It will acquire, track, and discriminate threat missiles and missile components, and pass this information to other BMDS radars downstream. Discrimination enhancements will be added in late CY 07 as part of the BMDS Test Bed, and other advanced capabilities will be added through upgrades and improvement programs via a series of spiral software enhancements.

Figure 1 below shows the first FBX-T as deployed at Vandenberg Air Force Base.

Figure 1. FBX-T at Vandenberg Air Force Base for Integration and Testing

Transition/Ownership/Configuration Control: Current plans for the FBX-T radar call for it to be operated and sustained through a Contractor Logistics Support (CLS) contract. The FBX-T team will also include a small military or government civilian contingent (one or two personnel) for liaison with the COCOMs, MDA, and the CLS Team. Under this plan, MDA will retain ownership of the FBX-T radars and be responsible for both operations and sustainment costs until transition to a Lead Service. The MDA Sensors Directorate (MDA/SN) will maintain configuration control of the radars as directed by the BMDS Configuration Management Plan until the radar transfers to a Service, after which configuration management will be conducted per joint agreement between the RDT&E and operational communities.

Concurrent Test and Operations: The FBX-T will initially be a concurrent test and operational asset in order to test and integrate planned spiral upgrades to the radar's forward based capabilities. The addition of new sensors and/or weapons to the BMDS will require the testing and integration of new algorithms and other software in order to add forward based capabilities and support new Engagement Sequence Groups (ESGs). As much as possible, research and development (R&D) testing will utilize FBX-Ts at test locations rather than deployed systems. Specific procedures for, and limitations on, concurrent test and operations will be jointly determined by MDA and the COCOMs.

Command & Control Battle Management & Communications: The BMDS C2BMC suite is principally responsible for planning BMDS operations and communications, providing BMDS situation awareness, monitoring and controlling BMDS operations and communications, and for providing theater BMD/National BMD integration. This suite provides the means through which the radar's track and discrimination information is passed to other sensors for cueing and/or to a weapon system for launch/engage on activities. Control of the FBX-T is exercised through a C2BMC suite located at a COCOM command center. The MDA Battle Management/Command and Control Directorate (MDA/BC) is responsible for development and fielding the BMDS C2BMC system. See Annex H, C2BMC.

The main information processor within the on-site C2BMC suite is the C2BMC Network Interface Processor (CNIP) provided by MDA/BC. Radar information is processed in the CNIP, and sent to the BMDS in the form of messages that are understood by receiving systems which use the information to establish a search area or to assist with identification and/or engagement of a target. The C2BMC suites consist of Operator Stations, Mission Servers, Network Management Equipment, Security and External Connection Equipment, and internal and external communications connectivity as required. Network Management Equipment includes the software required to perform BMDS communications planning, monitoring, and control as well as the hardware and software required to support system administration and to manage the various communications interfaces. MDA/SN and MDA/BC will work together through the development, fielding, and spiral development processes.

5. PROGRAM STATUS

~~(FOUO)~~ MDA/SN has acquired the first of four FBX-Ts for the BMDS. It will be available for deployment following the completion of integration and testing at Vandenberg Air Force Base. The second FBX-T is scheduled to be available for deployment in December 2007. The third and fourth FBX-Ts are scheduled to be available for deployment in October 2008 and October 2009 respectively. See the program schedule in Figure 1 below. The first FBX-T will be deployed with software Capability Release 1 (CR-1) which will enable the radar to perform search and track of ballistic missiles in the boost and post-boost phases of flight. Follow-on software (CR-2) will enhance the radar's discrimination capability and will be available in CY 07 for the deployment of the second FBX-T and as an upgrade to the first FBX-T. No hardware modifications are anticipated to be required to host the CR-2 spiral upgrade. MDA will manage FBX-T configuration control through the MDA Configuration Control Board (CCB) and the Operational Configuration Management Board (OCMB) process.

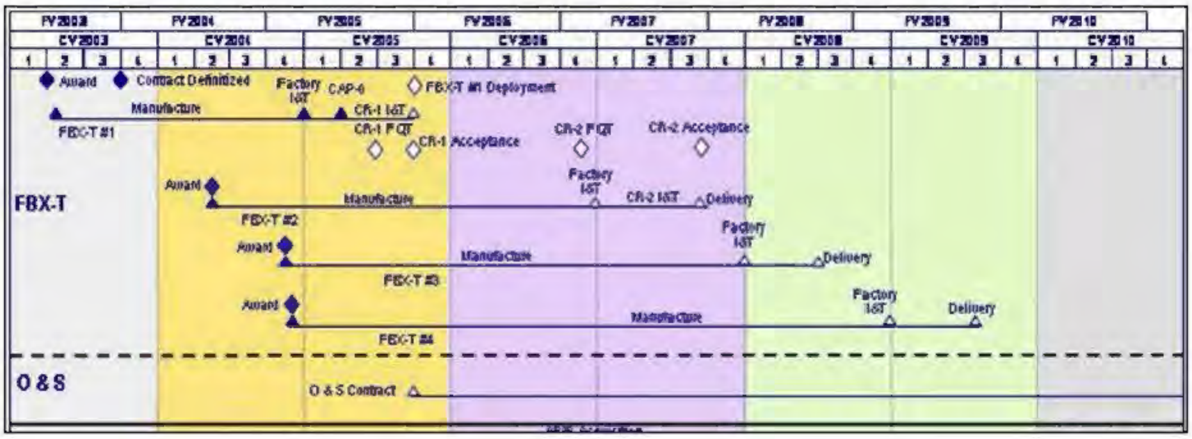

Figure 2. FBX-T Program Schedule ~~(FOUO)~~

6. ORGANIZATIONAL RESPONSIBILITIES

6.1. General

Except as noted, responsibility for execution of the tasks contained in this plan rests with MDA until responsibilities transfer to the Army as Lead Service. In addition, some support responsibilities may be assumed by a Combatant Command Service Component sponsor if one is designated by the gaining COCOM or by a hosting installation.

6.2. Doctrine

The FBX-T will be operated in accordance with existing plans and publications, including Joint Publication 3-01 (Countering Air and Missile Threats), 3-26 (Homeland Security), and 3-26.1 (Homeland Defense.) A Concept of Operations (CONOPS) for FBX-T will be developed by U.S. Strategic Command (STRATCOM) based on information on FBX-T capabilities and limitations provided by MDA. The CONOPS will address FBX-T operations for both homeland and theater defense and will be validated in wargames and exercises.

The FBX-T contractor is developing technical manuals in electronic format to govern operations and maintenance of the radar, along with checklists and other material. These materials will be updated to reflect operational experience and successive FBX-T capability releases, and can serve as the basis for Service publications in the event that a Service is designated to operate the radar.

The FBX-T CONOPS is in staffing as of the date of this version. STRATCOM will exercise Combatant Command authority for the FBX-T and will provide overall planning guidance and coordination. The Regional COCOM in whose Area of Responsibility the radar is deployed will exercise OPCON. This Command may further designate a subordinate element to exercise TACON of FBX-T. As noted above, MDA will retain administrative control of deployed FBX-Ts and responsibility for their operations, maintenance, and sustainment until the system transfers to a Lead Service. The Regional COCOM will report FBX-T readiness based on health and status reports from the radar and /or information from the operators on site.

As additional FBX-T radars are fielded, MDA will conduct tabletop exercises with STRATCOM and the affected regional COCOMs to identify operational differences which may exist between the different COCOMs. Standard FBX-T operational topics include:

- Homeland and regional employment plans
- Strategic, regional COCOM, and connectivity requirements
- Strategic, regional COCOM, and host nation reporting requirements
- Host nation agreement status
- Operational availability
- Command relationships
- Force protection requirements and responsibilities
- CONOPS approval/modification process

6.3. Personnel/Organization/Leadership

FBX-T on-site contractor personnel requirements are summarized in Figure 3 and will include the following:

- A CLS team for radar operations, maintenance, and site sustainment. The specific size and composition of the contractor team will be determined by MDA through negotiation with the CLS contractor depending upon site requirements.
- A military or government civilian supervisory detachment. The senior supervisor will exercise on-site contractual supervision of contractor personnel, and conduct liaison between the BMDS operational chain of command, hosting command, and local authorities. The supervisor will be trained and designated as a Contracting

Officer's Representative to provide direction and properly monitor and evaluate the contractor's performance. These personnel are not shown in the Figure.

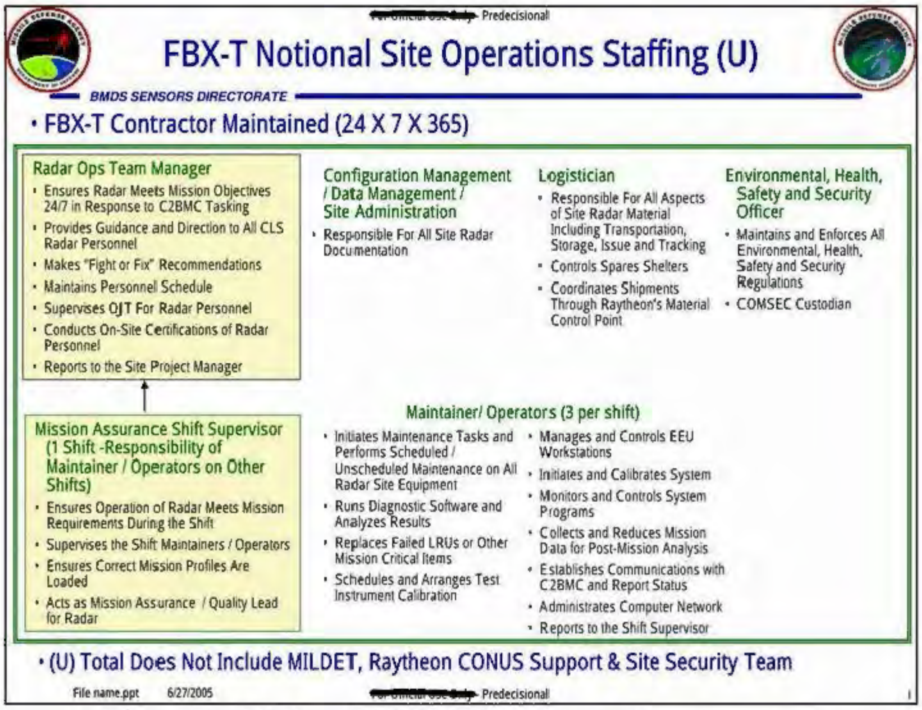

Figure 3. Notional FBX-T Personnel Requirements

Personnel requirements for the on-site supervisory detachment could be provided by the Army as Lead Service, a COCOM, or by MDA. If MDA will provide these personnel, MDA/TR and MDA/HR will coordinate the addition of billets to the MDA TDA for this purpose. Since obtaining positional billets to support permanent FBX-T military personnel is a lengthy process that could extend to three years, it may be necessary at first to provide these personnel on a temporary duty basis. The source for these personnel will be determined through discussion with MDA, STRATCOM, the hosting COCOM, and the Lead Service.

The CLS contractor will be responsible for supplying on-site personnel to support FBX-T deployment, operations, maintenance, and sustainment. The CLS contractor will also be responsible for contractor personnel replacement procedures for continuous FBX-T support. The Combatant Command may designate this support as "Essential DoD Contractor Services". The CLS contractor is contractually obligated to provide support, including during periods of crisis, until appropriately released or evacuated by military authority.

The number and skill mix of personnel on the CLS Team will depend on individual site requirements, cross-training, and host command/host nation resources available on-site.

The contract will also provide for a reach back capability to augment the FBX-T Team as needed for technical support, concurrent testing, and mission growth.

6.4. Training

STRATCOM Directive 508-6, Missile Defense Education and Training System, divides the responsibility for missile defense training into three levels as shown in Figure 4.

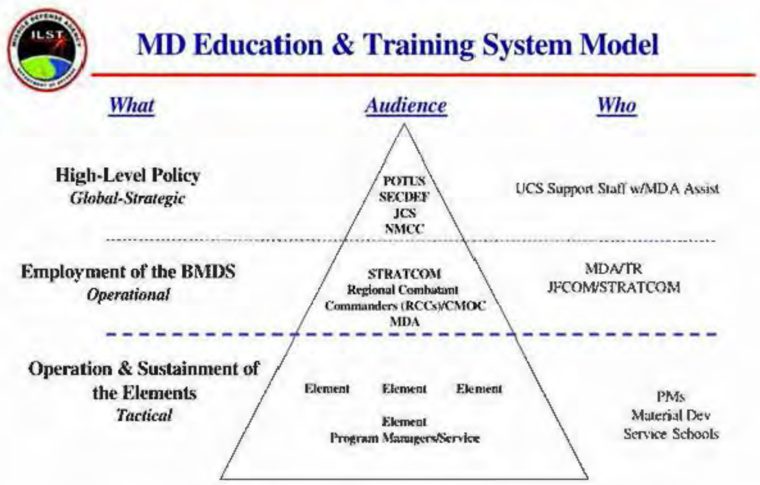

Figure 4. MD Education and Training System

MDA/SN is responsible for ensuring that the CLS contractor conducts FBX-T site personnel training, to include any military contingent, through "Individual" and "Collective/Unit/Crew" levels. Training for Multi-Echelon/ Battlegroup/Battle Staff/Service Component certification is the responsibility of the parent COCOM, and "Global" certification is the responsibility of STRATCOM. Training will be conducted in accordance with MDA Directive 1025, Ballistic Missile Defense Training Development and Execution (Draft) as applicable. In the absence of a parent COCOM, STRATCOM will perform Multi-Echelon/Battlegroup/ Battle Staff/Service Component certification or coordinate with another COCOM for that requirement. Responsibility for individual and crew training will pass to the Lead Service if the system transfers to the Army.

Other training responsibilities include the following:

- MDA/SN and MDA/BC will provide information on FBX-T capabilities, limitations, and employment considerations to MDA/TR that will be used to prepare familiarization training and materials for COCOM commanders and staff and other BMDS elements.
- MDA/TR will coordinate with the hosting U.S. command to determine theater-specific common skills training that may be required of deploying personnel.

- MDA/TR will arrange for BMDS system-level training, as described in MDA Directive 1025, to be provided to the FBX-T crews and military staff prior to deployment.
- MDA/TR will plan, coordinate, and implement a training strategy designed to address difference training throughout the BMDS for FBX-T upgrades that may impact radar capability or operator interface. MDA/TR will also provide training to the FBX-T site personnel when external element BMDS capabilities are altered or upgraded.

Major training events and milestones are described below:

- Training Requirements Definition. MDA will determine top-level training requirements for military and CLS personnel based on the FBX-T CONOPS and follow-on COCOM requirements for BMDS operations. This may include theater-specific training required for deployment. Personnel to be trained include those who will initially deploy with the FBX-T, as well as the reserve personnel to support scheduled personnel rotations. Training will encompass FBX-T familiarization for senior leaders and COCOM staff.
- Training Material Development. The CLS contractor will plan, prepare, and develop training materials and conduct individual familiarization training and testing to validate the ability of the FBX-T crew to operate and maintain the radar. The contractor will propose, and MDA/SN will approve, training objectives and training requirements standards.
- Training Conduct. The CLS contractor will conduct training and testing for deployable operations and maintenance personnel. Deployment training will be conducted while still in a testing mode to ensure an ability to react quickly to emergency activation. Permanent records of student achievement will be maintained by the course developer and be provided to MDA upon request.
- Operational Assessment. BMDS tests and exercises will be used to conduct system and BMDS-level operational training and assessment prior to and post-deployment At the system level, table top and dry run exercises will also be conducted to validate FBX-T operational procedures and training. The Regional Combatant Command is responsible for certifying individual and crew readiness.

6.5. Materiel

6.5.1 FBX-T Core and Supporting Equipment. FBX-T materiel includes key mission equipment and essential support items. Figure 5 depicts the major mission components of the FBX-T system, including a shelter for Command and Control Battle Management communications equipment. Additional supporting equipment will include generator fuel storage equipment, electrical switch gear, storage and administrative trailers, and miscellaneous support equipment. The exact equipment list will be developed by the CLS contractor upon completion of a detailed site survey.

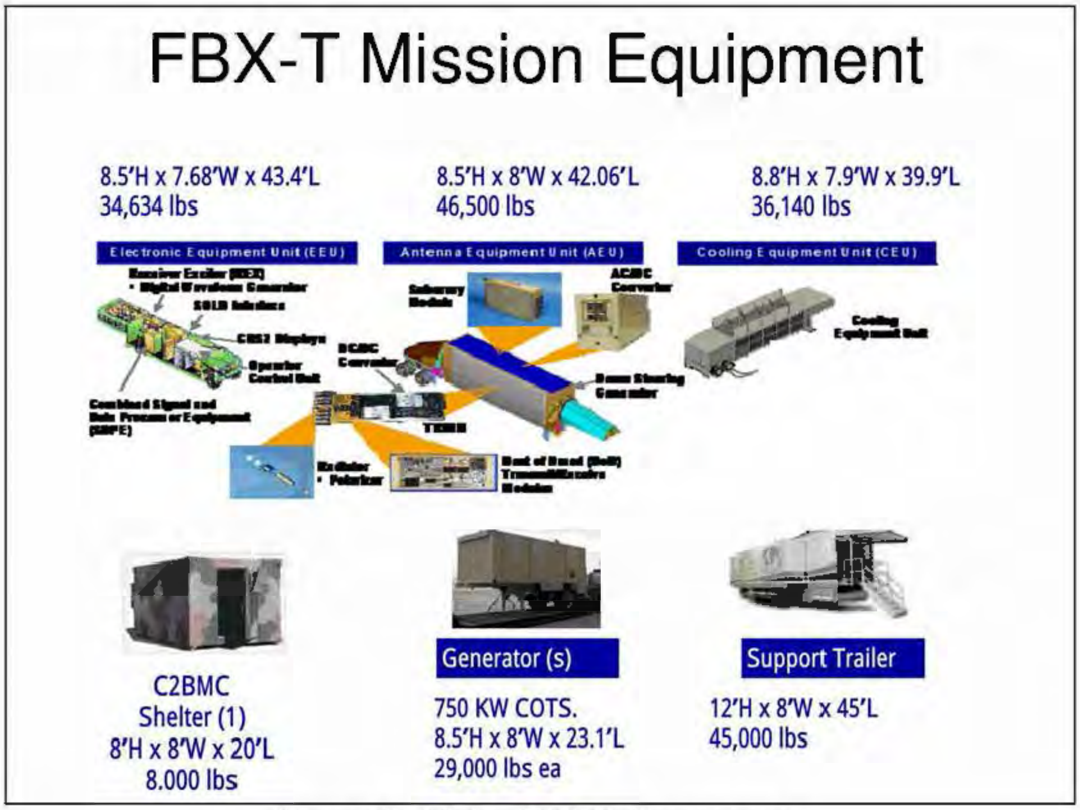

Figure 5. Major FBX-T Components

The mission equipment represents the minimum equipment required to provide a sensor capability for sustained periods. This equipment will be provided, transported, set up, operated, and maintained by the contractor. The FBX-T consists of the following mission equipment:

- 1 Antenna Equipment Unit (AEU)
- 1 Electronics Equipment Unit (EEU)
- 1 Cooling Equipment Unit (CEU)
- 1 Radar Support Trailer (RST)
- 3 Commercial Off-the-Shelf generators (750kW class, 4160 volt, 3 phase)

The FBX-T will also have C2BMC interface equipment provided by MDA/BC and located in a BMDS Communications Network Gateway (BCN) Shelter. The FBX-T has no organic communications equipment and will require continuous connectivity to multiple secure networks including data, voice, and SIPRNET. The number of channels and channel capacities are still being defined. A SATCOM terminal and associated connectivity may be required, depending on the communications capability available at the chosen site. Redundant capability should be provided to ensure availability. The

FBX-T unit will require other communications at the site for routine communications; e.g., telephone, NIPRNET. This may require installation of an auxiliary communications shelter (ACS), depending upon communications available at the deployment site.

Additional supporting equipment will be provided by the contractor or by the hosting command, depending upon the availability of local support and which source is the most cost effective. As Lead Service, the Army may also require/provide additional support equipment or facilities.

Key supporting equipment includes:

- Vehicles. Prime movers (M1088) are required in order to move the FBX-T elements from one location to another. The use of in-theater assets is preferable to airlifting prime movers, since moves are expected to be infrequent. Tractor trucks (M1088) are required to tow the EEU, AEU, CEU, and support trailers. Specific numbers required depend on the movement strategy (caravan or one at a time), the distances to be covered, and time constraints. Other vehicles may also be required to tow generators, water trailers, and fuel trailers, if used.
- Power Generators. The FBX-T will be deployed with high voltage power generators and associated distribution equipment to serve as back-up power. However, these generators may be used as the primary power source if a commercial power source is unavailable or until commercial power can be connected. Additional generators may be required for administrative and security facilities and for other mission equipment. This will be site-dependent.
- Fuel Storage and Transport Capacity. A tanker (M978 or equivalent) or a 10,000 gallon (minimum) storage capacity is required on site to fuel the generators.
- Shelters/Trailer. Additional International Standards Organization (ISO) shelters and/or trailers are required for spares, communications equipment, and tools/test equipment. In addition, an administrative trailer for crew office and working space may also be deployed. Each ISO shelter can be transported on a flat bed truck, and trailers can be hauled by standard tractor trucks.
- FBX-T-Specific Support Equipment / Maintenance Equipment. The FBX-T-specific support equipment and standard maintenance equipment will be provided by the CLS contractor.

Table 1 provides space and weight characteristics of the FBX-T major equipment items.

Major Components	No. of Units	Length (ft)	Width (ft)	Height (ft)	Gross Weight (lbs)	Prime Mover Required
Electronic Equipment Unit	1	43.4	7.68	8.5	36,140	M1088 or equivalent

Major Components	No. of Units	Length (ft)	Width (ft)	Height (ft)	Gross Weight (lbs)	Prime Mover Required
Antenna Equipment Unit	1	42.1	8.0	8.5	52,980	M1088 or equivalent
Cooling Equipment Unit	1	39.9	7.9	8.8	41,080	M1088 or equivalent
Power Generators	3	21	8	11.3	50,000	TBD
Radar Support Trailer	1	47.5	8	8.5	24,000	M1088 or equivalent
BCN Shelter	1	20	8	8	13,000	M1088 or equivalent
ISO Shelters/	TBD	TBD	8	8	TBD	M1088 or equivalent
Fuel Tanks, Bladders, or Tanker Truck	TBD	TBD	TBD	TBD	TBD	TBD

Table 1. Space & Weights of FBX-T Major Equipment Items

6.5.2 <u>Transportation.</u> Until activated, the FBX-T will be at a test site, such as Vandenberg AFB, to support FBX-T and BMDS R&D efforts. MDA/SN and the CLS contractor will work with the hosting COCOM and TRANSCOM to develop a plan for transporting the radar overseas. All material to be transported must be certified for air transportation. The contractor will coordinate local support to move the primary mission equipment to the designated airfield. The contractor will service, prepare and pack the equipment for movement.

Transportation requirements to deploy the FBX-T to a theater of operations will be dependent upon the time allocation for deployment. FBX-T will deploy from its testing location either by air or by sea from a coastal embarkation port.

Strategic airlift requirements for the FBX-T's primary mission equipment are estimated to be two C-17 aircraft. This estimate does not include primary power generators and power conditioning equipment. These estimates will be refined as part of deployment planning. If sufficient lead time exists prior to deployment, military or commercial sea lift may be considered as an option. Transportation costs are budgeted by MDA/SN for an initial move from a test site such as Vandenberg AFB to an operational site.

The estimated timeline for airlift deployment is:

Pack and prepare to transport, move to airfield	1 week
Transport and stage in theater for onward movement	2 weeks
Set up for operations	1 week
Calibrate and integrate radar	2 weeks
Conduct BMDS-level test	1 week

The estimated timeline for sealift deployment is:

Prepare to transport, move to port	1 week

Load, transport to theater of operations	Undefined
Unload, move to deployment site	Undefined
Set up for operations	1 week
Calibrate and integrate radar	2 weeks
Conduct BMDS-level test	1 week

Prior to arrival, the hosting COCOM will plan to provide support for Reception, Staging, Onward Movement and Integration (RSOI), including a staging location in theater if onward movement from a port of debarkation is required. An advance party will deploy prior to equipment deployment to make arrangements for RSOI and site occupation. The advanced party will coordinate with the COCOMs for required additional transportation support. Transportation assets may be required to support the move from the reception and staging area to the deployment site. Special handling equipment (e.g., cranes) will be required to position major items of equipment within the FBX-T site. Transportation support may also be required for common sustainment operations.

6.6. Facilities

6.6.1 General. The area required for the FBX-T site will vary depending on the site layout and conditions, and field of view and security requirements, including standoff distance. The site must be suitable for full power operations, accessible by road, relatively level, and geologically able to support the weight of the radar and associated equipment. The maximum load is approximately 12,210 kg/m2. For the longer term operations envisioned for FBX-T, it is desirable to operate from an improved site that provides more permanent support capabilities.

Figure 6 provides a notional FBX-T site plan and equipment configuration. The exact site layout will be tailored for each deployment site. The prepared hardstand surface is shown by the tan shaded rectangle. There is approximately 12 acres of a "clear zone" (green shaded area) required to permit unobstructed, low-elevation operation. Contained within the clear zone is a Keep Out Zone of approximately 4 acres. MDA/SN will coordinate with the supported COCOM and/or host nation for site construction when the deployment site has been selected.

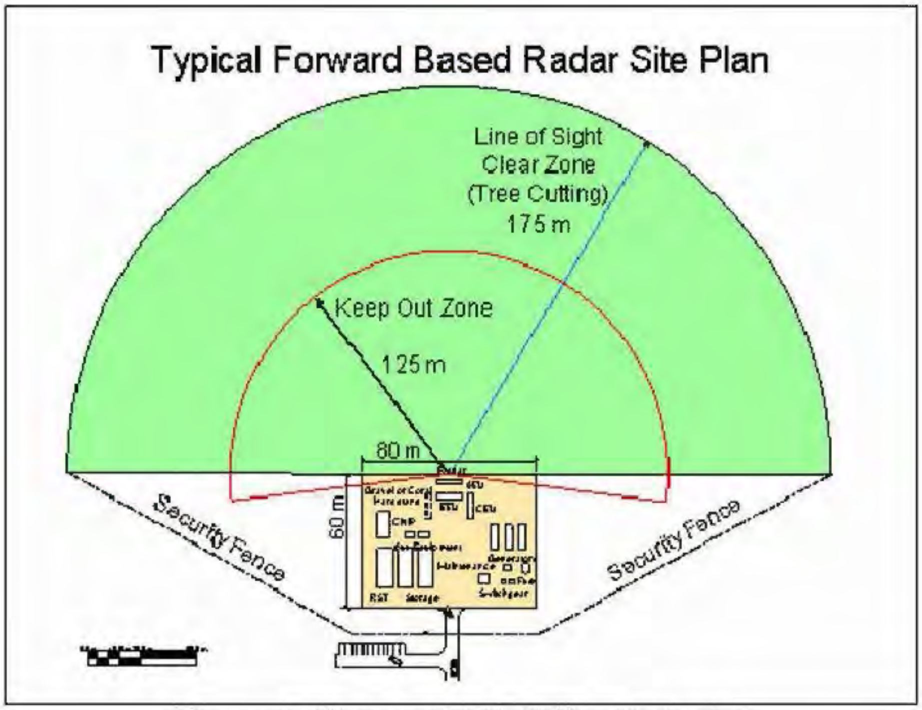

Figure 6. Notional FBX-T Site Footprint

6.6.2 <u>Site Surveys.</u> Selection of the FBX-T site and facilities follows a sequence of actions which are similar whether the site is located on a U.S. base, or off base at a host nation site. The site selection process involves MDA, regional commands, host nation, and local base authorities if sited on a U.S. military installation.

Several preliminary actions have been accomplished by MDA/SN to support FBX-T test facility acquisition and system siting. These actions provide a basis to begin deployment site planning. MDA/SN has produced a Facilities Requirements Document (FRD) to describe the system facility requirements (e.g., size, hardness, power, physical layout). Site surveys were conducted at the Pacific Missile Range Facility (PMRF) and a prospective overseas deployment site per MDA Directive 4165.02. Checklists were developed for future deployment site surveys based on that experience.

MDA will submit site survey requests to the hosting COCOM and/or U.S. Embassy in the country of interest. Either the Embassy Attaché or other appropriate U.S. official will notify the host nation and request authority for a team to visit several sites. The host nation and regional military authority will recommend several potential sites based on data sent to them and knowledge of past surveys/exercises at those sites.

The initial survey team will be a combined MDA (SN, TR, TE, BC, IS, and SI), Army, and COCOM team representing key functional areas, such as operations, security, communications, civil engineering, environmental and support. The CLS contractor will also be a team member and provide relevant FBX-T technical data such as electromagnetic interference and compatibility (EMI/EMC) assessments. These assessments impact site selection criteria for radiation hazard stand-off and interference with other radiation devices such as aircraft navigation aids. The host nation may wish to provide technical experts as counterparts to the survey team.

The team will visit the potential sites, collect data on the sites, and rank the sites according to predetermined selection criteria. The site survey provides the starting point for the evaluation and ranking process and will be augmented with regional command staff experience. The highest ranking sites will be discussed with the regional command and host nation for assessment of other issues (for example, local politics may play a role) and a site will be identified as a preferred alternative from the list of acceptable candidates. MDA, the Army, and the COCOM will consult to select the preferred site, and the COCOM will obtain host nation approval. Once the site is selected, a follow-on detailed site survey will be conducted.

6.6.3 Spectrum Allocation. MDA/SN will forward a DD1494 through the Army Spectrum Management Office requesting frequency spectrum allocation and permission to radiate in the host country.

6.6.4 Environmental Management. MDA is required to consider the potential environmental impacts associated with the construction and operational activities throughout the lifecycle of the FBX-T. MDA/TER will work with Army, OSD, COCOM, and host nation authorities who have experience in the local environmental requirements and issues to ensure all FBX-T activities are in compliance with applicable environmental laws and standards. These include international treaties, Executive Order (EO) 12114, DoD directives, basing and status of forces agreements, and host country environmental regulations. At a minimum, MDA activities in foreign countries will comply with the Department of Defense (DoD) final governing standards, or in their absence, the environmental criteria of the DoD Overseas Environmental Baseline Guidance Document.

6.6.5 Site Design and Bid. Once the final site is identified, construction design, environmental impact analysis and the construction bidding process will begin. Site design adapts the generic FBX-T requirements to the specific location to include roads, fences, utilities, radar pad, noise barriers, etc. The details are required to bid the construction and must account for any environmental and security requirements. A site will not be approved and construction authorized until the environmental analysis is complete and a decision document is signed by MDA.

6.6.6 Site Construction and Site Preparation. MDA/SN has submitted a preliminary DD Form 1391, Military Construction Program, for an unnamed OCONUS site as the basis for a cost estimate for preparation of the initial site. MDA/SN will update the DD 1391 after site selection. This cost estimate will be updated to reflect the specifics for the chosen site, considering factors such as road access, utilities, fencing, clearing, etc. For sites in PACOM, MDA/TER may fund the Naval Facilities Engineering Command (NAVFACENGCOM) or the Army Corps of Engineers (USACE) for the design and construction oversight. Once a construction contract is awarded, MDA/TER will oversee the funding and support the FBX-T program in the execution of the project. The project is normally awarded to a local or regional contractor or subcontractor, and should nominally take 3-6 months to complete the construction work.

6.6.7 <u>Host Command/Host Nation Agreements.</u> MDA and the Army will develop memorandums of agreement and Interservice Support Agreements with operational commands, service components and/or installations as needed to clarify roles and responsibilities. The agreements will be used to address organizational responsibilities associated with FBX-T transportation, employment, organic logistical support, force protection, site facilities, and billeting. Fundamental issues requiring resolution include:

- Quality of life issues (e.g., meals, billeting, transportation, commissary privileges, medical support)
- Theater entrance and accountability requirements
- Contractor employee site specific clearance and security procedures
- Contractor deployment/redeployment procedures, including required training, clothing, and emergency equipment
- Theater of Operations familiarization training (local culture, customs, evacuation procedures, etc.)
- Force protection policies and procedures.

Memorandums of agreement may also be required with the host nation. The degree of the host nation's involvement in missile defense is to be determined. It is possible that the host nation may want to receive radar data to be integrated into the host nation's missile defense systems. Whether the FBX-T will provide data to the host nation will be addressed via a Memorandum for Agreement with the host nation. MDA/IS will be responsible for ensuring FBX-T support is addressed in host nation agreements. Discussions with the host nation will address the following topics at a minimum:

- Basing/site location
- Customs requirements
- Operational frequency requirements
- EMI and other environmental impacts
- Physical security
- Anti-terrorism / force protection

- Visas, work permits
- Equipment transportation permits
- Operational agreements
- Theater vs. U.S. Homeland BMD agreements
- Data exchange with host nation BMDS or C2 systems
- Support requirements identified during a site survey

6.7. Security

FBX-T operational requirements will be very similar regardless of location on a U.S. or host nation site. However, the security and support requirements may increase if located on a host nation site. The security of the radar and the sources and nature of the intelligence collection threats against them are assessed and verified by MDA/SIC. SIC also coordinates with other intelligence organizations and conducts analysis to protect the radar or any of its associated activities from compromise.

FBX-T requires security for a variety of reasons: threats, asset protection, technology exploitation, and its role in defense of the homeland. MDA and the Army will determine security requirements for FBX-T in conjunction with STRATCOM and the hosting COCOM. The security assessment will consider projected threat assessments for COCOM installations in the host nation and the designated System Security Level (SSL) for the FBX-T. Security requirements must be sufficiently defined to allow site selection to proceed. Impacts of siting the FBX-T on a non-U.S. controlled site will be defined prior to the site survey. The security impacts on the design of the FBX-T site will be updated and included in the bid package for construction.

Physical security requirements inside the FBX-T compound will be an MDA and Army responsibility. The radar hardstand, radiation hazard zone, and satellite communications antenna (if needed) will require a security fence (lighted), with intrusion sensors for the fence zone and key interior radar components. Appropriate barriers are also required at the entry control point.

In addition to these technical security measures, there will be a guard force to provide security for the compound, including access control. This force will consist of contractor, government, or military personnel. An external response force will also be required to cope with situations beyond the ability of the FBX-T guard force. It is envisioned that the response force will be provided by the hosting U.S. command or installation if located on a U.S. base. Security training for operations, maintenance, and other site personnel will be defined and programmed. Threat concerns and response plans will be updated as the threat changes. Note that security engineering studies are underway that may modify current plans to meet security requirements while fulfilling all necessary security requirements established by the responsible COCOM and DoD and MDA regulatory guidance. MDA will have a comprehensive and executable event Operational Security (OPSEC) plan prior to the FBX-T deployment.

MDA has conducted an assessment of information assurance requirements for FBX-T and its interfaces. The appropriate protections will be incorporated, tested, and validated by the MDA Designated Approval Authority prior to initiation of full operational capability.

6.8 Test Strategy

6.8.1 <u>Overview.</u> ~~(FOUO)~~ Capability Release 1 (CR-1) testing began in July 2005, and FBX-T successfully participated in several targets of opportunity tests observing launches at Vandenberg AFB, CA. The test data base has also drawn on FBX-T hardware-in-the-loop (HWIL) tests at the "String" facility located in Woburn MA; THAAD radar tests at White Sands Missile Range, NM (WSMR); hardware radiation tests in the Near Field Range, Andover MA; and BMDS wargames, ground tests, and models and simulations. The HWIL String facility and the VAFB test site contain a C2BMC Network Interface Processor (CNIP) which tests sending the track messages from the radar to C2BMC and C2BMC tasking of the radar. The BMDS ground test campaign will demonstrate interaction between the elements of engagement sequence groups (ESGs) of which FBX-T is a part.

~~(FOUO)~~ When the host site is ready to receive the FBX-T and testing of the current software baseline is sufficient to validate the FBX-T's capability, the program manager will recommend to the Director, MDA that the radar assets are ready to be moved to the host nation site. This recommendation will document the testing accomplished and the radar's capabilities and limitations. This input and other test results from BMDS Ground Tests and other assessment activities will be used as an input to the Operational Capability Management Board (OCMB), which controls changes to the BMDS Operational Baseline. MDA will obtain COCOM concurrence on these updates to the Operational Baseline. Development and testing for capabilities beyond the proposed Operational Baseline (e.g., next Block, residual fixes) will be retained within the Developmental Baseline and continue under the MDA Program Manager. Once the radar is emplaced at the host nation site and transitioned to COCOM control, test and exercises with the radar will become part of Concurrent Test and Operations.

6.8.2 <u>FBX-T Radar Specification Tests.</u> ~~(FOUO)~~ All relevant specification requirements have been tested by THAAD or FBX-T with the focus on the search and track mission. The THAAD and FBX-T will accomplish qualification testing in an on-going effort through 2007. THAAD and FBX-T identified all tests expected to be completed in 2005 and determined which other tests are not scheduled for completion in time to support initial FBX-T deployment. The requirements that were not verified in time to support deployment were demonstrated (vice tested) for confidence-building at

WSMR (THAAD) or VAFB (FBX-T) for the expected host nation environment. Examples included temperature ranges in the candidate host nation sites which are not as extreme as MIL-STD 810 limits but are typical of weather at WSMR and VAFB. Thus, the operations at the FBX-T and THAAD test sites effectively demonstrated a meaningful temperature range and provide confidence that the equipment will work in those temperatures.

6.8.3 Flight and Ground Tests at Vandenberg AFB. ~~(FOUO)~~ FBX-T flight tests used Minutemen III (MMIII) "Glory Trips" flights launched from VAFB to characterize radar performance under boosting and ballistic conditions. The radar tracked the MMIII boosters and upper stages during their missions downrange to the Kwajalein Missile Range. For those missions which were observable to maximum range, the radar tracked until the signal is lost. While at VAFB, the radar tracked satellites and balloons to verify radar performance and demonstrate CNIP message processing. The test preparation and tests at VAFB included a successful endurance test, team training, demonstration of tactics, techniques and procedures, and refinement of CONOPS. Measurements of radiation were also conducted at VAFB and White Sands Missile Range using the THAAD radar to assure that EMI/EMC would not pose risks at the deployed sites.

6.8.4 Engagement Sequence Group Testing with C2BMC, GMD, Aegis, and other Sensors. ~~(FOUO)~~ FBX-T is a key sensor in several BMDS engagement sequence groups (e.g., Ground Based Interceptor Launch/Engage on FBX-T). The tests to demonstrate FBX-T capabilities for each ESG use both the HWIL "String" and the VAFB site events. The VAFB events provide a limited one-on-one scenario with the Glory Trip missions. BMDS Ground Tests have been planned to demonstrate the GMD and Aegis connectivity and performance under a variety of scenarios. This ground test campaign assesses the ability of the new or upgraded hardware and software in the BMDS elements to operate effectively together and includes:

- GT 04-1 Integrated Ground Test with GMD laboratories and FBX-T tapes to verify C2BMC connectivity and messages
- GT 06-1 Missile Defense Integration Exercise with GMD laboratories, C2BMC, FBX-T String and other missile defense HWIL facilities in a common set of scenarios controlled by the Missile Defense System Exerciser to demonstrate the connectivity and interplay of the BMDS
- GT 04-2 Distributed Ground Test with GMD deployed assets, C2BMC, and the FBX-T radar at VAFB to extend the GT 04-1 events to GMD deployed site assets; and
- WG 04-5 Wargame to focus on FBX-T Block 04 ESG; Tactics, Techniques, and Procedure development; and warfighter command and control of BMDS

6.8.5 FBX-T Deployed Site Testing. ~~(FOUO)~~ This testing actually begins with the order to move from the Vandenberg AFB test site to a designated host nation site. The radar will receive a final baseline calibration and component checkout and then be disconnected and moved to a shipping point. Air shipment and road transport will be part of the transportation demonstration. Upon arrival at the host site, components will be reconnected and tested. The radar will use signature and metric satellites to calibrate the radar and re-assess the FBX-T's performance after the shipment. Adjustments, maintenance, and component replacement may lead to further calibrations. The C2BMC components will be connected and connectivity tests will be conducted with the C2BMC centers at the JNIC and COCOMs. When the radar and site team are ready, an appropriate readiness review and regional component unit certification demonstration will be conducted to verify compliance with Regional, Host Nation and BMDS procedures. The radar will participate in additional Distributed Ground Tests with BMDS deployed assets (GMD and C2BMC) for further BMDS performance characterization. Once the radar is transitioned to COCOM control, test and exercises with the radar will become part of the BMDS Concurrent Test and Operations construct.

6.9 Supportability Strategy

The CLS contractor will transport, set-up, operate, maintain, and sustain the mission equipment and other required support equipment/services. The supporting equipment/services may be government furnished or provided by the contractor, host command, or host nation, whichever is the most effective and economical. Final decisions on support requirements and responsibilities will be determined through site surveys, host command/installation agreements and ISSAs, and host nation agreements

The contractor will provide a deployment kit of spares and consumables to support the FBX-T for a minimum of 30 days. Initial kits will be based on estimates from maintenance experience with the THAAD radar. Subsequent kits will be based on FBX-T maintenance experience. Contractor personnel will perform ordering and inventory functions. Repairable line replacement units will be returned to the contractor for repair and replacement. Import/export considerations for shipment of spares will be built into agreements with the host nation as required.

MDA and the Army will work with the regional COCOM to determine the availability of theater-provided logistics support. All support items not government furnished will be provided by the contractor. All support and reporting requirements established through a hosting command will be delineated in a memorandum of agreement or Interservice Support Agreement (ISSA).

The following sustainment issues will be addressed in a support agreement with the hosting command or by the contractor:

- Class I (Food Service): The deployed FBX-T has no internal ability to provide food services. Food services will be obtained on the local economy if not provided by the host command. Additional consideration should be given to the ration cycle based on the FBX-T's continuous operational requirement.
- Class II (Clothing, Individual Equipment, Administrative & Housekeeping Supplies): Negotiations with host command should address the FBX-T site personnel authorization to draw clothing and individual equipment and administrative supplies as needed from local resources. Contractor personnel will wear military clothing and equipment only if required by the local command.
- Class III (Petroleum, Oils, and Lubricants): Fuel and lubricant support is required and should be included in any host command/nation negotiations. Consideration should also be given to comparing the contractor's cost to obtain these supplies/services on their own against the cost of obtaining Class III items through Government channels. The estimated daily consumption of diesel fuel, assuming a power grid is unavailable, is at least 700 gallons/day, and up to 2500 gallons/day if the FBX-T is radiating continuously on generator power.
- Class IV (Construction Materials): The FBX-T will be positioned at a pre-surveyed and prepared site. Additional construction, if required, should be negotiated between the MDA and host to determine if it will be provided by MDA or theater MILCON. Engineer and barrier materials must be considered for force protection of both personnel and equipment.
- Class V (Ammunition): Specific security requirements have yet to be determined. Coordination with the host unit/installation will be accomplished to ensure the availability of the ammunition and storage facilities for weapons and ammunition.
- Class VI (Personal Demand Items): Access to personal comfort/hygiene items must be considered for all personnel deployed to a combat theater. Class VI supplies normally associated with rations must be planned and will initially be the responsibility of MDA/TR/SN to ensure they accompany the FBX-T and its personnel. Resupply of those items must be available through a PX/BX, provided by the host, or obtained by the contractor on the local economy.
- Class VII (Major End Items, Radar, Radios): Major end items will be provided through MDA. Theater support will be required to replace minor support items. At some time not earlier than FY2008, the Army may procure and sustain common support equipment for FBX-T.
- Class VIII (Medical): Negotiations with the host/sponsor/installation providing direct support to the FBX-T site personnel should include provisions for medical support/supplies. Coordination must be planned ahead of time and consideration given to the health status of deploying contractors, as well as the availability of medical support. Normally, the host command will only provide emergency

medical support to contractor personnel, unless non-emergency services are not available from local host country sources.

- Class IX (Repair Parts, Components for Equipment Maintenance): The FBX-T common and unique items will be provided through MDA and the prime contractor. Support for common equipment and vehicles that are available through the Army or Air Force system should be coordinated with the Army as Lead Service and the host/installation providing support. This must be coordinated very early in the planning process. A complete list of all equipment and vehicles will be required prior to deployment to ensure repair part availability.

7. CONTRACT STATUS

7.1. Current Development/Manufacturing Contract

The key efforts for the development of FBX-T software and the manufacture of four (4) FBX-Ts are under contract, HQ006-03-C-0047. The period of performance of the contract is 04/03 through 03/09.

7.2. FBX-T Support

FBX-T will be contractor operated and maintained. A Task Order contract, HQ006-05-C-0016, is in place for the operations and sustainment of FBX-T at Vandenberg Air Force Base and at OCONUS locations to be determined by the Government. The scope of work includes logistics infrastructure, depot operations, site operations and sustainment, and provision of spares and back-up power systems. Task orders can be placed to meet changing operational conditions and future sites. The period of performance of the contract is 06/05 through 06/10.

8. PLAN FOR TRANSITION ACTIONS/MILESTONES

This section is to be determined until the Army as Lead Service and MDA have agreed on the transfer of responsibilities and the timing thereof.

9. FUNDING SUMMARY

9.1. Research, Development, Test & Evaluation (RDT&E) Requirements.

~~(FOUO)~~ Funding for FBX-T RDT&E is included in the MDA/SN President's Budget 2007 (PB 07). This includes procurement of three additional FBX-Ts and plans for three FBX-T software baseline releases, with each new release replacing the previous releases on all fielded FBX-Ts upon successful completion of FBX-T testing and BMDS Integration Testing. There are no current plans to transfer RDT&E or procurement requirements from MDA/SN to a Service. Funding for element-level testing and evaluation has been included in the MDA/SN POM 07. Total T&E requirements will depend upon the level of FBX-T participation required in BMDS ground and flight test and exercise activity.

9.2. MDA/SN Operations and Sustainment (O&S) Requirements.

~~(FOUO)~~ MDA/SN funding for FBX-T Operations and Support (O&S) is shown in Table 2 below. This data is based on PB 07; the figures should be considered preliminary and pre-decisional. The MDA/SN budget includes funding for Contractor Logistics Support to operate and maintain the deployed radars, site physical security, spares, integrated logistics support infrastructure/depot support, and site maintenance through the end of FY 2011. The figures provided in this Annex do not include one-time costs for deployment and site preparation. Budget requirements are subject to change depending on where the radar sites are located and what facilities/support can be negotiated locally with in-theater commands and or the host nation.

$ in Millions	FY06	FY07	FY08	FY09	FY10	FY11	* FY12	* FY13
MDA/SN FBX-T Operations & Support	37.6	47.2	62.1	67.0	88.8	105.1	107.3	109.6
FBX-T #1 Operations & Sustainment	33.9	28.6	28.1	27.8	30.9	30.1	30.8	31.4
Spares		5.1	4.2	3.3	5.4	3.5	3.6	3.6
Infrastructure (Depot Support)		8.5	8.8	8.8	9.0	9.0	9.2	9.4
Deployed O&S (Radar Manning, Comm Service, Security Manpower, Generator Fuel, Electrical Power, Site maintenance, Base Support Services)		15.0	15.1	15.8	16.5	17.6	18.0	18.4
FBX-T #2 Operations & Sustainment	3.8	15.1	21.8	22.0	24.7	24.1	24.6	25.2
Spares	2.4	12.3	4.2	3.3	5.4	3.5	3.6	3.6
Infrastructure (Depot Support)	1.4	2.5	2.5	2.9	2.9	3.0	3.1	3.1
Deployed O&S (Radar Manning, Comm Service, Security Manpower, Generator Fuel, Electrical Power, Site maintenance, Base Support Services)		.3	15.1	15.8	16.5	17.6	18.0	18.4
FBX-T #3 Operations & Sustainment		3.6	8.7	11.5	25.7	25.1	25.7	26.2
Spares		3.6	7.2	8.3	6.4	4.5	4.6	4.7
Infrastructure (Depot Support)			1.5	2.9	2.9	3.0	3.1	3.1
Deployed O&S (Radar Manning, Comm Service, Security Manpower, Generator Fuel, Electrical Power, Site maintenance, Base Support Services)				.4	16.5	17.6	18.0	18.4
FBX-T #4 Operations & Sustainment			3.6	5.7	7.5	25.7	26.3	26.8
Spares			3.6	4.2	4.3	6.4	6.5	6.7
Infrastructure (Depot Support)				1.5	2.9	2.9	2.9	3.0
Deployed O&S (Radar Manning, Comm Service, Security Manpower, Generator Fuel, Electrical Power, Site maintenance, Base Support Services)					.4	16.5	16.8	17.2

Notes:

1) Does not include 3.6M / Year ~~for~~ Mission Planning (Deliberative Planning)
2) Does not include $23M in FY09 for P3I Processor Upgrade
3) * FY12 & FY13 not included in PB07 Budget

Table 2. FBX-T O&S Estimates by Radar ~~(FOUO)~~

MDA has also identified an unfinanced O&S requirement for security, considering contractor security personnel in lieu of military personnel, and weapons, ammunition, and security vehicle.

9.3. Service Operations and Sustainment (O&S) Requirements.

Until MDA and the Army agree on transfer of responsibilities, MDA/SN will continue to program for FBX-T O&S costs. There are two exceptions:

- It has been assumed that a small military or government contingent (estimate of one or two personnel) will be required at the radar site, but the organization to provide the personnel has not been determined. The manpower cost for this contingent has not been included in the MDA/SN POM.
- The SN POM includes funding for a security detachment at each FBX-T site and other technical security measures such as fencing, lighting, intrusion detection systems, and access control at each site. Funding has not been included for any additional forces or facilities that a COCOM or the Army feels is required for force protection.

MDA will continue to negotiate with Host Nations and local base commands for on-site support to field FBX-T in the most economical possible manner. As site, host nation, and service agreements are reached, O&S requirements will be adjusted.

10. AGREEMENTS AND COMMITMENTS

To date, MDA has entered into no agreements or commitments regarding FBX-T deployment. As planning proceeds for radar deployment, it is anticipated that ISSAs will be required with the hosting installation and that SOFA status determinations will need to be made regarding contractor personnel.

11. REFERENCES

Commander U.S. Strategic Command Memorandum, Subject: Operationalizing an Integrated Missile Defense System, 26 August 2005.

12. UNIQUE ACRONYMS

AEU	FBX-T Antenna Equipment Unit
BC	Battle Management/Command & Control Directorate (MDA)
BCN	BMDS Communications Network Gateway
CEU	FBX-T Cooling Equipment Unit
CLS	Contractor Logistics Support
CNIP	C2BMC Network Interface Processor
CR-1	FBX-T Capability Release-1
CR-2	FBX-T Capability Release-2
EEU	FBX-T Electronic Equipment Unit
EMC	Electromagnetic Compatibility

EMI	Electromagnetic Interference
FBX-T	Forward Based X-Band Radar – Transportable
FRD	Facilities Requirements Document
HWIL	Hardware-in-the-Loop
ISO	International Standards Organization
SN	Sensors Directorate (MDA)
PMRF	Pacific Missile Range Facility
RST	Radar Support Trailer
SSL	System Security Level
VAFB	Vandenberg Air Force Base
WSMR	White Sands Missile Range

13. DEFINITIONS

None

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Sea Based X-Band Radar (SBX)
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Missile Defense Agency/Ground Based Midcourse Defense
X-Band Radar Project Office
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BMDS Transition and Transfer Plan
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EXECUTIVE SUMMARY

Purpose: Document roles, responsibilities, resources, and schedules, along with issues among the Missile Defense Agency (MDA), Combatant Commander (COCOM), and lead service (when designated) to support operations and sustainment of the Ground-Based Midcourse Defense (GMD) Sea-Based X-Band Radar (SBX-1). SBX-1 will attain Capability Available for Limited Defensive Capability (LDC) in early 2006 and will also be used by MDA for development activities. Transition to SBX operations in the spring of 2006 will provide defensive "capability available" as part of the BMDS.

A lead service for transition and transfer of responsibilities for operation and sustainment has not been identified. However, the X-band Radar (XBR) Project Office (PO) believes SBX-1 is NOT a good candidate for transition during the Program Objective Memorandum (POM) time frame, FY 08-13. It is a unique asset and will most likely remain an MDA responsibility for its lifecycle. Known unfunded requirements for future blocks are provided in section 5.2, and additional unfunded requirements may arise when a lead service is identified. Technically mature operations such as security aboard the vessel may transition to a service before a lead service is identified. Also, MDA reengineering decisions on a joint depot with Theater High-Altitude Area Defense (THAAD) and Forward-Based X-Band (FBX) Radar could impact SBX-1 transfer. The single executive interest issue is identification of a lead service, and other issues will flow from resolution of that issue. Until a lead service is designated, mutually agreed upon transition planning such as Force Protection/Security, POM input development and infrastructure planning and development cannot begin.

Background: The President and Congress committed to deploying a Ballistic Missile Defense System (BMDS) as soon as technologically possible. Under National Security Presidential Directive (NSPD) -23, dated December 16, 2002, President Bush directed that this capability be fielded by October 2004. In response, MDA modified the test bed contract with the Boeing Company to allow for manufacture and deployment of major components in conjunction with the test bed spiral development program. This LDC is intended to support robust development and testing while providing defense against attack by a limited number of ballistic missiles.

The GMD Joint Program Office (JPO) will deliver a missile defensive capability in a block approach, incrementally improving upon the tactical configuration of the BMDS. Block 2004 includes SBX-1. Follow-on blocks are expected to improve SBX-1 with the incorporation of Unfunded Requirements (UFRs) in section 5.2.

The SBX-1 is breaking new ground from acquisition to operations. While lessons learned and past experience from comparable technology programs have application to some features of the XBR and integration with a Sea-Based Platform, it does not have a service development and deployment legacy. Accordingly, SBX-1 is confronted with challenges in fielding, integrating, and command that would not be true in a more conventional service acquisition program. It is this uniqueness that gives rise to potential issues related to transition and transfer to a service.

Annex F

SBX Transition and Transfer Plan

1.0 PURPOSE

This Sea-based X-band Radar (SBX) Annex to the Ballistic Missile Defense System (BMDS) Transition and Transfer Plan provides the status of plans for SBX transition and transfer to a service. However, no lead service for transition and transfer of responsibilities for operation and sustainment has been identified

Transition to SBX operations in the spring of 2006 will provide defensive "capability available" as part of the BMDS. SBX will also be used by the Missile Defense Agency (MDA) for development activities.

2.0 FACTS AND ASSUMPTIONS

2.1 Facts

- Currently, MDA sustainment funding comes from the existing MDA Research, Development, Test and Evaluation (RDT&E) budget and that is the only source of funding. The Ground-Based Mid-Course Defense (GMD) Program manages SBX under this arrangement.
- SBX includes the SBX-1 vessel and other facilities, personnel and facilities ashore and a leased offshore support vessel support SBX-1, and are all managed by the Prime Contractor.
- SBX-1 is a government-owned vessel. Operation and maintenance of SBX-1 is performed by the prime contractor. SBX-1 includes the XBR, In-flight Interceptor Communications System (IFICS) Data Terminal (IDT), GMD Communications Network (GCN), Embedded Test (ET) Node, Test Control Node (TCN), and Platform.
- No lead service for SBX transition and transfer has been designated
- SBX-1 will attain defensive operations "capability available" in FY06.
- The GMD Program did not purchase a full technical data package from the Prime Contractor (Boeing), therefore; the Operations and Maintenance (O&M) is limited to contractor support.
- SBX-1 is capable of near-continuous readiness for Defensive Operations, if directed; under the Sustainment Development Phase (SDP) II contract. SBX-1 will coordinate events (including maintenance) that impact operational capability using the BMDS System Synchronization Process/Asset Management process that provides COCOMs control of tasking.

- With underway replenishment, the SBX-1 can remain at sea, only limited by long-term maintenance, and inspections (up to 2.5 years without inspection waiver). Basic endurance without replenishment is planned for 30 days with 30 days reserve.

2.2 Assumptions

- The SBX program manager executes a spiral development strategy to deliver planned capability in increments on behalf of the Director, MDA.
- Portions of the GMD contract may be separated and re-competed. An example would be a new contract for operation and maintenance of all MDA XBRs under a single contact.
- Concurrent test and operations is planned to continue in the GMD Program.

3.0 OPEN ISSUES

3.1 The SBX-1 requires a Designated Service for Transition/Transfer Planning and Issue Identification/Resolution

BACKGROUND: SBX-1 was originally contracted as a test-bed article and defensive operations or lead military services were not anticipated. As a test asset a full data package, technical manuals, and training materials, probably needed for transition of logistics support to a Service, were not purchased. Additionally, as a test asset, the SBX-1 required minimal force protection and self defense capability. The SBX-1 is now expected to be designated as a System Security Level A when it begins defensive operations. A designation of SSL A indicates that the loss, theft, destruction or misuse of this resource will cause great harm to the strategic capability of the United States.

DISCUSSION: No service has been designated for transfer of the SBX-1 and planning for transition has not begun. Issues associated with transition and transfer has not been identified. One possible specific issue may require renegotiation of the Contractor Logistics Support (CLS) contract to include additional logistics support materials.

IMPACT: No service specific transition and transfer planning will take place until a Service is designated and specific issues identified.

RECOMMENDATION: The XBR PO has no recommendation of a particular Service to be designated for the SBX. USSTRATCOM recommended the Navy be designated lead.

CLOSURE: Will occur when the Secretary of Defense designates a Service for the SBX.

4.0 PROGRAM/SYSTEM DESCRIPTION

Under National Security Presidential Directive (NSPD) -23, dated December 16, 2002, President Bush directed that this capability should be fielded by October 2004. In response to this direction, MDA modified the existing test bed contract with the Boeing Company to allow for the manufacture and deployment of major components in conjunction with the test bed's spiral development program. This Limited Defensive Capability (LDC) is intended to support robust development and testing while providing defense against attack by a limited number of ballistic missiles.

The GMD JPO utilizes a spiral development acquisition strategy to deliver a missile defensive capability to the COCOMs in a Block approach, incrementally improving upon the tactical configuration of the BMDS. Block 2004 includes SBX. Follow-on blocks are expected to improve SBX capability.

4.1 SBX-1 Primary Mission Equipment

The SBX Primary Mission Equipment consists of:

- Semi-submersible, Multi-purpose Sea-going Platform,
- XBR,
- IDT,
- GCN,
- ET Node, and
- TCN

The SBX-1 has completed installation of Primary Mission Equipment and is undergoing sea trials, shakedown and verification. Ultimately, following a modification testing and travel period, SBX-1 will deploy to support Defensive Operations. (See Figure 8.1-1 Example Schedule)

SBX Primary Mission Equipment is all aboard the SBX-1 Vessel. The Platform is equipped to maneuver and operate as an independent, self-propelled vessel. The XBR is a Multi-function Phased Array Radar (MFAR) that offers electronic beam steering, coupled with a mechanically slewed antenna mount. It also incorporates multiple wide band waveforms for improved range resolution, target identification, and discrimination.

The IDT provides communication to the GMD Exoatmospheric Kill Vehicle (EKV) while in flight to its target. GCN provides data communications between XBR or IDT and GMD Fire Control (GFC) for reports, tasking and data.

4.1.1 SBX-1 Vessel

Adding machinery and compartments to provide propulsion and support mission equipment and personnel converted a Moss CS50 multi-purpose semi-submersible bare-deck platform into the present vessel. SBX-1 is certified by the US Coast Guard (USCG) as an independent, ocean-going self-propelled vessel. The machinery plant uses an integrated diesel electric propulsion plant consisting of four independent, azimuth-rotating propulsion drive trains, and six diesel generator sets. The propulsion system employs four (4) commercial, steer-able thrusters. The thrusters are installed in existing foundations located near the ends of the each pontoon and are capable of being retracted. Figure 4.1.1-1 illustrates the SBX-1.

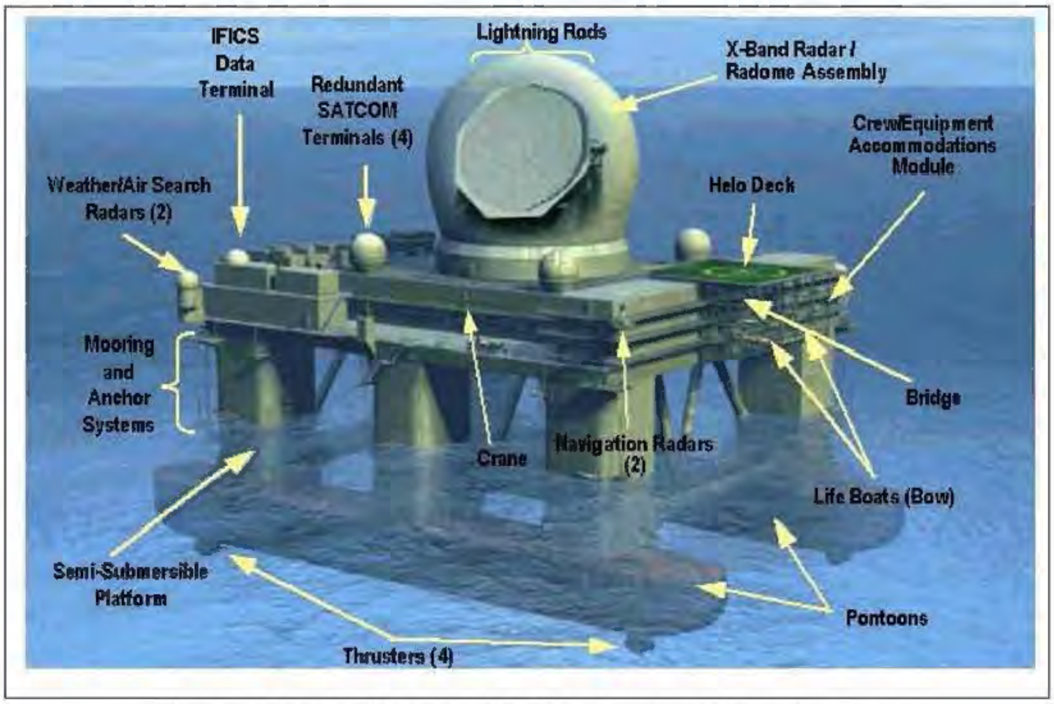

Figure 4.1.1-1. SBX-1 with Equipment Identifications

While nominally stationary, The SBX-1 is capable of operations in the open ocean in transit and operational draft conditions at speeds up to 2.5 M/S. Transit draft is used for en route operations while operational draft is normally used to provide a highly stable platform for XBR operations. Integrated Flight Test (IFT) support operations are always at operational draft condition. However, radar testing and calibration may be conducted while in transit draft. The SBX-1 employs a combination of weather radar, en route planning and International Maritime Organization (IMO) weather alerting capabilities to minimize exposure to severe weather while at sea. Figure 4.1.1-2 shows SBX-1 underway.

Figure 4.1.1-2. SBX Vessel Underway ~~for~~ Sea Trials.

4.1.2 XBR

The XBR is an MFAR that employs electronic beam steering coupled with a mechanically slewed antenna mount. The radar incorporates multiple wide-band waveforms for improved range resolution, target identification, and discrimination. Inertial Measurement Units (IMUs) are used to augment the radar's Drive Platform Control System (DPCS) along with beam steering electronics to mitigate sea-induced motion. A thermal management and power system, Liquid Conditioning & Circulating System (LCCS), is used to tightly control the temperature of the radar's array face as well as critical radar electronics. The radar power subsystem supports radar operations.

The XBR performs midcourse cued target search, acquisition, precision track, classification, discrimination, and hit assessment functions under the direction and control of the GMD Fire Control and Communications (GFC/C) component. GFC Sensor Task Plans (STPs), radar directives and radar data is sent to/from the GFC and the XBR via a satellite and the GCN. Figure 4.1.2-1 shows the XBR inside the radome.

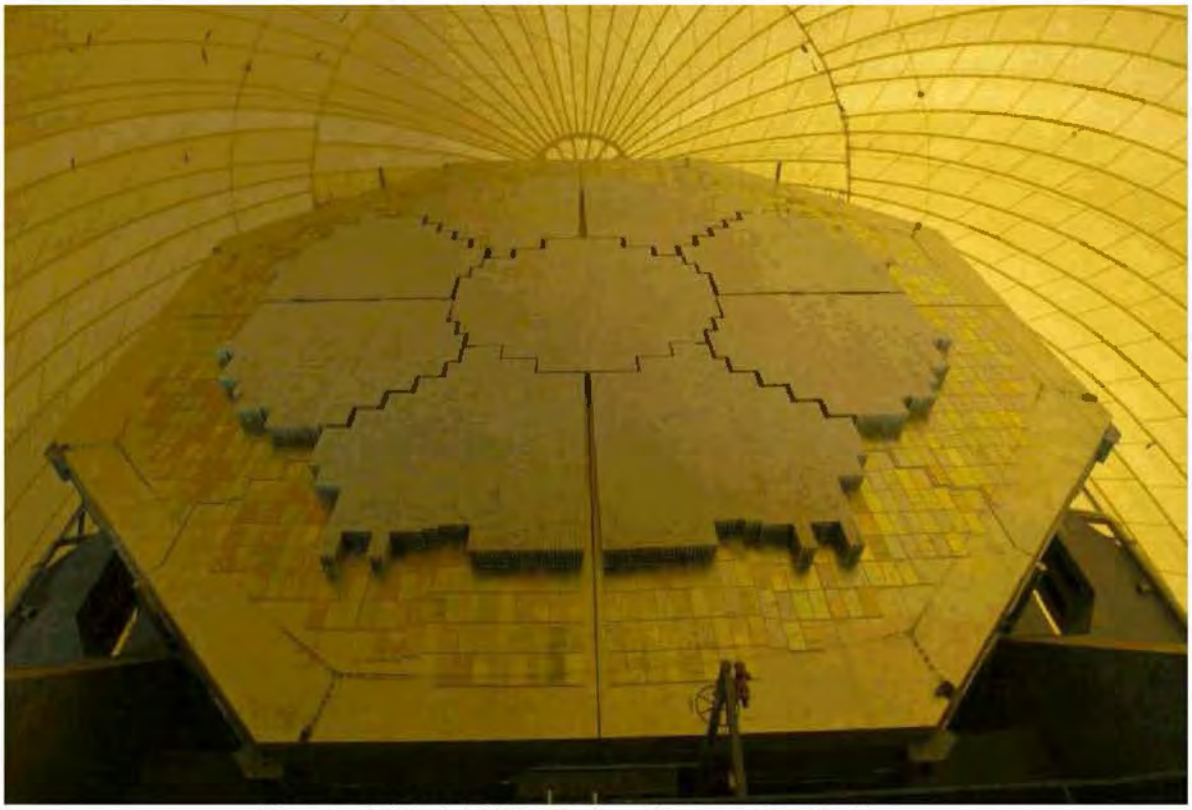

Figure 4.1.2-1. XBR Radar Face under Radome.

4.1.3 In-Flight Interceptor Communications System Data Terminal (IDT)

The IDT provides communication to/from the in-flight GMD interceptor EKVs. It is mounted on the platform below the line of sight of the XBR. The antenna is housed in an 18-foot radome. During operations the Vessel will maintain the platform orientation to provide continual IDT Line-of-Sight (LOS) to the interceptor during Communication Events (CEs). The IDT is tasked by the GFC using the Communications Task Plan (CTP). Figure 4.1.3-1 shows the IDT antenna configuration.

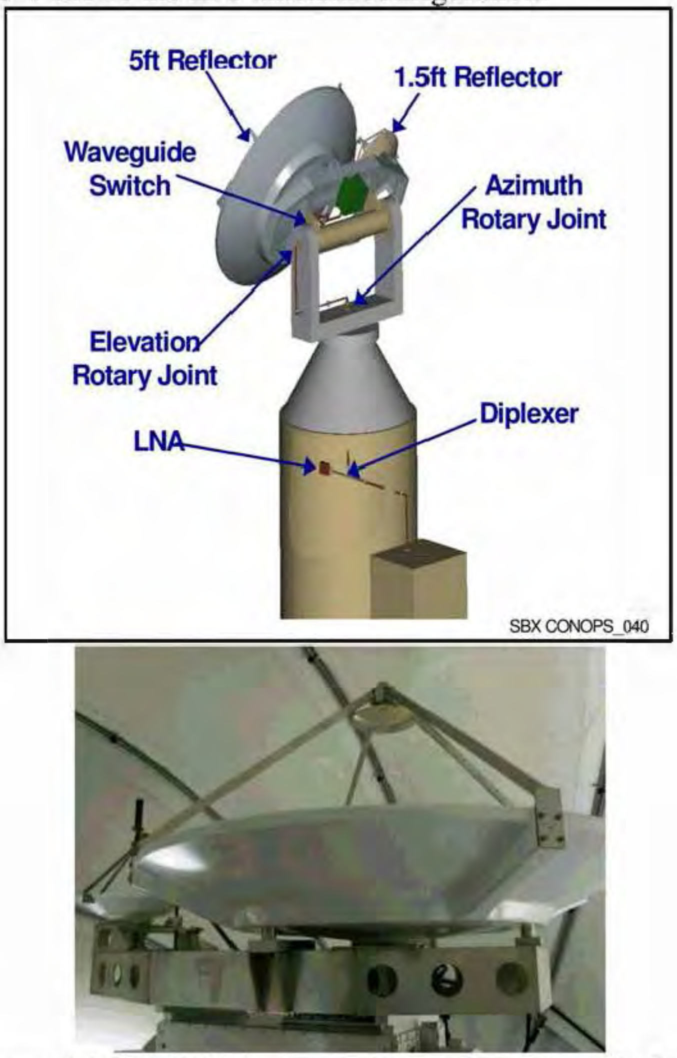

Figure 4.1.3-1. IDT Antenna diagram (top), and photo.

4.1.4 Embedded Test Node

An ET Node is located aboard the Vessel. This node allows the XBR and IDT to participate in GMD Distributed Ground Tests (DGTs) and other simulations. ET is an end-to-end system exerciser that also provides the structure for GMD System Integration and Checkout (SICO) and for system level ground testing. It fully supports target injection and data collection for GMD system level evaluations and/or validations of models and simulations and supplies the tools for post-test analysis.

4.1.5 GMD Communications Network (GCN)

The GCN is used specifically to transmit classified military mission data to/from the GFC nodes. Only specific GMD elements such as an IDT, XBR, ET Node, etc. are authorized access to the GCN. The GCN is composed of a series of secure communications media and are continuously monitored by personnel assigned to the Network Operations Centers (NOCs). GCN communication consists of satellite links and terrestrial or submarine fiber optics cable. Both Long Haul Communications (LHC) and Communications Node Equipment (CNE) are part of the GCN suite of equipment. Satellite Communications (SATCOM) antenna(s) and terminal equipment located on the SBX Vessel are integrated into the GCN. SBX SATCOMs are operated under the jurisdiction of GCN mode of operations except when supporting PSB/Vessel non-mission administrative and logistics support communication.

4.1.5.1 SBX Non-Mission Communications (NMC)

The NMC will provide the internal communication on board SBX-1 as well as required data transfer between SBX-1 and most external locations not associated with the GCN. The NMC will include telephone services, Internet services such as web browsing and email, as well as a SECRET level Virtual Private Networks with network nodes on board the Vessel and at the Raytheon, Northrop Grumman and Boeing Off-Site Support Centers (OFSCs). The GCN will provide two dedicated fractional T1 capacity satellite links between the Vessel and the Continental United States (CONUS). This is planned to increase the total T1 capacity in early 2006. Interfaces to the telephone system, Internet, and other services will be at the satellite earth stations. Access to the MDA Classified Network which supports SIPRNET will be added in 2006. Vessel radio communications include VHF-FM bridge-to-bridge, VHF and HF radios for unclassified communications, a UHF radio for unclassified and secure communications, and INMARSAT.

4.1.6 Support Equipment

Complete support equipment summaries are documented in the Logistics Management Information Database and made available to pertinent personnel. Generally, Test, Measurement, and Diagnostic Equipment (TMDE) are commercial off-the-shelf (COTS). Devices for moving / lifting heavy objects or reaching certain areas within the XBR radome will be modified COTS (MCOTS). Platform equipment to support day-to-day operations will be managed and maintained on the Platform by Vessel Management Company.

4.1.7 Offshore Support Vessel (OSV)

An OSV will support SBX re-supply at its mooring in Adak, Alaska, and will have the capability to service the SBX while at sea. Motor Vessel (M/V) Dove, shown in Figure

4.1.7-1, is now on time charter to support the SBX-1. OSVs are available to hire from the offshore oil industry, and enjoy certain exceptions to ship classifications such as more fuel than regular cargo vessels, allow avoiding double hulls, and permit passengers aboard. MDA obtained a waiver from the US Coast Guard to allow OSV rules to be applied even though M/V Dove does not support the oil industry.

M/V Dove will carry fuel, personnel and International Standards Organization (ISO) containers; and will assist the SBX when mooring. Other duties include towing, and anchor handling. The M/V Dove can tow the SBX-1 from 3 to 6 knots; cruise at 12 knots, with max speed around 14 knots, and has dynamic positioning that provides a SBX replenishment capability while the SBX is moored or at sea.

Figure 4.1.7-1: Motor Vessel Dove towing SBX-1 out of the Corpus Christi ship channel for Sea Trials.

4.1.8 Training Devices

Currently, there are no SBX system/subsystem training devices. Any unique future training devices will be developed and maintained by the contractor. Embedded Test (ET) supports DGTs (see section 4.1.4), which step through the operational procedures and could be used to support element and component training or exercise. ET also records data during operations and test and can be used for post-mission assessment.

4.1.9 Communication Equipment

SBX-1 will maintain communications connectivity for mission execution and administrative coordination as it moves. Commercial satellites are used for communication, and coverage includes most of the Pacific Ocean. Satellite service can be shifted to change coverage area, if necessary, and normally requires 45 days notice. Changes in COCOM reporting requirements or communications connectivity will be coordinated during transit planning.

4.1.10 Supplies, Spares, and Repair Parts

Except for the Platform, GCN, and ET, the remainder of the SBX-1 adheres to the GMD two-level maintenance concept – repair parts will be managed as Line Replaceable Units (LRUs) that are removed/replaced on-site and shipped to the Off-Site Support Center (OFSC or depot level) for repair. Platform systems will be repaired as much as possible by removing and replacing LRUs, and the platform will be primarily repaired by three-level maintenance – remove/replace, minor rework aboard, or depot level repairs. Platform spares, consumables, supplies, and food stores will be kept on-board the vessel in such quantities to ensure 30 days of operations and with a 30-day contingency reserve for transit back to safe harbor. Other spares, consumables, or supplies may be kept at a shore facility, but the general rule is that the manufacturer will deliver directly to the SBX-1. Shore facilities, equipment, and services will be leased locally, and not spared.

- ·*Technical Data:* Contractor will provide all technical data required by his personnel. Data requirements will be determined by the contractor and will not be required to meet Government standards.

- ·*Software Maintenance:* Software maintenance will generally be performed at the contractor's facility with the software update transmitted electronically to the SBX-1. If required, the contractor will send additional people to the SBX-1 to support the integration of major software updates.

- ·*Scheduled Maintenance:* Scheduled maintenance will include preventive maintenance and corrective maintenance on highly redundant XBR LRUs (low-number LRUs don't statistically fail so they can be planned ahead). The STRATCOM Asset Management Process will control scheduling of maintenance down time.

4.1.11 Vessel Propulsion and Transit

The SBX Vessel is self-propelled using retractable azimuth-rotating thrusters. When the thrusters are retracted, the SBX draft is about 33 feet, allowing access to many harbors. When the thrusters are retracted, SBX has no propulsion and must be controlled with tugboats. When the thrusters are extended, SBX has a draft of about 48 feet. The thrusters can propel SBX with a maximum speed of 10 knots, but a cruising speed of 7-8 knots is expected. The fuel capacity for SBX would support 20 days of transit, twenty

days on station, and then twenty days return transit without refueling. Fuel capacity is not enough to support 60 days of top-speed transit.
Estimated fuel usage ~~for~~ various conditions was provided by Boeing in a Basis of Estimate (BOE):

Transit Day	21,000 gallons
On-Station Day	17,000 gallons (measured in Gulf of Mexico Sea trials)
In-port Moored Day	11,700 gallons
Total Fuel Capacity	1,800,000 gallons (Planning should not include using the last 10 %.)

The SBX Vessel has the ability to ballast to change draft. At transit draft, the Vessel can make its highest speed, but will roll and pitch more due to sea condition effects. To meet its twenty-year fatigue life, wave height limits have been set that will require the SBX Vessel to ballast to operational draft. At operational draft, the vessel has greatly reduced motions and fatigue stresses. The SBX Vessel can ballast to operational draft in less than eight hours. While at operational draft the Vessel has increased drag and speed will be reduced to 2 knots or less. De-ballasting to transit draft can be accomplished in less than five hours. The SBX Vessel will ballast to operational draft when on station for operations, including loitering on station near Adak in the Bering Sea.

4.1.12 Adak Support Facilities

The city of Adak has a protected port with three piers and an airfield that will be used to supply the SBX Vessel. Commercial air service is available from Alaska Airlines (two flights a week with cargo/passenger combination Boeing 737-200C aircraft.) The airfield has two runways over 7,500 feet long, and crossed to provide options for wind direction. The port receives commercial container barges 2 to 3 times per month, primarily supporting the cod fishing industry. SBX will make use of a small fraction of the barge service capacity. Samson provides the service, with barges originating in Seattle. The SBX Vessel and M/V Dove can each carry four 20-foot ISO containers and has electricity to support refrigerated containers. SBX-1 will receive personnel, small parts, and perishable items via scheduled commercial flights into Adak, and receive bulk consumables, non-perishable food stores, and large parts by sea.

The M/V Dove will assist SBX-1when mooring or leaving the mooring. A planned transition to underway from mooring will proceed over 24 hours. The SBX-1 will deploy for testing to achieve the viewing geometry desired for flight test. SBX-1 could also be directed to deploy for various BMDS objectives.

Direction for deployment for defensive operations will come from Operational Control (OPCON). The M/V Dove may or may not deploy simultaneously with SBX-1, depending on shipments and fuel scheduling.

4.1.13 Reception, Staging, Onward-movement & Integration (RSOI)
SBX-1 will maintain communications connectivity for mission execution and administrative coordination as it moves. Commercial satellites are used for communication, and coverage includes most of the Pacific Ocean. Changes in COCOM reporting requirements or communications connectivity will be coordinated during transit planning.

The M/V Dove will accompany SBX-1 if the intention is to change operating areas. Transportation assets may be required to support transfer of personnel and material from airport to seaport and the M/V Dove. Prior to arrival in the new operating area, the supported COCOM or designated Geographic Combat Commander (GCC) should plan to provide support for the M/V Dove, including identifying a suitable port for replenishment and crew transfer. No special handling equipment is expected. SBX-1's unique mission support stores will be shipped from GMD OFSCs. Commercial shipping supplies will support SBX fuel, lubricants, food stores, consumables and platform repair parts. Most will be available in ports supporting large ships.

A Forward Support Team (FST) of about three people from the various SBX shore sites will deploy before M/V Dove arrival at a seaport to arrange for crew transfer and replenishment. The FST will coordinate with the COCOMs for any additional transportation or temporary office space and billeting support (FST and crew in transit) that they require. Requirements could be filled by the COCOM, or the FST can obtain commercial transportation, office space, and billeting.

Contractors, government civilians and military personnel deploying with the FST or transferring to the SBX-1 will require theater specific training on force protection status and actions, threat, and any other aspects deemed necessary by the GCC. There is no USCG role that affects SBX-1 operations.

5.0 PROGRAM STATUS

5.1 Program Status as of Sept 20, 2005
The SBX-1 has completed Builder's Trials and its first set of sea trials. As of this writing the SBX-1 is in the midst it's Sub-system Check out (SSCO) in the Gulf of Mexico (XBR high-power transmit & calibration, E3 & Vibration tests, and ABS/US Coast Guard Interim Certifications).

Current plans are for the SBX-1 to be transported from the Gulf of Mexico to Hawaii via the Blue Marlin heavy transport vessel. Once in Hawaii, the SBX-1 will be provisioned; painted and inspected; the crew trained and drilled; communications link tests will be complete; and the XBR will complete its final calibration activities. In 2006, the SBX will participate in Ground Tests GT-04-1B & GT-04-2B, transit to Adak, and be on station by April. (See schedule at 8.1-1 Note: not current)

No lead service has been designated.

5.2 Future Development (Enhanced Software & Force Protection UFRs)

Once on station at Adak, the SBX will have the following capabilities (XBR Build 1.6. software):

- Support engagement in transit draft or semi-submerged draft
- Maintenance and testing/calibration coordinated with GFC manually
- Radar primarily remains in Maintenance State until the GFC operation alerts the SBX via secure voice (manual alert). (Note: SBX will be reexamining the plan for Long-Term Operations to be in Maintenance State. The current preference is to be in the Operations State with Periodic Maintenance Intervals.)
- Duty watch standers always ready to make first response to manual alert (24/7)
- Operator transitions radar into Operations State in response to manual alert
- Communication with GFC is established prior to receiving Alert and Sensor Task Plan (STP) commands
- Search Fences can be Manually Activated
- Radar remains in Operational State until alert/engagement is complete

When integration funding becomes available, the following Enhanced XBR Operations will be provided through the integration of software Build 2.2:

- Maintain radar within Operations State 24/7 over long time periods
- Automatic immediate response to GFC alert and/or cued search STP
- Warm Data Processor/Signal Processor (DP/SP) switch over
- Automatic coordination with GFC before initiating maintenance and testing
- Automatic STP de-confliction and management of radar resources to handle multiple threats and meet GFC deadlines
- Automatic monitoring of GFC alert while in Simulation State

Proposed, future operations and sustainment requirements that are currently unfunded:

Operations and Sustainment UFRs

Unfunded Requirements	Description	*Annual Cost Estimate ($M)	Fiscal Year Requested
** Force Protection Associated with Ground Force on Adak	Once the mooring is in place, a patrol/reaction force will be based on the island of Adak. Housing for the force, operations costs for the patrol boats, and office space for the force is included in this effort.	$6.2	FY07 – FY13
Additional Force Protection	Requirements for the protecting the OSV and associated shore facilities have yet to be determined. GMX anticipates additional personnel and support equipment will be required but to date, those requirements have not been established.	TBD	TBD
Cyclic Inspection and Refurbishment for the Vessel	Inspection of the SBX vessel is required by ABS on a cyclic basis. Inspections in some areas on an annual basis, with a major inspection ever 5 years. What, when and were to perform these inspections has not been finalized.	TBD	TBD

*Year one cost; adjust for inflation in respective following years

** Not included in the annual cost is the acquisition cost of vehicles and patrol/response boats for the security force

6.0 ORGANIZATIONAL RESPONSIBILITIES

6.1 Doctrine

The impact on development and approval of Doctrine caused by lack of designation of a lead service is significant. The SBX-1 Concept of Operations (CONOPS) is supposed to identify a lead organization reportable to STRATCOM for the development, coordination, and certification of Tactics, Techniques and Procedures (TTP) for SBX.

6.1.1 STRATCOM Responsibilities

- Recommend lead service for SBX-1 missile defense mission
- Complete coordination of SBX-1 CONOPS with lead service elements

6.1.2 Lead Service Responsibilities

- Develop, coordinate, and certify Tactics, Techniques, and Procedures for the SBX-1 missile defense mission operations.
- Develop, coordinate and certify CONOPS.
- Analyze and revise doctrine as necessary to reflect current GMD system design and capabilities, current STRATCOM CONOPS, and joint doctrine.
- Conduct GMD tests and exercises IAW approved doctrine.

6.2 Organization

The impact on SBX-1 mission from an operations and maintenance perspective is unknown because of lack of designation of a lead service.

6.2.1 Legacy GM Element Responsibilities

- Exercise management responsibility for SBX-1 in post-transition period.

6.3 Training

Level 1 organizational level and maintenance training (On-the Job) was provided to the SBX-1 crew. The training is adequate to support Limited Defensive Operations (LDO) but may not be sufficient to support lead service operations/ certification. No depot training was provided since MDA concept is for life-of-the-system depot support. The lead service will be responsible for any training required to establish service depot support concept after transfer. No estimates have been developed for "service depot support" costs.

6.3.1 MDA Responsibilities

- Conduct Type 1 O&M training

6.3.2 Lead Service Responsibilities

- Conduct follow-on training and any training required for establishment of service unique support infrastructure

6.4 Material

The prime contractor has provided Hardware, software and spares. However, there has been no transfer to the services. The two reasons for this are lack of designations of a lead service and GMD's adaptation of the Contractor Lifecycle Support Strategy. This makes it difficult for MDA/GMD to identify a process for transferring assets such as spares and support equipment from MDA/GMD prime contractor to a service.

6.4.1 MDA Responsibilities

- Implement future SBX-1 Missile Defense hardware and software initiatives
- Manage the MDA-unique hardware/software configuration baseline while coordinating all spiral software releases.
- Preserve the integrity of existing interfaces and mission capabilities during future developments
- Incorporate approved operational baseline configuration changes as part of an integrated build whenever possible

6.4.2 Lead Service

- Develop acquisition strategy in conjunction with MDA to assume contract responsibility for hardware and software support after transfer.
- Work with MDA to develop orderly process for incorporation of future Missile Defense initiatives while preserving the integrity of missions.
- Ensure that the joint configuration management baseline is preserved

6.5 Leadership Development

Lack of designation of a lead service has inhibited the capability of gaining organizations to provide the command assessments that will be required upon transfer.

6.6 Personnel

6.6.1 MDA Responsibilities

- Work with prime contractor to identify any impact on personnel
- Provide support through contractual coverage and transfer of funding until transfer

6.6.2 Legacy element responsibilities

- Program for any additional manpower requirements after transfer. The full impact of transfer activities upon personnel composition remains unknown until a lead service is designated and CONOPS completed.

6.7 Facilities

Facilities requirements will be validated once the lead service is identified.

- MDA will provide necessary facilities upgrades.

6.8 Security

SBX-1 will be designated System Security Level A when it attains Defensive Operations Capability Available, at the latest. Discussions led by Commander, Fleet Forces Command (designated lead by U.S. STRATCOM for transit force protection planning) determined that the steady state dedicated security force for underway operations in areas assessed as low physical threat should consist of personnel armed with small arms and crew served weapons. Boeing did not reach agreement with MDA on liability, so MDA is pursuing active-duty military forces (first choice) and government hired and directed contractors (second choice). The military Request for Forces only extends through the transit to Adak and a turnover period. Contractors may be required for the follow-on period.

The cost of mooring at Adak is funded. Operations will be from a loiter position offshore. Chapter 10 of SD-538-2, UFC 4-025-01, Waterfront Security Directive, dictate security requirements for an SSL-A system moored. If a mooring is installed, U.S. STRATCOM and U.S. Northern Command (NORTHCOM) have stated that force protection measures in the draft Unified Facility Criteria would be required – likely a security barrier and patrol boats. This would further increase manpower requirements and operating costs and is included in the funding profile in section 9 as a separate line. A security barrier and patrol boats are not required when the SBX-1 is loitering.

The design of the SBX Security has been baselined to operate in a benign threat environment and at mission classification level of collateral SECRET. This original design posture may not be suitable for support of operational missions under the user command. Several categories of security upgrades may be necessary to support operational activities. These include Physical security (interior and exterior), Communications Security (COMSEC), Computer security, TEMPEST and electro-magnetic upgrades, Personnel security, and other improvements. The SBX-1 crew must all possess a Secret Level security clearance.

6.8.1 Physical Security

Improvements to the detection of threats around and under the platform may be necessary to preclude piracy and other surreptitious attempts to gain access to the platform. These features may include portable sonar (buoys), autonomous and remote underwater vehicles, and additional cameras around and under the platform. Ideally, the interior spaces of the platform will have additional camera coverage and an improved personnel detection and identification system (possible RF personnel location system).

Physical structural changes to the platform will likely be required to support increased classification processing above the collateral SECRET level. Additional physical partitioning and physical separation will be necessary to support the creation of an isolated Sensitive Compartmented Information Facility (SCIF), and to provide access via SIPRNET connectivity. The existing security alarm subsystem will likely require upgrades, as well as, a review of how access to granted to the various spaces on the platform. Exterior spaces/doors etc. will likely require updating to include additional sensors and cameras. The storage areas for classified media will require review and modification to support the increased levels of classification.

6.8.2 Communications Security and COMSEC

The normal requirements of Service operational activities will require the additional military communications systems and their supporting infrastructure. This will translate into the addition of new communications nets and radio systems to support information transfer above the collateral SECRET level. It may also mean the removal of the currently installed contractor specific links, which will pose an inherent vulnerability to the military operations and communications systems.

Inherent in this requirement is the correct RED/BLACK installation of the various pieces of COMSEC equipment. The interconnection between the unclassified networks and the classified networks will require review and verification of the separation between the two. The existing RED/ BLACK separations were verified by testing to preclude the existence of any electromagnetic vulnerability. This vulnerability will continually be reviewed.

6.8.3 Computer Security

The current onboard computer systems and the addition of new computer systems to process additional data required by services to support operational missions will require the correct installation and separation from existing systems. All systems, current and future, will require a review of the implemented procedures and permissions for all individuals having access or supporting these systems. It is likely additional security features will be necessary to support the planned operational missions and support activities.

6.8.4 TEMPEST

The existing equipment and all equipment additions will require a review to determine their electromagnetic profile and compatibility with existing electromagnetic profiles of the various areas of the platform. It is very likely an instrumented TEMPEST survey may be required to meet the Service specific TEMPEST requirements.

6.8.5 Personnel Security
A strict need-to-know/access will need to be enforced together with a positive identification system likely involving some form of biometric identification. The personnel permissions to various equipments, Computer systems and spaces on the platform will require review and modification to support the Service operational missions.

6.9 Test Strategy
SBX-1 will be tested as a part of upcoming DGTs and IGTs to ensure interoperability with GMD.

6.9.1 MDA Responsibilities

- Fund the integration and site testing of MDA configuration changes for all supported missions.
- Review, evaluate, integrate, and test all operational baseline changes proposed by service legacy element to ensure the Missile Defense mission is not impacted.

6.9.2 Supportability Strategy
Prior to establishment of LDO, logistics support elements including spares, technical manuals, on-the-job training, and positional handbooks are provided for use by the prime contractor in support of missile defense.

SBX-1 will be managed during its transition and transfer through MDA/GMD funded contractual actions for both hardware and software support. These contractual activities currently expire in the third quarter of FY 07.

In the absence of a designated lead service, the adequacy of the support posture cannot be established. There are some disparities between how the prime contractor supports the legacy equipment and how MDA/GM provides support that needs to be reconciled once a lead service designation is known.

6.10.1 MDA Responsibilities

- Fund and implement software correction of deficiencies from the SBX-1 program for missile defense changes and preventing degradation to legacy performance
- Provide contractual hardware and software sustainment for Missile Defense-unique items until transfer

6.10.2 Service element responsibilities:

- Prepare POM submittals as required to prepare for and support transition and Sustainment
- Provide Sustainment coverage upon transfer.

7.0 CONTRACT STATUS

7.1 Missile Defense Agency SBX-1 Related Contracts with Prime Contractor Boeing

- NMD Prime Contract (HQ0006-01-C-0001), Contract Line Item Number (CLIN) 0101, Test Bed RDT&E, Non Construction included the development, hardware and software. This contract is funded with MDA 0400 funding. Completion date 30 September 2007.
- NMD Prime Contract (HQ0006-01-C-0001), CLIN 0115, Test Bed RDT&E, Non Construction included the development, installation and testing of SBX-1 hardware and software. This contract is funded with MDA 0400 funding. Completion date TBD.
- NMD Sustainment Development Program II (SDP II), CLIN 0503 of GMD Prime Contract HQ0006-01-C-0001, provides contractor on-site and off-site hardware support for the SBX-1. The basic contract extends through Dec 2007 with a one-year option. SDP-II is funded with MDA 0400 funds.

8.0 PLAN FOR TRANSITION ACTIONS/MILESTONES

8.1 Schedule

Determination of the effective date for transfer will be based upon funding, the maturity of the system, contractual considerations (including status of MDA SDP II (hardware) and SBX-1 software (CLIN 0101) contract initiatives and any planned initiatives). A tentative Program Management Responsibility event driven transfer date that gives recognition to software changes originating with Targets of Opportunity (TOOs), IGTs, DGTs and impacts from other GMD elements such as GFC (message format changes) cannot be established until a lead service is designated.

The Transition Plan will address the accomplishment of specific milestones leading to transition. Key dates leading to transfer include: **(TBD)**

Figure 8.1-1 is an Example Milestone Schedule which will be replaced with an agreed to transition schedule with a Lead Service.

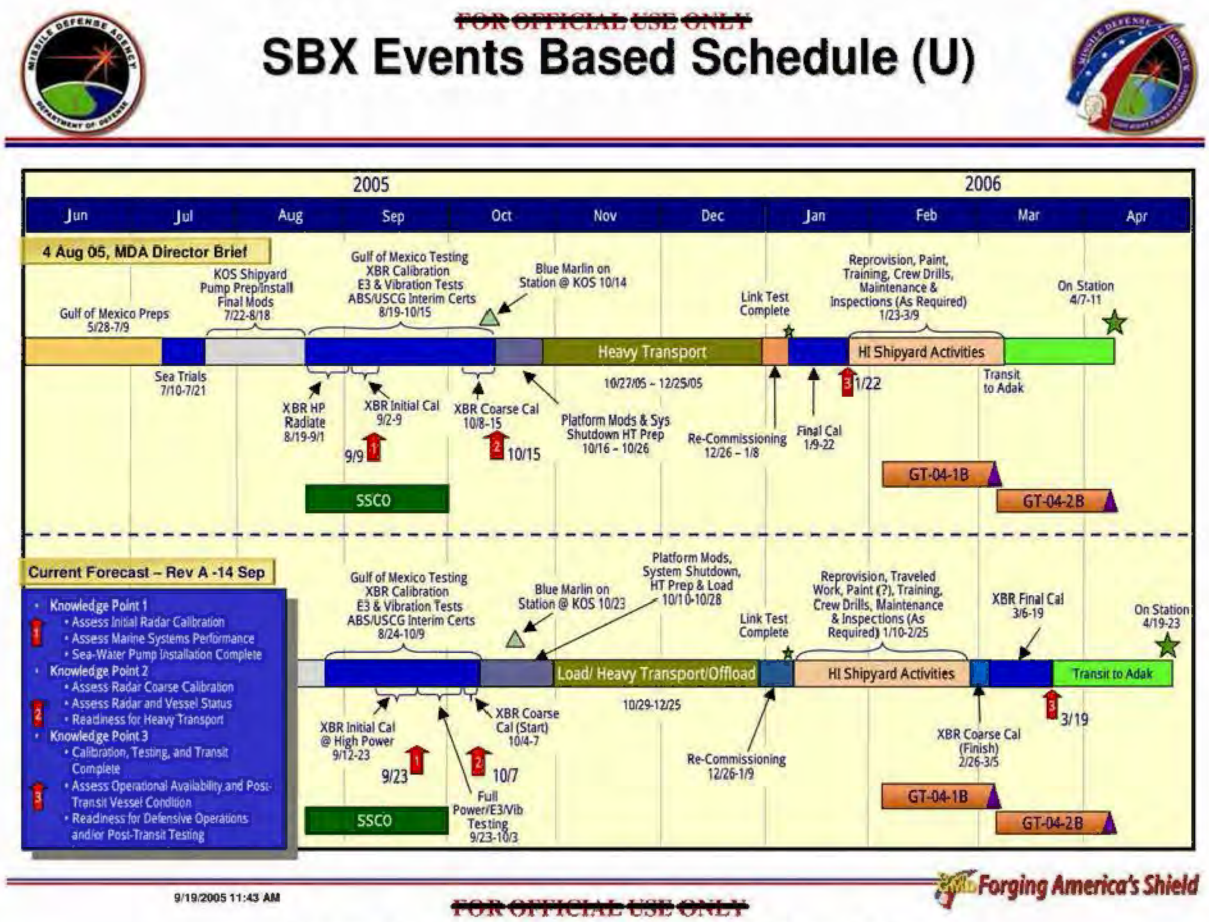

Figure 8.1-1: <u>Example</u> SBX-1 Schedule Only

9.0 Funding

9.1 - GMX POM Allocation:

Table 9.1 presents the funding allocated from the GMD POM for the GMX program.

$ in Millions	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	Total
SBX CLS (SDP II)	81	92	94	96	107	100	102	104	774
SBX On-Board Security	1	4	4	4	4	4	4	4	28
Force Protection at Adak	7	6	6	6	6	7	7	7	52
SBX Mooring	23								23
SBX Basing	18								18
Total Reqts	130	101	104	106	117	110	112	115	895
MDA Funding (PB07)	130	101	104	106	117	110	112	115	895
Unfunded	0	0	0	0	0	0	0	0	0

Table 9.1 GMX Allocation of GMD POM

10.0 AGREEMENTS AND COMMITMENTS

(TBD)

11.0 REFERENCES

National Security Presidential Directive - NSPD-23 dated 16 Dec 2002

12.0 ACRONYMS

BMDS – Ballistic Missile Defense System

CE – Communication Event

CLIN – Contract Line Item Number

CLS – Contractor Logistics Support

CNE – Communications Node Equipment

COCOM – Combatant Commander

COMSEC – Communications Security

CONOPS – Concept of Operations

CONUS – Continental United States

COTS – Commercial Off-the-Shelf

CTP – Communications Task Plan

DGT – Distributed Ground Test

DPCS – Drive Platform Control System

DP/SP – Data Processor/Signal Processor

EKV – Exoatmospheric Kill Vehicle

ET – Embedded Test

FBX – Forward Based X-band Radar

FST – Forward Support Team

FYDP – Five-Year Defense Plan

GCC – Geographic Combat Commander

GCN – GMD Communications Network

GFC – GMD Fire Control

GFC/C – GMD Fire Control and Communications

GMD – Ground-Based Midcourse Defense

IFICS – In-flight Interceptor Communication System

IDO – Initial Defensive Operations

IDT – IFICS Data Terminal

IFT – Integrated Flight Test

IGT – Integrated Ground Test

IMO – International Maritime Organization

IMU – Inertial Measurement Unit

ISO – International Standards Organization

JPO – Joint Program Office

LCCS – Liquid Conditioning & Circulating System

LDC – Limited Defensive Capability

LDO – Limited Defensive Operations

LHC – Long Haul Communications

LOS – Line-of-Sight

LRU – Line Replaceable Unit

MCOTS – Modified COTS

MDA – Missile Defense Agency

MFAR – Multi-function Phased Array Radar

M/V – Motor Vessel

NMC – Non-Mission Communication

NOC – Network Operations Center

NORTHCOM – United States Northern Command

NSPD – National Security Presidential Directive

O&M – Operations and Maintenance

OFSC – Off-Site Support Center

OPCON – Operational Control

OSV – Offshore Support Vessel

PO – Project Office

POM – Program Objective Memorandum

RDTE – Research, Development, Test and Evaluation

RSOI – Reception, Staging, Onward-movement & Integration

SATCOM – Satellite Communications

SBX – Sea-based X-band Radar

SBX-1 – Sea-based X-band Radar (alt)

SCIF – Sensitive Compartmented Information Facility

SDP-II – Sustainment Development Program (Phase II)

SICO – System Integration Check Out

SSCO – Subsystem Check Out

STP – Sensor Task Plan

STRATCOM – United States Strategic Command

TCN –Test Control Node

THAAD – Theater High-Altitude Area Defense

TOO –Target of Opportunity

TMDE – Test, Measurement, and Diagnostic Equipment

TTP – Tactics, Techniques and Procedures

UFR – Unfunded Requirement

XBR – X-Band Radar

13.0 LIST OF FIGURES AND TABLES

13.1 Figures

13.2 Tables

BALLISTIC MISSILE DEFENSE SYSTEM
TRANSITION AND TRANSFER PLAN

Annex G

Ground-Based Midcourse Defense (GMD) Program:
Ground-Based Interceptors (GBI) and GMD Fire Control and Communications (GFC/C)

Missile Defense Agency/GM
7100 Defense Pentagon
Washington, DC 20301-7100

EXECUTIVE SUMMARY

Purpose: To document the responsibilities, resources, and schedules required among MDA, STRATCOM, and the Services to operate and sustain the Ground-Based Midcourse Defense (GMD) system Ground-Based Interceptor (GBI) and GMD Fire Control and Communication (GFC/C) components, as well as to highlight outstanding issues.

Background: The Army is the lead service for operation of GBI and GFC/C. MDA provides Program Management and sustains the system through the Prime Contractor. Contractor Support will be funded and executed by MDA through the FYDP (FY13). The current GMD Prime Contract has options for logistics support through CY07. Follow-on sustainment (FY08-13) is TBD and will be influenced by pending Acquisition Strategy decisions. Base Operations and Support (BASOPS) Functions for the operational sites will transition to the Services prior to FY13 (see Figure 1). The GMD program strategy is spiral development utilizing Research, Development, Test, and Evaluation (RDT&E) funded block upgrades to deliver operational capability, and is still primarily in development and risk reduction. National Security Presidential Directive (NSPD)-23 of December 16, 2002 directed the fielding of the GMD limited defensive capability, which was achieved in September 2004. GMD assets will be used for both DT/OT and military operations.

(b)(5)

[redacted]

Issues

- Potential GMD Component Acquisition Strategy changes impact, and must consider sustainment and transition strategies.
- Projected Sustainment Funding Shortfalls and impact on Readiness and Spiral Development.

$ in Millions	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	Total
GBI & GFC/C CLS Total Reqts	173	411	440	401	332	344	345	356	2801
Sustainment Funding (PB07)	173	411	324	400	332	344	TBD	TBD	1984
Unfunded	0.0	0.0	116*	0.0	0.0	0.0	TBD	TBD	116

Figure 2 - Sustainment Costs

- Complete agreement(s) have not been reached on funding responsibilities for BASOPS and Physical Security assets. At Eareckson Air Station (EAS), immediate FY06 shortfall is $1.8M.
- Policy on Outyear Transfer of System ownership or CLCS has not been agreed to by all stakeholders.

Annex G
BMDS Transition and Transfer (T2) Plan
Ground-Based Midcourse Defense (GMD) Program:
Ground-Based Interceptors (GBI) and
GMD Fire Control and Communications (GFC/C)

1.0 PURPOSE

To document the roles, responsibilities, resources, and schedules required among MDA, STRATCOM, and the Services to support the Operations and Sustainment of the Ground-Based Midcourse Defense (GMD) system Ground-Based Interceptor (GBI) and GMD Fire Control and Communication (GFC/C) components, and to highlight outstanding issues. As defined in this Annex, the GFC/C and GBI includes hardware and software, logistics infrastructure, security, and facilities. GMD Sensors - Upgrade Early Warning Radar (UEWR), Cobra Dane Upgrade (CDU), and Sea-based X-band Radar (SBX) - are covered under separate Annexes. The Department of the Army is the Lead Service for GBI & GFC/C. The Department of the Air Force is the lead Service for UEWR and provides host BASOPS and security services at GMD GBI and GFC/C asset located at Air Force installations.

2.0 FACTS AND ASSUMPTIONS

2.1 Facts

GMD was developed as an integrated system of GBIs, fire control, sensors and infrastructure. The program strategy is spiral development utilizing block upgrades to provide capability and assets to support BMDS engagement sequence groups (ESGs). (An ESG is a group of component assets required to engage a particular threat.) All material (software/hardware) developed and procured in the GMD Program is funded with RDT&E.

GMD was fielded under National Security Presidential Directive (NSPD-23) dated 16 Dec 02. A Limited Defensive Capability (LDC) was delivered September 04. GMD assets are in place at operational sites at Fort Greely, Alaska (FGA), Eareckson Air Station, Alaska (EAS), Vandenberg Air Force Base, California (VAFB), and the Colorado Springs, Colorado area.

MDA will continue to manage the GMD program; including ownership of GBI and GFC/C assets and Embedded Test (ET) Capability assets, responsibility for Program Management, Systems Engineering, Configuration Management, Test and Evaluation, Fielding Assets, Sustainment, and evolving/developing capabilities.

GMD ET and operational assets will be used for ongoing test and development by MDA and for operations by the Service(s).

The Army is the Lead Service for GBI and GFC/C. Army will man and operate GBI and GFC/C fielded capabilities at Fort Greely, AK; Vandenberg AFB, CA; and Schriever AFB, CO.

The supportability strategy is Contractor Life Cycle Support (CLCS). Sustainment of GBI and GFC/C will be funded and executed by MDA through the FYDP (FY13). Sustainment Development Program II (SDP II) Contract Line Item Number (CLIN) of the Boeing GMD Prime Contract provides logistics support through CY07 for the hardware. Software sustainment for the fielded system is provided by leveraging the ongoing Prime Contractor development program. Exceptions have been made to Prime Contractor CLCS for Government Furnished Equipment, Property, and Services (GFX), primarily communications systems (e.g., the DSCS, as described at the end of this section) and base infrastructure. Follow-on sustainment (FY08-13) contractual vehicle(s) are TBD and will be determined by pending Acquisition Strategy decisions. The Army has not agreed to assume sustainment costs for CLCS at any future date.

Organic support is not planned; and no funding, infrastructure, technical data package, or other necessary documentation is available for transition of GMD mission equipment to organic support.

Because of the spiral development of the GMD Program, a technical data package has not been purchased.

Defense Satellite Communications Systems (DSCS) equipment will transition to the Services beginning FY07 per existing agreements. The first DSCS at FGA will transition to the Army IAW Memorandum of Agreement (MOA) #165 at the start of FY07; the second DSCS at FGA is planned for transition to the Army in FY08. The DSCS at EAS will transition to the Air Force IAW MOA #173 at the start of FY07. (See Table 10.1)

2.2 Assumptions

Responsibility for GBI and GFC/C CLCS will not transition to the Services earlier than FY13. This includes CLCS responsibility for GFC/C equipment co-located with radars at EAS (COBRA DANE), Beale Air Force Base, and Fylingdales, UK.

Army is responsible for BASOPS and security at FGA in accordance with Interservice Support Agreements (ISAs), referenced in Sec 10; but responsibility for physical security sensor system assets at the Missile Defense Complex (MDC) is not agreed upon (see Issue 3.4).

See Issue 3.6; per the ISAs for the two locations (referenced in Sec 10); Air Force is responsible for BASOPS Operations and security at EAS and VAFB.

3.0 OPEN ISSUES

3.1 Responsibility for System Ownership and Lifecycle Management including CLCS

Background: For this plan covering the FY06 forward look into the POM 08-13, the Army does not agree to the transfer of responsibility for system ownership, lifecycle management and/or CLCS of the GMD System at this time. GMD system was deployed using developmental hardware. It is planned as an evolving capability with no set configuration baseline or milestone decision process, and will be used for both developmental test and operations. The GMD support strategy is Contractor Life Cycle Support, which integrates the logistics support system with the ongoing capability development and deployment. The system was not designed to manage CLCS separately from the development of performance capability. The Army accepts responsibility for operations of the system only.

Issue: Clear guidance/policy does not exist as to criteria for eventual transfer of the system ownership or CLCS responsibility.

Impact: Without policy establishing if or when ownership or CLCS should transfer, Army will not accept ownership or POM responsibility. Criteria and deliverables that would allow the Army to eventually accept the system will not be established or budgeted. MDA will continue to fund CLCS from RDT&E funding potentially impacting developmental program or sub-optimizing logistics support.

Recommendation: Decision be made to either (1) confirm MDA lifecycle management responsibility for GMD including CLCS or (2) establish criteria, that when met, transfer responsibility to Army.

Closure: MDA/OSD issue policy letter.

3.2 BMDS Acquisition Strategy Decisions

Background: MDA is currently evaluating and revising where needed, the BMDS Element Acquisition Strategies, to include the acquisition strategy for each GMD component. The current GMD acquisition strategy is to use a single integrated prime contract to develop, procure, field, sustain, and evolve a deployed GMD defensive capability through application of the "Spiral Development" concept. Excursions to this existing strategy are being considered for applicability to the GMD program. These potential strategy excursions include: 1) breakout of hardware components of the GMD system into separate contract acquisitions. 2) breakout of sustainment functions into a separate contract or contracts, 3) breakout of future block upgrades and procurements into separate contract procurements.

Issue: Strategy must fully consider potential impacts on Systems capability integration, lifecycle sustainment, personnel resource requirements, cost, contract requirements, and transition/transfer ramifications prior to any strategy decisions.

Impacts:
1) Procurement of Technical Data Packages. Technical Data Packages for the GMD Developmental items (hardware and software) are not contractually required to be delivered under the existing GMD prime contract. Technical Data rights are also restricted. In order to contractually compete for acquisition of these items, technical data will have to be resourced and procured prior to implementing those competitions. The availability of technical data will increase the probability to successfully transfer logistics support for individual hardware elements to the Service(s).
2) The ability to contractually incentivize sustainment of System level capability may be jeopardized unless a significant integration capability is established. The GMD Prime Contract currently requires the prime contractor to provide the integration capability for both the development effort and the fielded system capability. Integration by other than the current prime contractor will require funding and development of acceptance test criteria at the component and system level and may delay fielding of future capabilities.
3) Leveraging support from "reachback" into the prime contract will be limited. The current GMD prime contract sustainment CLINs are able to "reachback" into the development CLINs for any needed hardware and software support assets to facilitate support of the deployed assets needed to perform the defensive operations mission. Breaking out sustainment and/or component hardware into separate procurements will severely limit the program's ability to leverage development resources and will likely require additional resources to fully spare, maintain, and provide software support for each of the individual contracts.
4) Services will resist transfer of responsibility for programs whose lifecycle strategy is in flux.

Recommendation: MDA fully consider potential impacts on Systems capability integration, lifecycle sustainment, personnel resource requirements, cost, contract requirements, and transition/transfer ramifications prior to any strategy decisions.

Closure: Suggested OPR: MDA; Resolution needed by end of FY06 to allow for time to compete new contract, if necessary. Resolution is also needed before a realistic transfer plan can be drafted.

3.3 Sustainment Funding Shortfalls

Background: Current level of logistics support provides a minimum capability to support GMD. Current software sustainment support leverages the prime Contractor development program. MDA responsibility for CLCS through the FYDP will require an increasing portion of RDT&E funding available for GMD program in the outyears, impacting spiral development. As development program funding decreases, ability to support fielded software may be impacted.

Issue: Currently, projected sustainment funding available is less than projected requirement (See Sec 9).

Impact: Potential for degraded fielded system availability will increase. Reduction in developmental activities will impact software support capability and delay system upgrades.

Recommendation: MDA establish methodology for projecting sustainment requirements for system hardware and software accurately and in time to meet POM 08 to ensure that resources are available. (See Figure 9.2) (Suggested OPR: MDA/DM and /GM; Resolution needed by 1st Quarter FY06 to meet POM 08).

Closure: MDA/DM issue guidance on O&S budget methodology.

3.4 Responsibilities/Ownership for Physical Security Assets

Background: Agreement has not been reached with Army on responsibility for ownership and maintenance of Perimeter Surveillance Systems (PSS) and Electronic Security Systems (ESS) at the MDC at FGA. MDA position is that Security is a Service Function. Army position is that these systems were designed by MDA integral to the BMDS and should be maintained by MDA until transition and transfer of primary GMD element assets. At transfer, Army will require formal ESS/PSS system operational verification prior to Service acceptance. Army position is that ESS/PSS are currently funded by MDA until FY13, at least; and that expansion of ESS/PSS due to additional missile fields will be funded by MDA.

Issue: Responsibility for maintenance and upgrade of ESS and PSS system

Impact: Lack of input to POM. Potential degradation of security capability at operational sites.

Recommendation: Transition current PSS and ESS to Army, beginning FY07 (Ref: 1 Aug 05 MDA GMF Memorandum to US Army Space and Missile Defense Command). Maintenance funding for PSS and ESS at FGA is estimated at approximately $1.2M per year. (OPR: GM and SMDC)

SMDC TRADOC System Manager Memorandum, dated 4 Oct 05 in response to an MDA GMF 1 Aug 05 memorandum requires transition/transfer to be contingent upon the system meeting a standard of reliability and maintainability; and the transfer timeline to be in sync with the Army PPBES to enable the requirements to be submitted in the POM. The Army will also need a more detailed life-cycle cost estimate to support a Service budget submission.

Closure: MDA/GM address Army concerns.

3.5 Responsibility for Funding Security at EAS

Background: Air Force position has been that GMD is a tenant organization and must pay all ISA costs including security, and fire protection above the standard level of service. Air Force maintains that a full time fire department service is an MDA-driven requirement. MDA position is that security services are a service responsibility and that full time fire department is no longer necessary. Air Force and MDA had agreed to a temporary funding arrangement for FY06 until responsibility can be resolved. Air Force will fund \$3.8M. MDA/Ground Based Midcourse (MDA/GM) will fund \$3.8M. Unresolved balance of \$1.8M will be paid by MDA. Requirement for Fire Service will be jointly reassessed. At an 18 Jan 06 JROC briefing, the Air Force proposed to agree to the Lead Service designation, requesting that MDA fund BASOPS through FY07 and a Security Intrusion Detection System (\$6M) in FY07.

Issue: Responsibility for Funding of Security and Base Operation at EAS is unresolved beyond FY06.

Impact: Continued disagreement, POM disconnects, and threat of reduction of services to support Operations in outyears. Potential degradation of security capability at operational sites.

Recommendation: Air Force funds BASOPS and Security. MDA/Air Force jointly reassess Fire Service requirement with goal to reduce to same level as rest of EAS within Air Force responsibility.

Closure: OSD lead service decision needed by 1st Quarter FY06 (for the responsible agency to be able to POM). **(Closed 18 Jan 06 JROC)** Fire assessment needed prior to negotiation of FY07 ISA. **(Open; OPR: AF and MDA)** Decision needed on MDA funding of Security Intrusion Detection System. **(Open; OPR: MDA)**

3.6 Unresolved Funding Responsibilities for BASOPS at VAFB and EAS

Background: Air Force has the responsibility for performing BASOPS, currently funded by MDA. Air Force believes that GMD mission is a tenant. MDA believes that BASOPs is a Service cost. Army is Lead Service.

Issue: Which Service has responsibility to fund BASOPS for GMD Operational facilities and assets?

Impact: Air Force withdrawal of support. Currently MDA has continued funding EAS BASOPS.

Recommendation: Air Force funds BASOPS and security for GMD operations at Air Force sites. **Update:** Air Force proposes to provide BASOPS FY08 and out; and requests that MDA fund BASOPS FY06-07 and fund a Security Intrusion Detection System FY07.

Closure: MDA agreement to Air Force proposal that MDA fund BASOPS FY06-07 and Security Intrusion Detection System FY07. (OPR: MDA)

3.7 Funding Responsibilities for BASOPS Functions at FGA

Background: Funding responsibilities for snow removal and ground clearing in and around the Missile Defense Complex (MDC) are in process of being resolved with the Army. Expect resolution by FY06. Issue: Who is responsible for these functions, MDA or Army?

Impact: Continued disagreement and POM disconnects, potential withdrawal of services

Recommendation: Army provides these functions through BASOPs contract.

Closure: OPR: MDA/GM and Army; Resolution expected by FY06.

4.0 PROGRAM/SYSTEM DESCRIPTION

4.1 GMD Program Description

The President and the Congress have committed to deploying a Ballistic Missile Defense System (BMDS) as soon as technologically possible. Under NSPD-23 President Bush directed that this capability should be fielded by October 2004. In response to this direction, MDA modified the existing Test Bed contract with the Boeing Company to allow for the manufacture and deployment of major components in conjunction with the Test Bed's spiral development program. This Limited Defensive Capability (LDC) is intended to support robust development and testing while providing defense against attack by a limited number of ballistic missiles.

The GMD Joint Program Office (JPO) utilizes a spiral development acquisition strategy to deliver a missile defensive capability to the Combatant Commanders (COCOMs) in a Block approach, incrementally improving upon the tactical configuration of the Ballistic Missile Defense System (BMDS);

- Block 2004 represents the early development of the Initial Defensive Capability (IDC) including ground-based interceptors, upgraded or new sensors (CDU, Beale UEWR and SBX), In-Flight Interceptor Communication System (IFICS) data terminals (IDTs), GFC Nodes, and communications networks including fiber and satellite communications systems.
- Block 2006 includes continued developmental upgrades of ground-based capabilities and integrated testing of the multi-layered BMDS components. The fielding of additional ground-based interceptors, Fylingdales UEWR, and IDTs in Block 2006 expands the initial BMDS capability to encompass additional ESGs.
- Block 2008 (Planned) includes development of enhanced ground-based interceptor capabilities, countermeasures mitigation, multi-sensor fusion, additional GFC/C capabilities, and addresses the concept of rotating interceptors to ensure latest capabilities are fielded.
- Block 2010 (Planned) further supports the continuing development, testing and fielding of new and evolving BMDS technologies.

4.2 Block 2004 GMD System Components

The GBI and GFC/C system components for the Block 2004 configuration are described below at a summary level.

4.2.1 Ground-Based Interceptor System Description

As depicted on figure 4.1, the GBI component of the GMD system is comprised of the interceptor, Peculiar Support Equipment (PSE), Launch Site Components (LSC), Missile Fields (MF) and Missile Complex facilities.

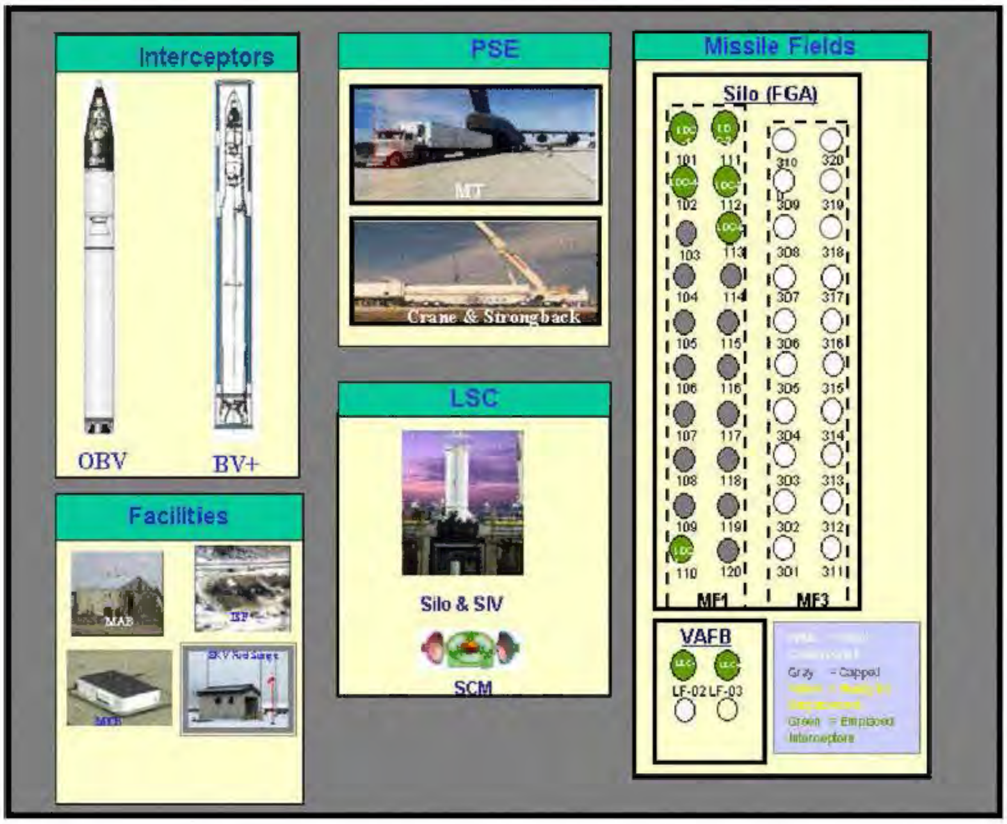

Figure 4.1 – GBI Component Description

4.2.1.1 Interceptor

The GBI interceptor is comprised of the Exoatmospheric Kill Vehicle (EKV) and either the non-canisterized Orbital Boost Vehicle (OBV), or a canisterized Booster Vehicle Plus (BV+).

4.2.1.2 Launch Site Components

The LSC are comprised of the Silo, the Silo Interface Vault (SIV) and the Silo Closure Mechanism (SCM). The Silo is an environmentally controlled structure that provides housing, alignment and protection from natural, hostile, and induced environments for the emplaced interceptor. There is one SIV associated with each Silo and it contains the GFC/C Launch Station Equipment (LSE), which prepares the interceptor for launch. Additionally, the SIV provides protection for the LSE from the environments. The SCM is essentially the Silo door and provides access to the top of the Silo for interceptor insertion or removal and maintenance.

4.2.1.3 Peculiar Support Equipment

GBI Peculiar Support Equipment (PSE) is comprised of items for transporting, handling, and inserting the interceptor into the launch silos, along with all other handling and support equipment and associated Test Diagnostic Equipment The major components of PSE are the Missile Transporter (MT), Strong Back (SB) and Crane.

4.2.1.4 Missile Fields

There are two MFs at FGA (MF-1 and MF-3) and four GBI Launch Facilities (LFs) at VAFB. Currently there are six interceptors emplaced in the six completed silos in MF-1 with construction of 20 silos on-going in MF-3. Emplacement of six interceptors in MF-3 is scheduled to begin in Sep 05.

Two of the four VAFB LFs have interceptors emplaced and the other two are undergoing renovation that is scheduled for completion end-Sep 05. While the VAFB LFs are primarily to support continued GBI development, the two emplaced interceptors provide a contingency operations capability.

4.2.1.5 GBI Related Missile Complex Infrastructure

The Interceptor Integration and support facilities at VAFB and FGA are comprised of the Missile Assembly Building (MAB), Mechanical Electrical Building (MEB), Interceptor Storage Facilities (ISF), EKV Fuel Storage and EKV Oxidizer Storage facilities.

4.2.2 GMD Fire Control and Communications (GFC/C)

The GFC/C Component provides battle management, command, control and communications, and operates in conjunction with the Integrated Tactical Warning and Attack Assessment (ITW/AA) network and other external supporting systems. The GFC/C integrates with the Space Based Infrared System (SBIRS), Aegis, UEWRs, SBX, and Ground-Based Interceptors (GBIs). The GFC/C Component includes six Products: the GMD Fire Control (GFC), GMD Communications Network (GCN), In-Flight Interceptor Communication System (IFICS), Test Exerciser (TEx), External System Interface (ESI), and the Launch Support System (LSS). The figure below depicts the GFC/C architecture.

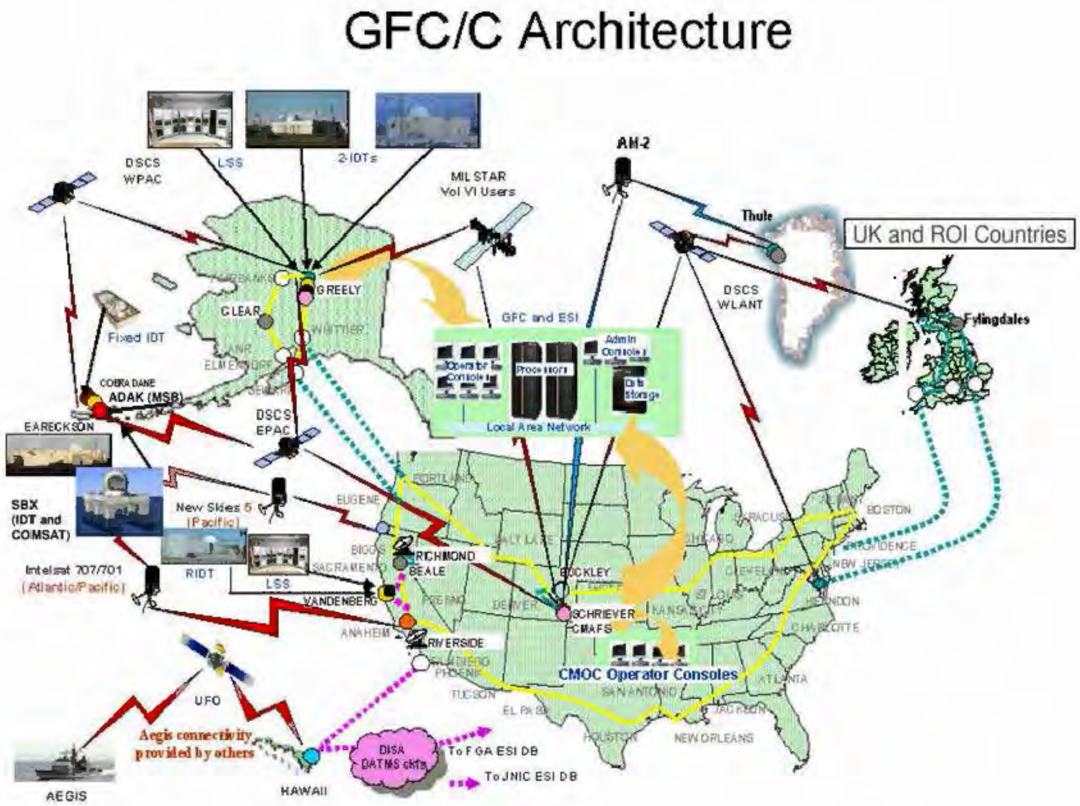

Figure 4.2 – GFC/C Architecture

4.2.2.1 GMD Fire Control (GFC)

Two GFC nodes receive and pass data from resources such as the UEWR, Cobra Dane Upgrade, SBX, IFICS, DSP/SBIRS, and Aegis to identify and select targets to be intercepted; provide automated battle management information; and permit Human-In-Control management of the GMD capability. The GFC capability is located at the Missile Defense Element (MDE) node in the Joint National Integration Center (JNIC) at Shriever AFB, CO; and at the Fire Direction Center (FDC) node located in the Readiness and Control Station, FGA. There are also four GFC Workstations (WSs) remotely connected with the Cheyenne Mountain Operations Center (CMOC) from the JNIC MDE node.

The GFC Prime Items consist of an Engagement Planner (EP), Command and Control (C2) software, system administration tools, and pre-planner. The EP software provides functionality of track management, planning, and interface management. The C2 software provides the user with Graphical User Interface (GUI) displays for decision aids, situation awareness, and system control. The displays support GMD command and control decision-making as appropriate at each of the GFC locations. The pre-planner provides an off-line capability to assess GFC performance given alternative threats and control parameters

4.2.2.2 External Systems Interface (ESI)

The ESI provides interface management and message transfer between the GFC and external elements with a variety of interface protocols. The ESI enables the GMD Element to interface with the Integrated Tactical Warning and Attack Assessment (ITW/AA) System as well as evolving Command and Control systems and external sensors. The ESI Data Bridge (ESI-DB) product consists of a Sun server, data storage device, and associated Sun WS and is located at the SPAWAR System Center (AEGIS site) in San Diego, the JNIC MDE node, and the FGA FDC node. The ESI Main Processor (ESIMP) located at the GFC node sites consists of an upgrade to the existing GFC Engagement Planner (EP) servers, a data archive system, and two personal computers used for data monitoring.

4.2.2.3 Test Exerciser (TEx)

TEx product is a framework for hosting GFC/C software functionality and aiding integration and testing the GFC/C software functionality. The TEx is the processor system that serves as an exercise scenario driver and provides models of GMD external elements to the GFC node to allow testing and exercising of the node without stimulus from the actual Test Articles. TEx is collocated with MDE and FDC nodes and is resident on all GMD System Trainers (GSTs). The GST is a standard GFC node with the addition of an instructor WS that includes a Learning Management System (LMS). It is a training tool that replicates all aspects of the GFC system and the GMD architecture. (For a more detailed description of the GMD training system, see Reference A.)

4.2.2.4 In-Flight Interceptor Communication System (IFICS)

IFICS establishes and supports data communication links between the IFICS Data Terminals (IDTs) and the in-flight interceptors or EKVs. Currently fixed IDTs are located at FGA and EAS. A Re-locatable IDT (RIDT) is at VAFB. An IDT is located aboard the SBX. The IDTs provide communications support for the transmission of In-Flight Target Updates (IFTUs) from the GFC to the GBI and the reception of the In-Flight Status Reports (IFSRs) from the Interceptor to the GFC.

4.2.2.5 GMD Communications Network (GCN)

The GCN provides the required secure, survivable communications, and network management services between all components of the GMD Element. It is composed of Long Haul Communications (LHC), Long Haul Communications System Manager (LSM), Communications Node Equipment (CNE), and Network System Manager (NSM). The LHC provides secure, reliable, multi-path, Wide Area Network (WAN) services between all geographically separated GMD locations, using fiber optic cable and satellite communications (SATCOM). The LHC System Monitor (LSM) monitors the health and status and controls the WAN LHC. A single LSM WS is collocated with each GFC node. The Communications Node Equipment (CNE) and the NSM provide each GMD component access to the secure, survivable GMD WAN. The CNE is that portion of the GCN subcomponent that provides communications interface to each GMD component. GFC/C is the component that provides the data communications access to those GFC/C and GMD Components within each local geographical area. The NSM Collection Station collocated with each CNE provides local communications and GFC/C equipment performance monitoring, fault detection, isolation and resolution, and status reporting. Two NSM WSs are collocated with each GFC Node. The NSM WSs are responsible for Fault Detection and Insertion and Recovery (FDIR) and the issuance of and tracking of trouble tickets as well as GFC/C System status reporting. Also collocated with each GFC Node is a Maintenance Management Center (MMC), to facilitate coordination between the On-Site Support Centers (OSSC) and the system operators. (For a more detailed description of the GMD support system, see Reference C.)

4.2.2.6 Launch Support System (LSS)

The Launch Support System (LSS) provides the command and control mechanism and interfaces for monitoring and operation of the GBI interceptors through the Command Launch Equipment (CLE). The CLE provides the functionality required to performing interceptor maintenance operations including Built in Test (BIT) and software download, Health and Status reporting to GFC, engagement processing of the Weapon Task Plan to provide interceptor data loads, and external power and control systems to perform interceptor launch.

The CLE consists of the Launch Guidance Control Equipment (LGCE), Readiness Station Equipment (RSE), Communication Equipment (CE) at the Readiness Station and Launch Support Equipment (LSE) and Junction Box (J-Box) to each Interceptor. The CLELAB combines the LGCE, RSE and CE to a Launch Equipment Boost Vehicle Simulator (LEBVS) to provide the capability of simulating CLE management and launch of multiple interceptors to support Distributed Ground Testing (DGT). All of the equipment in the FGA and VAFB Readiness Stations (LGCE, RSE and CE) including the UPS is configured as redundant systems containing duplicate lines of hardware. The LSE and J-Box reside in each Silo Interface Vault (SIV) and are connected to the Silo/SIV Environmental and Mechanical Control Systems, and the Interceptor.

Additionally, the LSS includes Ground Test Equipment. The Acceptance Test Equipment (ATE) is used in the Missile Assembly Building (MAB) to perform interceptor test and acceptance during final assembly. The Ground Electronics Checkout System (GECOS) is used to simulate the interceptor for CLE system checkout and to support ground tests.

4.2.3 Embedded Test Capability

Embedded Test (ET) provides a framework that accomplishes Distributed Ground Tests (DGTs), Integrated Mission Tests, Integrated Ground Tests (IGTs), and Recurring System Integrity Tests, and supports System Integrated Checkout, Pre-Mission Tests, and Integrated Flight Tests (IFTs). ET hardware and software are deployed at the GMD operational sites and at the System Test Laboratories to perform hardware-in-the-loop (HWIL) and software-in-the-loop (SWIL) testing.

The ET provides the GMD system with the capability to perform System and Subsystem Checkouts (SSCOs) as GMD components are installed and checked out at their deployed sites. As additional GMD components are checked out and integrated into the GMD system, System Integration Checkouts (SICOs) are performed. The ET controls the SICOs, stimulates the GMD components being integrated, and emulates the interfaces of any missing components.

Upon completion of the integration of the GMD components, the ET will control and provide the test data required for Recurring System Integrity Tests. The ET will further be used to execute a Test & Evaluation (T&E) predefined scenario to test the GMD system, collect the test data, and provide real-time analysis on the test data.

5.0 PROGRAM STATUS

5.1 Current Program Status:

Met Presidential Mandated Schedule of Limited Defensive Capability by 30 Sept 04

Army operational forces activated, trained, and in place Colorado Springs, CO, and Fort Greely, AK

Eight Ground-Based Interceptor Emplacements Completed at FGA Dec 05

Two Operational Interceptors at VAFB Dec 04

Periodic Launch Capability Demonstrations Conducted to Build System Confidence

Critical Hardware Functionality Demonstrated and Tested in Flight and Ground Test Program

ESGs verified – Engage on Cobra Dane, Launch on Cobra Dane, Launch on AEGIS, Engage on AEGIS, Engage on Beale

Integrated Ground Test (IGT) 2, 3, 4A, and 4B Completed

Systems Integration Check Out (SICO) Test 1, 3, 5, 6A, and 6B Successfully Completed

Successfully completed GFC/C accomplishments:

- Completed IDT Installation And Checkout At EAS And FGA
- Completed Acquisitions Of Relocatable IDT At VAFB and Communications Node Equipment
- Completed GFC Nodes at FGA and JNIC/CMOC

- Installed Two EAS DSCS Terminals And One FGA Terminal
- Completed Installation Of MILSTAR Terminal At FGA
- Completion/Checkout of GMD CONUS Fiber Optic Ring and Submarine Fiber Optic to Alaska and UK

Executed SDP II Contract Line Item - Activated Logistics Support System, including On Site Support Centers (OSSCs), Logistics Control Center (Log-CC) Huntsville, and Original Equipment Manufacturer's (OEM) Depots

Second FGA DSCS by Jul 06

5.2 The Way Ahead – Future Development

5.2.1 Block 08

Manufacture, Test, and Emplace Ten Additional GBIs

Continue to Design, Develop, Integrate and Test Concurrent Test and Operations (CTO)

- CTO is the capability (software-driven) of the Operational/Mission Hardware to remain Operational (with no degradation of capability) while being simultaneously used to conduct the Testing & Evaluation necessary to support Spiral Development

Plan, Manufacture and Integrate NE IDT

- Initiation of design is planned for FY06 with completion of construction projected for 2008, with equipment installation and checkout in 2009 (TBD). The Army will have a similar responsibility (i.e., security and BASOPS) as that for the IDTs in Alaska with successful accomplishment of the established certification criteria. Ownership of the IDT will remain with MDA. Future construction upgrades to the IDT shall remain the responsibility of MDA.

Design, Develop and Integrate GMD Enhancements

Initiate and Execute GBI Rotation Strategy and Service Life Characterization Program (GRSSLCP)

- The GRSSLCP will rotate newer GBIs into the alerted fleet while consuming older ones in ground and flight-testing thereby characterizing the expected service life of the interceptors. This also serves to rotate newer technology and components into the fleet to improve performance. Harvested interceptors will be retrofitted with (Flight Termination Systems and flown in flight tests or dissected, x-rayed, static fired, or converted to Ground Test Missiles.

5.2.2 Block 10/12

Plan, Construct, and Integrate 3rd GBI Site

- Transition/Transfer of a future 3rd missile field in Europe to the Army/Combatant Command (dependent on the negotiated Host Nation Agreement) for "Operations Only" will occur when an established certification process is successfully accomplished. Exact location of the 3rd missile field has not been determined. Site activation/construction schedules for the 3rd missile field have not been determined. The MDA shall retain ownership of the site and the system hardware assets for the foreseeable future. The 3rd missile field hardware and facilities will be transitioned to the Army for operational responsibilities when certification criteria are met. Transition of ownership to the Army shall not occur in the foreseeable future. Construction upgrades to the site and hardware modifications shall remain the responsibility of the MDA.

Third interceptor site includes

- 10 GBIs, IDT, GCN, Site Facilities, System Test (the final configuration of a Third GBI site remains undecided at this time)

Integrate GBI with Multiple Kill Vehicle (MKV) for SBX (Mod 1) ESG

Continue GBI Rotation Strategy

- Service Life Characterization, Tech Refresh

Design, Develop and Integrate GMD Enhancements

6.0 ORGANIZATIONAL RESPONSIBILITIES

6.1 Doctrine

The Army has the responsibility for overseeing the development of GMD Doctrine. GMD Doctrine provides the basis for GMD operations and training. GMD operations and missions are not much different than conventional Army missile defense operations and missions, and will be conducted in a joint environment. Therefore GMD Doctrine will be based upon the time-honored successful elements of Army Missile Defense Doctrine and from appropriate Joint Doctrine.

6.1.1 Missile Defense Agency Responsibilities:

- Fund analysis for and revisions to GMD and Joint Doctrine required by spiral development and Block upgrades to the GMD and the BMDS systems.
- Ensure/provide access by Army GMD Doctrine personnel to BMDS data and information, including test results, system configuration, and architectures that may have impact on GMD Doctrine.

6.1.2 STRATCOM responsibilities:

- Coordinate GMD/BMDS Concepts of Operation with Army GMD Doctrine personnel.
- Provide coordination with other COCOMs.
- Conduct GMD tests and exercises IAW approved doctrine; coordinate doctrine used in tests and exercises with Army GMD Doctrine proponent; provide after action reports (AARs) and lessons learned from tests and exercises to Army GMD Doctrine proponent.

6.1.3 Army responsibilities:

- Conduct analysis of and revise GMD Doctrine as necessary to reflect current GMD system design and capabilities, current STRATCOM Concepts of Operations, and Joint Doctrine.
- Fund analysis and revisions to Army Doctrine required by changes in Joint Doctrine, STRATCOM Concepts of Operations, and GMD Doctrine.
- Participate in GMD tests and exercises using approved GMD Doctrine.

6.2 Organization

The Army developed the required organizational structure for the GMD. GMD was fielded as U.S. Army Forces Command Modified Table of Organization and Equipment (MTOE) organization. GMD organizational requirements were identified in Unit Reference Sheets, which provided the basis for the development of the initial Table of Organization and Equipment (TOE) and subsequent MTOE. The force structure requirements supporting the organization were developed and competed within the Total Army Analysis (TAA) Process and will be refined in future Force Development cycles (e.g., TAA, Force Design Update (FDU)).

6.2.1 Missile Defense Agency Responsibilities

In coordination with the Service(s):

- Define site security requirements in concert with the affected BMDS element.
- Develop operational requirements.
- Determine appropriate level of staffing for site activation, sustainment, and ops support.

6.2.2 Army Responsibilities

- Develop the required organizational structure (TOE and MTOE) for GMD force design *[AR 71-32]*.
- Develop the Force Alignment and Stationing Package, which will assign the GMD Units to a parent organization.
- Validate and prioritize organization requirements.
- Review, staff, and approve FDU.

- Produce TOE following approval of FDU.
- Produce MTOE from TOE.
- Organization designation by Department of Military History.
- Approve MTOE for GMD Brigade; GMD Battalion; and Military Police Company.
- Submit Force Design Update (FDU) as needed.
- Assist in developing Allocation Rules for use during TAA.

6.3 Training

The GMD Training Program is based on the Army's Systems Approach to Training (SAT) model. This integrated training concept addresses a diverse set of operator and support personnel training needs necessary to ensure GMD is manned by trained, qualified, and certified operators and maintainers from all involved services (Army, Navy, and Air Force) in place to support GMD operations. Training considers the results of lessons learned, System Manpower and Personnel Integration Management Plan issues and concerns, and Task and Skills Analysis. It also leverages upon existing and/or planned training courses provided by various GMD organizations. GMD training will conform to the policies of the Missile Defense Education and Training System (MDETS) as established in STRATCOM DIRECTIVE (SD) 508-6. (For a more detailed description of the GMD training system, see Reference A.)

6.3.1 Institutional and Unit Sustainment Training

The backbone of both institutional and unit training is the GST. It is used to develop Tactics, Techniques, and Procedures (TTPs), exercise CONOPS, conduct Operator Procedures Investigations (OPIs) and conduct crew certification and sustainment training. The GST does not introduce artificialities nor is it representative of future GMD capabilities. It has the following modes of operation:

1. Stand-alone Training Capability - The Stand-alone training capability is a separate training facility that is virtually identical to the operations/command center's mission equipment. It is ideally collocated with each Army operations/command center. Commander, ARSTRAT envisions conducting continuous sustainment training via local exercises to sharpen individual operator skills and build crew cohesiveness. A dedicated stand-alone training capability allows individual and collective training, and/or continued defense option/execution plan development/refinement without interference to the adjacent operation/command center. Each standalone capability will have an ARSTRAT G3 certified instructor assigned to operate the capability; each instructor will have a control console separate from the trainees' consoles from which the instructor will be able to send/control training scenarios.

2. Distributive Multi-Echelon Training. The distributive training capabilities are capable of conducting multi-Echelon Training between the MDE, FDC, and CMOC. Integrated

Training is defined as training conducted between two or more operations/command centers executing the same scenario exercise. It also allows new execution plans to be evaluated during periods of crisis.

6.3.1.1 Unit Sustainment Training

The main training system for daily unit and multi-echelon sustainment training is the Distributed Training Capability (DTC). The DTC consists of a GST co-located with the FDC at FGA, a GST co-located with the MDE at the JNIC, CMOC training GFC WS in the CMOC, and an off-line (no connection with the operational GCN) data and voice communications network.

In the future with the DTC serving as a starting point, an expanded, distributed, multi-echelon training system called the Distributed, Multi-Echelon Training System (DMETS) will be implemented that ties GSTs with C2BMC training WSs.

6.3.1.2 Institutional Training

~~For~~ institutional training at the GMD Training and Exercise Center (GTEC), two GSTs are integrated with other GFC training WS to provide a training configuration that replicates the 100th MD Bde MDE, the 49th MD Bn FDC, and the CMOC operational GFC WSs.

6.3.2 Upgrade Training

Upgrade Training (UGT) provides the skills and knowledge required for system upgrades, modifications, or added capabilities. Upgrade Training Teams (UGTT) will provide training on-site, or students may receive upgrade training at the GMD Training and Exercise Center (GTEC), which ever is most effective. In support of GMD UGT, the GMD Prime Contractor will use standalone and distributed multi-echelon GMD System Trainers (GST).

6.3.3 Responsibilities

6.3.3.1 Missile Defense Agency Responsibilities

- Support the transition/transfer of training systems and activities to the services and other government agencies as negotiated. To facilitate service POM activities for the transition, provide to the services the FY05 costs and the projected costs for FY06 and FY07 of the GTEC GST operating costs, the Distributed Training Capability (DTC) operating costs, and the GTEC training costs (course development and conduct).
- Work with SMDC/ARSTRAT to sign an MOA that addresses specifics/details of GMD training transition/transfer NLT the end of FY06.

- Coordinate USSTRATCOM, USNORTHCOM, CMOC, SMDC/ARSTRAT and AFSPC training requirements.
- Review training planning documentation and provide comment.
- Coordinate the review/comment cycle of training planning documentation with the Service community.
- Provide overall management of the GMD Integrated Training Program including training schedules through FY07 (or as determined by negotiation).
- Develop, maintain, and conduct trade studies/analyses, and implement the GMD System Training Plan through FY07 (or as determined by negotiation).
- Design, develop, deliver and maintain via CLCS the GTEC GMD System Trainers (GST), the DTC (including the DTC communications network), that portion of the Distributed, Multi-Echelon Training System (DMETS) within its scope (all the GMD-developed hardware and software), and UEWR Standalone Trainers. This effort includes providing hardware and software upgrades to the GMD portion of the GST to keep them current with the operational system. Operate the GTEC GST and the DTC, and manage the DTC training utilization and scheduling through FY07 (or as determined by negotiation).
- Design, develop, and deliver system UGT
- Develop, update, and conduct the GTEC GMD training courses for the Government and contractor personnel through FY07. Maintain the GMD Training Baseline through FY07 (or as determined by negotiation). Ensure that GMD training materials are accurate.
- Fund the GTEC facility rent, up-keep, and maintenance costs to include minor facility infrastructure improvements.
- Fund Service and COCOM Mission Training Plans (MTPs), Crew Drill manuals, Individual Training Plans (ITPs), System Training Plans (STRAP), and Training Support Packages (TSPs) through FY07.
- Resource, maintain, and operate the training communications network in support of GMD training.
- Resource and conduct individual and collective training in preparation for Force Development Experimentation/Limited User Tests.
- Develop GMD training materials – Computer Based Training (CBT) modules, etc.
- Provide Technical Interchange Meetings (TIMs) as a part of UGT.
- Develop and deliver upgrade training products and instruction to support GMD crew recertification and upgrades to the operational system. This must include scenario generation, integration, and update support.

- Integrate the GTEC GSTs with DTC Capability.

6.3.3.2 Army Responsibilities

As Lead Service for Operations, the Army is the centralized manager and integrator for all training products associated with GMD. Army responsibilities include, but are not limited to, the following:

- Develop POM input for transferring GMD Operator Training (from MDA to the Army in the FY08 POM cycle).
- Work with MDA/JPO to sign an MOA that addresses specifics/details of GMD training transition/transfer NLT the end of FY06.
- Coordinate Service & operator participation in training development in the form of active involvement in training accreditation, training development, quality assessment, and simulation/scenario development.
- Speak as the single operator voice to JPO regarding the GMD system.
- Ensure Service training products are developed, coordinated, and integrated as joint products. Also, ensure Service training products are delivered in time to support program objectives and schedules.
- Develop, update, and conduct the GTEC GMD training courses for the Government and contractor personnel after FY07 (or as determined by negotiation). Maintain the GMD Training Baseline after FY07 (or as determined by negotiation).
- Develop, update, and coordinate Mission Training Plans (MTPs), Crew Drill manuals, Individual Training Plans (ITPs), System Training Plans (STRAP), and Training Support Packages (TSPs). Fund these efforts starting in FY08.
- Manage the GTEC facility. Fund the GTEC facility rent, up-keep, and maintenance costs to include minor facility infrastructure improvements, starting in FY08 (or as determined by negotiation).
- Coordinate, advocate, and maintain TRADOC program accreditation for the GMD training program. *[TRADOC Reg. 350-70]*
- Develop, update, coordinate, and publish the GMD operator Critical Task List as an operator input to the MDA GTB development.
- Operate the GTEC GST and the DTC after FY07 (or as determined by negotiation).
- Develop, maintain, and implement appropriate Service certification program(s). Certify applicable personnel for GMD Operations.
- Approve GMD Operator Technical Manuals (TM-10s)
- Ensuring timely training of military personnel to support test, deployment, operations, and support of the GMD system.

- Manage, as delegated by MDA, the DTC training utilization and scheduling through FY07, and carry forward overall responsibility thereafter.
- Contribute to GMD Design Readiness Review (DRR) criteria assessment.
- Develop, validate, and implement doctrine and tactics training as part of the Upgrade Training requirement.
- Provide training products developed for future operational capabilities (i.e. additional GBI sites).
- Support and conduct Collective Training for Force Development Experimentation/Limited User Test with assistance from MDA.

6.3.3.3 US Northern Command (NORTHCOM) Responsibilities

- Develop and maintain Unit Qualification, Continuing, Refresher, and recertification training programs for CMOC (during Sustainment).
- Certify applicable personnel for GMD operations.
- Exercise the GMD capability to assess system and personnel readiness.
- Conduct GMD and ITW/AA training.
- House combat ready personnel who develop, manage, and administer, mission center crew training programs.
- Express requirements, modes of operations, etc. to JPO and contractor participants.
- Attend and support GMD program Integrated Product Teams (IPTs) and Working Groups (WGs) as appropriate.
- Review training planning and implementation documentation as coordinated by JPO and provide comment to contractor training community via JPO.

6.3.3.4 US Strategic Command (STRATCOM)/JFCC-IMD Responsibilities

- Supervise and approve the development, maintenance, and conduct of training for Joint BMDS/GMD personnel.
- Exercise the GMD capability to assess and certify system and personnel readiness.
- Review component command training programs.
- Express requirements, modes of operations, etc., to JPO and contractor participants.
- Attend and support GMD program and IPTs and WGs as appropriate.
- Coordinate training planning and implementation documentation as provided by JPO, and provide comment to contractor training community via JPO.
- Certify applicable personnel for mission operations and support.

- Identify mission essential task lists, training needs, opportunities, and parameters for the BMDS *[SD 508-6]*.
- Conduct BMDS Collective Training and individual proficiency training in coordination with the Services *[SD 508-6]*.

6.4 Materiel

6.4.1 MDA responsibilities

- Develop, procure, and field the GMD system (system is being procured via Spiral Development in Blocks).
- Perform a Support Readiness Assessment IAW BMD Integrated Program Policy Implementation Guide, 2 Jun 05.
- In conjunction with Services, establish transfer criteria for GBI and GFC/C assets (transfer criteria is TBD; see Issue 3.1).

A description of the material assets and capabilities delivered/planned for delivery follows:

<u>Block 04 BMDS Test Bed Infrastructure</u>

- 5 GBIs with Support
- GFC/C
  - GFC Block Upgrades
  - DSCS Terminals
  - MILSTAR Terminal

<u>Block 04 BMDS Test Bed Expansion & Infrastructure</u>

- 15 GBIs with Added Location (CE-1, 6-18 plus 2 Test)
- IDT/GCN for SBX

<u>Block 06 Capability Enhancements</u>

- 10 Additional Interceptors and Additional IDT @ Ft. Greely
  - Includes 5 with BV+ Booster
- Processor Upgrades in EKV and CLE

<u>Block 08</u>

- Manufacture, Test, and Emplace Ten Additional GBIs
- Continue Design, Develop, Integrate and Test CTO
- Plan, Manufacture and Integrate NE IDT
- Design, Develop and Integrate GMD Enhancements

- Initiate and Execute GBI Rotation Strategy
    - Service Life Characterization, Tech Refresh

Block 10/12

- Plan, Manufacture, and Integrate 3rd GBI Site
    - 10 GBIs, IDT, GCN, Site Facilities, System Test
- Integrate GBI with MKV for SBX (Mod 1) ESG
- Continue GBI Rotation Strategy
    - Service Life Characterization, Technology Refresh
- Design, Develop and Integrate GMD Enhancements

6.4.2 Army Responsibilities

Provide TOE- and MTOE- related material

Provide material for BASOPS Functions

Independent Logistician Assessment (Transfer Criteria TBD; see Issue 3.1)

6.4.3 Air Force Responsibilities

Provide material for BASOPS Functions

6.5 Leadership and Education

Formal leader development of Army personnel is the responsibility of TRADOC and is conducted at TRADOC proponent schools for officers, warrant officers, non-commissioned officers, and enlisted personnel. SMDC schedules numerous courses annually to enhance leadership skills for Soldiers preparing to assume leadership positions.

6.5.1 MDA Responsibilities

Include GMD in BMDS Training and Education Program.

6.5.2 Army Responsibilities

Develop and incorporate GMD training into Officer Education, Non- Commissioned Officer Education and Warrant Officer Education Systems.

6.5.3 STRATCOM/JFCC-IMD Responsibilities

Train and certify Headquarters personnel for command-specific BMDS-related duties *[SD 508-6, SD 508-8].*

6.6 Personnel

GBI and GFC/C are operated by Army operators at the unit. Additional military occupational specialty soldiers are assigned as defined in the MTOE. The Army provides human resources to support force requirements and will refine manpower requirements during the Total Army Analysis process and as a part of the MTOE development process. Contractor Support personnel are required to provide system maintenance and supply support.

6.6.1 Missile Defense Agency Responsibilities

- Support development of the Army and Joint Manpower Estimate Report.
- Define Architecture Operational Facilities (OPFAC) requirements.
- Define skill sets for personnel.

6.6.2 Army Responsibilities

- Develop the Army Manpower Estimate Report.
- Provide Military Occupational Specialty qualified soldiers for operational support of GMD organizations.
- Coordinate with combat, training, and materiel developers to ensure that total requirements are identified.
- Determine training supportability and ensure that personnel requirements are included in the BOIP and supporting documentation.
- Requirements and resourcing of GMD organizational and personnel requirements will be established within the Total Army Analysis process.
- Validate and prioritize manpower and personnel requirements.
- Requisition personnel based on approved MTOE.
- Coordinate among the active Army, Army National Guard, and the Army Reserve, as appropriate.

6.6.3 Air Force Responsibilities

- Provide Security Force Manpower at Air Force Installations Hosting GMD Assets

6.7 Facilities

6.7.1 Operational Facility Support

Operational Facility Support for GMD Facilities is provided to MDA IAW a negotiated Interservice Support Agreement (ISA) or MOA with the host installation. Funding responsibility is subject to transfer to the Lead Service for specific support categories. These Support Categories are covered in the Operational Facility Support Transition Matrix for each site (See Tables 6.1 – 6.4).

Table 6.1 - GMD Operational Facility Support Transition Matrix Fort Greely, Alaska					
BASOPS Function (GMD Mission Facilities)	Current Funding Responsibility	**Transition Yes/No**	**Transition Criteria**	**Transition Date**	**Proposed Funding Responsibility**
Electronic Security System *	MDA	Yes	POM Cycle	TBD	ARMY
Perimeter Surveillance System *	MDA	Yes	POM Cycle	TBD	ARMY
Fencing	MDA	Yes	Program Decision Memorandum (PDM) III	TBD	ARMY

* See Issue 3.3

Table 6.2 - GMD Operational Facility Support Transition Matrix Vandenberg AFB, California					
BASOPS Function (GMD Mission Facilities)	**Current Funding Responsibility**	**Transition Yes/No**	**Transition Criteria**	**Transition Date**	**Proposed Funding Responsibility**
Electronic Security System	MDA	Yes	PDM III	FY07	AIR FORCE
Entomology	MDA	Yes	PDM III	TBD	LEAD SERVICE (TBD)*
Facility Maintenance and Minor Repair	MDA	Yes	PDM III	TBD	LEAD SERVICE (TBD)*
Fencing	MDA	Yes	PDM III	FY06	AIR FORCE
Grounds Maintenance	MDA	Yes	PDM III	TBD	LEAD SERVICE (TBD)*
Refuse Collection and Disposal	MDA	Yes	PDM III	TBD	LEAD SERVICE (TBD)*
Utilities	MDA	Yes	PDM III	TBD	LEAD SERVICE (TBD)*

*See Issue 3.4

Table 6.3 - GMD Operational Facility Support Transition Matrix Eareckson AS, Alaska					
BASOPS Function (GMD Mission Facilities)	**Current Funding Provided By**	**Transition Yes/No**	**Transition Criteria**	**Transition Date**	**Proposed Funding Provided By**
Communication Services	MDA	Yes	PDM III	TBD	LEAD SERVICE (TBD)*
Electronic Security System	MDA	Yes	POM Cycle FY08	TBD	LEAD SERVICE (TBD)*
Facility Maintenance and Minor Repair	MDA	Yes	PDM III	TBD	LEAD SERVICE (TBD)*
Fire Protection	MDA	Yes	PDM III	FY06	AIR FORCE
Police Services	MDA	Yes	PDM III	FY06	AIR FORCE
Safety	MDA	Yes	PDM III	FY06	AIR FORCE
Secure Voice - Replacement COMSEC	MDA	Yes	PDM III	TBD	LEAD SERVICE (TBD)*
Security Services	MDA	Yes	PDM III	FY06	AIR FORCE
Utilities	MDA	Yes	PDM III	TBD	LEAD SERVICE (TBD)*

*See Issue 3.4

Table 6.4 - GMD Operational Facility Support Transition Matrix Colorado Springs, Colorado					
BASOPS Function (GMD Mission Facilities)	**Current Funding Provided By**	**Transition Yes/No**	**Transition Criteria**	**Transition Date**	**Proposed Funding Provided By**
GTEC Facility Maintenance	MDA	Yes	POM 08	FY08*	Army

*Or as determined by negotiation

6.7.2 Operational Facilities

Property for the Operational Facilities of the GMD Program is owned by the host installation, but will continue to be controlled by MDA. A listing of facilities by site is included in the GMD Operational Facilities Matrix, Table 6.5

Table 6.5 - GMD Operational Facilities Matrix

Location	Facility	Use
FGA	3001	Readiness & Control
FGA	3102	Utilities Building
FGA	3103	Substation
FGA	3104	Fuel Unloading Facility
FGA	3105	Water Supply Building -Garrison provides water testing and treatment.
FGA	3110	Missile Assembly Building (MAB)
FGA	3120	EKV Hypergolic Fuel Storage
FGA	3121	EKV Oxidizer Fuel Storage
FGA	3201	IFICS Data Terminal (IDT)
FGA	TBD	IFICS Data Terminal (IDT)
FGA	3301	Defense Satellite Communications System (DSCS)
FGA	TBD	Defense Satellite Communications System (DSCS)
FGA	TBD	MILSTAR
FGA	3401	Missile Storage Building 1
FGA	TBD	Entry Control Point (ECP) 2
FGA	3501-3520	Missile Field # 1
FGA	3521-3540	Missile Field # 3
FGA	3601	Missile Field # 1 Mechanical & Electrical Building (MEB)
FGA	3602	Missile Field # 3 Mechanical & Electrical Building (MEB)
FGA	Utilidors	Utilities Distribution
VAFB	1914 (Infrastructure Only-Excluding Mission Equipment)	Relocatable IFICS Data Terminal (IDT) Complex
VAFB	LF 02, LF 03, LF 21, LF 23 (LF 24*)	Missile Silos
VAFB	980	Missile Assembly Building (MAB)
VAFB	1819	Missile Assembly Building (MAB)
VAFB	1768	Launch Control Center (LCC)
VAFB	1978	Security Bldg
EAS	620	IFICS Data Terminal (IDT)
EAS	585	Defense Satellite Communications System (DSCS)
EAS	4010	Cobra Dane

*Not currently an active LF

6.7.3 Mission Support Facilities

Mission Support Facilities for the GMD Program are owned by the host installation, but will be controlled by MDA until transfer agreements have been reached with the Lead Service, once identified. A listing of facilities by site is included in the GMD Mission Support Facilities Matrix, Table 6.6.

Table 6.6 - GMD Mission Support Facilities Matrix		
Location	**Facility**	**Use**
FGA	339 or 656	MDA Storage
FGA	512	MDA Storage
FGA	626	MDA Storage
FGA	601	MDA Storage
FGA	628	MDA Storage & Maintenance
FGA	629	MDA Storage
FGA	670	MDA Storage
FGA	652	MDA Conference Facility/TCN
FGA	661	MDA Admin
FGA	663	MDA Admin
FGA	675	MDA Shop Space
FGA	658	MDA Storage
FGA	340	MDA Storage
FGA	627	MDA storage
FGA	655	GMD Test/Training Ctr
FGA	1203	ASP
FGA	650	GMD Conference Ctr
FGA	660	GMD Learning Ctr/Test
FGA	706, 662 (1st floor), 801, 804, 805, 806, 825, 827, 829, 830, 831, 854, 856, 808, 809, 810	Housing (Transient and Permanent party)
VAFB	6510	MDA Admin Offices
VAFB	6511	Storage & Warehousing
VAFB	8500	MDA Admin Offices
VAFB	1777	Warehousing & Storage
VAFB	1959	Warehousing & Storage
VAFB	1970	Storage & Warehousing
VAFB	2001	Storage & Warehousing
VAFB	6819	Storage & Warehousing
VAFB	988	Storage & Warehousing
EAS	598	Lodging
EAS	600	MDA Admin Offices
EAS	611	Equipment Testing
EAS	618	Communications
EAS	3050	Storage & Warehousing

6.8 Security

The operational assets of the GMD system have been designated Security System Level (SSL) "A" in accordance with DoD Regulation 5200.8-R, "Physical Security Program", May 1991. (For a more detailed description of GMD security, see Reference B.) Transition of ownership of PSS and ESS at Fort Greely is currently an open issue (see paragraph 3.4)

6.8.1 Missile Defense Agency Responsibilities

- Develop and Establish GMD Security Programs
- Fielding GMD security capabilities
- Establish maintenance/logistics infrastructure for GMD security assets (non-legacy)

6.8.2 Army responsibilities

- Manage the Security Program at Army locations
- Provide Security manpower (e.g., Guard Force, Information System Security Officer, and Organizational Security Assets such as Facility Security Officer (FSO)) and equipment for GMD assets at Army installations (i.e., FGA, Ft Drum) and other designated locations
- After transfer (see open issue 3.4), provide sustainment of Security Assets and Equipment including Entry Control and Security Infrastructure.

6.8.3 Air Force responsibilities

- Manage the Security Program at Air Force locations
- Provide Security manpower (e.g., Guard Force, Information System Security Officer, and Organizational Security Assets such as FSO) and equipment for GMD assets at Air Force installations (i.e., EAS, VAFB, JNIC, CMOC, etc) and other designated locations.
- After transfer (see open issue 3.4), provide sustainment of Security Assets and Equipment including ESS, PSS, Entry Control, Security Infrastructure

6.9 Test Strategy

The overall goal of the GMD Developmental Test & Evaluation (DT&E) Program is to reduce risk, characterize component and system capabilities, support BMDS integration with other elements (e.g. FBX-T, AEGIS), build confidence in the element, and provide data for verification activities and anchoring of Models and Simulations. The test strategy consists of a series of flight and ground tests. Integrated Flight Tests (IFTs) demonstrate that the GMD Element can engage a missile target, then launch and guide an interceptor to intercept and destroy the target reentry vehicle above the atmosphere. Radar Certification Flights (RCFs) and Target of Opportunity (TOO) flights are non-intercept tests with the purpose of characterizing sensor capabilities, interfaces, and communications systems within GMD components and GMD and other elements. Ground Tests are hardware in the loop tests, which are used to characterize system performance and for installation and checkout of new components added to GMD. The major ground tests are IGTs, DGTs, Subsystem Checkouts (SSCOs) and Subsystem

Integration and Checkout (SICOs). IGTs, Pre-DGTs, and Pre-SSCOs are performed in the system test labs (Prime Contractor Integration Laboratory (PCIL) and Integrated System Test Capability (ISTC)). DGTs are ground test conducted using fielded hardware/software. The primary purpose of the DGT is to verify interface and functionality of new or upgraded software/hardware. SSCOs/SICOs are component level test (e.g., SBX) for newly-fielded hardware/software.

The specifics of the current test program are documented in the BMDS Integrated Master Test Plan (IMTP). Planning for out year (FY08-10) tests will typically consist of three Flight Tests, one Ground Test, one DGT, and two to three TOOs annually. Future Flight and Ground Tests will include Aegis Ballistic Missile Defense integration, FBX-T, SBX, CDU, European participation at Thule, and Airborne laser participation.

Operational Testing of the GMD Program is the responsibility of a joint group of service Operational Test Agencies (OTAs). The OTAs include Army Test & Evaluation Command (ATEC), Air Force Operational Test & Evaluation Center (AFOTEC), the Navy's Operational Test & Evaluation Force (OPTEVFOR), and the Joint Interoperability Test Command (JITC). ATEC has been designated as the lead agency.

6.9.1 MDA Responsibilities

MDA/TE has been designated as the Responsible Test Organization (RTO) for BMDS test. Within the RTO, the BMDS Combined Test Force (CTF) is the executing agent for testing. The BMDS CTF is comprised of MDA/TEX and element test organizations (e.g., GMD CTF) and is responsible for conducting BMDS test program operations. Almost all the major tests are conducted as Developmental Test/Operational Test (DT/OT). The GMD CTF is made up of members from the Prime Contractor, Joint Program Office (JPO), and OTAs. It is responsible for Test Planning, Test Integration, Test Execution, and Test Evaluation and Reporting. It acts as the single integrated team for planning, integrating, conducting, and evaluating GMD Element-level combined developmental and operational testing in accordance with the GMD integration strategy. It is also responsible for coordinating with the Service for use of BMDS assets for test and development.

6.9.2 Services and Combatant Commands

In addition to the OTAs, system operators routinely participate in flight tests as well as IGTs and DGTs. BMDS CTF coordinates with the Joint Theater Air and Missile Defense Organization (JTAMDO) and with NORTHCOM/STRATCOM, through MDA/TR, to directly address operator test, training and transition issues and to provide inputs to operational assessments and to the Military Utility Assessment (MUA).

6.10 Supportability Strategy

The current support strategy for the GMD Element is to provide CLCS for those deployed components which are used to perform the GMD defensive operations mission, throughout their life-cycle, by providing Joint Program management of the Element's cost, schedule, performance, and risk while performing both the defensive operations and the develop/test missions. This includes all training systems that are used to execute the GMD training operations mission. This support strategy reflects acquisition reform, conforms to DoD policy and remains essentially unchanged since first delineated in the 1998 version of the GMD program's Single Acquisition Management Plan (SAMP). Pending Acquisition Strategy decisions may require changes to this support strategy. The responsibility for GMD support shall remain with MDA pending a transfer agreement with the Lead Service.

Currently, the CLCS strategy is being executed via the GMD prime contractor's SDP II Program. (For a more detailed description of the GMD support system, see Reference C).

6.10.1 MDA Responsibilities
Resource and provide CLCS through FYDP

7.0 CONTRACT STATUS

7.1 Current Contract
GMD Prime Contract HQ 0006-01-C-0001 Block 04 /Block 06 CE
Prime Contractor: Boeing Corporation
Period of Performance: End of FY07

7.2 Future Contract
TBD Period of Performance FY08-13

8.0 PLAN FOR TRANSITION ACTIONS/MILESTONES

8.1 Schedule
Since the deployment of the Initial Defensive Capability in September 2004, operations of the GMD sites in Alaska and Colorado Springs have been transitioned to the Service(s). MDA will remain responsible for the GBI, GFC/C components through the FYDP, including the CLCS of the system. MDA plans to transition responsibility for other categories of Support, including BASOPS and Security, subject to resolution of issues and agreement with the Services. Whether or not MDA will transition System Ownership or CLCS after FY13, is TBD.

Figure 8.1 is a Transition Actions/Milestones schedule depicting key events and planning with regard to the continued deployment and transition of the GMD system.

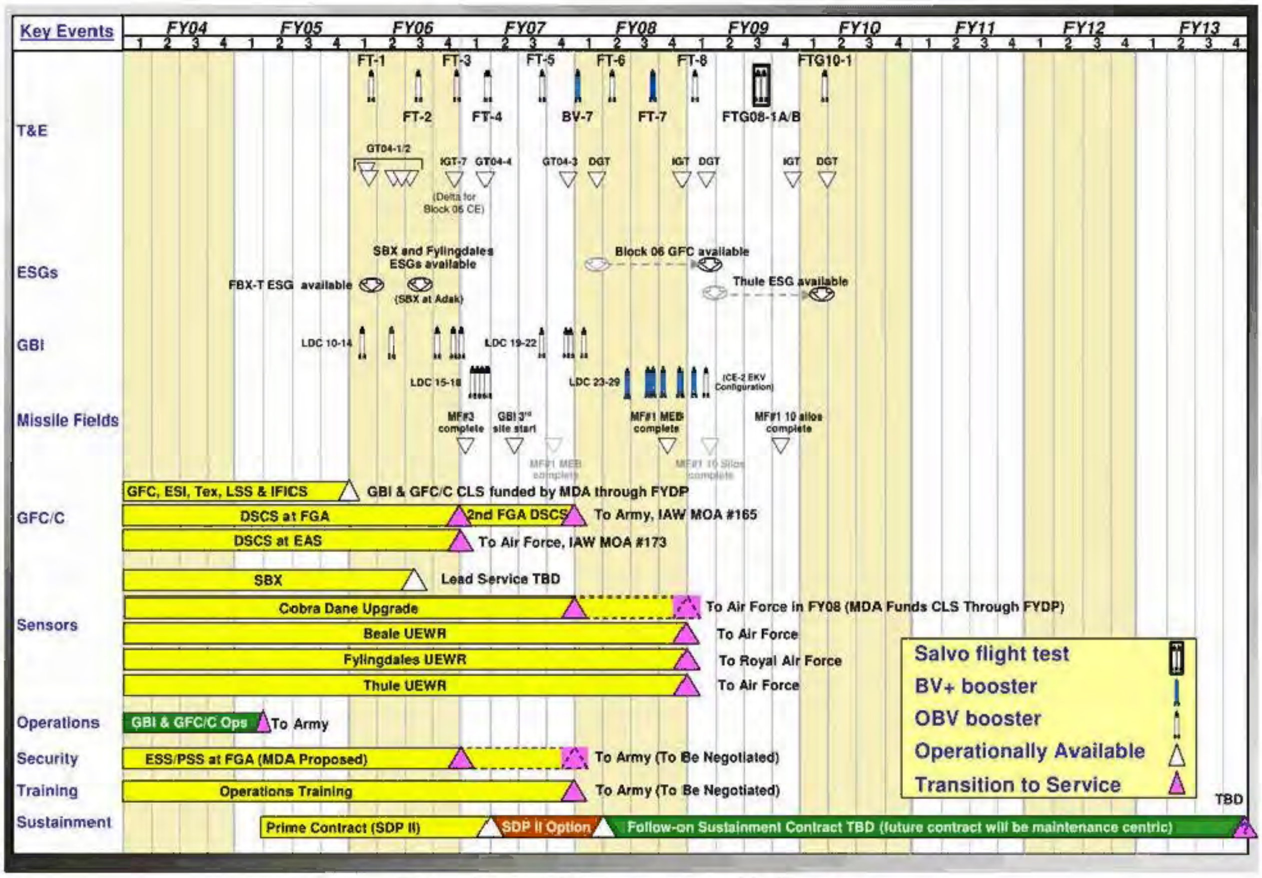

Figure 8.1 – Transition Actions/Milestones

9.0 FUNDING

9.1 Budget

Figure 9.1 shows the MDA/GMD Overall Budget for FY05 to FY13.

Because GMD and its components do not break out costs to a component level, the budget figures include Sensor costs, even though Sensor transition is covered under a separate annex.

		FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	Total
Block 04	Development	2019.6									2019.6
	Deployment	631.2									631.2
	O&S	104.8									104.8
Block 06	Development		1392.6	1503.8							2896.5
	Deployment	563.0	552.7	353.1							1468.8
	O&S		279.0	375.1	330.9	233.7					1218.8
Block 08	Development				1065.5	1029.2					2094.7
	Deployment		73.7	281.0	360.0	147.0	135.4	19.5			1016.6
	O&S						203.1	194.0			397.1
Block 10	Development						1018.1	1210.2	TBD	TBD	2228.3
	Deployment			188.9	717.0	654.8	539.3	139.0	TBD	TBD	2239.0
	O&S								TBD	TBD	0.0
	Total	**3318.6**	**2298.0**	**2701.9**	**2473.4**	**2064.8**	**1895.8**	**1562.7**	**TBD**	**TBD**	**16315.3**

Figure 9.1 – GMD Program Budget

The O&S budget is bordered in green. For a deployed system, these are the costs that are transitioned once responsibility for the system falls completely on the operational agency. However, given the developmental nature of the GMD program, MDA will retain financial responsibility for sustainment of the system components until at least FY13.

9.2 O&S Requirements

Figure 9.2 shows details of O&S requirements for FY06 to FY13, and projected shortfalls.

$ in Millions	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	Total
GBI & GFC/C CLS Total Reqts	**173**	**411**	**440**	**401**	**332**	**344**	**345**	**356**	**2801**
Sustainment Funding (PB07)	**173**	**411**	**324**	**400**	**332**	**344**	**TBD**	**TBD**	**1984**
Unfunded	**0.0**	**0.0**	**116***	**0.0**	**0.0**	**0.0**	**TBD**	**TBD**	**116**

Figure 9.2 - O&S Requirements

9.3 Interservice Support Agreements Funding

Besides O&S costs, there are other sustainment costs that are associated with the location of the system components. Under individual Interservice Support Agreements (ISAs) for each site, MDA negotiates and agrees upon site support requirements, who will perform them, and who will pay for them. Exact costs of services being transitioned (Tables 6.1 – 6.4) can be obtained from Host Installation Resource Managers. Currently, complete agreement has not been reached with Services (see Section 3 Issues). (See Section 10 for a listing of the ISAs.)

Figure 9.3 shows a breakout of the MDA estimates for ISA costs to the program, by component site.

Location	Service	FY06		FY07		FY08		FY09	
		MDA	Services	MDA	Services	MDA	Services	MDA	Services
Ft Greely, AK	US Army	5.693	4.699	5.864	4.840	6.040	4.985	6.221	5.135
Ft Drum, NY (NE IDT)	US Army			4.400		4.532		4.668	
Eareckson AS, AK	US Air Force	3.811	2.540	3.925	2.616	4.043	2.695	4.164	2.776
Eielson AFB, AK	US Air Force	0.031		0.032		0.033		0.034	
Elmendorf AFB, AK	US Air Force	0.048		0.050		0.051		0.053	
VAFB, CA	US Air Force	1.943	1.466	2.001	1.510	2.061	1.555	2.123	1.602
Beale AFB, CA	US Air Force	0.910		0.937		0.965		0.994	
JNIC	US Air Force		0.946		0.974		1.003		1.033
CMOC	US Air Force		0.046		0.048		0.049		0.051
Adak	TBD (Navy?)	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Fylingdales, UK	Royal Air Force, UK	0.149		0.154		0.158		0.163	
TOTAL		$12.586	$9.697	$17.363	$9.988	$17.884	$10.287	$18.421	$10.596

Location	FY10		FY11		FY12		FY13	
	MDA	Services	MDA	Services	MDA	Services	MDA	Services
Ft Greely, AK	6.408	5.289	6.600	5.448	6.798	5.611	7.002	5.780
Ft Drum, NY (NE IDT)	4.808		4.952		5.101		5.254	
Eareckson AS, AK	4.289	2.859	4.418	2.945	4.551	3.033	[illegible]	[illegible]
Eielson AFB, AK	0.035		0.036		0.037		[illegible]	
Elmendorf AFB, AK	0.054		0.056		0.058		[illegible]	
VAFB, CA	2.186	1.650	2.252	1.699	2.320	[illegible]	[illegible]	1.803
Beale AFB, CA	1.024		1.055		1.087		1.119	
JNIC		1.064		1.096		[illegible]		1.163
CMOC		0.052		0.054		0.055		0.057
Adak	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Fylingdales, UK	0.168		0.173		0.178		0.184	
TOTAL	$18.973	$10.914	$19.542	$11.241	$20.129	$11.579	$20.733	$11.926

Projected; actual ISA costs TBD

PROJECTED

Figure 9.3 - Interservice Support Agreements Estimates

10.0 AGREEMENTS AND COMMITMENTS

Table 10.1 - Summary of Memoranda of Agreement Supporting GCN and DSCS Equipment

Number	Type	POC	Parties	Short Description
	MOI		MDA and DISA	Memorandum of Intent 16 Aug 2000
31	MOA	MDA/GME	MDA and DISA have agreed to develop a MOA with separate annexes defining DISA responsibilities	Long Haul Communications and matrix support
102	MOA	MDA/GMB	SLA Space Command Integrated Digital Network (SDIN), MDA and Air Force Space Command	
120*	MOA	MDA/GME	SPAWAR San Diego and MDA	
121	MOA	MDA/GMB	MDA and SED	GBMC3 (now GFC/C) ESI development support
165	MOA	MDA/GMB	USANETCOM and MDA	DSCS Ground Station O&M at Ft. Greely
173	MOA	MDA/GMB	611th ASG and MDA	Operation and Maintenance of GCN
176/206*	ISA	MDA/GML	JNIC and MDA	GMD Voice Network Support

*MOA #176 ISA GMD Voice Network Support now included in JNIC MOA #206

Interservice Support Agreements to provide BASOPS:
ISA 36, 611th ASG, Eareckson AS, AK, 24 Nov 04
ISA 40, 3d Wing Support at Eareckson, AS, AK, 24 Nov 04
ISA 59, Cheyenne Mountain BASOPS, 24 Nov 04
ISA 109, Ft Greely BASOPS, 24 Nov 04
ISA 118, Beale AFB, 9th Reconnaissance Wing, 24 Nov 04
ISA 134, Eielson AFB, 354 Fighter Wing, 12 Jan 04
ISA 153, Vandenberg AFB, 30th Space Wing, 13 Dec 04
ISA 178, Fylingdales, 24 Nov 04

11.0 REFERENCES

Reference A – GMD System Training Description for the BMDS T2 Plan, 13 Dec 05 (GMD document; available upon request)
Reference B – GMD Security System Transition/Transfer Description for the BMDS T2 Plan, 13 Dec 05 (GMD document; available upon request)

Reference C – GMD Supportability Strategy Description for the BMDS T2 Plan, 13 Dec 05 (GMD document; available upon request)
Reference D – National Security Presidential Directive - NSPD-23 dated 16 Dec 2002
Reference E – MDA GMF Memorandum 1 Aug 04 to USASMDC – Subject: Transition of Security Functions at the Missile Defense Complex to the 100th Missile Defense Brigade
Reference F – AR 71-32
Reference G – STRATCOM Directive (SD) 508-6
Reference H – TRADOC Regulation 350-70
Reference I – PROGRAM DECISION MEMORANDUM (PDM III)
Reference J – BMD Integrated Program Policy Implementation Guide, 2 Jun 05

12.0 ACRONYMS

AFOTEC – Air Force Operational Test and Evaluation Command

ATEC – Army Test and Evaluation Command

ATE – Acceptance Test Equipment

BASOPS – Base Operations and Support

BMDS – Ballistic Missile Defense System

BV+ - Boost Vehicle (Plus)

C2 – Command Control

CBT –Computer Based Training

CDU –Cobra Dane Upgrade

CE – Communication Equipment

CLCS – Contractor Life Cycle Support

CLE – Command Launch Equipment

CLELAB - CLE Laboratory

CMOC – Cheyenne Mountain Operating Center

CNE – Communications Node Equipment

COCOMS – Combatant Commanders

COMMS – Communications Systems

COMSEC – Communications Security

CONUS – Continental United States

CTF – Combined Test Force

DGT – Distributed Ground Test

DMETS – Distributed, Multi-Echelon Training System

DOTMLPF – Doctrine, Organization, Training, Material, Leader development, Personnel and Facilities

DSCS – Defense Satellite Communications System

DTC – Distributed Training Capability

DT/OT Developmental Test/Operational Test

EAS – Eareckson Air Station, Alaska

ECP –Entry Control Point

EKV – Exoatmospheric Kill Vehicle

EP – Engagement Planner

ESG – Engagement Sequence Group

ESS –Electronic Security System

ESI – External System Interface

ESI-DB – External System Interface Data Bridge

ESIMP - External System Interface Main Processor

ET – Embedded Test

FBX-T – Forward Based X-band Radar

FDC – Fire Direction Center

FDIR - Fault Detection and Insertion and Recovery

FDU – Force Design Update

FGA –Fort Greely, Alaska

FYDP – Five-Year Defense Plan

GBI – Ground-Based Midcourse Interceptor

GCN – GMD Communications Network

GECOS – Ground Electronics Check Out System

GFC – GMD Fire Control

GFC/C – GMD Fire Control and Communications

GFX – Government Furnished X (Equipment, Property, Services, etc)

GMD – Ground-Based Midcourse Defense

GST – GMD System Trainer

GTEC – GMD Training and Exercise Center

GUI – Graphic User Interface

GVN – GMD Voice Network

HWIL – Hardware-in-the-Loop

IFICS – In-flight Interceptor Communication System

IDO – Initial Defensive Operations

IDT – IFICS Data Terminal

IFSR – In-Flight Status Report

IFTU - In-Flight Target Update

IGT – Integrated Ground Test

IMTP – Integrated Master Test Plan

IPT – Integrated Product Team

ISF – Interceptor Storage Facility

ISTC – Integrated System Test Capability

ITP – Individual Training Plans

ITW/AA – Integrated Tactical Warning and Attack Assessment

J-Box – Junction Box

JNIC – Joint National Integration Center

JPO – Joint Program Office

JTAMDO – Joint Theater Air and Missile Defense Organization

JTIC – Joint Interoperability Test Command

LDC – Limited Defensive Capability

LEBVS – Launch Equipment Boost Vehicle Simulator

LF – Launch Facility

LGCE – Launch Guidance Control Equipment

LHC – Long Haul Communications

LogCC – Logistics Control Center

LSC – Launch Site Components

LSE – Launch Station Equipment

LSE – Launch Support Equipment

LSM – Long Haul Communications Systems Monitor

LSS – Launch System Support

MAB – Missile Assembly Building

MDA – Missile Defense Agency

MDE – Missile Defense Element

MDETS – Missile Defense Education and Training System

MEB - Mechanical Electrical Building

MF – Missile Field

MKV – Multiple Kill Vehicle

MOA – Memorandum of Agreement

MTP – Master Test Plan

MT – Missile Transporter

MUA – Military Utility Assessment

MTOE – Modified Table of Organization and Equipment

MTP – Mission Training Plans

NORTHCOM – United States Northern Command

NSM – Network System Manager

NSPD – National Security Presidential Directive

OBV – Orbital Boost Vehicle

OEM –Original Equipment Manufacturer

OPFAC – Operations Facility

OPTEVFOR – US Navy Operational Test and Evaluation Force

OSSC – On-site Support Center

OTA – Operational Test Agency

PACAF – Air Force Pacific Command

PCIL –Prime Contractor Integration Laboratory

PDM – Program Decision Memorandum

PSE – Peculiar Support Equipment

PSS – Perimeter Surveillance System

POM – Program Objective Memorandum

RCF – Radar Certification Flight

RDT&E – Research, Development, Test and Evaluation

RIDT – Relocatable I FICS Data Terminal

RSE – Readiness Station Equipment

RTO – Responsible Test Organization

SAMP – Single Acquisition Management Plan

SATCOM – Satellite Communications

SB – Strong Back

SBIRS – Space Based Infrared System

SBX – Sea-based X-band Radar

SCM – Silo Closure Mechanism

SDP-II – Sustainment Development Program (Phase II)

SICO – System Integration Check Out

SIV – Silo Interface Vault

SMDC/ARSTRAT – Space and Missile Defense Command/Army Strategic Command

SPAWAR – Naval Space Warfare Command

SSCO – Subsystem Check Out

STRAP – System Training Plans

STRATCOM – United States Strategic Command

SWIL – Software-in-the-Loop

TAA – Total Army Analysis

TCN –Test Control Node

TEX –Test Exerciser

TIM – Technical Interchange Meeting

TOE – Table of Organization and Equipment

TOO –Target of Opportunity

TM –Technical Manuals

TRADOC – Training and Doctrine Command

TSP – Training Support Packages

UEWR – Upgraded Early Warning Radar

UGT - Upgrade Training

UGTT - Upgrade Training Teams

VAFB – Vandenberg Air Force Base, CA

WAN – Wide Area Network

WG – Working Group

WS - Workstation

13.0 LIST OF FIGURES AND TABLES

13.1 FIGURES

13.2 TABLES

DRAFT

BALLISTIC MISSILE DEFENSE SYSTEM TRANSITION AND TRANSFER PLAN

Annex H

Command and Control Battle Management and Communications (C2BMC)

Missile Defense Agency/BC
7100 Defense Pentagon
Washington, DC 20301-7100

BMDS Transition and Transfer Plan
Annex H
Command & Control Battle Management & Communications (C2BMC)

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EXECUTIVE SUMMARY

The purpose of this Ballistic Missile Defense System (BMDS) Command & Control Battle Management & Communications (C2BMC) Transition – Transfer Plan is to provide an understanding of the resources, design, development, integration, fielding and sustainment activities of the Missile Defense Agency (MDA) and Missile Defense National Team B (MDNTB or NTB) to support C2BMC and identify initial planning to transition and transfer this capability to a Service and/or Agency. Currently there has been no Service identified as the "Lead Service" for C2BMC to transition/transfer and Joint Forces Component Command – Integrated Missile Defense (JFCC-IMD) has been identified as the "user representative". Accordingly, there are no plans to transition or transfer C2BMC to a Service at this time, however there is an initiative where portions of C2BMC (e.g. Initial Qualification and Continuation Training and Equipment Maintenance) may transition to another entity/agency.

BMDS Transition and Transfer Plan
Annex H
Command & Control Battle Management & Communications (C2BMC)

1.0 PURPOSE

The purpose of this Ballistic Missile Defense System (BMDS) Command & Control Battle Management & Communications (C2BMC) Transition, Transfer Plan is to provide an understanding of the resources, design, development, integration, fielding and sustainment activities of the Missile Defense Agency (MDA) and Missile Defense National Team B (MDNTB or NTB) to support C2BMC and identify initial planning to transition and transfer this capability to a Service and/or Agency. This document has been developed to provide readers with a high level description of methodology and processes that will be used. Funding and sustainment responsibilities of the MDA are summarized.

2.0 FACTS AND ASSUMPTIONS

2.1 Facts

2.1.1 Program Management: MDA/BC is the Program Director for C2BMC responsible for day to day program management, configuration management, research, development, test and evaluation (RDT&E.), development and implementation of new capability and funding of all aspects of C2BMC.

2.1.2 Gaining Service: Not Identified

2.1.3 System Operations and Support (O&S): C2BMC will be manned and operated by uniformed Service personnel in existing Combatant Command (COCOM), Sub-Unified Command and National Command Operations Centers. C2BMC will be maintained and sustained by on-site Contractor Logistics Support (CLS) funded by MDA. Where possible, responsibility for C2BMC equipment maintenance will be transitioned to existing site maintenance contracts or other agencies (i.e. Defense Information Systems Agency (DISA)).

2.1.4 Base operations/support: Following C2BMC installation in existing COCOM, Sub-Unified Command and National Command Operations Centers, base operations support (facilities, power, water, etc) are the responsibility of the host site.

2.1.5 MDA/Service responsibilities: A Service has not been identified as the Lead Service for C2BMC.

2.1.6 Unit fielding process:

2.1.6.1 Pre Site Survey: MDA/NTB will complete the following activities prior to the Site Survey: Site Survey Questionnaire (SSQ), In-Service Engineering Checklist review, SSQ distribution to Site and Program Office, completion of a Memorandum of Understanding (MOU), coordination of Site Survey dates with the Site, Customer, and others, Site Survey travel planning and coordination with the Customer.

2.1.6.2 Site Survey: MDA/NTB will conduct a Site Survey at each site receiving any configuration of C2BMC. Site surveys provide an opportunity for engineering, In-Service Engineering, installation, training, CLS, configuration management (CM), and security personnel to meet with their site counterparts to review and discuss the unique issues related to a given site. Site surveys will consist of pre-survey briefing, Focus Group sessions, daily wrap-up, and Action Item review. The MOU will be passed to the site for signature coordination.

2.1.6.3 Post Site Survey: Following the Site Survey, MDA/NTB will ensure the following activities are accomplished: completion of documentation, retrieving signed MOU from Site and signing internally, sending MOU document to CM control, reporting back to the Program, generation and coordination of Facility Mod changes, and ordering equipment.

2.1.6.4 Equipment Installation (on-going): MDA/NTB will ensure: room(s) have been modified as required and are ready to receive equipment, coordinate with Site organizations for assistance as required, provide status reports to Site Transition Meeting and customer, installation of C2BMC equipment, post-installation clean-up including trash removal, checkout of equipment by NTB personnel, and conduct Acceptance Testing and Training. NTB Quality Assurance members will ensure compliance with all specifications to include facilities issues.

2.1.7 Material release authority: MDA/NTB maintains release of equipment authorization. Prior to shipment of any C2BMC equipment to a site a Pre-Ship Readiness Review is held with MDA, NTB and Site representatives to ensure all outstanding issues are resolved prior to equipment shipment for installation.

2.1.8 Milestone C decision applicability: C2BMC is a spiral RDT&E program developed for MDA by NTB under an Other Transaction Agreement (OTA) - a developmental system being used as an operational asset in the BMDS mission area. It is not anticipated at this time that C2BMC will have a "normal" Milestone C decision.

2.2 Assumptions

2.2.1 The Government retains total system performance responsibility (TSPR) for the BMDS.

2.2.2 All C2BMC capabilities may not be implemented as currently planned: some capabilities may be added, some may be delayed for higher priority capabilities, and others may be adjusted in capability content. In harmony with the capabilities-based spiral development approach, MDNTB(I) shall adjust the capabilities specified, implemented, and delivered in each Spiral as a function of program priorities, schedule, and budget.

2.2.3 MDNTB(I) will provide spares for a subset of equipment. The selection of hardware for inclusion in the spares list shall be based on engineering judgment of equipment or component criticality. For those items on the spares list, the BOM shall include a quantity of spares equivalent to approximately 10% of the total quantity of that item across all activated sites. To the extent possible and fiscally reasonable, MDNTB(I) shall leverage sparing provided through Commercial Off-The Shelf (COTS) vendor maintenance contracts. A thorough analysis of C2BMC sparing requirements shall be performed and subsequent recommendations submitted to the Government as described in the SOW.

2.2.4 MDNTB(I) shall operationally maintain the C2BMC equipment activated during the Part 4 POP. Accordingly, any efforts dedicated to achieving acceptance – as a precursor to turning over the system – at one or more activated sites are not included in the Part 4 tasks.

2.2.5 The users of the BMDS C2BMC Suite are Service personnel at the Combatant Commands/Sub-Unified Commands and National Command Operations Centers to which the suite will be deployed, however only the CLS Maintenance Organization will perform maintenance on the C2BMC system.

2.2.6 The MDA is responsible for CLS through FY-13.

3.0 OPEN ISSUES

There are no open issues for C2BMC.

4.0 SYSTEM DESCRIPTION

The BMDS C2BMC suite is the BMDS element that is principally responsible for planning BMDS operations and communications, providing BMDS situation awareness, monitoring and controlling BMDS operations and communications, and for providing BMD for friends, allies, deployed forces and homeland defense. C2BMC is being designed, developed, integrated, fielded and sustained by the Missile Defense National Team Command and Control, Battle Management, and Communications (C2BMC) Industry (MDNTB(I)) Team for the MDA .

The C2BMC suite consists of Operator Stations, Mission Servers, Network Management Equipment, Security, External Connection Equipment, and internal and external communications connectivity as required. The Operator Stations provide the principal user interface to the software and databases via the Mission Servers required to process messages and to perform BMDS planning, control, and execution. The Network Management Equipment includes the software required to perform BMDS communications planning, monitoring and control as well as the hardware and software required to support system administration and to manage the various communications interfaces. The Security and External Connections Equipment provides the physical interface to the Host Center and connectivity to the BMDS communication network(s).

The baseline architecture for a C2BMC Suite consists of eight operator workstations with up to four monitors each, a network management workstation, and four racks of servers and communications equipment, all located within existing facilities that provide communications connectivity, power, shelter, security, and other services. Each operator workstation carries the same software suite.

The C2BMC system is designed to interface, coordinate and manage a wide range of sensor-to-shooter links that were not designed to work together (e.g. the Aegis Air Defense Radar System and the Patriot Missile launcher). These sensor-to-shooter links will form the basis for what is envisioned as a multi-layer defensive shield against all ballistic missile threats to the United States of America, her allies, and all common interests of the USA and her allies.

MDNTB will provide operator assistance and training at fielded sites and provide logistics support to maintain and enhance C2BMC system wide availability.

4.1 Full Suite Configuration: The largest configuration is the C2BMC Full Suite. It consists of:

- Sun server for the mission applications and database
- Computer Network Equipment (CNE) consisting of Routers, switches and cryptological devices
- Operator Enterprise Workstations (EWS)

The full C2BMC suite is comprised of 4 racks of servers and communications network equipment. The hardware is substantially contractor-furnished equipment (CFE), although some government-furnished equipment is required. The Bill of Materials (BOM) for each location is an appendix to each of the Site Implementation Documents (SID).

4.2 Remote Suite Configuration: The remote suite configurations vary from site to site but they primarily consist of EWS and CNE. These workstations will be "remoted" off a C2BMC full suite. This configuration consists of:

- EWS
- CNE

4.3 Gateway Configuration: The Gateway configuration is for communications equipment. This configuration is not for the warfighter, but rather for a communications hub. The Gateway consists of:

- Two Laptop computers with Planning Software for Situational Awareness.
- CNE with triple redundancy.
- Government Furnished Equipment (GFE):
  - PSC-5D SATCOM Radio.
  - Joint Range Extension.
  - KG-175 (TACLANE)/KG-84/KIV-7

4.4 Web Browser Configuration: The Web Browser configuration allows warfighter location to browse into the C2BMC server and be able to see situational awareness screen information. The configuration consists of:

- A EWS "remoted" to a Full Suite by a SIPRNET connection.

4.5 System Roadmap and Architecture: Figure 1 is the C2BMC Roadmap through Block 08. Figures 2 & 3 provide the current fielded system architecture (Block 04) and Block 06 architecture.

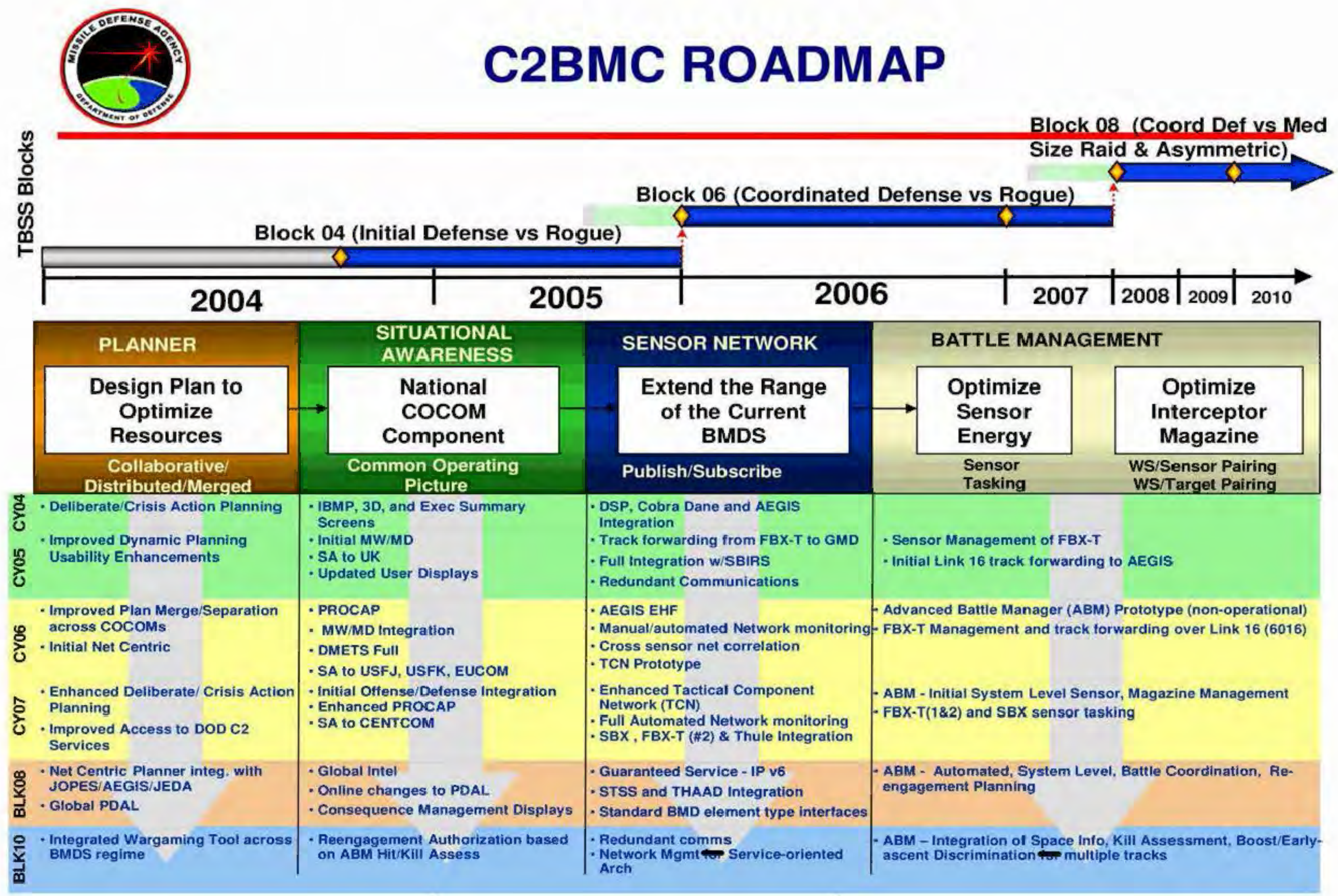

Figure 1 – C2BMC Roadmap

(b)(3):10 USC § 130

(b)(3):10 USC § 130

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5.0 PROGRAM STATUS

C2BMC is being spirally developed by the Missile Defense National Team Command and Control, Battle Management, and Communications (C2BMC) Industry (MDNTB(I)) Team for the MDA under a OTA that includes various SOW's. The C2BMC product development follows a capabilities based Block and Spiral development process that strikes a balance between top-down allocation of system-level capabilities to C2BMC functions and the bottom-up leveraging of existent capabilities in related Elements. Currently there are no plans to transition C2BMC to a Service.

5.1 Current Program Status: The Part 4 SOW covers the period of performance 1 January 2006 through 31 December 2007 and is referred to as Block 06. The currently fielded system capability is identified in Figure 1 and the Block 04 architecture is depicted in Figure 2.

5.2 Future Development: The Part 5 SOW covers the period of performance 1 January 2008 through 31 December 2009 and is referred to as Block 08. Block 06 and Block 08 capability is identified in Figure 1 and the Block 06 architecture is depicted in Figure 3.

6.0 ORGANIZATIONAL RESPONSIBILITIES

6.1 Doctrine: BMDS/C2BMC CONOPS and Tactics, Techniques and Procedures (TTP) are being developed by USSTRATCOM and JFCC IMD. JFCC-IMD is responsible for tactical Global BMDS.

6.1.1 MDA Responsibilities:

- Assist USSTRATCOM and JFCC-IMD in the development of C2BMC/BMDS CONOPS and TTPs.

6.1.2 Service Responsibilities:

- Assist USSTRATCOM and JFCC-IMD in the development of C2BMC/BMDS CONOPS and TTPs as required.
- Develop Service Doctrine as required for BMDS Mission Area as required.

6.1.3 COCOM Responsibilities:

- Develop BMDS/C2BMC CONOPS and TTPs as required.

6.2 Organization: The Services in conjunction with the COCOMs, Sub-Unified Commands and National Command Operations Centers will develop and source the required organizational structure for C2BMC operations in existing operations centers for the BMDS mission area. MDA/NTB will staff and field CLS personnel to support and sustain C2BMC.

6.2.1 MDA Responsibilities:

- Staff and field CLS personnel to support and sustain C2BMC operations at requisite command operations centers.

- Assist Services, COCOMs, Sub-Unified Commands and National Command Operations Centers with C2BMC operations orgizational structure development and provide recommendations as required.

6.2.2 Service Responsibilities:

- Assist COCOMs, Sub-Unified Commands and National Command Operations Centers with C2BMC operations orgizational structure development and provide recommendations as required.

6.2.3 COCOM Responsibilities:

- Assist Services, Sub-Unified Commands and National Command Operations Centers with C2BMC operations orgizational structure development and provide recommendations as required.

6.3 Training: United States Strategic Command (USSTRATCOM), supported by other organizations, is responsible for the institution and oversight of a training program for Global Missile Defense. MDA provides training in support of organizations with Title 10 United States Code (USC) authority that will employ the BMDS. For the purpose of avoiding gaps in BMDS training and ensuring coherence among all BMDS-related training programs, USSTRATCOM has delegated to MDA the responsibility for oversight and coordination of training plans and training development related to the BMDS and its parts. These training development and execution tasks will be performed by MDA organizations, Services, and COCOMs in a coordinated manner through adherence as referenced in MDA Directive 1025.1 dated October 14, 2004. During Block 06 NTB will develop a "Train-the-Trainer" approach to training C2BMC operators where MDA/NTB will train a few individuals at each COCOM and that individual will then be responsible to train the remaining Staff and new joins.

6.3.1 Initial Type 1 Individual Qualification Training: Application training will be delivered using stand-alone computer-based training (CBT), which may be completed independently of other students or instructors (asynchronous training). This CBT will provide interactive performance based, self-paced training using duty position defined missile event scenario threads, and may be used between scheduled mobile training team's (MTT) and Continuation Training events to enhance the operators skills. Asynchronous CBT training material would be available 24/7 and will be delivered electronically accessible through the MDA Classified Portal. Each C2BMC operator and operations support personnel will have to get access to the Classified MDA portal. Note the classification and distribution statement before sharing or discussing this information, the Joint Defensive Planner (JDP) course is for US Only. The SA material currently is releasable to Canadians working in the CMOC and the Great Britain Liaison Officer working at STRATCOM Headquarters. These foreign personnel will have their training delivered on CD-ROM. It is recommended that all personnel complete the CBT training prior to a spiral MTT arrival on the site. The site-training manager will certify completion of CBT prior to the arrival of the MTT on-site for the conduct of initial training

6.3.2 MTT: The second level of training will be provided by a MTT either at the individual work center at the COCOM for Spiral version training or at the Joint

Integration Training Center, Schriever AFB. The MTT will provide instructor led training through lecture, demonstration, and hands-on performance on Enterprise Workstations. The MTT will verify that the end user can employ the C2BMC software applications on the EWS or web browsers to a required measurable performance level for individual initial qualification. At the completion of the combination of both training courses, the individual will receive a C2BMC Qualification Certificate.

6.3.3 Continuation Proficiency Training: Bi-monthly use of CBT will be alternated with continuation training currently scheduled at Schriever AFB for Situation Awareness and Planner training. Operators will participate in Distributed Multi-Echelon Education and Training System (DMETS) exercises daily to exercise crew GBMD procedures and Crew-to-Crew multi-echelon command coordination for event processing. COCOMs will employ IMD Exercise participation to insure crew proficiency GBMD execution.

6.3.4 MDA Responsibilities:

- MDA/NTB will provide initial individual qualification training for operation and sustainment of element hardware and software the first time a user receives it, and for concepts, principles, and high-level policy considerations associated with employment of the BMDS. The foregoing includes updates as spiral development of the BMDS brings forth new information or other changes.
- MDA will support the Services and COCOMs in their Title 10 USC responsibilities to perform crew, team and higher collective training, to train replacement personnel, and to maintain operational task proficiency.
- Provide C2BMC BMDS Operator Training.
- Provide C2BMC Operations & Support Training to CLS personnel.
- Provide Information Assurance Training to CLS personnel.
- Provide training material as required.
- Provide equipment and facilities to conduct MTT and Continuation Training in the Joint National Integration Center (JNIC)
- Schedule and conduct MTT and Continuation Training as required.
- Explore transitioning Initial Qualification and Continuation Training to the National Security Space Institute (NSSI).

6.3.5 Service Responsibilities: N/A

6.3.6 COCOM Responsibilities:

- Provide personnel for C2BMC BMDS Training
- Provide facilities for MTT to conduct training
- Ensure C2BMC BMDS personnel complete CBT as required.

6.4 Material

The MDA will resource, design, develop, integrate, field and sustain C2BMC suites/systems for all requisite requirements. Additionally, MDA will procure, deliver and replenish requisite spares.

6.4.1 MDA Responsibilities:

- Resource, design, develop, integrate, field and sustain C2BMC suites/systems for all requisite requirements.
- Procure, deliver and replenish requisite spares.
- Fund Platinum Level Service Agreements from equipment manufacturers.
- Provide post delivery software and hardware support.
- Where possible, transition C2BMC equipment maintenance responsibility to existing site maintenance contracts or other agencies (i.e. DISA).

6.4.2 Service Responsibilities: N/A

6.4.3 COCOM Responsibilities: N/A

6.5 Leadership: Formal leader development is the responsibility of the Services and is conducted in Service schools for both Officer and Enlisted personnel and will not be addressed in this forum.

6.6 Personnel: C2BMC suites/systems will be operated at COCOM, Sub-Unified Commands, and National command operations centers in the BMDS mission area by uniformed Service personnel trained by MDA/NTB. Maintenance and repair of C2BMC suites/systems will be accomplished by MDA/NTB contracted CLS personnel.

6.6.1 MDA Responsibilities:

- Provide CLS personnel to support and sustain C2BMC suites/systems at each COCOM, Sub-Unified Command and National command operations areas.
- Provide training personnel to conduct uniformed Service personnel training as required.

6.6.2 Service Responsibilities: Lead Service not identified.

- Provide uniformed Service personnel to operate C2BMC suites/systems in the BMDS mission area as required by COCOMs, Sub-Unified Commands and National command operations centers.
- Coordinate with COCOMs, Sub-Unified Commands and National command operations centers for Service personnel requirements.

6.6.3 COCOM Responsibilities:

- Provide uniformed Service personnel to operate C2BMC suites/systems in the BMDS mission area.
- Coordinate with Services for COCOM, Sub-Unified Commands and National command operations centers personnel requirements.

6.7 Facilities: Facilities requirements are the responsibility of MDA, COCOMs, Sub-Unified Commands and National command operations centers or the custodian of where C2BMC suites/systems are installed.

6.7.1 Operational Facilities: Sites which host C2BMC equipment are wholly owned and operated and sustained by the US Government.

6.7.2 Storage Facilities: There is a storage facility ~~for~~ C2BMC materials at the Powers Building in Colorado Springs, CO. This is a Lockheed Martin Facility. This storage facility will also be used for C2BMC equipment rack assembly and check-out, Packaging, Handling, Storage and Transportation (PHS&T) activities and the Training Development activities associated with the program. All staffing, utility and other requirements are the sole responsibility of Lockheed Martin. The Facility complies with ISO 9000 requirements. This facility will be maintained by Lockheed Martin (non-MDNTB) personnel. Additionally, MDNTB will locally store spares and repairables in the geographic areas where C2BMC suites/systems are installed.

6.7.3 Training Facilities: While much of the training will be conducted via remote Computer Based Training, MDNTB In-Service Engineering (Training) will coordinate use of training facilities with respective locations where C2BMC hardware/software and equipment are deployed. MDNTB In-Service Engineering (Training) will participate in the MDA Integrated Training Working Group (ITWG) in order to manage, schedule, and provide training IAW STRATEGIC COMMAND DIRECTIVE (SD) 508-8. If coordinated use of a government facility cannot meet time or space requirements, then MDNTB In-Service Engineering (Training) will facilitate off-site training. Any off-site training will meet all security requirements necessary to facilitate effective instruction and will be supported by the MDNTB. All military-base training facilities requirements will be supported by the US Government. All training facilities for Vendor directed training (for their maintenance personnel) will be the sole responsibility of the Vendor providing the maintenance support. All training facilities required by US Government/Military maintenance providers (for GFE) are sole responsibility of the US Government.

6.7.4 Administrative/Office Facilities: Per the approved SID, the host facilities will provide a specified number of office spaces for CLS team members.

6.7.5 Laboratory Facilities: There are several lab facilities that support the spiral development of C2BMC:

- HWY 83, CO (integration lab). This is a Lockheed Martin (LM) facility. MDNTB members will coordinate facilities maintenance issues directly with on-site LM facilities maintainers (non-MDNTB members). LM will fund all facilities related maintenance efforts at this facility.
- Huntsville, AL (software lab). This is a Northrop Grumman facility. Lockheed Martin as the Prime Contractor negotiates all facility activities with Northrop Grumman. MDNTB members will coordinate facilities maintenance issues directly with on-site Northrop Grumman facilities maintainers within the scope of the negotiated agreement between LM and Northrop Grumman.
- Crystal City, Arlington, VA (Communications lab). MDNTB negotiates all facilities support with the leasing agent and other required contractors. The facilities support, as negotiated, will be administered by MDNTB Contracting personnel.

- JNIC:
  - Site #1 Current version Testing. The US Government will coordinate and fund all facilities maintenance issues.
  - Site #2 Beta Version Testing. The US Government will coordinate and fund all facilities maintenance issues.

6.7.6 Facility Modifications: Any and all existing facility modifications necessary to support C2BMC are identified in the site specific Installation Procedures.

6.7.7 Facility Security: All Program facility security requirements can be found in the System Security Authorization Agreement (SSAA). TEMPEST practices are required and the site should use National Security Telecommunications and Information Systems Security Advisory and Memorandum (NSTISSAM) 2-95 for guidance. Specific practices are included in the site specific SSAAs.

6.7.8 Program Agreements: Program agreements (including responsibilities and funding) and schedules required to provide necessary modified or new facilities are contained in the site specific Site Installation Plans (SIP), SIDs, CLS Appendices and Installation Procedures.

6.7.9 MDA Responsibilities:

- Fund and design facilities as described above.

6.7.10 Service Responsibilities: N/A

6.7.11 COCOM, Sub-Unified Commands, and National Command Operations Centers Responsibilities:

- Provide requisite facilities for C2BMC operations in the BMDS mission area.
- Provide power, cooling, shelter, physical security, and connectivity to the various communications networks required for C2BMC operations.
- Environmental compliance issues associated with C2BMC IT equipment hosted inside host facilities is the responsibility of the host.
- Provide adequate work space for Contractor Logistics Support (CLS) personnel.
- Provide secure storage facilities for C2BMC CLS spare/repair parts.

6.8 Security: There are no additional security requirements following C2BMC installation. C2BMC is being installed in existing Combatant Command (COCOM), Sub-Unified Command and National Command Operations Centers and will not drive additional security measures than what already exist in these facilities. An assessment has not been completed by the approving COCOM on all C2BMC sites/locations. A determination from USSTRATCOM should be made prior to transition/transfer per USSTRATCOM Directive 538-2.

6.9 Testing Strategy: MDA/NTB will perform C2BMC system level capabilities-based testing with each spiral release and report the results in a Block/Spiral Test Report. Additionally, MDA/NTB C2BMC will participate in BMDS holistic war games and exercises that demonstrate and validate the entire BMDS system capability and interactivity between the BMDS Elements.

6.10 Supportability Strategy

C2BMC maintenance and sustainment will be accomplished via CLS and a four-tiered maintenance concept. The maintenance roles and types of tasks to be performed at each tier of maintenance are captured in figure 4.

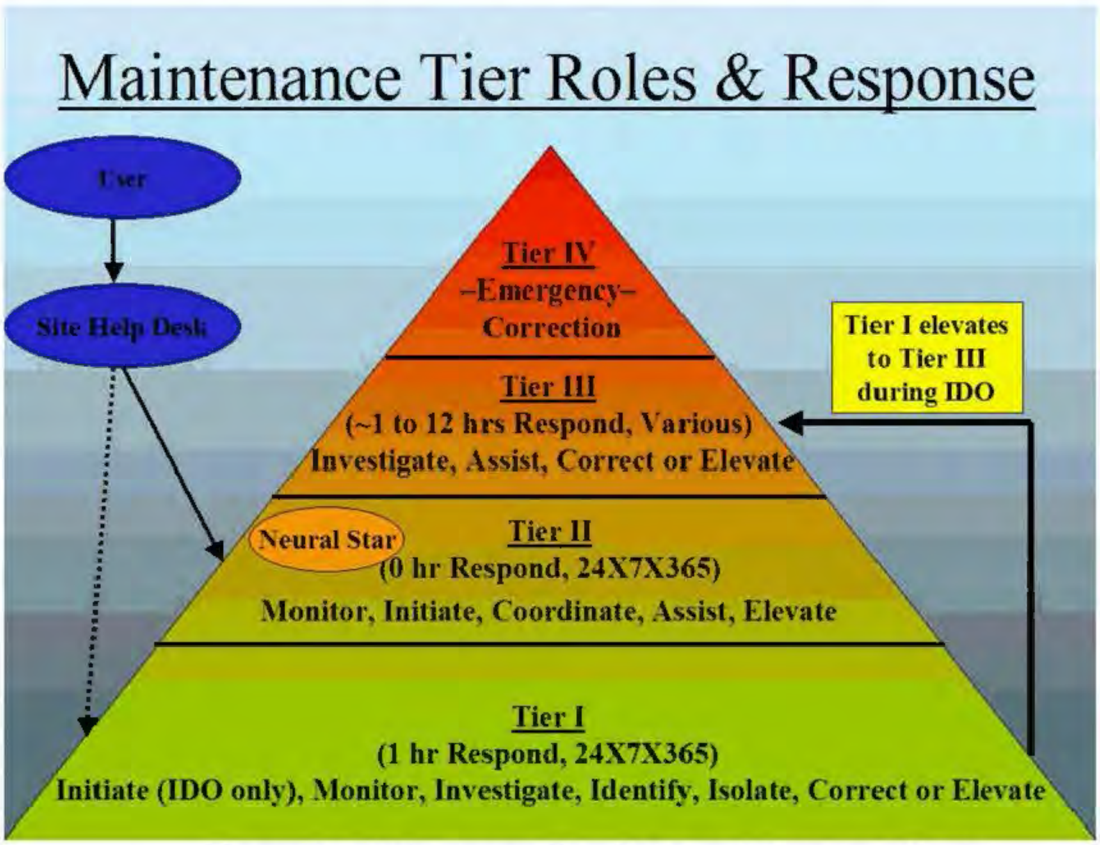

Figure 4 – Maintenance Tier Roles and Response Times

- Tier I maintenance will be performed by site-customized NTB CLS Teams.
- Tier II maintenance will be performed by the NTB C2BMC Centralized Help Desk.
- Tier III maintenance will be performed by 5 distinct groups of people (All NTB or commercial vendors):
  - NTB C2BMC “support by wire” Development Team.
  - COTS Hardware Vendors under a Support Agreement (includes GFE).
  - GOTS Hardware Vendors under a Support Agreement.
  - COTS Software Vendors under a Support Agreement.
  - GOTS Software Vendors under a Support Agreement.

- Tier IV maintenance will be performed by an "ad-hoc" task-organized team assembled to correct a critical or catastrophic failure that could not be solved otherwise.

Maintenance Support agreements are in place for every item of software and hardware in the C2BMC system. NTB Prime Contractor has purchased "Platinum Level" Support Agreements with all major software and hardware providers. The C2BMC software is supported by platinum-type service provided by MDNTB. Vendor response times vary depending upon the level of Support Agreement purchased by MDNTB. The C2BMC Program Office has warranties for all Commercial Off The Shelf (COTS) hardware and software and GFE hardware procured by MDNTB. The MDNTB Contracting Office has collected all of these warranties. There is no plan to monitor or administer the warranties, due to the fact that the comprehensive Support Agreements in place (and in the future) far exceed or will far exceed the coverage provided in the warranties. Though there is no formal warranty management, the warranty portion of the maintenance support agreement (more comprehensive) will be enforced by the CLS manager and the NTB CLS Team Leads with support from NTB Contracting. A detailed plan in the form of management of the maintenance support contracts can be found in the CLS plan. Government Off The Shelf (GOTS) software does not come with a warranty, but service agreements are established for all GOTS software products.

6.10.1 Spares/Repair Parts/Piece Parts. Generally, MDNTB Support Agreements with equipment vendors allow vendors to order, catalog, store, preserve, manage and issue (vendor owned stocks), locally. As need dictates, vendors will utilize available local stocks (if applicable) to support the availability of C2BMC. If a part is not available locally, the vendor will "reach back" into their respective supply chains for additional support. Vendor response times (not time to repair) vary depending on the negotiated service agreement. but as a guide, the major end item vendor's response times are within 4 hours.

6.10.2 Property Management and Inventory Management. The vendors will catalog all Spares/Repair Parts and Piece Parts. Once used, vendors will identify the spares/repair parts and the new parts will be added to the C2BMC Government Property Database and the Lockheed Martin Government Property Database. Items identified for repair will be maintained in both databases and tracked by the Site CLS lead and the C2BMC CLS Manager until the repairable is returned to MDNTB's control (to the local site or the C2BMC Inventory Warehouse, (Powers Building, Colorado Springs, CO). Items that are not repairable on-site will be turned over to the US Government. Upon the US Government accepting these items identified for disposal, those items will be removed from both US Government databases listed above.

6.10.3 MDA Responsibilities:

- Fund and implement the C2BMC maintenance and sustainment system described above.
- Provide CLS funding through FY-13.
- Where possible, transition C2BMC equipment maintenance responsibility to existing site maintenance contracts or other agencies (i.e. DISA).

6.10.4 Service Responsibilities: N/A
6.10.5 COCOM Responsibilities: N/A

7.0 CONTRACT STATUS

7.1 Current Contracts: C2BMC is being spirally developed by NTB for the MDA under an Other Transaction Agreement (OTA). The current OTA is Part 4 SOW that covers the period of performance 1 January 2006 through 31 December 2007 and is referred to as Block 06. The C2BMC product development follows a capabilities based Block and Spiral development process that strikes a balance between top-down allocation of system-level capabilities to C2BMC functions and the bottom-up leveraging of existent capabilities in related Elements.

7.2 Future Contracts: The Part 5 SOW covers the period of performance 1 January 2008 through 31 December 2009 and is referred to as Block 08. The Part 6 SOW covers the period of performance 1 January 2010 through 31 December 20011 and is referred to as Block 10.

8.0 PLAN FOR TRANSITION ACTIONS/MILESTONES

There has been no Service identified as the "Lead Service" for C2BMC transition/transfer purposes. Accordingly, there are no plans to transition or transfer C2BMC to a Service. There is an initiative where portions of C2BMC (e.g. Initial Qualification and Continuation Training and Equipment Maintenance) may transition to another entity/agency. JFCC-IMD will provide operational oversight for the C2BMC.

8.1 Schedule: Refer to Figure 1 C2BMC Roadmap for a basic program schedule. Future C2BMC installations are planned for United States European Command (EUCOM), United States Central Command, (CENTCOM), United States Forces, Japan (USFJ), United States Forces Korea (USFK), and Kenney Headquarters Pacific Air Operations Center (PAOC). Currently C2BMC systems are installed and operational in the following locations:

8.1.1 Full Suite Configuration

- USSTRATCOM (2 Suites)
- USNORTHCOM (2 Suites)
- USPACOM (1 Suite, 2nd Suite during FY-06)

8.1.2 Remote Suite Configuration

- Missile Defense Agency Operations Center (MOC)
- Peterson AFS
- Cheyenne Mountain Operations Center (CMOC)

8.1.3 Gateway Configuration

- USPACOM

8.1.4 Web Browser Configuration

- National Capital Region (NCR) – 4 Installs

- Site Activation Coordination Center (SACC)
- 14th AF Vandenberg
- Space and Missile Defense Command (SMDC)
- JFCC-IMD
- BMDS Watch Officer (BWO)

9.0 O&S FUNDING

C2BMC Sustainment Funding across the FYDP in Millions is:

	FY-06	FY-07	FY-08	FY-09	FY-10	FY-11	FY-12	FY-13
C2BMC Operations & Support	32.407	50.516	57.15	53.67	61.376	55.093	62.831	57.853
*** CLS Personnel**	7.662	7.564	10.564	7.903	11.77	7.058	12.049	7.412
*** Continuing System Improvements**	10.27	16.426	11.616	16.368	14.451	15.417	14.793	16.189
*** Sustaining Support**	6.03	17.79	26.105	20.52	25.926	23.256	26.54	24.421
*** Indirect Support (DISA)**	3.645	3.715	3.734	3.668	3.91	3.931	4.002	4.128
*** Unit Operations (COCOM)**	4.8	5.021	5.131	5.211	5.32	5.432	5.446	5.704

10.0 AGREEMENTS AND COMMITMENTS

Program agreements and associated reference material are amplified in the following documentation:

- PL-SA-0025 C2BMC ILSP A050, C2BMC Integrated Logistics Support Plan (ILSP), 10 November 2004
- PL-SA-0026 C2BMC CLS Plan A051, C2BMC Contractor Logistics Support (CLS) Plan, 20 October 2004
- ADRL A-0021: Deployment and Logistics Support Plan: LDO C2BMC Element System Activation Plan.
- ADRL A-008: Element Capability Baseline.
- ADRL A-0018: MDNTB Configuration Management Plan, December 4, 2003.
- CJCSI 6510.01C, Information Assurance and Computer Network Defense, 1 May 2001.
- CJCSM 6510.01, Information Assurance and Computer Network Defense, 25 Mar 2003.
- NACSIM 5103, Guidelines for Facility Design and RED/BLACK Installation, 30 Jun 82
- DODD 8500.1, Information Assurance, 24 Oct 2002.
- DODI 8500.2, Information Assurance Implementation, 6 Feb 2003.
- System Capability Specification (SCS) Volume 1: Block 2004, April 28, 2003 MDNTS S-0109-2.1 (April 28, 2003).
- MDNTB Part 3 Statement of Work
- ADRL A-027 Spiral Test Plan
- ADRL A-029 Block/Spiral Test Report
- MDA Directive 1025.1 dated October 14, 2004

- USSTRATCOM Directive 538-2

11.0 REFERENCES

- PL-SA-0025 C2BMC ILSP A050, C2BMC Integrated Logistics Support Plan (ILSP), 10 November 2004
- PL-SA-0026 C2BMC CLS Plan A051, C2BMC Contractor Logistics Support (CLS) Plan, 20 October 2004
- MDNTB Part 3 Statement of Work
- USSTRATCOM Directive 538-2

12.0 ACRONYMS

- ATP Authority to Proceed
- BMD Ballistic Missile Defense
- BMDS Ballistic Missile Defense System
- BOM Bill of Materials
- BWO BMDS Watch Officer
- C2BMC Command & Control Battle Management & Communications
- CBT Computer Based Training
- CFE Contractor Furnished Equipment
- CLS Contractor Logistics Support
- CM Configuration Management
- CNE Computer Network Equipment
- CNIP C2BMC Network Interface Processor
- CNIPRNet CNIP Robust Network
- COCOM Combatant Commander
- CONOPS Concept of Operations
- COTS Commercial Off-The Shelf
- CY Calendar Year
- DISA Defense Information Systems Agency
- DISN Defense Information System Network
- DMETS Distributed Multi-echelon Education and Training System
- EWS Enterprise Workstations
- GFE Government Furnished Equipment
- GMD Ground-Based Midcourse Defense
- GOTS Government Off-The Shelf
- ILSP Integrated Logistics Support Plan
- IMD Integrated Missile Defense
- ITWG Integrated Training Working Group
- JDP Joint Defensive Planner
- JFCC-IMD Joint Functional Component Command – Integrated Missile Defense
- JNIC Joint National Integration Center

- LM Lockheed Martin
- MDA Missile Defense Agency
- MDNTB Missile Defense National Team B
- MDNTB(I) Missile Defense National Team B Industry
- MDNTS Missile Defense National Team S
- MDNTS(I) Missile Defense National Team S Industry
- MOC Missile Defense Agency Operations Center
- MOU Memorandum of Understanding
- MTT Mobile Training Teams
- NCR National Capital Region
- NSSI National Security Space Institute
- NTB National Team B
- NSTISSAM National Security Telecommunications and Information Systems Security Advisory and Memorandum
- PAOC Pacific Air Operations Center
- PHS&T Packaging, Handling, Storage, and Transportation
- O&M Operations & Maintenance
- O&S Operations & Support
- OO Object Oriented
- OTA Other Transaction Agreement
- POP Period of Performance
- RDT&E Research Development Test & Evaluation
- SACC Site Activation Coordination Center
- SCS System Capability Specification
- SETA Scientific & Engineering Technical Assistant
- SIBMD Single Integrated Ballistic Missile Dataset
- SID Site Implementation Document
- SIP Site Implementation Plan
- SMDC Space and Missile Defense Command
- SOW Statement of Work
- SSAA System Security Authorization Agreement
- SSQ Site Survey Questionnaire
- TSPR Total System Performance Responsibility
- TTP Tactics, Techniques and Procedures
- USC United States Code

13.0 DEFINITIONS

13.1 Composite C2BMC Element: The composite C2BMC element of the BMDS is the integrating and, hence, overarching BMDS element. It includes capabilities physically located at Combatant Commander Sites as well as at Element installations. Each BMDS Element may consist of weapon, sensor, and/or C2BMC components. The

Element's C2BMC capabilities pertinent to the BMDS are part of the composite C2BMC element. All Elements in the BMDS can be broken down into one or more components. Typically, three types of components are discussed: weapons, sensors, and C2BMC. The composite C2BMC element contains only the C2BMC component type, however, a number of C2BMC components operate together to form the composite C2BMC element as shown in Figure 5. This illustration points out how the system-level C2BMC components in all BMDS Elements are allocated as both components of the hosting Element as well as the composite C2BMC element. Element-internal C2BMC components, however, are allocated solely to the hosting Element.

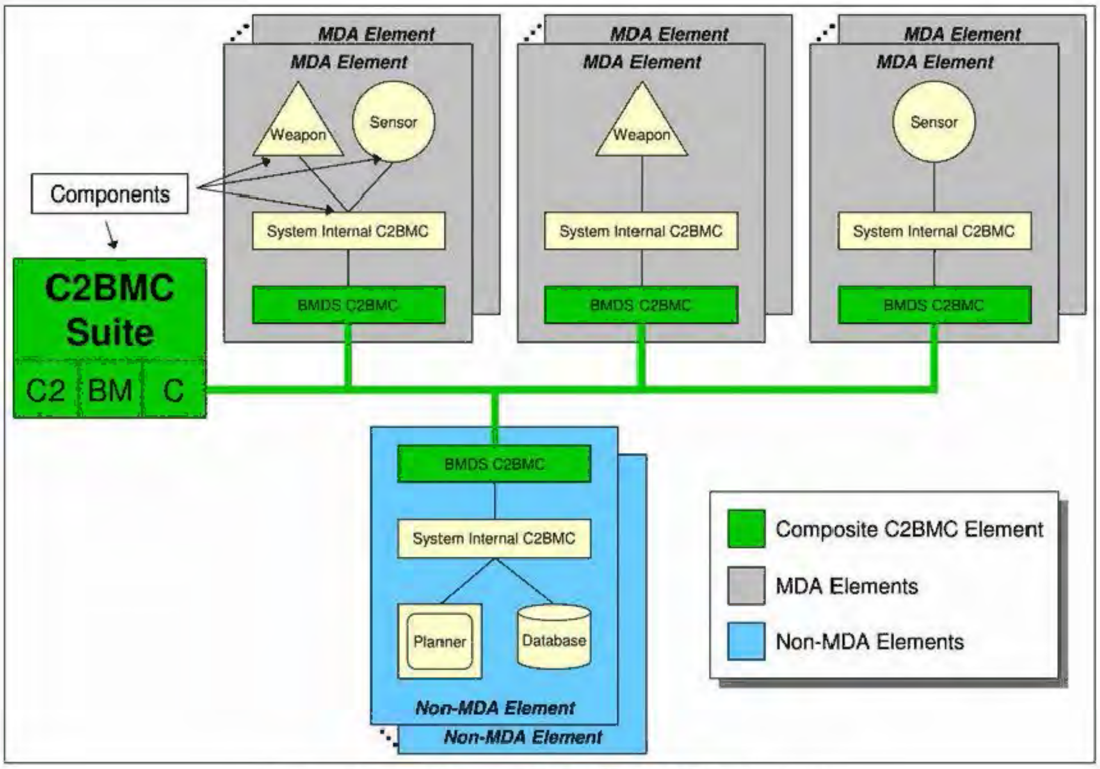

Figure 5 – Composite C2BMC Element

For example, the C2BMC component of the Ground-Based Midcourse Defense (GMD) Element can be split into capabilities necessary for interoperation with other BMDS Elements and capabilities required purely for internal GMD functions. The former are part of the composite C2BMC element, and the latter are not. All C2BMC capabilities with the GMD Element will be developed and provided by GMD as directed by MDA. MDNTB(I), MDNTS(I), and GMD will jointly develop requirements for the composite C2BMC element capabilities resident in the GMD Element.

Following the graphical representation of this concept in Figure 5, the items in green represent the composite C2BMC element for the BMDS, and their characteristics, functions, and performance shall be as specified by MDNTB(I), in collaboration with MDNTS(I), in coordination with the Element program, and as directed and funded by

MDA. The items in gray are weapon and sensor system Elements of the BMDS under MDA control. Each Element program controls the characteristics, functions, and performance of its system, in compliance with MDA direction. Items in blue are non-MDA systems that support the BMDS. That support will include provision of components for the composite C2BMC element as agreed by the support program, with characteristics, functions, and performance specified by MDNTB(I). Achievement of the necessary capabilities in non-MDA support systems and programs will require Government-to-Government negotiation between MDA and the non-MDA program.

13.2 C2BMC Suite: The C2BMC Suite is the physical component of the composite C2BMC element present at a location, e.g., a theater command center. The physical form of the Suite, i.e., hardware, software, and communications connectivity, will vary depending on the required capabilities to fulfill the roles and responsibilities of the hosting site. For example, one site might require four workstations to accommodate its operator positions while another might require only two; or, a remote site may require unique communications equipment in order to access a communications network.

13.3 C2BMC Network Interface Processor (CNIP): The C2BMC Network Interface Processor illustrated in Figure 6 and formerly known as the C2BMC Agent is a design concept under development for initial implementation in Block 2006. The root concept of the CNIP is to provide a common interface between the C2BMC Suite and sensor and weapons assets deployed globally. Data transfers between the C2BMC Suite and CNIP-enabled Elements will occur between CNIPs on either side of the interface. Data exchanges between CNIPs will occur over the CNIP Robust Network (CNIPRNet). Data conveyed on this interface will nominally be drawn from the Single Integrated Ballistic Missile Dataset (SIBMD), which provides the source information – such as track and asset information and status, weather data, etc. – behind the tabular and graphical C2BMC user displays. With the standardized CNIP-to-CNIP interface fully under C2BMC control, interface modifications can be realized in a fraction of the time compared with each Element having to update its interface processing uniquely. This benefit then simplifies the process of developing interfaces to pass new types of data essential to BMDS integration.

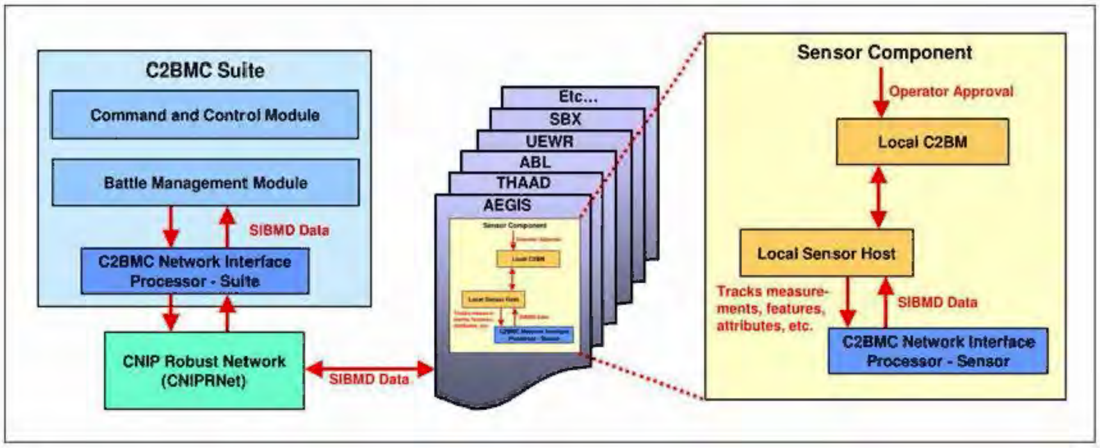

Figure 6 – C2BMC Network Interface Processor

14.0 LIST OF FIGURES AND TABLES

BMDS Transition Plan, Annex I

SPACE TRACKING & SURVEILLANCE SYSTEM (STSS)

MDA/SS

Colonel Chris Pelc, System Program Director

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EXECUTIVE SUMMARY

The Space Tracking and Surveillance System (STSS) is a Missile Defense Agency (MDA) program for tracking ballistic missiles during all phases of flight to enable successful engagement by MDA weapon systems. STSS extends the capability of the Ballistic Missile Defense System (BMDS) by providing accurate and timely track and supporting data for ballistic missile attacks on a global basis. The goals for the STSS system include BMDS feature aided tracking, discrimination, tactical parameter data on threat missiles including missile typing and hit/kill assessment inputs.

STSS is not a candidate for transition in the time period of the 08 POM (FY 08-13), though it will be a candidate for the 10 POM (FY 10-15). Transition planning, and allocation of accompanying funding will need to take place in the years preceding such a transition. USAF is the lead Service for STSS.

One significant change that will take place upon transition is the migration from operation from the Missile Defense Space Experimentation Center (MDSEC) to a yet to be specified USAF operating location. The USAF ground station facility will require funding in the FY12-13 timeframe. MDA and USAF have initiated discussions that will result in a better understanding of this issue.

BMDS Transition and Transfer Plan
Annex I
Space Tracking and Surveillance System Transition Plan

1.0 PURPOSE

This Plan defines the preliminary conditions and timing for the transition of the BMDS component Space Tracking and Surveillance System (STSS) to a Military Department or Service for operations and support and procurement. This plan includes references to STSS Block 06 --research and development of two prototype satellites, Block 08 --Ground Segment and software upgrade, and Block 12(O) – initial operational constellation.

2.0 FACTS AND ASSUMPTIONS

2.1 FACTS

- Missile Defense is the sole mission of the STSS constellation -- contributions to other missions will be provided "as capable".
- There is no transition of the Block 2006 satellites anticipated. MDA will continue to operate these satellites to support BMDS testing, until satellite end of life.
- Block 2006 STSS ground station provides primary mission data solely to the C2BMC for distribution to other BMDS elements. Tasking for, and dissemination of data for other missions is expected to flow through the C2BMC.
- STSS SPO will involve HQAFSPC in discussions of the Block 2012(O) program as it takes shape
- MDA will continue to develop enhancements to the STSS constellation, in coordination with AFSPC, the operator of the constellation.

2.2 ASSUMPTIONS

- Data from Block 2006 and 2012(O) satellites will be of interest to HQAFSPC for other missions.
- After transition, Block 2012(O) will not be operated out of the Missile Defense Space Experimentation Center (MDSEC). HQ AFSPC will work with MDA to develop the STSS operational ground architecture.
- After transition, AFSPC will operate and maintain Block 2012 (O).
- Upon successful transition, AFSPC will manage sustainment of Block 2012 (O).

- Transition of the STSS SPO, which will continue to manage STSS enhancements, to the USAF is not anticipated.
- Integration of STSS with SBIRS High has yet to be determined.
- The AFSPC desired end state is for an integrated SBIRS processing system which would include STSS in the SBIRS High ground architecture. Initial deployment may not include STSS being fully integrated, but planning will account for this eventuality.

3. 0 OPEN ISSUES

Planning for STSS transition has just begun. Location of the ground operations facility has not been identified, nor funding established for any new facility. MDA's STSS Block 2012(O) funding profile does contain funds to develop the ground hardware and software (~$2B). MDA and USAF have initiated discussions that will result in a better understanding of this issue. In addition, to support the FY07 PB request and future budget submissions, MDA will be working with the OSD Cost Analysis Improvement Group (CAIG) to enable them to provide an independent cost estimate for the Block 2012 (O) program.

4.0 STSS PROGRAM/SYSTEM DESCRIPTION

The STSS program is the space-based tracking sensor for the BMDS. The program is being developed by MDA as a capability based spiral development effort. The System Program Office for STSS is an MDA office (Space Sensor – SS) located at Los Angeles Air Force Base (LAAFB), staffed and supported by the USAF. The first STSS spiral capability is delivered in Block 2006. The Block 2006 delivery consists of two R&D satellites in low earth orbit (1350km) with acquisition and tracking sensors covering the visible and infrared spectrum. The two satellites will have a direct (cross-linked) communication system and pass data to the BMDS through the Air Force Satellite Control Network (AFSCN). The STSS ground segment Operations Center for Block 2006 and any future R&D spirals will be located in the Missile Defense Satellite Experimental Center (MDSEC), located at the Joint National Integration Center (JNIC) in Colorado Springs, CO.

The Block 2006 satellites will be operated by STSS contractor personnel (Northrop Grumman Space Technology) and contribute to BMDS flight-testing as their primary mission. Once on orbit, STSS performance will be characterized through a series of flight tests with ground, airborne, resident space objects, and ballistic missile targets. In addition to modeling and simulation, and targets of opportunity, two long-range and two short-range ballistic missile targets are being procured by the STSS program for dedicated flight tests. STSS will also support the Test Bed through participation in BMDS system testing. The purpose of the flight tests is to demonstrate the ability to meet the requirement to close the fire control loop with BMDS interceptors using space based infrared tracking information. This requirement drives the accuracy and timeliness requirements on the system. The Block 2006 satellites may be able to contribute data to other missions on an as-capable, non-interference basis.

In Block 2008, MDA plans to update the Block 2006 STSS ground segment Operations Center and software, based on on-orbit experience with the satellites and data processing. These upgrades will help optimize the processing and use of STSS data. No new space hardware is planned for this spiral.

In the summer of 2004, based on successful ground testing of the Block 2006 sensors, and the future needs of the BMDS architecture, the Missile Defense Agency (MDA) made the decision to begin procuring an operational constellation of STSS satellites. This portion of the program is known as STSS Block 2012 (Operational), or Block 2012 (O). The Block 2012 (O) program will leverage the on-orbit experience with the Block 2006 satellites, and provide global tracking for the BMDS.

The operational STSS capability will be developed and deployed using a spiral development approach. The current plan is to provide an acquisition approach that allows phased deployment of STSS satellites with increasing performance and technical sophistication, in concert with an operational ground system that can operate heterogeneous satellites and accommodate satellite constellation growth. In addition, this approach provides decision points that allow the incorporation of technology advances as they become available. At this point AFSPC will take over the operation and sustainment of Block 2012.

5.0 PROGRAM STATUS

The Block 2006 satellites are based on existing hardware from the SBIRS Low Flight Demonstration System (FDS) Program. The Block 2006 effort entails the refurbishment, integration, test, and launch of this hardware, and development of the STSS Ground Segment. A dual satellite launch is planned for 2QFY07 from Cape Canaveral, FL, using a single Delta II launch vehicle. The Block 2006 has been on contract since 2002, and is proceeding ahead of schedule and at cost.

The Block 2008 effort will be procured through a modification to the Block 2006 contract. Contract action is anticipated in mid FY07.

MDA is currently developing the technical composition and acquisition strategy for the operational constellation – STSS Block 2012 (O). Plans are for a separate operating location (TBD). However, the initial (two) satellites will be operated from the MDSEC until transition is determined. Funding for the effort begins in FY06 (< $1M), followed by significant funding in FY07-11. Contract award is anticipated in 4QFY06/1QFY07, with a Preliminary Design Review planned approximately one year after contract award. Program plan calls for a full year of Block 2006 on-orbit satellite operation prior to Block 2012 (O) CDR. First launch – based on the Government program plan – is anticipated in the FY12 timeframe. Size of constellation and sensor composition are classified. Composition of the satellites is expected to evolve during the build up of the constellation.

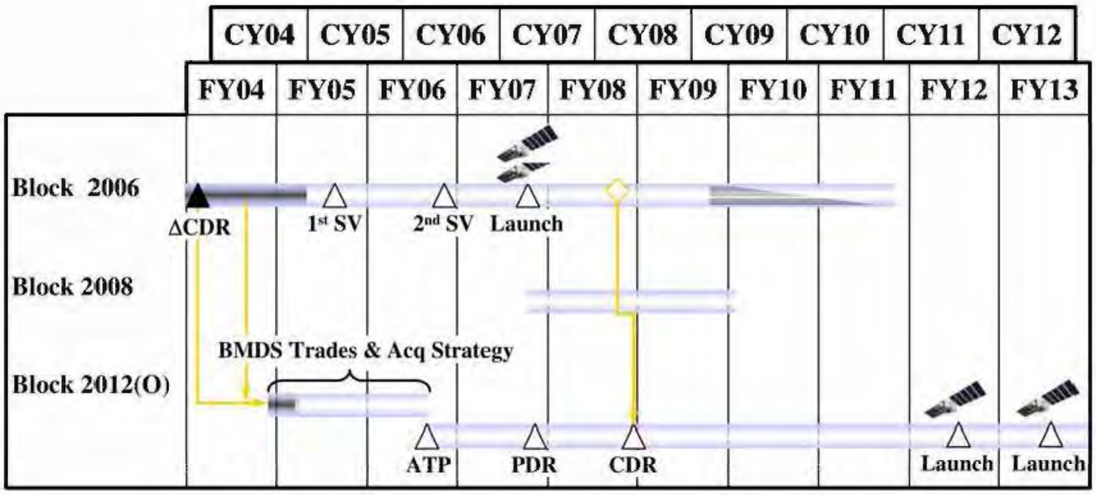

Figure 1, STSS Program Evolution

6.0 ORGANIZATIONAL RESPONSIBILITIES

6.1 MDA

MDA establishes the desired system capabilities, requirements and policies, provides funds, and manages all aspects of the STSS acquisition program. MDA will continue to operate all research and development assets. MDA will retain control of research and development system operations, and work with AFSPC to consider the affordability of modifications to better contribute to other missions.

MDA will provide initial individual qualification training for operation and sustainment of element hardware and software the first time a user receives it, for concepts, principles, and high-level policy considerations associated with employment of the BMDS. The foregoing includes updates as spiral development of the BMDS brings forth new information or other changes.

MDA will support the Services and COCOMs in their Title 10 USC responsibilities to perform crew, team and higher collective training, to train replacement personnel, and to maintain operational task proficiency.

MDA will fund the Air Force for the initial development of and follow-on crew training for the STSS and updates to Air Force Training Support Plans (TSPs). MDA will also coordinate both Element and above Element training with AFSPC and AETC Training Systems Development Teams and ensure that both USSSTRATCOM and AFSPC applicable training directives are utilized.

6.2 HQ AFSPC

HQ AFSPC/DRF will collaborate with MDA on capability implementation and identify Space Operations requirements to MDA, to potentially include

preparation of POM submissions to fund all operational/sustainment needs and communication links.
The Air Force or combatant command will train replacement operational personnel and maintain their operational task proficiency. The maintenance of operational proficiency includes the training of crew, team and higher collective tasks. These responsibilities complement the MDA responsibility to provide initial individual qualification (e.g., new equipment training, install training, initial individual qualification, and the like). The Air Force will prepare a POM submission to fund the conduct of BMD pipeline input training to include sustainment, leadership, crew replacement, etc., IAW prescribed TSP and doctrine.

6.3 SMC

USAF provides manpower and facilities to the STSS SPO per the MOA between MDA and USAF/SMC (dated June 2003).

6.4 USSTRATCOM

STRATCOM provides the Concept of Operations (CONOPS) that applies to the entire Operational BMDS and is responsible for providing qualification and/or certification requirements in the operation of BMDS. Training & Training Support (TTS) for the STSS research & development constellation will be handled by the contractor, with Block 12(O) handled by AFSPC.

United States Strategic Command (USSTRATCOM), supported by other organizations, is responsible for the institution and oversight of a training program for the STSS Program. MDA provides training in support of organizations with Title 10 United States Code (USC) authority that will employ the BMDS. For the purpose of avoiding gaps in BMDS training and ensuring coherence among all BMDS-related training programs, USSTRATCOM has delegated to MDA/TRJ the responsibility for oversight and coordination of training plans and training development related to the BMDS and its parts. The STSS program is adhering to USSTRATCOM "Global Ballistic Missile Defense (GBMD) Training Concept of Operations"(CONOPS) Version 1, dated 11 April, 2005. The GMBD CONOPS coordinates Ballistic Missile Defense (BMDS) training activities of the Combatant Commanders (COCOMS), MDA, the services, and its components. The STSS program is working closely with the research and development contractor to ensure that the foundation of standing procedures for the BMDS training community identified in the CONOPS are being adapted in the contractor training currently being developed by NGST. These training development and execution tasks will be performed by MDA organizations, Services, and COCOMs in a coordinated manner through adherence as referenced in MDA Directive 1025.1 dated October 14, 2004.

7.0 CONTRACT STATUS

- Block 2006 is on contract through the end of FY08.
- Block 2008 will be put on contract through modification of the Block 2006 contract in mid FY07.
- Block 2012 (O) contract award is planned for 2QFY07. Acquisition strategy is under development.

8.0 PLAN FOR TRANSITION ACTIONS/MILESTONES

The established transition actions and milestones have been discussed in earlier sections of this annex. As the STSS program gets closer to transition more specific details towards the actions and milestones will be identified and incorporated into the annex.

9.0 FUNDING (PB06 – Feb 2005)

POM Synchronization arrangements: STSS development and fielding is provided by MDA throughout the FYDP. It is anticipated that MDA will continue to fund the development of STSS satellites, ground segment upgrades and potential operations capability through initial build up of an operational system. MDA and AFSPC will work to reach a common understanding of future year funding requirements to bring system to operational status, to include funding allocation.

($M, RDT&E)

	FY06	**FY07**	**FY08**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**
MDA								
Block 2006	231.2	247.5	73.7	92.0	89.2	41.2		
Block 2008		35.0	29.3	24.1	14.1	13.8		
Block 2012 (O)		97.0	309.2	635.3	836.7	816.5	745.0	677.0
USAF					TBD	TBD	TBD	TBD

TABLE 1 FUNDING

Note: All funding data provided in this plan and its annexes is preliminary and predecisional, subject to change.

10.0 PLAN FOR TRANSITION ACTIONS/MILESTONES

- STSS SPO and AFSPC to find appropriate opportunities for AFSPC to get familiar with the STSS program, particularly the planned capabilities of Block 2006, and requirements for Block 2012(O). **Current, ongoing activity**.

- AFSPC to make a determination as to what STSS Block 2006 data is of interest, then AFSPC, STSS SPO and MDA/BC to assess if this data is available through planned connectivity through C2BMC. **Target assessment – Spring 2006**.

- STSS SPO to explore mechanism for external tasking through the C2BMC of Block 2006 sensors on non-interference basis with BMDS testing. **Target assessment -- Spring 2005**

- STSS SPO to develop initial and evolutionary manning plan for Block 2012 (O) constellation as part of acquisition strategy development. **Target – include in Block 2012 RFP. – Mar 2006.**

11.0 AGREEMENTS AND COMMITMENTS

Space Tracking and Surveillance System Transfer Plan (USAF to MDA) USD/AT&L, dated 31 March 2003

MDA – SMC MOA for the Management of the Space Tracking and Surveillance System (STSS) and LASER Technology Development Programs: dated June 6, 2003.

12.0 REFERENCES

National Security Space Acquisition Policy, Number 03-01, dated 27 December 2004, SAF/USA documents and provides acquisition process guidance for the Department of Defense (DoD) entities that are part of the National Security Space (NSS) team including STSS.

13.0 ACRONYMS

CONOPS	Concept of Operations
FDS	Flight Demonstration System
GEP	Ground Entry Points
HQAFSPC	Head Quarters Air Force Space Command
MDSEC	Missile Defense Satellite Experimental Center

NSS	National Security Space
SBIRS	Space Based Infrared System
SMC	Space and Missile Center
SPO	System Program Office
STSS	Space Tracking and Surveillance System
USSTRATCOM	United States Strategic Command

14.0 DEFINITIONS

15.0 LIST OF FIGURES AND TABLES

BALLISTIC MISSILE DEFENSE SYSTEM
TRANSITION AND TRANSFER PLAN

Annex J

Airborne Laser
(ABL)

Missile Defense Agency/AL
1350 Wyoming Blvd SE
Albuquerque, NM 87117

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EXECUTIVE SUMMARY

The Airborne Laser Program will design, build, test, and eventually field a megawatt-class chemical-oxygen-iodine laser mounted aboard a Boeing 747-400F aircraft. ABL's primary mission will be to acquire, track, and kill enemy ballistic missiles (BMs) during the boost phase of flight. Destroying ballistic missiles in the boost phase means threats are eliminated before having an opportunity to deploy reentry vehicles, sub-munitions, or countermeasures.

ABL integrates three major subsystems (Laser; Beam Control; and Battle Management, Command, Control, Communications, Computers and Intelligence (BMC4I)) into a modified commercial Boeing 747-400 aircraft. The ABL program also includes ABL-specific ground support equipment.

The development of the first ABL weapon system test bed will be accomplished by incrementally stepping through all the key knowledge points (increasing degrees of integration and testing of the integrated weapon system denoting significant levels of accumulated understanding) that confirm the ABL's viability.

This annex is organized to highlight the steps necessary to initiate transition and complete the transfer of the **ABL capability, platforms, and program** to the Air Force (see Section 2.1 Facts and Key Transition Events). The KTEs are:

- Initiate Transition Planning of ABL for eventual transfer to USAF
- Transition an initial ballistic missile defensive capability after system demonstration.
- Deliver an initial operational platform to the USAF
- Transfer the ABL program to the USAF

This annex further describes the ABL program and system, its current status in development, and the organizational responsibilities expected of the Missile Defense Agency (MDA), the United States Air Force (USAF), and Combatant Commanders (COCOMs).

Executive Highlights:

- ABL is not a candidate for transition during the FY08-13 POM timeframe.
- There are currently no known unfunded requirements for MDA or the USAF; however, planning for the 2nd Test ABL (T-2) is under revision while the ABL program focuses on near term knowledge points leading up to a successful lethal demonstration in 2008 by the 1st aircraft (T-1).
- There are no open executive-level issues for ABL.

Funding:

The current MDA fiscal environment focuses the ABL T-1 program on near term knowledge points before any investment is made on the second aircraft (T-2). The initial funding for T-2 has slipped from FY07 to FY09 to reflect this near term focus philosophy/direction. Air Force funding for ABL Production activities is also under revision and may slip accordingly.

MDA.

Fiscal Year	2004	2005	2006	2007	2008	2009	2010	2011
Total Funding ($M)		$447.9	$454.7	$598.9	$542.6	$417.4	$416.4	$647.8

Air Force.

Fiscal Year	2004	2005	2006	2007	2008	2009	2010	2011
Total Funding ($M)		$0	$0	$0	TBD	TBD	TBD	TBD

Key dates through the remainder of the ABL Test Schedule are shown below. The dates for the 2nd aircraft are "**To Be Reviewed (TBR)**" pending lethal shootdown consistent with the MDA/AL funding allocation as of 01 Feb 2006.

	Approx. Date
Industrial Sustainment Contract	FY07
ABL T-1 Capability Increment 1 Demonstration (Shootdown):	NET 2008
ABL T-2 "Green" Aircraft Order	TBR
Long-Lead Procurement Contract	TBR
Procurement of "Green" aircraft for first production ABL (ABL P-1)	TBR
ABL T-2 System Demonstration (Shootdown)	TBR
ABL P-1 Delivery	TBR
ABL P-2 to P-7 Delivery	TBR

Note: all T-2 and Production activities are predicated on meeting T-1 knowledge points and ultimately lethal demonstration.

Annex J
BMDS Transition and Transfer Plan
BMDS Airborne Laser

1. PURPOSE

This annex is designed to outline the transition and transfer process of the Airborne Laser (ABL) weapon system and its program office from the Missile Defense Agency to the United States Air Force. Close coordination with several offices within the Missile Defense Agency (MDA), the United States Air Force (USAF), and Combatant Commanders (COCOMs) will be critical to successfully achieve transition of a boost-phase missile defense capability to the warfighter. The first two aircraft of the ABL Research, Development, Test & Evaluation (RDT&E) phase are in a category that are available at some point of technical maturity for operational use in a contingency or emergency basis, with the provision to be returned to MDA for further testing and completion of the RDT&E phase. The third aircraft of the series will be the first to transition to the gaining service as the first production platform.

2. FACTS AND ASSUMPTIONS

2.1 Facts

The following tables list four **Key Transition Events (KTEs)** with the steps necessary to accomplish successful Transition and eventual Transfer of the Airborne Laser Program from MDA to the United States Air Force (gaining Service). Each major task and subtask is briefly described with the Office of Primary Responsibility (OPR) listed first and the office(s) or agency (ies) for primary coordination (Coord) underneath.

2.1.1 Table J-2.1 Key Transition Event-1: Initiate Transition Planning.

Table J-2.1
KTE, Tasks, Subtasks, Description, and OPR/Coordination*

KTE	Task	Subtask	Description	OPR/Coord
1			Initiate Transition planning of the Airborne Laser Program for eventual Transfer to the United States Air Force	**SPO** **ACC**
	1-1		Convene initial Transition Conference to include ACC (SMO), MDA/AL (SPO), USSTRATCOM, and Boeing	**SPO, ACC/** **MDA, SAF/AQ,** **AF/XORC** **JFCC-IMD**

* Note: "SPO" refers to the Airborne Laser System Program Office (MDA/AL). "ALIL" indicates the Logistics Branch within the Airborne Laser SPO.

KTE	Task	Subtask	Description	OPR/Coord
	1-2		Draft and sign an agreement (MOA) between Air Combat Command, Commander, USSTRATCOM and MDA/AL that outlines: 1. Eventual employment of the Airborne Laser 2. Number of aircraft required to meet those scenarios 3. Proposed POM amounts	**SPO, ACC/ SAF/AQ JFCC-IMD STRATCOM/J85**
		1-2-1	Obtain concurrence with MDA/D on agreements negotiated by MDA/AL with the Air Force and/or other governmental agencies.	**MDA/D/TR/SE SPO**
		1-2-2	Coordinate with JFCC-IMD and ACC on how to clarify process by which USAF is to be advised of warfighter procurement requirements subsequent to the MDA RDT&E Fielding process.	**SPO, ACC/ JFCC-IMD SAF/AQ**
		1-2-3	Work with the Air Force to secure force structure to support ABL squadron development and deployment through mandatory JCIDS and Air Force CIDS processes.	**SPO, ACC SAF/AQ**
		1-2-4	Ensure security and force protection requirements are embedded in transition costs.	**SPO**
	1-3		Draft and execute the ABL Acquisition Strategy	**SPO**
	1-4		Write three memoranda documenting the transition of Block A ABL capability to the Air Force. The first draft memo from Director, MDA to OUSD (AT&L) via the Assistant Secretary of the Air Force (SAF/AQ) for Acquisition, documents MDA's intention to transition ABL to the Air Force. The second memo will inform OSD when the transition will commence and conclude. SAF/AQ will send the third memo to USD (AT&L) via MDA, accepting the capability for the Air Force.	**SPO, ACC MDA SAF/AQ**
		1-4-1	Further clarify definitions and timing of the USD (AT&L) memo of XX Sep 05 (use date of release of the AT&L memo) that names the Air Force as the Lead Military Department on the ABL Program.	**SPO, ACC MDA/TR**
	1-5		Coordinate with Air Force to define the desired operational capability in terms of personnel, equipment, and unit structure, threat capability, operational doctrine, technology and history.	**SPO, ACC SAF/AQ**
		1-5-1	Focus on force development through doctrine, organization, training, materiel, leadership, personnel, and facilities (DOTMLPF) requirements to deliver useful capabilities.	**SPO, ACC**
	1-6		ACC has the lead in the development of operational employment concepts to facilitate transition planning and continue RDT&E efforts.	**ACC**
		1-6-1	Coordinate with ACC to ensure availability of operational concepts to MDA 2-ltrs.	**ACC MDA**

KTE	Task	Subtask	Description	OPR/Coord
		1-6-2	ACC will work closely with MDA throughout the development process to ensure a thorough understanding and appreciation of new capabilities in order to update BMDS doctrine prior to element/component activation.	**ACC MDA/TR**
	1-7		Program, budget, and advocate ABL procurement and operational force structure requirements.	**SPO, ACC**
	1-8		Conduct Integrated Logistics Support activities to support force development and sustainment of activation of BMDS element/component capabilities.	**SPO, ACC MDA ILST, ALIL IPT, Boeing**
		1-8-1	Conduct or participate in BMDS activation in support of operational use of RDT&E capabilities. Provide technical data required to support force development and sustainment of activated BMDS element activities.	**SPO AETC, ACC, IPT, Boeing**
		1-8-2	Ensure element/component interoperability with BMDS.	**SPO Boeing, BMC4I IPT**
		1-8-3	Develop Reliability, Maintainability, & Availability (RM&A) metrics, report readiness criteria and performance metrics.	**SPO/ALIL IPT**
		1-8-4	Establish manning requirements (including contractors as required) for activated element/components formed around program developmental systems	**ACC, SPO AETC, IPT, Boeing**
		1-8-5	Develop initial technical and operator training (to include training devices and training support materiel).	**ACC, SPO AETC, Boeing**
		1-8-6	Reflect operational support requirements in contracts, as appropriate.	**SPO (prior to transition), ACC (after transition)**
		1-8-7	Develop O&S cost estimates for operating activated assets	**SPO, ACC Boeing**
		1-8-8	Work with MDA/SE to characterize all of ABL's capabilities to include support capabilities.	**SPO**
		1-8-9	Manage the initial support training development for activation, transition, and transfer.	**SPO, ACC**
		1-8-10	Assist MDA/SE in the development of RM&A criteria.	**SPO, ACC MDA/SE**
		1-8-11	Set the technical configuration of the first production ABL.	**SPO**

2.1.2 KTE-2. Table J-2.2 Key Transition Event-2: Transition an Initial Ballistic Missile Defensive Capability to the Air Force.

Table J-2.2
KTE, Tasks, Subtasks, Description, and OPR/Coordination

KTE	Task	Subtask	Description	OPR/Coord
2			Transition an initial ballistic missile defensive capability after a full system demonstration. (Block 2010 to Block 2014)	**SPO, ACC MDA/TE SAF/AQ**
	2-1		Establish criteria for determining a capability is present for transition.	**ACC, SPO JTAMDO**
		2-1-1	Plan for permanent activation through the methodical preparation for the delivery of a capability to the warfighter for indefinite usage.	**ACC, SPO MDA/D SEC**
		2-1-2	Work with MDA/TR to develop and update the Capabilities and Limitations of ABL.	**SPO, ACC MDA/TR**
		2-1-3	ACC, in coordination with MDA/AL, will prepare and document an organizational structure for the sustained combat operation and logistical support of the activated ABL.	**ACC, SPO**
		2-1-4	Assist SECAF with advice on desired capabilities, operational approaches, and suitability and supportability issues.	**ACC AF/IL and AF/XO**
		2-1-5	Identify required Service support for activation of the production ABL.	**ACC, SPO, Boeing**
		2-1-6	Provide forces and resource, as appropriate, to support fielding of a defensive capability.	**ACC**
		2-1-7	Finalize the organization document that will describe the capabilities that are provided and will include a listing of required personnel and equipment. The document will: 1. Assign personnel and equipment to sections 2. Describe the role and responsibilities of each section 3. List personnel by skill, experience, security clearance, special qualification, and quantity 4. Identify mission critical items of equipment.	**ACC SPO AETC**
	2-2		Establish the initial cadre of trained personnel to operate a deployed ABL.	**ACC SPO, AETC Boeing**
		2-2-1	Develop a cadre of Liaison Officers that will support COCOMs during either emergency activation or once operational transition has begun.	**ACC SPO**
	2-3		Deliver any new capabilities in the form of new Engagement Sequences Groups (ESGs), per MDA/TR guidance in the BMDS Activation Plan (BAP).	**ACC**
	2-4		Identify the expected ballistic missile threat identified in the current Adversary Capabilities Document (ACD).	**ACC MDA DIA**
	2-5		Match delivered capability to the BMDS force structure already in place whether the capability is expected to be permanently deployed or available for emergency activation.	**ACC MDA/TR**
		2-5-1	Ensure BMDS communications connectivity necessary to support the activation and operational	**ACC SPO**

KTE	Task	Subtask	Description	OPR/Coord
			use of RDT&E and/or transitioned capabilities.	**MDA/BC**
	2-6		An Element/component designated as providing an emergency capability should be able to respond as fast as it can be reconfigured for operations. Training, qualification, and certification should be completed prior to being declared emergency capable. An ABL designated as emergency capable will present a plan for its sustainment as part of its Emergency Activation Plan. (MDA/TR BAP). SPO is working on an Integrated Support Plan that could fill this role.	**ACC, SPO JFCC-IMD JTAMDO MDA/TR**
		2-6-1	For Contractor Logistics Support beyond FY2011, identify responsibility for logistics support should an RDT&E aircraft be called upon to transition a capability beyond that date.	**ACC SPO**
		2-6-2	Plan for deployment scenarios where the U.S. will extend BMDS protection to other countries, protect its allies and solidify coalitions, as directed by the President.	**ACC Supported COCOM**
	2-7		As part of MDA, ABL should be prepared to activate during an emergency to enhance the BMDS capabilities already available to the warfighter.	**SPO, ACC MDA/TE/PI/SI Support COCOM**
	2-8		Coordinate delivery of a combat ready system including logistical support and materials needed for sustained operations to the gaining service for indefinite usage.	**ACC, SPO**
	2-9		Follow the fundamental principles of DOTMLPF to ensure that BMDS capabilities delivered to the warfighter will be **sustainable** and **ready to support operations**, whether under permanent or emergency activation procedures. (Use ABL Transition Plan as submitted in the MDA/TR format 09 June 05)	**SPO**
	2-10		Work closely with MDA, USAF and warfighters throughout the development process to ensure a thorough understanding and appreciation of new capabilities in order to influence BMDS doctrine prior to ABL activation.	**SPO, ACC MDA/TR**
		2-10-1	Prepare updated information for use by the Secretary of Defense and USSTRATCOM to outline the conditions under which ABL can be activated and the potential impact on RDT&E.	**SPO**
		2-10-2	Prepare the metrics to determine the operational test decision criteria to support a fielding decision. Do the same to support a procurement decision.	**SPO, ACC USD (AT&L) SEC**
	2-11		Work with MDA/TER in site activation planning for environmental, facilities management, and construction efforts.	**ACC MDA/TER**
	2-12		Support deployment preparation by ensuring System Program Office (SPO) personnel designated to join the activated/transferred element are prepared. Military personnel requiring deployment or transition preparation will be	**ACC, SPO Supported COCOM Boeing**

KTE	Task	Subtask	Description	OPR/Coord
			prepared in accordance with Air Force Instruction XX-XXX. Civilians will be prepared in accordance with COCOM requirements for deploying personnel. Contractor personnel will be prepared in accordance with contract provisions. Ensure contracts include provisions governing the deployment of contractor personnel.	

2.1.3 KTE-3. Table J-2.3 Key Transition Event-3: Deliver an Initial Operational Platform to the Air Force.

Table J-2.3
KTE, Tasks, Subtasks, Description, and OPR/Coordination

KTE	Task	Subtask	Description	OPR/Coord
3			Deliver an initial operational platform to the Air Force. (Block 2016)	**SPO** **Boeing**
	3-1		With MDA/TR assistance and with documentation from the Secretary of Defense, establish criteria for transfer of responsibility for ABL from MDA to the Secretary of the Air Force.	**MDA/TR** **USD (AT&L)** **SPO, ACC** **SAF/AQ**
		3-1-1	At a minimum, address metrics that quantify: 1. Technical maturity of the program. 2. Availability of facilities for production. 3. Commitment of the SECAF to procurement funding for the ABL	**SPO, ACC** **MDA/TE** **AF/AQ**
		3-1-2	ABL and USAF/ACC must determine what data will be required for procurement decisions, with approval of USD (AT&L) who will be the Milestone Decision Authority for production decisions.	**SPO, ACC**
	3-2		Coordinate with the MDA Operations Center (MOC) on activation and support activities for activated elements and components	**ACC** **MDA/BC**
	3-3		Ensure fielded elements/components of the BMDS remain fully operational, provide continual BMD, and participate in OT&E activities consistent with the Concurrent Test and Operation Asset Management Scheduling, Planning and Execution, MDA Directive 3000.01, approved 1 November 2004.	**ACC** **MDA** **BC/TE/SE**
		3-3-1	Upon completion of permanent activation, ABL will plan to become part of the fielded BMDS and will begin CTO. It will be under the operational control of the warfighter and its primary mission will be to support defensive operations.	**ACC** **SPO**
	3-4		The permanent activation process includes the programmatic, developmental process, as well as the DOTMLPF planning required to deliver a capability	**SPO, ACC** **SAF/AQ** **Boeing**

KTE	Task	Subtask	Description	OPR/Coord
			to the warfighter. Permanent activation is the methodical preparation for the delivery of a capability (including all supporting elements and/or components) to the warfighter for indefinite usage.	
		3-4-1	Follow the fundamental principles of DOTMLPF to ensure that BMDS capabilities delivered to the warfighter will be sustainable and ready to support operations, whether under permanent or emergency activation procedures.	**ACC** **SPO** **MDA/TR**
	3-5		ACC, in coordination with MDA/AL, will prepare and document an organizational structure for the sustained combat operations and logistical support of the activated and transferred ABL.	**ACC, SPO**
		3-5-1	The organization document will describe the capabilities that are provided by the structure and will include a listing of required personnel and equipment. The document will: 5. Assign personnel and equipment to sections 6. Describe the role and responsibilities of each section 7. List personnel by skill, experience, security clearance, special qualification, and quantity 8. Identify mission critical items of equipment.	**ACC, AETC** **SPO**
	3-6		Conduct Integrated Logistics Support activities to support force development and sustainment of activation of BMDS element/component capabilities.	**ACC** **SPO** **MDA ILST IPT**
		3-6-1	Conduct or participate in BMDS activation in support of operational use of RDT&E capabilities. Provide technical data required to form force development support activated BMDS element activities.	**ACC, SPO**
		3-6-2	Ensure element/component interoperability with BMDS.	**ACC, SPO** **MDA/BC**
		3-6-3	Report readiness criteria and performance metrics.	**ACC**
		3-6-4	Establish manning requirements (including contractors as required) for an activated ABL formed around program developmental systems	**ACC, AETC,** **SPO**
		3-6-5	Reflect operational support requirements in contracts, as appropriate.	**ACC** **SPO**
		3-6-7	Clarify with the Air Force all the support required for activation of ABL, on either a permanent or contingency basis.	**SPO** **ACC**
		3-6-8	Develop O&S cost estimates for operating activated assets	**ACC**
		3-6-9	Develop initial technical and operator training (to include training devices and training support materiel).	**ACC** **SPO** **Boeing** **AETC**
		3-6-10	Provide a safety assessment of ABL before activation and transfer to ensure that all safety	**SPO**

KTE	Task	Subtask	Description	OPR/Coord
			hazards have been identified; mitigated or accepted at the appropriate level of management; and communicated to the users.	
	3-7		Coordinate with the MOC on activation and support activities with the MOC for the activated ABL.	ACC MDA/BC
		3-7-1	Coordinate Site Activation efforts within MDA where needed to support ABL transfer.	ACC MDA/PI/SI
		3-7-2	Assist USAF with budget plans for O&S and MILCON funding based upon recommendations and documentation provided through the coordination with ACC, MDA, Boeing, and MDA/AL. The MDA/AL produced Integrated Support Plan will help with this effort.	ACC SPO MDA Boeing

2.1.4 KTE-4. Table J-2.4 Key Transition Event-4: Transfer the ABL Program to the Air Force.

Table J-2.4
KTEs, Tasks, Subtasks, Description, and OPR/Coordination

KTE	Task	Subtask	Description	OPR/Coord
4			Transfer the Airborne Laser Program to the Air Force (Block 2020)	MDA ACC SAF/AQ
	4-1		Prior to ABL program transfer, determine the most efficient program office structure: OPTIONS 1. Retain program office within MDA 2. Transfer program office to USAF sponsorship 3. USAF establishes a new program office	MDA ACC, SAF/AQ SPO
	4-2		Ensure procedures for permanent activation and transfer follow the fundamental principles of DOTMLPF to ensure that BMDS capabilities delivered to the warfighter will be sustainable and ready to support operations.	ACC Boeing
		4-2-1	During the period prior to transfer of ABL to the Air Force, ensure that resources are available to MDA/AL for the operational employment of their RDT&E capability.	MDA ACC SPO
		4-2-2	Coordinate Site Activation efforts within MDA where needed to support ABL transfer.	MDA ACC

		4-2-3	Upon completion of permanent activation, ABL will become part of the fielded BMDS and will begin CTO. It will be under the operational control of the warfighter and its primary mission will be to support defensive operations. The permanent activation process includes the programmatic, developmental process, as well as the DOTMLPF planning required to deliver a capability to the warfighter.	**ACC** **MDA** **SPO, Boeing**
	4-3		Partner with the Air Force to utilize its capabilities in the planning and execution of the final transfer.	**SPO, Boeing**
	4-4		Work closely with an MDA headquarters deputy with responsibility for supervision of all BMDS activation/transfer issues.	**ACC** **MDA**
	4-5		Train, qualify, and certify individuals, crews, and above element leadership.	**ACC**
	4-6		Provide RDT&E collected RM&S data and availability assessment(s) to ACC to characterize the support and sustainment requirements and capabilities of the transitioning asset. (Includes Integrated Support Plan)	**ACC. SPO**

2.2. Assumptions

2.2.1. Funding will be available for analyzing and planning ABL T-2 development, including technology development and block enabler efforts.

2.2.2. Acquisition of ABL T-2 will be closely tied to the knowledge gained from the key test events in the RDT&E phase of ABL T-1.

2.2.3. ABL T-1 could be available with limited or "rudimentary" operational capability during an emergency approximately six months after Lethal Demonstration (scheduled NET 2008).

2.2.4. Production decision will be based on the successful completion of ABL T-2 shootdown (scheduled NET 2015).

3. OPEN ISSUES

3.1 Issue Description: The ABL program open issues remain to be determined. Overall success of the program remains contingent on successful completion of the RDT&E phase leading to system demonstration NET 2008.

4. PROGRAM/SYSTEM DESCRIPTION

The Airborne Laser (ABL) is the boost-phase defense segment of the Missile Defense Agency's (MDA) integrated and layered ballistic missile defense system (BMDS). ABL will be deployable within hours to any potential conflict, arriving in theater ready to provide an initial U.S. deterrent and defensive capability for U.S. and/or allied forces. As a result, adding ABL to the BMDS significantly increases MDA's overall defensive capabilities by reducing the amount of targets faced by successive defenders and by addressing certain threats that may be difficult to counter. ABL's unique capabilities will make it a flexible weapon system that will provide a credible deterrent and a lethal defense against a rapidly evolving ballistic missile threat.

The technology and concept design efforts currently in progress provide key answers to the design effort in the areas of lethality, atmospheric characterization, beam control, aircraft systems integration, and environmental concerns. These efforts are the source of necessary data applied to exit criteria ensuring higher and higher levels of confidence and are key milestones of the development program.

4.1 Aircraft. ABL T-1 is a highly modified Boeing 747-400F. Operational manning has room for twelve aircrewmen, or two complete crews. The bulk of the aircraft contains the laser system and associated fluid tanks and beam path equipment.

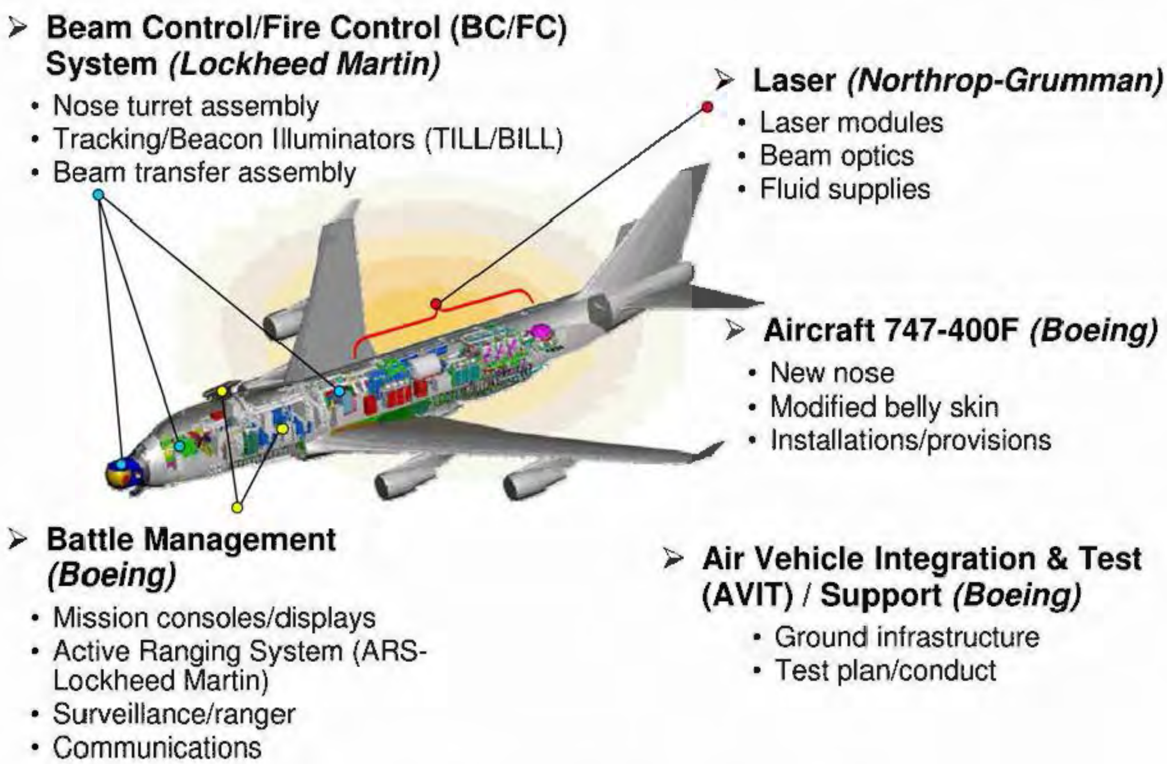

Figure 1 – ABL Weapon System Configuration.

4.2 Beam Control/Fire Control (BC/FC). The BC/FC is the complex system of lenses and mirrors that assure the lethality of the ABL's directed energy. Stretching from the turret on the front of the 747 Freighter to an area behind an airtight bulkhead that protects the crew from possible chemical leaks, the BC/FC system is the most intricate of all the ABL systems. It is composed of 127 optics (mirrors, lenses and windows) ranging in size from one inch to five and one-half feet in diameter, many of which are unique to ABL and represent the state of the art in glass manufacturing and optical coating.

The BC/FC system performs two general functions: It safely controls the high- and low-energy laser beams propagated through the aircraft, and it is crucial to ABL's kill mechanism. The two major elements of the ABL BC/FC system are:

- Beam Transfer Assembly (BTA) – optics and pointing mechanisms to transfer the laser beam from the laser modules to the pointing mirrors.
- Flight Turret Assembly (FTA) – roll and yaw pointing mechanisms.

4.3 Battle Management, Command, Control, Computers, Communications, and Intelligence (BMC4I). BMC4I is the brains of the ABL, providing surveillance, communication, planning, and the central command and control of the ABL weapon system and the following functions:

- Infrared surveillance, detection, and tracking of multiple targets
- Target typing and prioritization
- Distributed predictive avoidance (deconfliction)
- Mission Planning (orbit selection and management)
- Military Communications
- Crew/System Interface
- Theater Interoperability

Once a missile is locked in as a target, the ABL weapon system tracks it, compensates for atmospheric distortion between the target and aircraft, and, finally, points the high-energy laser onto the missile skin, causing it to rupture.

BMC4I suite also provides a robust capability to deliver missile launch and impact point prediction information to the rest of the BMDS. It gives the commanders early decision-making tools and increases the overall efficiency and effectiveness of the Theater Missile Defense (TMD) architecture.

4.4 High Energy Laser (HEL). The laser device subsystem (LDS) is a megawatt class, chemical oxygen iodine laser (COIL) that interfaces with the BMC4I and the BC/FC subsystems. The LDS provides component status to the BMC4I and BC/FC, delivers the HEL beam to the BC, and receives commands from FC. The HEL segment is responsible ~~for~~ producing the megawatt class laser beam required to destroy the target missile. The HEL consists of a series of chemical oxygen-iodine laser (COIL) modules. The Block 2004 design carries six modules; the Block 2008 aircraft may also carry six. At the current state of the art, only chemical lasers are capable of producing the megawatt class power required to defeat military targets at long ranges. The COIL operates at a wavelength that allows propagation over long distances with minimal divergence and has good atmospheric transmission characteristics.

5. PROGRAM STATUS

The status and near-term schedule of the Airborne Laser are updated regularly based on results from the current series of laser firing tests and the progress of the Beam Control/Fire Control (BC/FC) ground and flight testing. The aircraft is at Boeing Wichita for a portion of 2006 for additional structural modifications and installation of two low-power pointing and tracking lasers (see 5.3.1 below).

5.1 Accomplishments to Date: Transition to the Air Force has not yet commenced. The earliest opportunity for transition will be the potential transfer of a missile defense capability by ABL Tail #1 no earlier than the successful completion of a full system demonstration, currently scheduled for late CY2008. The evolving capabilities of the ABL make potential transfer of capabilities for missile defense possible through the remainder of the RDT&E phase to include possible use of ABL Tail #2 (T-2) sometime after its successful lethal demonstration. The first transfer of a production aircraft capable of performing missile defense missions is not projected before FY18. See the table below.

Determination of the effective date for transition to the USAF will be based upon funding, the maturity of the system, and contractual considerations at the System Functional Review (SFR). The Transition Plan will address the accomplishment of specific milestones leading to transition.

5.2 Key dates leading to transition include:

	Approx. Date
Industrial Sustainment Contract	FY07
ABL T-1 Capability Increment 1 Demonstration (Shootdown):	NET 2008
ABL T-2 "Green" Aircraft Order	TBR
Long-Lead Procurement Contract	TBR
Procurement of "Green" aircraft for first production ABL (ABL P-1)	TBR
ABL T-2 System Demonstration (Shootdown)	TBR
ABL P-1 Delivery	TBR
ABL P-2 to P-7 Delivery	TBR

TBR = To Be Reviewed pending Shootdown consistent with the MDA/AL funding allocation as of 01 February 2006.

5.3 Current Program Status:

5.3.1 Flight Testing. As of August 2005, the Airborne Laser (ABL) program has completed flight testing of the system's passive mission payload, completing another phase of critical testing. The Low Power Systems Integration-Passive (LPSI-P) test phase included ground and flight tests of ABL's BMC4I and BC/FC segments. During this phase of testing, ABL demonstrated the stability and alignment of the two BC/FC optical benches with the turret. It also demonstrated the system's pointing and vibration control functions as well as its ability to acquire targets as directed by the BMC4I segment. In May 2005, the ABL's 1.7-meter wide conformal window was unstowed for the first time during flight, a maneuver necessary for the weapon system to complete its mission of shooting down a ballistic missile in flight. ABL has also demonstrated the BMC4I systems ability to detect autonomously and hand off targets using Link-16.

With completion of this phase of testing, in Dec 05 ABL T-1 was transferred to Boeing's Wichita, Kan., facility to undergo final modification. This consists of installation of two low-power illuminator lasers: the Beacon Illuminator Laser (BILL) and the Target Illuminator Laser (TILL).

5.3.2 Laser Testing. Testing of the high energy weapon laser in the Systems Integration Lab (SIL) continued its progress toward increasing lasing times at higher power levels. This process was completed in Dec 05 and the SIL began disassembly and refurbishment of the laser at that time.

5.4 Future Development

Upon completion of the LPSI-A phase in Wichita, ABL T-1 will return to Edwards AFB and resume RDT&E activities. The high-energy laser (HEL) integration will begin with ground and flight testing. This activity culminates in a full system lethal demonstration against an actual boosting missile, currently scheduled not earlier than 2008. Follow-on activities for ABL T-1 will center on Envelope Expansion in a variety of different scenarios.

ABL T-2 development and testing will focus on its role as a deployable test asset with an operationally viable capability. ABL T-2 will address ABL T-1 performance shortfalls and target its development toward capability improvements. As a next step in providing a useful capability to the BMDS and the warfighter, ABL T-2 efforts will also focus on its sustainability with improvements in interoperability, reliability, maintainability and deployability. ABL T-2 is scheduled to culminate its RDT&E phase in a lethal system demonstration in FY15. The numerous capability improvements include a fully deployable set of common and unique support equipment to enable ABL to conduct missile defense operations from Forward Operating Locations (FOLs).

5.4.1 CY06 / 07 / 08 Planned Activities. CY06 planned activities include focusing on preparations for full weapon system testing, completion of the SIL disassembly and parts refurbishment, finishing aircraft structural modifications, integration of laser components onto the ABL, performing BC/FC upgrades, and completion of the LPSI-Active flight tests, while in Wichita. During the active testing, the BILL and the TILL will be integrated and flight tested to demonstrate acquisition and fine tracking with active illumination. The testing also will verify ABL's atmospheric compensation design and operation.

CY07 planned activities include completion of all non-HEL related tests and initiation of ground and airborne testing of the fully integrated weapon system, Service Life Extension Program activities on key components, and initial purchases of deployable ground support equipment and first aircraft spares.

CY08 activities will be focused on the activities surrounding the full system lethal demonstration against a boosting missile.

6. ORGANIZATIONAL RESPONSIBILITIES

6.1 Doctrine

The BMDS Charter (DoDD 5134.9) is the overarching guidance that governs the development and acquisition of ballistic missile defense. As new elements/components are added to the BMDS, doctrine will have to be developed for their integration and employment. Doctrine for weapon system employment is the realm of the Service and the affected warfighter.

Joint Publication 3-01, "Countering Air and Missile Threats"; JP 3-26, "Homeland Security"; and JP 3-26.1, "Homeland Defense" all contribute to the development of ABL doctrine in a joint environment. USSTRATCOM and USNORTHCOM Concept Plans will also dictate some actions. Draft Doctrine, Tactics, Techniques, and Procedures will continue to be further defined by the United States Air Force Air Combat Command as ABL capabilities develop and lessons learned are gathered through warfighter exercises.

6.1.1 MDA. MDA should continue to work closely with the warfighter community through the STRATCOM Warfighter Involvement Process (WIP) and under the auspices of the Joint Functional Component Commander – Integrated Missile Defense (JFCC-IMD). They use this venue to develop the joint command and control architecture for ABL and the BMDS. It will eventually be integrated into the applicable command and control architectures for air and missile defense and related C2 architectures.

6.1.2 <u>Service and Combatant Commands.</u> AF and STRATCOM should continue the development of the Concept of Employment (CONEMP) and the Concept of Operations (CONOPS) to support the first ABL production aircraft/squadron for missile defense operations. They should ensure ACC input is included in the Joint Doctrine process, coordinate ACC's CONOPS into the COCOM's Concept of Operations for Ballistic Missile Defense, and develop war plans for employment of multiple Airborne Lasers. (DoDD 5134.9)

6.2 Organization

6.2.1 <u>MDA.</u> Employ close working relationships with the Combatant Commanders, the Chairman of the Joint Chiefs of Staff, and the Secretaries of the Military Departments to improve development and promote early fielding of effective BMDS capabilities.

6.2.2 <u>Services and Combatant Commands</u>. The Air Force, through ACC, will develop the required organizational structure for the first operational Airborne Laser aircraft and squadron. The initial ABL squadron will organize, train, and operate as a Theater Air Control System (TACS) component. It will then report to a parent Wing, Numbered Air Force (NAF), and MAJCOM. ABL will operate under the direction of the established command structure. When ready to deploy into a Theater, ABL will operate in concert with the AEF element (Wing, Group, and Squadron) that has been assembled into the Air and Space Expeditionary Task Force (ASETF). The Air Force will develop the required organizational structure (Table of Distribution and Allowances/Modified Table of Organization and Equipment) for ABL aircraft /squadrons and coordinate the integration of Liaison Officers from the elements into the appropriate COCOM command centers, especially during periods of heightened tensions.

6.3 Training

6.3.1 <u>MDA.</u> It is MDA's responsibility to work with USSTRATCOM to accredit the MDA-developed crew certification process and standards for BMDS-unique training. MDA must also interoperate with the greater BMDS to ensure full C2BMC certification. MDA provides BMDS-level training in support of organizations with Title 10 authority that will employ the BMDS. For the purposes of streamlining and continuity in BMDS related training programs, USSTRATCOM has delegated to MDA responsibility for oversight and coordination of training plans and training development related to the BMDS and its parts. MDA/TR is the office of primary responsibility for BMDS training within MDA with authority to organize, delegate, and task. MDA will support the services and combatant commands in their Title 10 USC responsibilities to established and agreed-to standards to perform crew/team and higher collective training, to train replacement personnel, and to maintain operational task proficiency. Additionally, MDA will develop training programs and materials for Air Education and Training Command (AETC) and ACC prior to transition to include mission support personnel, maintenance personnel and mission and flight crews. MDA will be responsible for training the initial cadre of personnel in each of these key positions.

6.3.2 Services and Combatant Commands. USSTRATCOM is responsible for the institution and oversight of a training program for global missile defense. They will ultimately, through Air Force coordination, approve ACC's Tactics, Techniques, and Procedures and Aircrew Training Publications. The Air Force, through ACC, will develop the System Training Plan, and the Mission Training Plan. ACC will also establish the training base to train replacement aircrew and maintenance technicians not earlier than the beginning of FY14.

In the event of emergency activation, the best trained, most capable personnel will be utilized. ACC will utilize the ABL-developed Training Systems Requirements Analysis (TSRA) to define key components, interrelationships, and requirements of a training system. For ABL-unique training, ACC will ensure full compliance with STRATCOM's Global BMD Training Concept of Operations. The CONOPs also includes appendices that detail the Distributed Multi-Echelon Training System (DMETS), BMDS Education and Training Resources, and the Annual Training Plan (ATP). Finally, ACC will develop the full program to train Air and Ground Crews, Support and HAZMAT crews (upon deployment from the MOB and at the FOL) and Liaison (LNO) teams to support the current force structure.

6.4 Materiel

6.4.1 MDA. MDA's responsibilities for Materiel are numerous until actual Transition begins. They must formulate and manage BMDS acquisition strategy; make program commitments and terminations; conduct source selections; award contracts; analyze performance; make affordability trade-offs; document the BMDS program of work; and report progress. MDA must continue to baseline the capability and configuration of capability blocks and elements and define the interoperability standards for each BMDS element; develop Cost Analysis Requirements Document; provide Contractor Logistics Support (CLS) through FY11; Complete System Safety Risk Assessment; provide Adversary Capabilities Document, as appropriate. They are also required to complete System Security Level Determination, Security Classification Guide, and Program Protection Plans. Other Materiel requirements performed by MDA include: Spectrum Certification Compliance (DD Form 1494); Configuration Management; a Supportability Strategy; a Simulation Support Plan and Accreditation; and an Information Support Plan. MDA should also develop plans for contracting, personnel, and facilities for BMDS elements transferring in or out of MDA responsibility.

Finally, MDA is responsible for the baseline BMDS capabilities and configurations that transfer from MDA to Military Department procurement and operations.

6.4.2 Services and Combatant Commands. Once USD (AT&L) has made a production decision, the Air Force should be prepared to introduce into the Program Objectives Memorandum (POM) the conventional equipment and military construction required for primary ABL operations based on the Table of Distribution and Allowances and Modified Table of Organization and Equipment for active squadrons. The Air Force then will provide the Integrated Air and Missile Defense System of Systems Capabilities Development Document.

6.5 Leadership Development

6.5.1 MDA. MDA will be expected to fund development of Leadership Development courses for ABL leaders and select members of MDA, STRATCOM, and Combatant Commander staffs.

6.5.2. Services and Combatant Commands. Lead, with the CJCS, analyses of alternatives, wargames, and exercises, to establish production quantities and operational force levels early enough to ensure the effective transition of BMDS elements from MDA to Military Departments. AF and STRATCOM will conduct Leadership Development courses for ABL leaders and key ABL personnel, through AETC.

6.6 Personnel

6.6.1 MDA. Provide personnel and resources, as appropriate, to support the development of ABL during the RDT&E phase.

6.6.2 Services and Combatant Commands. Provide forces and resources, as appropriate, to support fielding of the BMDS, in accordance with the Air Force Manpower Estimate Report (MER).

6.7 Facilities

6.7.1 MDA. MDA/AL will define and develop facilities needed to support the ABL weapon system during RDT&E and provide a facilities recommendation to the service at transition.

6.7.2 Services and Combatant Commands. Coordinate with each Service for the necessary allocation of facility space upon the initiation of transition of an element to that Service. At the appropriate time in the development process, define the facility requirements for operational Airborne Laser squadrons, especially the special equipment and storage for laser fluid mixing and handling.

6.8 Security

6.8.1 <u>MDA Responsibilities.</u> MDA/SI will provide assistance to BMDS element managers, site managers, and HQ staff and elements on all security, counterintelligence, and intelligence matters, addressing the full spectrum of security requirements: Site/activity security, personnel security, operational security, counterintelligence, information security, visitor control, information assurance, technology protection, etc.

6.8.2 <u>USAF Responsibilities.</u> USAF Security Instruction Manual, AFI 31-101, establishes the appropriate Protection Level (PL) condition for operational USAF units.

6.9 Test Strategy

The overall goal of the Airborne Laser (ABL) test and evaluation (T&E) program is to field a weapon system with the proven capability to negate threat ballistic missiles in their boost phase as an integral element of the Ballistic Missile Defense System (BMDS). The strategy of the ABL T&E program is to use a building block approach to integrate and test major ABL components. This approach begins with component integration and checkout and continues through ground tests and then flight tests of the fully integrated weapon system. The top-level objectives of the ABL test program are:

- Evaluate ABL capability to negate threat-representative ballistic missiles in the boost phase of flight.
- Evaluate ABL integration and interoperability with the BMDS.
- Evaluate ABL operational effectiveness and suitability.
- Verify that the ABL weapon system meets performance levels defined in the ABL Technical Requirements Document (TRD) and in the applicable Initial Capability Document (ICD), Capability Development Document (CDD), or Capability Production Document (CPD).
- Collect data to support subsequent ABL spiral development and performance modeling.

As part of the transition process, the ABL System Program Office (SPO) and the Air Force Operational Test and Evaluation Center (AFOTEC) will prepare a Developmental Master Test Plan (DMTP) describes the developmental T&E (DT&E) program, the operational T&E (OT&E) program, and the live fire T&E (LFT&E) program. ABL participation in BMDS-level test events will be addressed in the DMTP and in the BMDS Integrated Master Test Plan (IMTP). As the ABL weapon system matures, test planners will develop a combined and fully integrated DT&E/OT&E program. In general, the operational realism of test activities will increase as the program progresses from component checkout to flight test engagements against threat-representative ballistic missile targets. Modeling and simulation (M&S) activities will augment ground and flight test activities to mitigate the impact of test limitations and to provide data across a broader range of conditions than is possible during flight tests.

The following are the key organizations involved with the ABL test program and their responsibilities.

6.9.1 <u>MDA.</u> MDA has overall management responsibility for developing the BMDS and BMDS elements and transitioning a specific BMDS element for procurement and operation by a designated Service. MDA is also the responsible test organization (RTO) for the BMDS and BMDS elements through the transition phase.

6.9.1.1 <u>MDA/AL.</u> The ABL System Program Office (SPO) is responsible for developing and fielding the ABL weapon system through a spiral development process. The ABL SPO also has overall management responsibility for planning, programming, funding, and executing the ABL DT&E and Live Fire Test and Evaluation (LFT&E) programs. Funding responsibilities for the OT&E program have not been determined.

6.9.2 <u>Services and COCOMs.</u> STRATCOM is the lead COCOM for Global Missile Defense. Air Combat Command (ACC) is expected to be the Air Force user of the ABL weapon system. ACC will develop the ABL Concept of Operations (CONOPS) and capability documents. The ABL Test and Evaluation Master Plan (TEMP) will describe ACC support and participation in ABL DT&E and OT&E. ACC is also expected to be responsible for ABL follow-on OT&E (FOT&E) and Force Development Experimentation (FDE) activities for Air Force specific testing on either T-2 or P-1.

6.9.3 <u>Air Force.</u>

6.9.3.1 <u>Air Force Flight Test Center (AFFTC).</u> The AFFTC is expected to be the principal participating test organization (PPTO) throughout the ABL DT&E program. The AFFTC will provide personnel, support functions, and other resources as agreed to in the ABL Program Introduction Document (PID) and Statement of Capability (SOC). The AFFTC has established the ABL Integrated Test Force (ITF) to plan and execute the ABL integration and developmental test program. The ITF is a team of government and ABL development contractor personnel.

6.9.3.2 <u>Air Force Operational Test and Evaluation Center (AFOTEC).</u> AFOTEC is expected to be the operational test agency (OTA) for the ABL program. AFOTEC will plan and execute the ABL OT&E program and determine the nature and scope of operational assessments (OA) and initial OT&E (IOT&E).

6.9.3.3 ABL Development Contractors. The primary contractors on the ABL development team are the Boeing Company, Lockheed Martin Missile and Space Systems, and Northrop Grumman Space Technology. Boeing is responsible for overall system integration; producing and modifying the 747-400F aircraft; and developing the BMC4I and surveillance subsystem. Lockheed Martin is responsible for developing the BC/FC subsystem, and Northrop Grumman is responsible for developing the high-energy laser (HEL).

6.10 Supportability Strategy

6.10.1. MDA. MDA/AL will assess supportability throughout the definition, design, development, test, integration, and fielding and activation phases (Integrated Master Schedule (IMS) Phases 1 thru 5) of the ABL weapon system. This includes Reliability, Maintainability, and Supportability (RM&S) data collection and analysis. Assessments of projected ABL weapon system availability based upon RM&S data, and development of an adequate Logistics Support Structure to provide maximum ABL weapon system supportability and availability (within resource constraints) to the BMDS upon transition and transfer. On-station Availability (OSA) and Operational Availability (A_o) are two of the major indicator of ABL weapon system supportability.

6.10.2. Services and Combatant Commands. MDA/AL continues to work with ACC and the MDA ILST IPT to fully develop the Integrated Support Plan.

7.0 CONTRACT STATUS

7.1 Current Contract. The ABL Block 2004 contract is a Cost Plus Award Fee (CPAF) contract, currently valued at $3.60B, with a period of performance through December 2008. It is currently funded at $2.80B, which is sufficient through 6 Mar 06. It is the primary ABL contract to develop and build the initial ABL weapon system. It also includes provisions to support the Missile Defense National Team, Advanced Technology Studies, Long Lead Optics, and multiple proposal preparation activities.

7.2 The Technology Insertion contract is a Cost Plus Fixed Fee (CPFF) Indefinite Delivery Indefinite Quantity (IDIQ) delivery order contract, with a ceiling of $200M and an ordering period through April 2013. It currently has fourteen delivery orders with a total value of $14.6M, funded at $14.2M. It was awarded in April 2003 for the purpose of developing advanced technologies for incorporation into future block ABLs. The Technology Insertion contract is used for high-risk technologies, but also technologies with high-performance payoff.

7.3 The Infrastructure Sustainment contract is a Cost Plus Fixed Fee (CPFF) Indefinite Delivery Indefinite Quantity (IDIQ) delivery order contract, with a ceiling of $250M and an ordering period through August 2013. It currently has four delivery orders with a total value of $17.7M, funded at $6.3M. It was awarded in August 2003 for the purpose of sustaining critical industries in order to maintain core competencies and availability of equipment between production efforts; perform technical tasks in areas that will increase reliability and reduce technical, schedule, and cost risk; and provide a rapid response capability if a critical component is needed. In addition, components with a long-lead or high-risk schedule may be purchased in order to meet the ABL acquisition strategy.

7.4 The Block 2006 contract is a combination Cost Plus Fixed Fee / Cost Plus Award Fee (CPFF/CPAF) Indefinite Delivery Indefinite Quantity (IDIQ) delivery order contract, with a ceiling of $500M and an ordering period through May 2014. It currently has five delivery orders with a total value of $18.6M, funded at $6.8M. It was awarded in May 2004 for the purpose of:

- demonstrating ABL's capability beyond the initial system demonstration against the full adversary capability space
- improving the suitability of the first ABL aircraft test bed
- characterizing and improving the integration of the ABL into the Missile Defense Agency's Ballistic Missile Defense System (BMDS)
- enhancing the first ABL aircraft missile defense capability
- augmenting ABL Program operations with concurrent supporting efforts

The block will implement a limited set of enhanced capabilities based on experience from the Block 2004 test program. The discrete efforts involved in stepping from the initial Block 2004 configuration to the enhanced configuration of the first ABL aircraft permit a periodic selection and implementation of desired capability in accordance with the BMDS Block 2006 plan and subsequent BMDS Block plans.

8.0 PLAN FOR TRANSITION ACTIONS/MILESTONES

8.1 Effective Date of Transition. Determination of the effective date for transition to the USAF will be based upon funding, the maturity of the system, contractual considerations.

8.2 Transition Plan Milestones. Specific milestones leading to transition. Key dates leading to transition include:

	Approx. Date
Industrial Sustainment Contract	FY07
ABL T-1 Capability Increment 1 Demonstration (Shootdown):	NET 2008
ABL T-2 "Green" Aircraft Order	TBR

Long-Lead Procurement Contract	TBR
Procurement of "Green" aircraft for first production ABL (ABL P-1)	TBR
ABL T-2 System Demonstration (Shootdown)	TBR
ABL P-1 Delivery	TBR
ABL P-2 to P-7 Delivery	TBR

TBR = To Be Reviewed pending lethal shootdown consistent with the MDA/AL funding allocation as of 01 Feb 2006.

8.3. Schedule. The schedule below reflects the major planned milestones for the remainder of the ground and flight testing for ABL T-1 and the planned acquisition date for the second RDT&E aircraft, ABL T-2.

Planning for 2nd Test ABL (T-2) under revision due to budget cuts

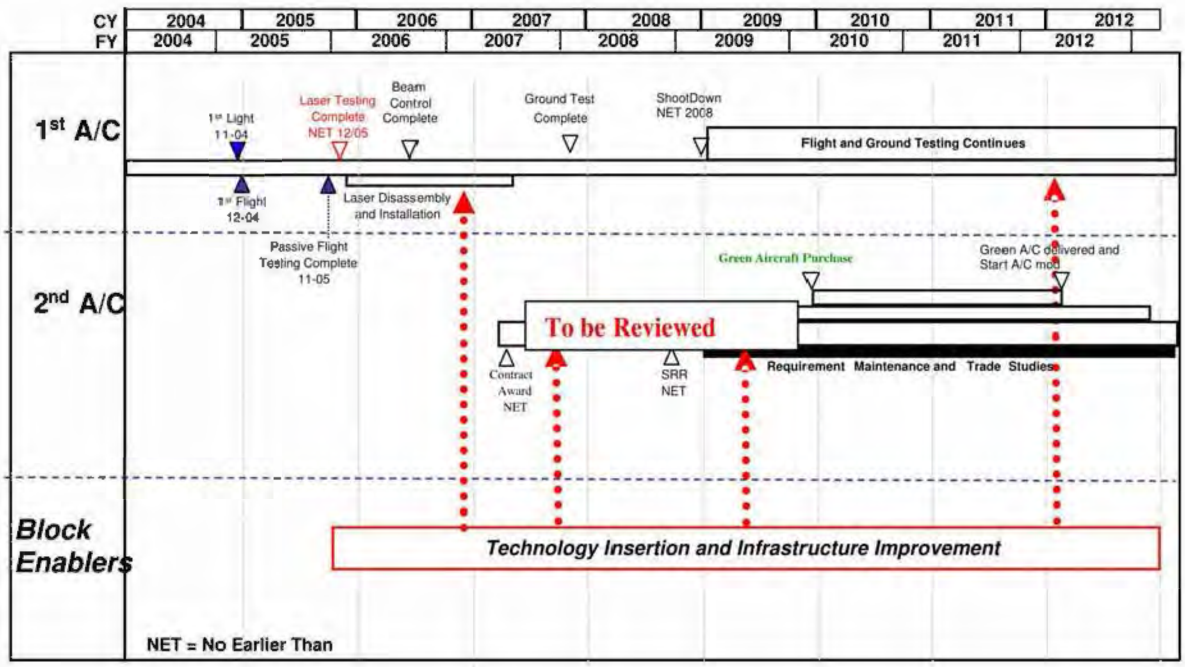

Figure J-8.1
ABL Test Aircraft Schedule

9.0 FUNDING

The figures below are from the approved FY06 POM, however budget cuts in 1QFY06 are expected to cause these figures to change. The current MDA fiscal environment focuses the ABL T-1 program on near term knowledge points before any investment is made on the second aircraft (T-2). The initial funding for T-2 has slipped from FY07 to FY09 to reflect this near term focus philosophy/direction. Air Force funding for ABL Production activities is also under review and may also slip accordingly.

9.1 MDA.

Fiscal Year	2004	2005	2006	2007	2008	2009	2010	2011
Total Funding ($M)		$447.9	$454.7	$598.9	$542.6	$417.4	$416.4	$647.8

9.2 Air Force

Fiscal Year	2004	2005	2006	2007	2008	2009	2010	2011
Total Funding ($M)		$0	$0	$0	TBD	TBD	TBD	TBD

Table J-9.1 Funding Lines Through FY11

10.0 AGREEMENTS AND COMMITMENTS

10.1 Agreements MOU/MOA. Memorandum of Agreement between MDA/AL (SPO) and ACC/DR-DAP (SMO) (April 2003)

11.0 REFERENCES

- MDA/TR memo dated 10 Aug 2005, "Transition Plan Content Guidance"
- MDA/TR Memorandum dated 10 March 2005, "Ballistic Missile Defense System Transition Planning"
- DoD Directive 5134.9 dated 09 Oct 2004, "Missile Defense Agency (MDA)"
- USD (AT&L) Memorandum dated 13 Feb 2002, "Ballistic Missile Defense Program Implementation Guidance"

12.0 ACRONYMS

ACRONYMS, ABBREVIATIONS

A_o Operational Availability

ABL	Airborne Laser
AFFTC	Air Force Flight Test Center
AFI	Air Force Instruction (when used with a number)
AFMSS	Air Force Mission Support System
AFPD	Air Force Publishing Directive (when used with a number)
AMC	Air Mobility Command
AMCI	Air Mobility Command Instruction
AMCP	Air Mobility Command Pamphlet
a/w/e	aircraft/weapons/electronic
BAE	British Aerospace Engineering
BILL	Beacon Illuminator Laser
BM	Ballistic Missile (Short Range-SRBM, Medium Range-MRBM, Intermediate Range-IRBM, Intercontinental-ICBM)
COI	Critical Operational Issue
COCOM	Combatant Commander (under the Unified Command Plan)
COMSEC	Communications Security
CPU	Central Processing Unit
DMTP	Developmental Master Test Plan
DTD	Data Transfer Device
DT&E	Developmental Test & Evaluation
DR	Deficiency Report
EMD	Engineering Manufacturing and Development/Production
ERS	Early Release of Submunitions
ESP	Emergency and Special Program
FDE	Force Development Evaluation or Experimentation
FMS	Flight management system
FOT&E	Follow-on Test and Evaluation
FYDP	Future Years Defense Program
IMS	Integrated Master Schedule
IMTS	Integrated Master Test Schedule
IOT&E	Initial Operations Test and Evaluation
ITF	Integrated Test Force
KTE	Key Transition Event
LFT&E	Live Fire Test and Evaluation
MDA/AL	MDA Airborne Laser Program Element of the BMDS
MDA/TR	MDA Directorate for Force Structure Integration and Deployment
MOC	MDA Operations Center
MOE	measure of effectiveness
MOP	measure of performance
MPE	mission planning environment
MTBCF	mean time between critical failures
NBC	Nuclear, Biological, Chemical
OA	Operational Assessment(s)

OPR	Office of Primary Responsibility
OPSEC	operations security
O&S	Operations and Support
OTA	Operational Test Agency
OT&E	Operational Test and Evaluation
OSA	On-station Availability
P-1	ABL production aircraft #1
PCMCIA	personal computer memory card international association
PDRR	Program definition and risk reduction
PID	Program Introduction Document
PPTO	Principal Participating Test Organization
RM&A	Reliability, Maintainability, and Availability
RM&S	Reliability, Maintainability, and Supportability
RTO	Responsible Test Organization
SME	Subject Matter Expert
SOC	Statement of Capability
SSR	system support representative
T-1	ABL Tail #1; YAL-1A; program definition and risk reduction aircraft
T-2	ABL Tail #2; second development and test aircraft
TAMD CRD	Theater Air and Missile Defense Capstone Requirements Document
TEMP	Test & Evaluation Master Plan
TILL	Tracking Illuminator Laser

13.0 LIST OF FIGURES AND TABLES

FIGURES

TABLES

BALLISTIC MISSILE DEFENSE SYSTEM
TRANSITION AND TRANSFER PLAN

Annex K

Kinetic Energy Interceptors
(KEI)

Missile Defense Agency/KI
7100 Defense Pentagon
Washington, DC 20301-7100

BMDS Transition and Transfer Plan

TABLE OF CONTENTS

EXECUTIVE SUMMARY

(U) Kinetic Energy Interceptors (KEI) will be a land-mobile, rapidly-transportable, hit-to-kill missile defense element with the ability to engage and defeat Medium Range Ballistic Missiles (MRBMs), Intermediate Range Ballistic Missiles (IRBMs), and Inter-Continental Ballistic Missiles (ICBMs) in the boost, ascent, and midcourse phases of flight. KEI will complement and augment other elements of the BMDS. It will protect the U.S. homeland, our forward-deployed military forces, and friends and allies. The land-mobile KEI element is comprised of three main components: a fire control component, a launcher component, and an interceptor component.

(U) The land-mobile KEI is in the early stages of a Development and Test (D&T) phase that will result in a Block 14 missile defense capability. As a result, it is not a candidate for transfer during the FY08 POM window (i.e., FY08-13). Transition of any KEI capabilities during that time period is to be determined.

~~(FOUO)~~ Full development of a sea-mobile KEI is not part of the program baseline. However, the KEI element is being designed to be common and compatible with a sea-based environment. A detailed Alternatives Assessment is being conducted by the Missile Defense Agency (MDA) and the Navy in 2005/2006 to determine the optimum interim and long-term platforms for sea-basing KEI. Among the platforms being assessed are: DDG-51 class combatants, SSBN and SSGN submarines, LPD-17 class support ships, and large commercial vessels such as container ships.

~~(FOUO)~~ The one open transition and transfer issue facing KEI is that a lead Service has not been formally identified for either the land or sea-mobile variant. If not resolved by the spring of 2006, this issue will begin to adversely affect the land-mobile KEI's design, operational test planning, and DOTMLPF preparations. For example, critical design decisions will be made during the preparations for the FY07 System Design Review without any official input from a lead Service. A 26 August 2005 memo from the Commander of USSTRATCOM recommends the Army as lead for the land-mobile KEI and the Navy as lead for the sea-mobile KEI, and if those recommendations are implemented, this issue will be closed.

~~(FOUO)~~ No decision has yet been made concerning production of KEI units. Given this and the lack of a lead Service designation, most of the details concerning transition or transfer of KEI to a Service are to be determined. It is therefore not possible at this time to identify any FY08 POM unfunded requirements relating to transition and transfer activities, for either MDA or a Service.

~~(FOUO)~~ Notwithstanding the lack of a lead Service designation, valuable transition interactions are occurring under the auspices of the Army's Space and Missile Defense Command (SMDC).

BMDS Transition and Transfer Plan
Annex K
Kinetic Energy Interceptors (KEI)

1.0 (U) PURPOSE: This KEI Annex identifies the roles and responsibilities leading to the transition and/or transfer of KEI to a Service. It documents the status of KEI's transition and transfer planning as well as the initial interactions the program has had with the Services and the warfighter community.

2.0 (U) FACTS AND ASSUMPTIONS:

2.1 (U) Facts: MDA/KI is responsible for the design, fabrication, integration, configuration management, and developmental testing of the KEI element, and for securing and defending the research, development, test, and evaluation (RDT&E) funding for these activities. Lead Services for the land-mobile KEI and any potential sea-based KEI have not been formally identified.

2.2 (U) Assumptions: For the purposes of proceeding with the program, we are assuming the Army will eventually be identified as the lead for the land-mobile KEI, and the Navy as the lead for any sea-mobile KEI. We further assume that formal lead Service identification for the land-mobile KEI will pave the way for critical MDA-Service discussions in such areas as operational testing, procurement timing and quantities, force protection, manning and operation of the fielded KEI, and required base operations and support.

3.0 ~~(FOUO)~~ OPEN ISSUES:

The one open issue for KEI is that a lead Service has not been formally identified for either the land- or sea -mobile variant. So far this has not been a serious issue because we are in the early phase of system design and because informal interactions with the Services have been taking place. However, the land-mobile KEI needs a lead Service formally designated by the spring of 2006 so that Service can assist in developing KEI's overall design as part of preparation for the System Design Review in 2007, and also so the Service can begin resourcing the personnel and Service-unique support equipment required for fielding. A 26 August 2005 memo from the Commander of USSTRATCOM recommends the Army as lead for the land-mobile KEI and the Navy as lead for the sea-mobile KEI, and if those recommendations are implemented, this issue will be closed.

4.0 (U) KEI ELEMENT DESCRIPTION:

(U) KEI will be a land-mobile, rapidly-transportable, hit-to-kill missile system with the ability to engage and defeat Medium Range Ballistic Missiles (MRBMs), Intermediate Range Ballistic Missiles (IRBMs), and Inter-Continental Ballistic Missiles (ICBMs) in the boost, ascent, and midcourse phases of flight. KEI will complement and augment other elements of the BMDS. It will protect the U.S. homeland, our forward-deployed military forces, and friends and allies.

(U) The land-mobile KEI element is comprised of three main components as shown in Figure K-4.1 below: a fire control and communications component (KFC/C), a launcher component, and an interceptor component. A notional KEI battery will consist of 10 interceptors in canisters mounted two each on five separate launchers. The launchers are controlled by two KFC/C units (the second unit is for redundancy). All KEI components are transportable by C-17 aircraft.

Figure K-4.1 ~~(FOUO)~~ Land-Mobile KEI Components

~~(FOUO)~~ Full development of a sea-mobile KEI is not part of the program baseline. However, the KEI element is being designed to be common and compatible with a sea-based environment. A detailed Alternatives Assessment is being conducted by MDA and the Navy in 2005/2006 to determine the optimum interim and long-term platforms for sea-basing KEI. Among the platforms being assessed are: DDG-51 class combatants, SSBN and SSGN submarines, LPD-17 class support ships, and large commercial vessels such as container ships.

4.1 ~~(FOUO)~~ Fire Control & Communications Component: The Fire Control and Communications component manages the land-mobile KEI's engagements and is the element link to the larger Ballistic Missile Defense System (BMDS) Command, Control, Battle Management, and Communications (C2BMC) network. It consists of hardware and software mounted in shelters towed by military-off-the-shelf (MOTS) tractors, S-band and C-band antennae, and support equipment such as generators. It will be capable of traveling over primary and secondary roads and will have some limited off-road capability. KEI does not have an organic fire control sensor, but receives target track data from one of two sources: either directly down-linked through an S-band link from overhead non-imaging infrared (ONIR) sensors such as DSP, or forward-based radar data indirectly delivered to KEI by the BMDS C2BMC through the Common Network Interface Processor (CNIP). The Fire Control and Communications component monitors the health status of the KEI battery, develops track files on threat targets, computes engagement geometries, issues launch commands, and sends in-flight track updates to the KEI interceptors through the C-band, KEI In-flight Communications System (KICS).

4.2 ~~(FOUO)~~ Launcher Component: The launcher component is a 4-axis trailer mounting two interceptors in canisters, known as all-up rounds (AURs). It is towed by a MOTS tractor, the M1070 Heavy Equipment Transporter (HET). The launcher is capable of traveling over primary and secondary roads and has limited off-road capability. During movement, the canisters are placed in the down position. Upon arrival at the deployment location, the trailer is detached from the tractor, outriggers are extended to stabilize the trailer, and the canisters are raised to a near-vertical position (85^{o}). When fired, the interceptor is cold-launched, meaning it is ejected up and out of the canister using a gas generator before the missile's first stage motor ignites. After launch, empty canisters are removed and replaced with new AURs for a rapid return to mission readiness.

4.3 ~~(FOUO)~~ Interceptor Component: KEI's interceptor component consists of a two-stage, high acceleration, high burn-out velocity booster that carries a payload under a protective shroud that's made up of a third-stage rocket motor and an agile kill vehicle (KV). Overall, the missile will be 40 inches in diameter and 466 inches long, and will weigh approximately 23,000 pounds. In addition to its KEI applications, the booster stack is designed to be a common vehicle for advanced midcourse KVs that MDA is currently developing, such as the Multiple KV (MKV) and advanced discrimination payloads. The third-stage rocket motor is a two-pulse device used to provide early divert capability or to accelerate the KV to even higher velocities. The KV itself weighs approximately 180 pounds and uses a two-color infrared seeker for target tracking during the final stages of the engagement. It has a liquid hydrazine-based divert and attitude control system to achieve its great agility (i.e., a high delta velocity).

5.0 (U) KEI PROGRAM STATUS:

5.1 (U) Current Program Status:

(U) The land-mobile KEI is in the early stages of a Development and Test (D&T) phase that will result in a Block 14 boost/ascent/midcourse missile defense capability. MDA/KI is managing the KEI program. A Northrop Grumman-led contractor team is the developer.

~~(FOUO)~~ During FY05-08, the KEI program is focusing on risk reduction and objective system capability engineering. Several development verification tests (DVTs) aimed at mitigating the risks in the booster, kill vehicle, and KEI fire control areas are currently underway. The booster DVT will culminate in an FY08 Booster Flight, a test that may be critical to the program's future. In late FY08, the results of these DVTs will be used at a decision review to determine the future course of the KEI program. This review will address a number of key questions, to include: 1) does KEI's progress to date warrant its continuance; 2) have the program's risks been sufficiently mitigated to proceed on its planned schedule or should it proceed more slowly; 3) should initial testing focus on boost phase defense or on the midcourse mission; and 4) should development of a sea-mobile KEI be initiated. The FY08 review is <u>not</u> a production decision.

~~(FOUO)~~ The results of the DVTs are influencing the design of the objective system (i.e., the Block 14 land-mobile KEI), which is proceeding in parallel with the risk reduction tests. A series of reviews (specifically a System Design Review and Design Reviews 0, 1, and 2) will lead the KEI design to an increasing level of depth and maturity. It is our intent that Design Review 2 will establish the Block 14 production design – the design that can be taken into production should a decision be made to proceed. The land-mobile KEI's D&T phase will culminate in at least ten intercept tests scheduled for FY12-15. As a result, it is not a candidate for transfer during the FY08 POM window (i.e., FY08-13). Transition of any KEI capabilities during that time period is to be determined.

5.2 ~~(FOUO)~~ The Way Ahead for KEI: Future developments may include the sea-mobile KEI or the integration of advanced payloads on the KEI common booster (e.g., MKV or advanced discrimination payloads). These options are not currently funded.

6.0 (U) ORGANIZATIONAL RESPONSIBILITIES (DOTMLPF Plus):

6.1 (U) Doctrine: Roles and responsibilities associated with the development of doctrine, tactics, techniques, and operating procedures will be defined once a lead Service is designated.

6.2 (U) Organization: Roles and responsibilities associated with the organizational structure of any operational land-mobile KEI fire units will be defined once a lead Service is designated.

6.3 (U) Training: MDA, through the Northrop Grumman contractor team, is responsible for the training of warfighters who will participate in the latter stages of KEI's developmental testing. Roles and responsibilities associated with the training for any operational land-mobile KEI fire units will be defined once a lead Service is designated.

6.4 (U) Materiel: Roles and responsibilities associated with the materiel needs of the operational land-mobile KEI, including such items as common support equipment, post-deployment software support, safety certifications, hazard classification, insensitive munitions compliance, and materiel release approval, will be defined once a lead Service is designated.

6.5 (U) Leadership Development: Roles and responsibilities associated with leadership development and education of operational land-mobile KEI crewmembers will be defined once a lead Service is designated.

6.6 (U) Personnel: Roles and responsibilities associated with the identification of the numbers, occupational specialty codes, and skills and competencies of user personnel needed for an operational land-mobile KEI will be defined once a lead Service is designated.

6.7 ~~(FOUO)~~ Facilities: MDA, through the Northrop Grumman contractor team, is responsible for the design, construction, check-out, and maintenance of facilities necessary to support the development of the land-mobile KEI. This includes a software and processor in-the-loop test facility called the System Integration Laboratory (SIL), a hardware-in-the-loop test site called the System Integration Facility (SIF), and an Element Integration Facility (EIF). The EIF will serve as both an assembly and storage location for all KEI test interceptors and as the assembly site for any production KEI missiles. The SIL will be located at a Northrop Grumman complex in Huntsville, AL. The locations of the SIF and EIF will be determined as a result of an on-going trade study. Roles and responsibilities associated with the design, construction, check-out, and maintenance of facilities necessary for basing an operational land-mobile KEI will be defined once a lead Service is designated.

6.8 ~~(FOUO)~~ Security: MDA, through the Northrop Grumman contractor team, is responsible for the overall security and force protection of KEI facilities during the program's development and test phase. This includes information assurance and communications, operations, and industrial security. For example, Northrop Grumman will provide all security for the SIL at its Huntsville, AL complex and for the SIL and EIF should they also be located on Northrop Grumman property. If the SIF and EIF are located on U.S. military installations, the military will provide the first level of security and force protection, meaning base or installation perimeter defense, but MDA and Northrop Grumman will still be responsible for the security of the facilities themselves. Roles and responsibilities associated with security and force protection of an operational land-mobile KEI will be defined once a lead Service is designated.

6.9 (U) Test Strategy:

(U) The primary objective of KEI's testing is to assess and verify the land-mobile KEI's boost, ascent, and midcourse intercept capabilities. The test strategy is documented in a draft Developmental Master Test Plan and is made up of Developmental Test & Evaluation (DT&E) activities, lethality testing, and future Operational Test & Evaluation (OT&E) efforts.

~~(FOUO)~~ DT&E of the land-mobile KEI consists of early development verification tests, followed at the element level by ground and flight tests and deployability and supportability demonstrations. The FY05-08 DVTs are reducing component risks and providing important data for the KEI's design. The culmination of these early tests is the Booster Flight in FY08 which will test the ability of the first and second stages of the interceptor to achieve the desired acceleration and burn-out velocity while carrying a mass that simulates the third-stage rocket motor and KV. Extensive ground testing will be accomplished both at the component and element levels. Component hardware and software will be tested in software integration labs and small-scale hardware-in-the-loop facilities. The integrated element hardware and software will undergo rigorous testing at the SIL and SIF, and pre-mission functional tests will be conducted at the EIF on the actual flight equipment prior to each flight test. Besides the Booster Flight, three additional interceptor-only flight tests are planned, and if those are successful, intercept flight tests will begin in FY12. At least ten intercepts are planned. Injection of operational realism into the land-mobile KEI's DT&E is ensured through several means. First, two deployability and supportability demonstrations are planned that will have extensive warfighter involvement. Second, the last six flight tests will use the Block 14 KEI production design hardware and software. Third, warfighters will be integrated into the last few intercept flight tests, to the point that they, and not the contractor team, will operate the KEI during the last DT&E mission.

~~(FOUO)~~ Lethality testing will assess the KEI's ability to negate threat payloads. This testing will simultaneously serve to accomplish any Live Fire Test & Evaluation (LFT&E) requirements imposed by Title 10. KEI's lethality tests consist of extensive first principles physics simulations of KEI intercepts (i.e., KV-threat payload collisions) using hydro-codes and finite element models. These results will then be corroborated by the data from the DT&E flight tests using realistic mock payloads.

~~(FOUO)~~ Because a lead Service has not been identified for KEI, and hence no Service operational test agency (OTA) has been specified, only very preliminary discussions have been held with DOT&E and the OTAs concerning OT&E of the land-mobile KEI. Once a lead Service is identified, OT&E discussions and planning will begin in earnest. Expectations are that the OT&E will piggyback off the planned DT&E events during FY12-15, but any dedicated OT&E will not occur until FY14/15.

6.9.1 (U) Test Responsibilities: MDA is responsible for funding, planning, and conducting KEI's lethality testing activities and for funding KEI's DT&E efforts. Per the D&T contract, the contractor team is responsible for planning and conducting all KEI DT&E, with the insight and advice of MDA. The roles and responsibilities of MDA's Combined Test Force (CTF) in the land-mobile KEI's DT&E are to be determined pending further discussions with the CTF. Roles and responsibilities associated with OT&E of the land-mobile KEI will be defined once a lead Service is designated.

6.9.2 (U) Test Funding:

$ in Millions	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
DT&E funding	4.0	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Lethality test funding	0.4	1.1	10.0	24.9	21.3	28.0	23.9	15.3
OT&E funding	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD

Table K-6.1 ~~(FOUO)~~ Land-Mobile KEI's Test & Evaluation Funding by Fiscal Year (Pre-Decisional Funding Figures)

~~(FOUO)~~ The $4 million in FY06 for DT&E represents some initial test planning by the KEI contractor team. The DT&E funding for FY07-13 will be determined by the fall of 2006. OT&E funding for FY06-13 will be determined after further discussions with DOT&E and the lead Service's operational test agency.

6.10 (U) Supportability Strategy: Roles and responsibilities associated with the development of a supportability strategy for the operational land-mobile KEI, including such issues as the number of maintenance support levels, degree of contractor logistics support, and the impact of the warranties embedded in the KEI D&T contract will be defined once a lead Service is designated.

7.0 (U) CONTRACT STATUS:

7.1 ~~(FOUO)~~ Current Contract: In December 2003, MDA awarded the KEI Development and Test program to Northrop Grumman (# HQ0006-04-C-0004). At the time, the contract was scheduled to end in CY12. Since 2003, the contract has been modified to add new ascent and midcourse requirements work and risk reduction activities (e.g., DVTs). The latter involved adding some new work content and the rescheduling of content already on contract. Two additional contract modifications are in process. The first will modify the contract to adjust for significant budget cuts the program has incurred and the resulting stretch in schedule. The second will add full midcourse capability and a requirement to meet MDA core requirements (e.g., anti-tamper and nuclear hardening). All of these changes will affect the delivery of the KEI capability – shifting it from a Block 10 to a Block 14 delivery and extending the contract end date to FY15. When the modifications that are currently in process are complete, the KEI D&T contract will encompass the design, fabrication, integration, and developmental test of a land-mobile, boost/ascent/midcourse missile defense element. It also contains priced but unfunded options for production of the land-mobile KEI, should a production decision be made in the future. These options allow for the production of 4 to 12 interceptors per year and up to four launchers and four KEI fire control units per year. The contract also includes priced but unfunded options for warranties on the production interceptors, launchers, and KEI fire control units. Under these options, the contractor team will warrant the performance of the items for up to 10 years after delivery.

7.2 (U) Future Contracts: No future contracts for KEI have been identified at this time.

8.0 (U) PLAN FOR TRANSITION ACTIONS/MILESTONES:

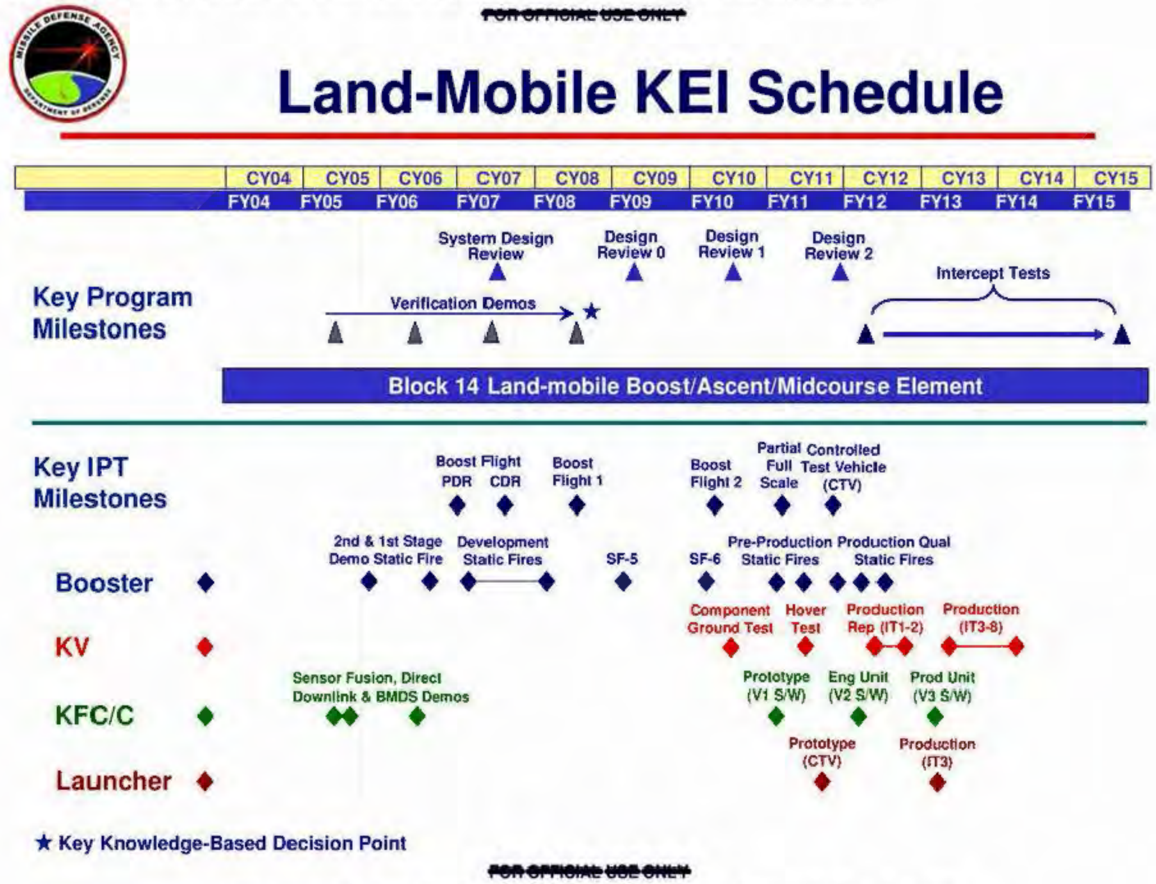

Figure K-8.1 ~~(FOUO)~~ Land-Mobile KEI's Schedule

8.1 (U) KEI Schedule: The overall KEI program schedule, per the FY07 President's Budget (PB), is shown above in Figure K-8.1. It does not show any formal transition or transfer events because in the absence of both a lead Service and a production decision for the land-mobile KEI, no such activities have been planned. This schedule is a living document and will be updated and refined as necessary. See Section 5.0 for descriptions of the events shown in Figure K-8.1.

9.0 (FOUO) FUNDING: The funding levels shown in Table K-9.1 below represent KEI's FY07 PB position for continuing the D&T program. All funds are MDA monies; no Service funds have yet been allocated to the KEI program. No procurement or operations and sustainment funds are included in KEI's budget profile. These RDT&E funds pay for the design, fabrication, integration, and test of the land-mobile KEI. This includes the purchase of the following for developmental testing: three launchers, four KFC/C sets, and twelve interceptors (including spares).

$ in Millions	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
RDT&E funds	202	386	400	852	1,149	1,651	1,426	1,239
Procurement funds	0	0	0	0	0	0	0	0
O&S funds	0	0	0	0	0	0	0	0

Table K-9.1 ~~(FOUO)~~ Land-Mobile KEI's Funding Profile by Fiscal Year (Pre-Decisional Funding Figures)

10.0 (U) AGREEMENTS AND COMMITMENTS: None to date as this is dependent on the designation of a lead Service.

10.1 (U) Initial KEI Transition and Transfer Activities: KEI has had informal discussions and interactions with the Services in several important areas. These include:

- (U) Participation with Users in the annual Nimble Titan wargame to assess issues such as shot doctrine, inventory management and lethality confirmation.
- (U) Discussions with DOT&E and the OTAs on KEI's developmental test plans, the proper methodology for using modeling and simulation to assess performance, and KEI's lethality test strategy.
- (U) Early User involvement is a requirement of the land-mobile KEI contract. Under the auspices of the Army's SMDC, Northrop Grumman has been working with Army soldiers on the design of the system. For example, soldiers have been assisting with the design of the KFC/C consoles, including console layout, information that needs to be presented, and the formatting of that information.
- ~~(FOUO)~~ A land-mobile KEI operational concept briefing is currently in draft and will be completed by the end of 2Q FY2006. At that time, we hope a lead Service will review it for accuracy and completeness and help us develop a detailed operational concept document that the Service will adopt as its own.
- (U) Initial development of the Operational Readiness Levels (ORLs) concept. ORLs are a tool for the lead Service to assess their readiness to receive the transition of a BMDS element, by measuring progress in each of the DOTMLPF areas as that element proceeds through its development at MDA. We have begun briefing this concept to the User community, but it will at the latter's discretion as to whether they use ORLs.
- (U) A joint MDA/Navy Alternatives Assessment is on-going to determine the optimum interim and long-term platform(s) for a sea-based KEI.

11.0 REFERENCES:

1. Draft KEI Developmental Master Test Plan, dated 03 February 2006

2. KEI FY07 President's Budget

12.0 ACRONYMS:

ACS = Attitude Control System
AUR = All Up Round
BMDS = Ballistic Missile Defense System
C2BMC = Command, Control, Battle Management, and Communications
CDR = Critical Design Review
CNIP = Common Network Interface Processor
CTF = Combined Test Force
CY = Calendar Year
D&T = Development and Test
DOT&E = Director, Operational Test and Evaluation
DOTMLPF = Doctrine, Organization, Training, Materiel, Leadership (Development & Training), Personnel, and Facilities
DSP = Defense Support Program
DT&E = Developmental Test and Evaluation
DVT = Development Verification Test
EIF = Element Integration Facility
FY = Fiscal Year
HET = Heavy Equipment Transporter
ICBM = Intercontinental Range Ballistic Missile
IRBM = Intermediate Range Ballistic Missile
KEI = Kinetic Energy Interceptors
KFC/C = Kinetic Energy Interceptors Fire Control and Communications
KICS = KEI In-Flight Communications System
KV = Kill Vehicle
LDACS = Liquid Divert and Attitude Control System
LFT&E = Live Fire Test and Evaluation
M = Millions
MDA = Missile Defense Agency
MOTS = Military-Off-The-Shelf
MRBM = Medium Range Ballistic Missiles
ONIR = Overhead Non-imaging Infrared
ORL = Operational Readiness Level
OTA = Operational Test Agency
OT&E = Operational Test and Evaluation
PB = President's Budget
PDR = Preliminary Design Review
RDT&E = Research, Development, Test, and Evaluation

SIF = System Integration Facility
SIL = System Integration Laboratory
SMDC = US Army Space and Missile Defense Command
USD(AT&L) = Undersecretary of Defense for Acquisition, Technology, and Logistics

13.0 (U) DEFINITIONS:

(U) All Up Round (AUR) – a single interceptor placed in a sealed canister that serves as both a shipping container/protective outer covering and as a launch tube. Two AURs are mounted on the trailer of each KEI launcher.

(U) Ascent Phase – that portion of a target's flight trajectory from final booster engine cut-off to apogee. For KEI program purposes, ascent is divided into two halves: pre- and post-deployment.

(U) Deployment - the point in the ascent portion of a target's flight trajectory when the threat payload separates from the post-boost vehicle or upper stage and any countermeasures are released.

(U) Development Verification Test (DVT) – a test conducted with prototype KEI hardware and software designed to reduce risk and show proof of concept.

(U) Element Integration Facility (EIF) – a facility for assembling KEI interceptors from components manufactured elsewhere and delivered to the EIF (e.g., Stage 1 & 2 motors, 3rd stage rocket motor, and kill vehicle). It is also the site where interceptors will be functionally checked prior to use in flight tests.

~~(FOUO)~~ KEI In-flight Communication System (KICS) – a C-band link between the KFC/C and the interceptor, which uplinks updated target tracking data to the interceptor and downlinks interceptor health status and, during the last few seconds prior to intercept, images of the target from interceptor's 2-color seeker.

(U) System Integration Facility (SIF) – a hardware-in-the-loop facility that is used for element-level testing of KEI. It will also serve as a training site for contractor and military operators of KEI.

(U) System Integration Laboratory (SIL) – a software and processor-in-the-loop facility that is used for element-level testing of KEI.

14.0 LIST OF FIGURES AND TABLES:

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BALLISTIC MISSILE DEFENSE SYSTEM

TRANSITION AND TRANSFER PLAN

Annex L

Patriot Advanced Capability (PAC3)/Medium Extended Air Defense System (MEADS) Combined Aggregate Program (CAP)

Missile Defense Agency/HQDA
7100 Defense Pentagon
Washington, DC 20301-7100

BMDS Transition and Transfer Plan
Annex L

PAC3/MEADS CAP

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EXECUTIVE SUMMARY

~~(FOUO)~~ The CAP Annex updates the March 2003 Under Secretary of Defense (Acquisition, Technology, and Logistics) (USD(ATL))-approved PAC3 Transfer and MEADS Realignment Plan from MDA to the Army. The Annex also provides a forward look as both the BMDS and CAP programs evolve.

~~(FOUO)~~ Although the Army is now responsible for PAC-3 procurement and the PAC-3/MEADS combined aggregate development program, MDA remains responsible for the BMDS'configuration control, interoperability and integration efforts. The Army and MDA continue to work together to ensure the successful integration of the PAC-3/MEADS capabilities into the BMDS as per the Mar 03 PAC3 Transfer and MEADS Realignment Plan. The Army has been an active participant in MDA's Configuration Control Board (CCB) process, as well as with all relevant systems engineering and technical coordination processes.

~~(FOUO)~~ Regarding current funding, MDA approved $5.82M (FY05: $.42M received; FY06: $2.8M; FY07: $1.6M; FY 08: $1M) for the Lower Tier Project Office (LTPO) to execute an Upper Tier Debris Mitigation Engineering Change Proposal (ECP) that will be implemented in PATRIOT Post Deployment Build (PDB)-6.5 available for BMDS Block 08. Regarding future funding, MDA plans to provide LTPO up to $4M (ROM) for FY06 and $3.75M for FY07 for LTPO support of BMDS RDT&E efforts. As of 1 Feb 06, MDA provided LTPO an initial input of $1M in FY06 funding for BMDS support activities detailed in section 9. For POM 08-13, MDA plans to provide LTPO a total ROM of $25M for support of BMDS RDTE efforts. See sections 3.1 and 9 for additional details regarding LTPO's future funding requirements The CAP Annex will codify an agreement in principle for MDA funding, with the specific details (amount, activities, etc) codified in another funding-related agreement updated annually (ie, MDA Program Management Directive). MDA provided

~~(FOUO)~~ The Army will continue to inform MDA of CAP-related issues impacting the BMDS via the MDA CCB process and other venues (ie, periodic System Element Reviews, Army/MDA Board of Director meetings, etc). The Army Liaison Office at MDA will continue to serve as the primary focal point for facilitating Army/MDA information flow and issue resolution involving the CAP and the BMDS.

BMDS Transition and Transfer Plan
Annex L
PAC3/MEADS CAP

1. ~~(FOUO)~~ PURPOSE: The CAP Annex updates the March 2003 USD(ATL)-approved PAC3 Transfer and MEADS Realignment Plan from MDA to the Army. The Annex also provides a forward look as both the BMDS and CAP programs evolve.

2. ~~(FOUO)~~ FACTS AND ASSUMPTIONS:

2.1. ~~(FOUO)~~ Facts: The Mar 03 PAC3 Transfer and MEADS Realignment Plan defined how the Army and MDA would coordinate activities to ensure that CAP remains interoperable with the BMDS. The plan remains in effect unless specifically modified by the provisions of the CAP Annex to the BMDS Transition and Transfer Plan.

2.2 ~~(FOUO)~~ Assumptions: N/A

3.0 ~~(FOUO)~~ OPEN ISSUES: *Discussion:* LTPO requests MDA provide RDTE funding (ROM - FY06: $4M, FY07: $3.75M, FY08-13: $25M) for continued LTPO support of BMDS development activities (to include T&E support, validation/verification of modeling/simulation efforts, analysis of information assurance /threat/safety/technical specification requirements, and providing responses to MDA requests for CAP information). As of 1 Feb 06, MDA provided LTPO an initial input of $1M in FY06 funding for BMDS support activities detailed in section 9. *Impact*: PBD 753 resulted in significant funding cuts for the Program Executive Office for Missiles and Space (PEO MS) and its Project Management Offices (to include LTPO). This severely impacts LTPO's ability to provide the level of BMDS development support required by MDA. The LTPO Level of Effort (LOE) required to support the BMDS will likely increase as the CAP program matures, but the rate of increase is difficult to estimate. Thus, LTPO projected a 3% annual increase based on the FY06-07 cost estimate to forecast the estimated cost of LTPO support for POM 08-13 (see Section 9 for a detailed breakout by FY). The CAP Annex will codify an agreement in principle for MDA funding, with the specifics (amount, activities, etc.) codified in another funding-related agreement updated annually (i.e., MDA Program Management Directive). *Recommendation*: MDA provide funding to PEO MS/LTPO.

4.0 ~~(FOUO)~~ PROGRAM/SYSTEM DESCRIPTION

~~(FOUO)~~ Patriot is an advanced Surface-to-Air guided missile system with a high probability of kill capable of operation in the presence of Electronic Countermeasures (ECM) and able to conduct multiple simultaneous engagements against high performance cruise missiles, unmanned aerial vehicles, and ballistic missiles likely to be encountered by U.S. Forces. The system utilizes a multifunction Phased Array Radar, a digital computer controlling system function, a guidance system combining command and homing (track-via-missile) features, and provides the operator the ability to control operations. The system integrated with the U.S. Air Force and U.S. Navy in the overall air defense of theater operations.

~~(FOUO)~~ The Patriot Advanced Capability (PAC)-3 program is a result of a series of integrated, phased system improvements in combination with the PAC-3 missile, which uses hit-to-kill technology. Modification to the system, which includes radar enhancements, communications upgrades, and increased command, control, and computer capability, will increase Patriot's effectiveness, survivability, flexibility of defense design, footprint, and detection of smaller low radar cross section targets.

~~(FOUO)~~ The FY06/07 budget combines the PAC-3/MEADS program based on a Milestone B decision, 1 July 2004. The Army revised the MEADS acquisition strategy to combine management, development, and fielding of both the MEADS and Patriot systems.

~~(FOUO)~~ The Patriot/MEADS CAP will provide for the evolution of the Patriot/PAC-3 system to the MEADS objective system through the early introduction of the MEADS Major End Items. This approach provides for earlier fielding of enhanced air and missile defense capabilities across the currently fielded force to counter the evolving threat and allow for the knowledge that was gained in the development and fielding of the Patriot System to be fused into the MEADS program. The PAC-3 missile is the baseline missile for the MEADS system. The Missile Segment Enhancement (MSE) missile, which provides for greater ranges, will be the objective missile for the system. The first year of procurement for the MSE missile (initial production facilitization) and the MEADS Ground Support Equipment (initial BMC4I) will begin in FY08.

5.0 ~~(FOUO)~~ PROGRAM STATUS: See attachments 1 to 9, following page L-7, for current status and way ahead for major CAP program activities.

6.0 ~~(FOUO)~~ ORGANIZATIONAL RESPONSIBILITIES (DOTMLPF plus)

~~(FOUO)~~ Section 4 of Mar 03 PAC3 Transfer and MEADS Realignment Plan defined organizational responsibilities for a wide range of activities following the transfer and realignment of the programs from MDA to the Army. These responsibilities are still valid (unless specifically modified by this Annex).

~~(FOUO)~~ Future organizational responsibilities for the majority of DOTMLPF plus items below cannot be assessed at this time without further definition/understanding of a C2BMC Concept of Operations (CONOPS). For example, C2BMC CONOPS and other potential algorithms may directly impact joint/theater air and missile defense doctrine. New materiel and equipment may be required based on changes to doctrine and CONOPS. Regarding personnel and leader development, CONOPS/doctrinal/materiel changes may impact existing Soldier Military Occupational Specialties and Officer specialties, resulting in changes to how Army theater air and missile defense personnel are trained. Any changes in materiel and training may impact logistics/supportability/facilities. Thus, organizational responsibilities for future DOTMLPF activities/funding related to CAP/BMDS integration will be defined in future Annex updates following a complete Army/MDA assessment of C2BMC CONOPS on joint/theater air and missile defense operations.

6.1 ~~(FOUO)~~ Doctrine: TBD

6.2 ~~(FOUO)~~ Organization: TBD

6.3 ~~(FOUO)~~ Training: TBD

6.4 ~~(FOUO)~~ Materiel: TBD

6.5 ~~(FOUO)~~ Leadership Development: TBD

6.6 ~~(FOUO)~~ Personnel: TBD

6.7 ~~(FOUO)~~ Facilities: TBD

6.8 ~~(FOUO)~~ Security: See paragraph 4.10 of the Mar 03 PAC3 Transfer and MEADS Realignment Plan from MDA to the Army for security agreements.

6.9 ~~(FOUO)~~ Test Strategy: The Army will remain responsible for CAP program testing. The Army will coordinate with MDA regarding CAP participation in any BMDS-level tests. As per paragraph 4.13 of the Mar 03 PAC3 Transfer and MEADS Realignment Plan from MDA to the Army: "MDA will fund the participation of the fielded PAC3 system participation in BMDS test bed activities/exercises as required to support overall BMDS objectives". See section 9 for ROM of MDA funding required for CAP participation in these tests.

6.10 ~~(FOUO)~~ Supportability Strategy: TBD

7.0 ~~(FOUO)~~ CONTRACT STATUS: The Army will remain responsible for all current and future CAP-related contracts.

8.0 ~~(FOUO)~~ PLAN FOR TRANSITION ACTIONS/MILESTONES

8.1 ~~(FOUO)~~ SCHEDULE: N/A. No transition/transfer schedule is needed given the program transferred to the Army in Mar 03.

9.0 ~~(FOUO)~~ FUNDING:

Current MDA Funding For Upper Tier Debris Mitigation ECP -0024 ($M) On file as POM Issue Sheet CCN: 07R-XP-X01

FY05	FY06	FY07	FY08	Total
$.42M Received	$2.8M	$1.6M	$1.M	$5.82M

Additional MDA funding ROM needed for LTPO support of BMDS development ($M)

	FY06	FY07	FY06/07 Total	FY08	FY09	FY10	FY11	FY12	FY13	POM 08 Total
Travel	$.04	$.04	$.08	$.04	$.04	$.04	$.04	$.05	$.05	$0.26
Analyses	$1.89	$1.19	$3.08	$1.23	$1.27	$1.31	$1.35	1.39	$1.43	$7.98
M&S V&V	$.25	$.5	$.75	$.52	$.53	$0.55	$.56	$0.58	$.60	$3.34
IA	$0	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Product Assurance	$0	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Safety	$0	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
ADP	$.6	$.3	$.9	$.31	$.32	$.33	$.34	$.35	$.36	$2.01
Spec	$.32	$.32	$.64	$.33	$.34	$.35	.36	$.37	$.38	$2.13
T&E	$.96	$1.4	$2.36	$1.44	$1.49	$1.53	$1.58	$1.63	$1.68	$9.35
Total	$4.06	$3.75	$7.81	$3.87	$3.99	$4.11	$4.23	$4.36	$4.49	$25.05

~~(FOUO)~~ Notes (The figures above and rationale below were briefed to MDA DM on 19 Oct 05. Attachment 10 is the POM issue sheet provided to MDA DM):

~~(FOUO)~~ MDA has provided LTPO with $1M initial FY06 budget to support the following activities:

1. **Travel ($40K)**
   - Task 1 – Travel to support JADGE related meetings
     - Includes 2 trips to Pearl and 2 trips to Tokyo
   - Task 2 – Travel to support other BMDS related meetings
     - These dollars are for attending CONUS AND OCONUS meetings to support BMDS activities.

2. **Specification Compliance ($150K)**
   - Task 1 – PATRIOT will receive the DOORS Version 7.1 License from MDA – already funded by JNIC
   - Task 2 – Data base management
     - LTPO will manage the PATRIOT transitions to DOORS
     - LTPO to provide for tracking of BMDS/LTPO PAC-3/CAP specifications for requirement accountability
     - Report of LTPO verification status

3. **ADP Threat Compliance ($200K)**
   - Task 1 – Review BMDS Block 06 ADP threat definitions that apply to LTPO and compare with the BMRD-based threat systems that have already been analyzed by LTPO
   - Task 2 – Ensure the data format of the signature and trajectory of the ADP-06 systems are suitable for use to support LTPO Block 06 capability design, assessment, and verification. Verify that LTPO model properly simulates intended uses (kinematics, signature) of the ADP-06 threat system definition
   - Task 3 – Identify the ADP-06 verification and assessment threat to be conducted by LTPO
   - Task 4 – Participate in MDA Common threat initiative by attending the regularly scheduled Threat Systems Engineering Sub-Group
   - Work collaboratively with SE and TSESG to develop verification and assessment vignettes.

4. **U.S. Japan Technical Support ($150K)**
   - Task 1 – PATRIOT Liaison to JADGE Activities
     - LTPO to provide data and SMEs for JADGE/BADGE development and planning activities
       - C2 for the extended air defense
       - PATRIOT to Japan Forces - interface control
       - FBX-T Radar – cues for early warning, site location
   - Task 2 – LTPO Support to Technical Sub Group (TSG)
     - LTPO to provide data and SMEs for TSG
       - Responding to technical requests and finding POCs
       - Includes 2 trips to Pearl and 2 to Tokyo – costed in the Travel funding line at ($25K)

- Task 3 – LTPO Support to Coordination Sub Group (CSG)
  - LTPO to provide data and SMEs for Coordination Subgroups
    - Responding to policy group to prepare MOUs, etc.

5. Analysis and Verification Activities ($285K)
- Task 1 – Analyses of BMDS architecture, system specs, and other technical documentation
  - Day-to-day activities/actions required to support MDA
  - Upcoming examples:
    - SE SDR/IDR – Feb/Mar 2006
    - MIP Revisions – Feb/Aug 2006
    - SIP issues resolution participation for Block 06 Theater environments
- Task 2 – Analysis and Verification Efforts
  - ICAR Activities which are costed below
  - "Ilities" verification

6. Interim Capabilities Assessment Report ($175K)
- Task 1 – PATRIOT System Issues
  - LTPO to provide PATRIOT Category 1 issues data
    - PATRIOT Block 04
    - PATRIOT Block 06
    - Provide SMEs for technical support
- Task 2 – PATRIOT Raid Size Capacity
  - LTPO to provide historical analytical results
    - PATRIOT Block 04
- Task 3 – PATRIOT Block 06 TOG Metrics
  - LTPO to provide PACSIM and FMS computer runs results
    - Using ADP vignettes for ICAR TOG Metrics (Pes, DA, Raid Size Capacity, etc.)
    - Provide information on models to capture capabilities and limitations
- Task 4 – PATRIOT Probability of Availability
  - PATRIOT Block 04/Block 06

<u>Other MDA funding for LTPO:</u>

TE will fund $3.0 for FY06 and FY07 LTPO test support

10.0 ~~(FOUO)~~ AGREEMENTS AND COMMITMENTS:

10.1 ~~(FOUO)~~ PAC3 Transfer and MEADS Realignment Plan, dtd 5 Feb 03, approved by USD(ATL) 31 Mar 03

10.2 ~~(FOUO)~~ POM Issue Sheet CCN: 07R-XP-X01 for Upper Tier Debris Mitigation ECP -0024; $5.82M FY05-08 Funding for ECP approved by Dir, MDA during 17 Mar 05 CCB

11.0 ~~(FOUO)~~ REFERENCES

11.1 ~~(FOUO)~~ PAC3 Transfer and MEADS Realignment Plan, dtd 5 Feb 03, approved by USD(ATL) 31 Mar 03

12.0 ~~(FOUO)~~ ACRONYMS

CAP: Combined Aggregate Program
ECM: Electronic Countermeasures
LTPO: Lower Tier Project Office
MEADS: Medium Extended Air Defense System
MSE: Missile Segment Enhancement
PAC: Patriot Advanced Capability
PEO MS: Program Executive Office for Missile and Space
CONOPS: Concept of Operations

13.0 ~~(FOUO)~~ DEFINITIONS: N/A

14.0 ~~(FOUO)~~ LIST OF FIGURES AND TABLES

Attachments:

1. PATRIOT-MEADS Combined Aggregate Program Schedule
2. PAC3 Missile Schedule
3. Missile System Enhancement (MSE) Solid Rocket Motor (SRM) and Critical Design Review (CDR)
4. MSE CDR
5. Recapitalization/Radar Enhancement Program (REP) III Program Status
6. Post-Deployment Build 6 Status
7. Upper Tier Debris Mitigation Status
8. MEADS Design and Development Status
9. BMDS Test Schedule (Draft)
10. MDA POM Issue Sheet (CAP UFRs); dated 21 Oct 05

Attachment 1
As of 1 Feb 06

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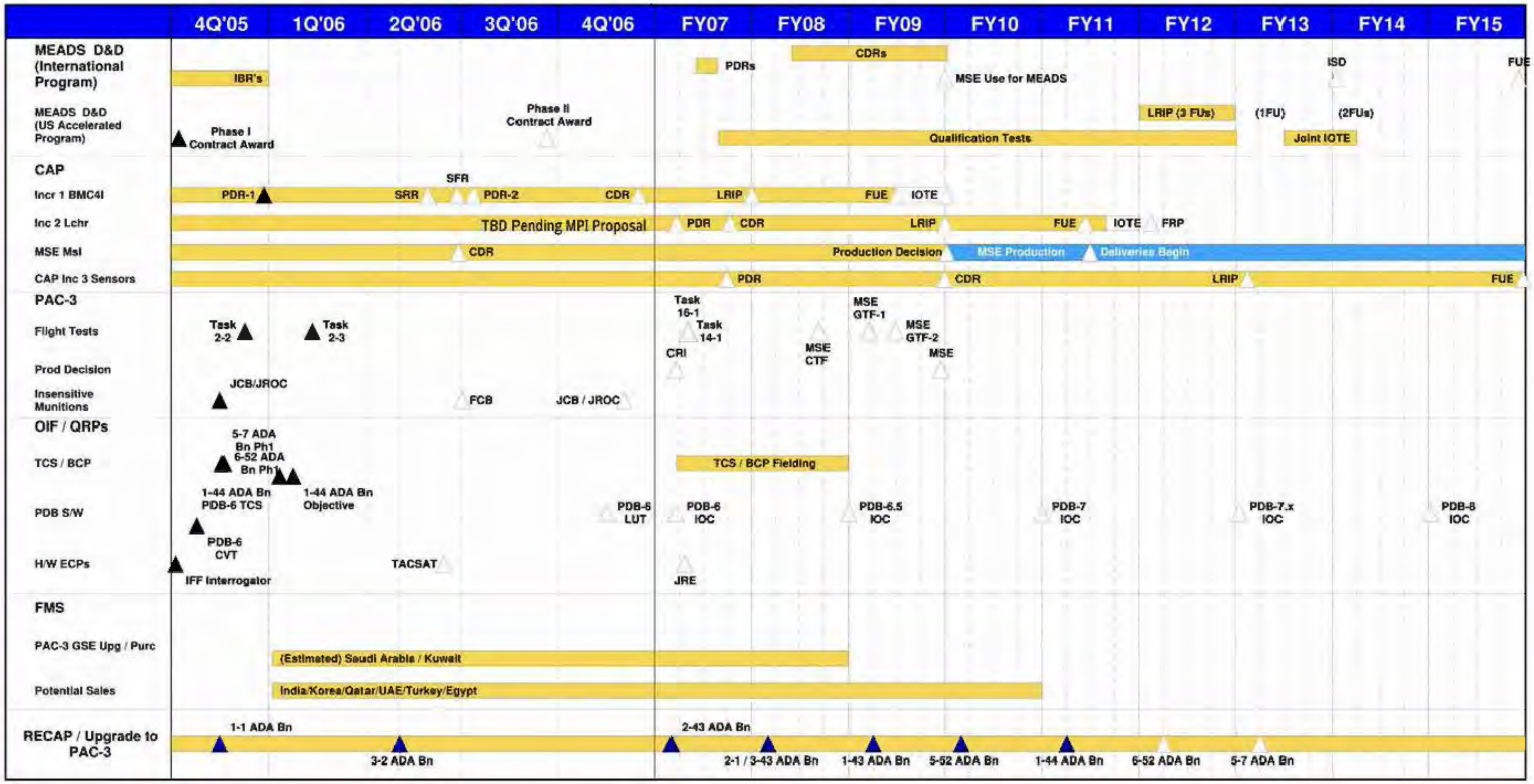
PATRIOT / MEADS
Combined Aggregate Program (U)

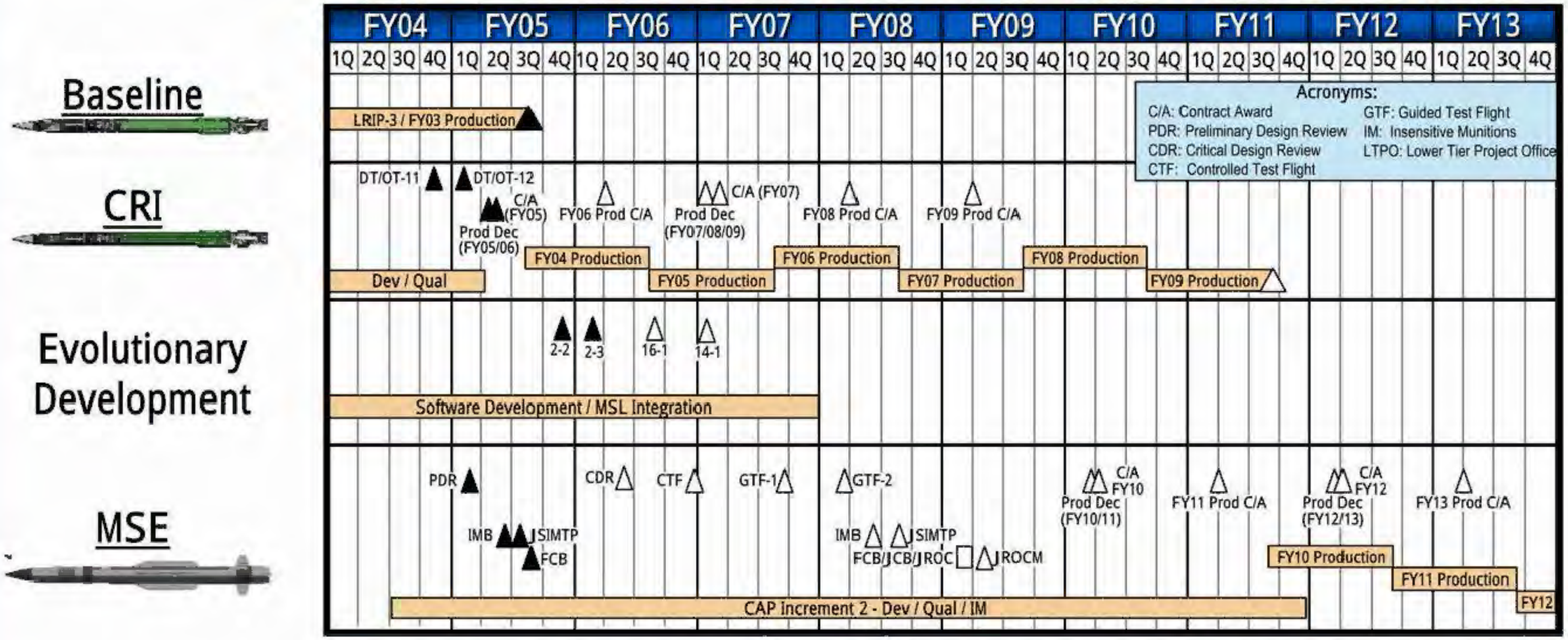


- ADA (Air Defense Artillery)
- BCP (Battery Command Post)
- BMC4I (Battle Mgmt Command, Control, Communications and Computers Intelligence)
- Bn (Battalion)
- CDR (Critical Design Review)
- CTF (Control Test Flight)
- CVT (Contractor Evaluation Test)
- D&D (Design and Develop)
- DT/OT (Developmental / Operational Test)
- ECP (Engineering Change Proposal)
- EDR (Embedded Data Recorder)
- FCB (Functional Configuration Board)
- FRP (Full Rate Production)
- FUE (First Unit Equipped)
- GTF (Guided Test Flight)
- IBR (Integrated Baseline Review)
- IOC (Initial Operating Capability)
- IOTE (Initial Operational Test and Evaluation)
- ISD (In-Service Date)
- JRE (Joint Range Extension)
- LRIP (Low Rate Initial Production)
- LUT (Limited User Test)
- MOU (Memorandum of Understanding)
- MSE (Missile Segment Enhancement)
- PDB (Post Deployment Build)
- PDR (Preliminary Design Review)
- SRR (System Requirements Review)
- TCS (Tactical Control Station)

PAC-3 PAC-2

UNCLASSIFIED

PAC-3 SCHEDULE (U)



356 PAC-3 Missiles Delivered through 1QFY06

MSE Solid Rocket Motor (SRM) AND Critical Design Review (CDR) UPDATE (U)

- **MSE SRM Testing:**
  - Issue – Unsuccessful "Hot Conditioned" SRM Test on Nov 30, 2005
    - Case Ruptured at ~90 msec Due to Overpressure Condition
  - Status – Root Cause Still Unknown. Investigation On-Going.
  - Road-Ahead – Identify Root Cause, Develop Corrective Actions and Retest if Necessary
  - Accomplishments to Date – Six Successful Static Firings
    - Two Pulse 1 Only Tests, Ambient Conditions
    - Two Pulse 2 Only Tests, Ambient Conditions
    - Two Pulse 1 and Pulse 2 Tests, Ambient and Cold Conditions
- **MSE CDR:**
  - Successfully Completed 11 Subsystem and IPT CDRs:
    (Actuator / CAS, LSE, SRM Case, SRM IPT, Battery, ISD, TIVS, Aft IPT, Forward IPT, CLS, SS&P)
  - Needed to Complete One Remaining Event to Successfully Enter CDR (SRM "Hot" Test)
    - Test was Unsuccessful, Resulting in a Delayed CDR
  - Pre-CDR Review (5-8 December). Independent Review Team Comments:
    - Impressed With the Review
    - No Showstoppers to CDR (Other Than SRM Failure)
    - Without SRM Failure, Program Could Have Successfully Entered and Exited CDR
    - "This Was the Way to Conduct CDR Preparations and Reviews."
  - New CDR Date Dependent Upon SRM Analysis. Anticipate 2/3QFY06

MSE CDR (U)

- **Successfully completed 11Subsystem and IPT CDRs:**
  - (Actuator/CAS, LE, SRM case, Battery, ISD, TIVS, Aft IPT, Forward IPT, CLS, SS&P, Program CDR review).
  - Needed to complete one remaining event to successfully enter CDR (SRM "Hot" test)
    - Test was unsuccessful, resulting in a delayed CDR.
- **Program CDR Review (5–8 December). Independent Review Team comments:**
  - Impressed with the review.
  - No showstoppers to CDR (other than SRM failure).
  - Without SRM failure, program could have successfully entered and exited CDR.
  - "This was the way to conduct CDR preparations and reviews."
- **SRM DVT testing:**
  - Successful pulse 2 (ambient temperature) motor test – Apr 05.
  - Successful pulse 1 (ambient temperature) motor test – July 05.
  - Successful pulse 1 & 2 (ambient temperature) motor test – July 05.
  - Successful pulse 1 & 2 (extreme cold temperature) motor test (considered to be the test with the most risk) 29 Nov.
  - Unsuccessful pulse 1 & 2 (extreme hot temperature) motor test - 30 Nov.
    - Failure investigation underway.

Attachment 5
As of 1 Feb 06

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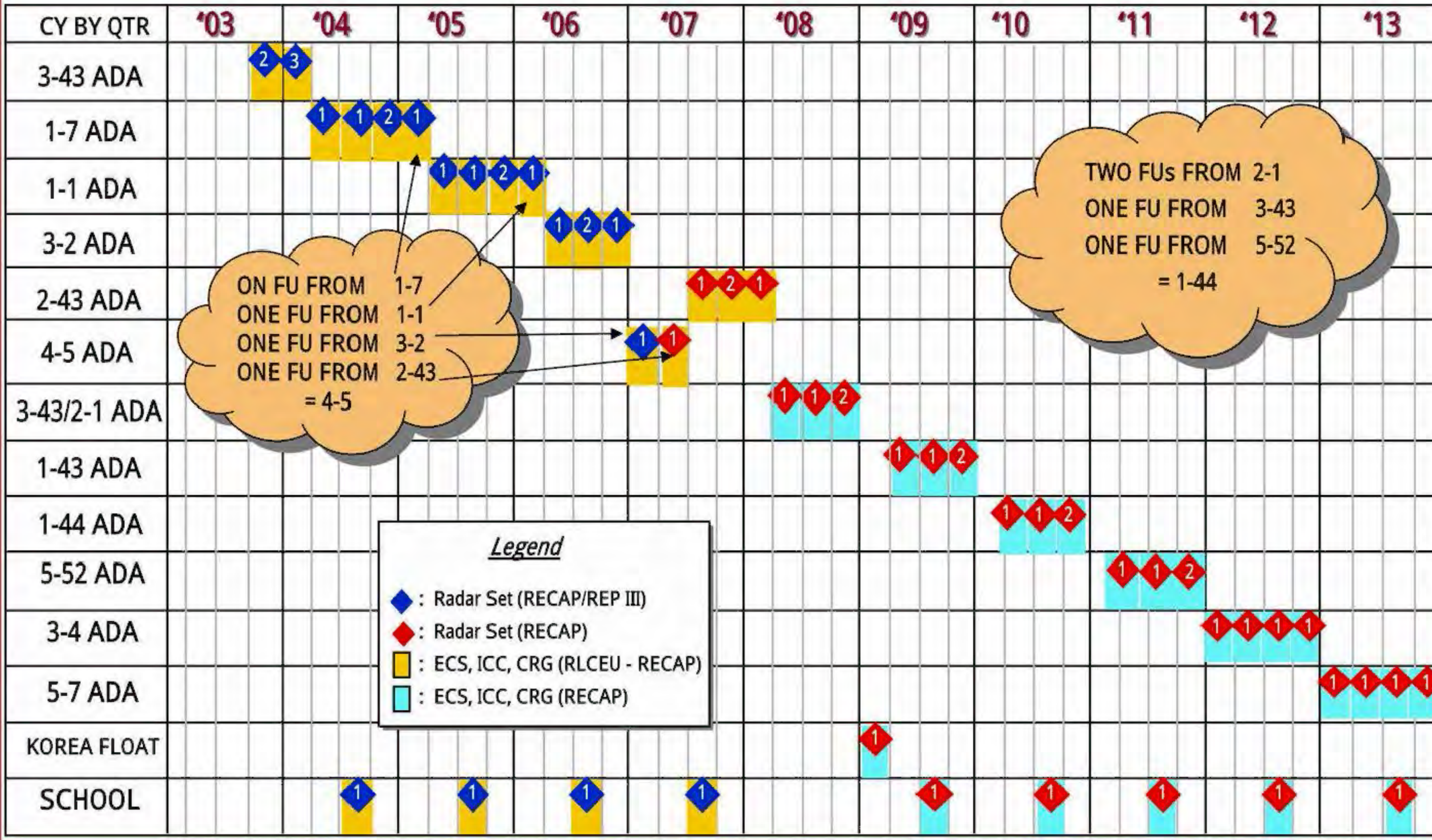
RECAPITALIZATION / REP III PROGRAM (U)

- Fielding Overview As of 1QFY06 -



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PDB-6 STATUS SUMMARY (U)

ACCOMPLISHMENTS

- PDB-6 implements numerous SW requirements changes derived from:
  - User approved list, including OIF lessons learned
  - Major TIR closures
  - OIF QRP2 HW ECP configurable
- Numerous PAC-3 and PAC-2 Flight Tests successfully completed using PDB-6 SW
- Successfully completed two major interoperability Tests at WSMR and service level link 11 a/b test at SED (link 16 testing in progress)
- PDB-6 Contractor Verification Testing (CVT) held at WSMR from 25 July through 20 August
- Majority of planned FQT Comprehensive Test Program (CTP) test cases ran and analyzed

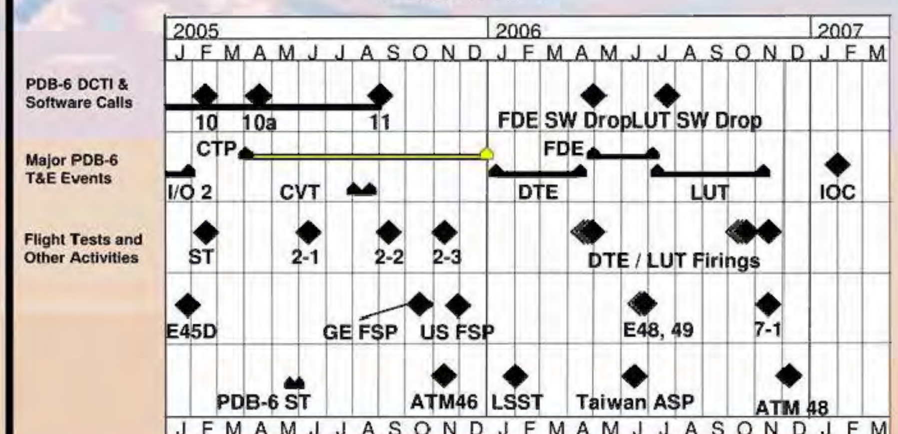
ISSUES

- No Open Issues

PDB-6 STATUS

- PDB-6 Software development is complete
- Successfully completed the DTE TRR on 13 December
- PDB-6 DTE is underway – began on 17 January

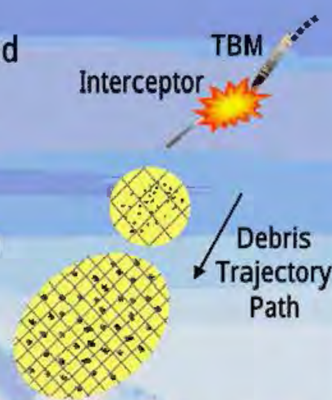
SCHEDULE



PATRIOT ECP-0024 UPPER TIER DEBRIS MITIGATION (U)

CONCEPT

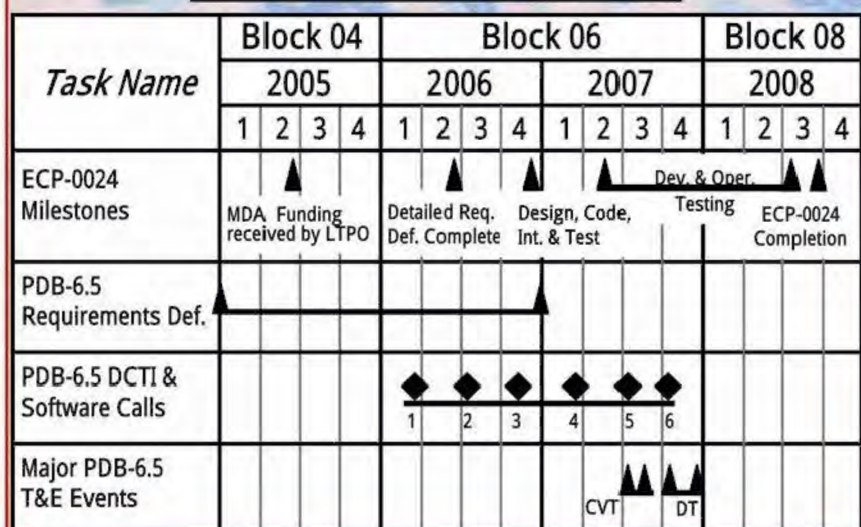
- Receive predicted intercept time and position information via Link-16
- Establish evaluation volumes
  - Initial: Based on intercept info
  - Dynamic: Measurement info
- Evaluate standard search detection data for applicability
  - Criteria: RCS and position
  - Do not validate or track debris
  - Conserves radar resources



STATUS / MILESTONES

- Option 1 approved by MDA at the 17 March 05 CCB
- FY05 MDA funding received by LTPO in June 05
- Concept requirements definition is in progress
- Detailed requirements definition scheduled for completion in June 06
- SW design, code, integration and test scheduled for completion in Dec 06
- ECP-0024 developmental and operational testing is currently scheduled to occur between May 07 thru July 08
- ECP-0024 completion is currently scheduled for Sept 08

PDB-6.5 SCHEDULE (Notional)



AST-10 FT Analysis in Support of ECP-0024

- LTPO has requested IAF PATRIOT data collected for analysis in support of ECP-0024 development
- Intercept characterization
- Debris characterization
- IAF FU's are Config-2+ vice Config-3 imposing a limited evaluation capability of the mission
- Knowledge gained from the AST-10 mission can be useful within ECP-0024 concept definition

MEADS D&D UPDATE (U)

- SRR – 23-27 May 05; MEI SRRs Scheduled thru Mar 06
- MEI IBRs Started May 23; Completed 7 Dec 05
- 35TH Steering Committee Meeting 24-25 Jan 06
- LRIP MOU – Discussions Planned to Begin Jan 2006
- PDR – Jun 07
- CDR – Oct 09
- DT (2011-2013); OT, Joint IOT&E (Part I, 2013); IOT&E, US Only (Part 2, 2016-17)
- LRIP Award / System Milestone C - 2012
- Production Contract - 2014

MEADS D&D UPDATE (U)
- Continued -

- Exciter (D&D)
  - SDR 28 Sep 05
  - Final Contract 28 Sep 05
- EMM (D&D)
  - 1st delivery to NAM 7 Oct 05
  - 2nd delivery scheduled 20 Jan 06
  - Final Contract 10 Nov 05
- Trucks (GFE)
  - Contract award May 05
  - Joint SDR with HREE 29-30 Nov 05
- HREE (GFE)
  - Contract award Aug 05
  - Joint SDR with Trucks 29-30 Nov 05

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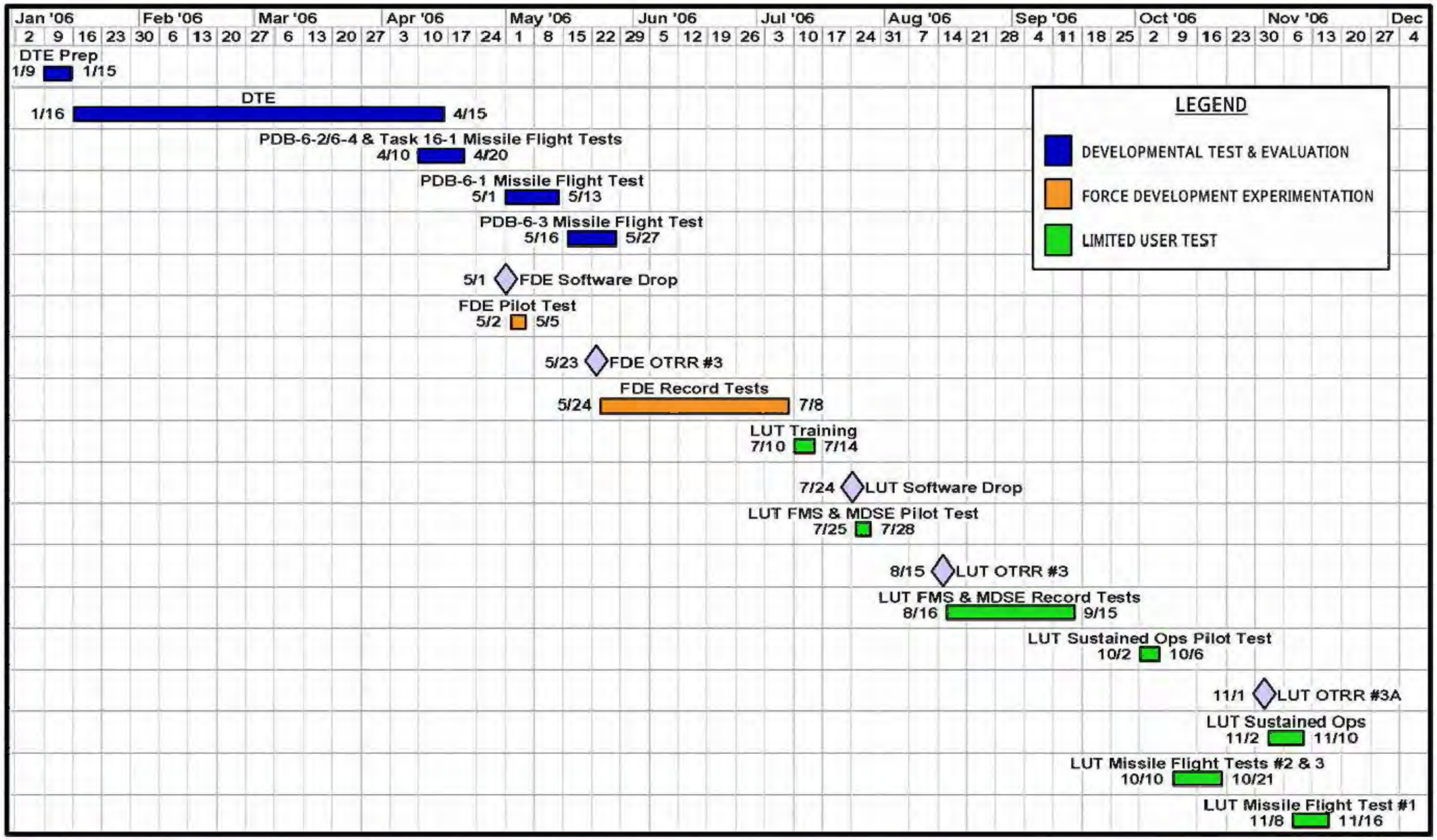
Attachment 9
As of 1 Feb 06

PATRIOT 2006 TEST SCHEDULE (U)



APPENDIX 10
21 Oct 05 **Issue Sheet** CCN:
21 October 2005

WBS / Program Element / Project: **BMD System Core** **0101**

Title: Lower Tier Project Office (LTPO) Support Of BMDS Development Activities

Description of Issue and Background:

MDA agreed to provide $5.82M for ECP-0024 (Upper Tier Debris Mitigation), which includes $.42M provided in FY05 (breakout by FY of $5.4M FY06-08 requirement is shown below in "Current Funding Level" line).

The LTPO requests MDA provide an additional $32.86M in FY06-13 RDTE funding for LTPO support of BMDS development activities (breakout by FY shown below in the "Adjustment" line). These activities involving the PAC3/MEADS Combined Aggregate Program (CAP) include: 1) T&E support, 2) Validation/verification of modeling/simulation efforts, 3) Information assurance analysis, 4) Threat analysis, 5) Safety analysis, 6) Product assurance analysis, 7) Technical specification/documentation analyses, and 8) Travel to attend meetings involving these areas. The LTPO Level of Effort (LOE) required to support the BMDS will likely increase as the CAP program matures, but the rate of increase is difficult to estimate. Thus, LTPO projected a 3% annual increase based on the FY06-07 cost estimate to forecast the estimated cost of LTPO support for POM 08-13. The Mar 03 PAC3 Transfer and MEADS Realignment Plan from MDA to the Army states that "MDA will fund RDT&E efforts to support attainment of interoperability standards established by MDA for all BMDS elements", and that "MDA will fund the participation of fielded PAC3 system participation in BMDS testbed events/exercises as required to support overall BMDS objectives".

Justification and Impact if Not Funded:

The LTPO will not be able to provide the level of BMDS development support required by MDA.

Interdependencies to Other BMDS Activities:

These activities are necessary to ensure the CAP program remains interoperable with the overall BMDS.

ROM Resources Required: ($M)

	FY06	FY07	FY06-07 Total	FY08	FY09	FY10	FY11	FY12	FY13	Total FY08-13
Current Funding Level	$2.80	$1.60	$4.40	$1.00						$1.00
Adjustment	$4.06	$3.75	$7.81	$3.87	$3.99	$4.11	$4.23	$4.36	$4.49	$25.05
Revised Budget Total	$6.86	$5.35	$12.21	$4.87	$3.99	$4.11	$4.23	$4.36	$4.49	$26.05

Contact for Further Information: Mr. Bob Thomas **Date Prepared:** 21 Oct 2005

Army LNO to MDA, 703-697-6412

Annex M to the BMDS Transition and Transfer Plan

Space Based Infrared Systems (SBIRS)

TABLE OF CONTENTS

EXECUTIVE SUMMARY

This annex is different from the other annexes in this plan, as SBIRS is currently and will continue to be a USAF program. No transfer is anticipated between the USAF and MDA. The Missile Defense Agency has funded the upgrade of certain SBIRS software and hardware features to satisfy BMDS requirements, and MDA and the USAF have developed an Interface Control Document which defines the format in which SBIRS will provide BMDS components with Early Warning data. MDA and the USAF will work together to develop additional SBIRS software and hardware features to meet missile defense needs as appropriate.

Annex M
BMDS Transition and Transfer Plan
SBIRS

1. PURPOSE

Document the relationship between the Missile Defense Agency (MDA) and the USAF regarding the interface between the Ballistic Missile Defense System (BMDS) and Defense Support Program (DSP)/Space-Based Infrared System (SBIRS) to include the operational system, test facilities and support personnel.

2. FACTS AND ASSUMPTIONS

2.1. Facts

No transition or transfer of program content is planned. There are several interface points between MDA and the USAF relating to the SBIRS program. Areas this annex will cover are as follows:

A. Update and maintenance of the operational interface between the SBIRS Mission Control Station (MCS and IMCSB) and the BMDS (Ground-based Midcourse Defense (GMD) and Command and Control Battle Management Center (C2BMC))

B. Offline SBIRS representation for Test Support

   - Establishing a hardware representation of SBIRS using current operational software for Off-line BMDS test purposes
   - Additional contractor manning to support SBIRS testing with BMDS

C. Future software and hardware upgrades to support missile defense

D. Update, accreditation and integration of SBIRS software representations into MDA Modeling and Simulation Tools

E. Planning for SBIRS specific data analysis support to MDA

2.2. Assumptions

- MDA will fund for near term modifications to the SBIRS program to enable support of the Missile Defense mission where this support differs from current SBIRS plans.
- HQ AFSPC and MDA will collaborate as necessary to identify SBIRS changes to support missile defense and work HQ AFSPC and MDA Program Objective

Memorandum (POM) inputs for long term support for the Missile Defense mission as a key mission area of the SBIRS program.

- MDA and the USAF have established a joint configuration control process to ensure proper linkage between BMDS and SBIRS requirements and operations.
- USAF and MDA will coordinate and execute testing to maintain the interface between respective systems.

3. OPEN ISSUES

3.1 Cost allocation of SBIRS Test Support Capability beyond FY07

HQ AFSPC will POM for a proportional share of funds for contractor manning to support the BMDS off-line test activities that are driven by SBIRS needs. MDA will POM for a proportional share of funds for contractor manning to support the BMDS off-line test activities that are driven by MDA needs. Funding allocation has yet to be determined.

MDA has agreed to POM for contractor manning and Operation and Maintenance costs associated with SBIRS support to BMDS testing. HQ AFSPC has agreed to POM for costs driven by SBIRS specific needs. Details of funding allocation are TBD.

Justification: Currently BMDS has no off-line capability for GFC/C or C2BMC testing; if this capability is made available, Headquarters Air Force Space Command (HQ AFSPC) will benefit equally from the SBIRS off-line test representation. At that point HQ AFSPC can POM for the AFSPC share of this support under an overall Command MDA support input. Prior to entering the FY08 POM cycle MDA has no plans to establish this capability in the near-term.

4. PROGRAM/SYSTEM DESCRIPTION

DSP consists of an operational constellation of early warning satellites with associated ground stations and processing infrastructure

  - o SBIRS is the follow on system to DSP.

- This transition plan concerns the operational connectivity between the BMDS and SBIRS ground station, and off-line representations of SBIRS for test and evaluation.
- SBIRS Software/Hardware
  - o The USAF maintains and modifies the software in the SBIRS ground segment software. This software contains protocol for sending missile defense messages to the BMDS.
  - o Modification to the BMDS functionality of the SBIRS software/hardware will continue.

- SBIRS Operators
  - The USAF provides SBIRS operators. Given the pace of BMDS testing anticipated, MDA has funded additional contractor personnel to support missile defense testing (avoiding the need for operational personnel support)
- SBIRS Offline Representation
  - To provide accurate SBIRS representations for BMDS wargames, simulations and ground tests, MDA has recognized the need to fund an additional activity, separated from the operational SBIRS ground stations. SBIRS participation is required to ensure this is an accurate representation of SBIRS performance and behavior.
- The SBIRS – BMDS interface is defined by a jointly approved Interface Control Document. The physical interface consists of 2 CNEs at the SBIRS MCS and IMCSB. SBIRS messages are sent to the C2BMC at the JNIC, Shriver AFB, and to the primary GFC/C node, also at the JNIC. Early warning messages are forwarded to the secondary GFC/C site at Fort Greeley, AK.

5. PROGRAM STATUS

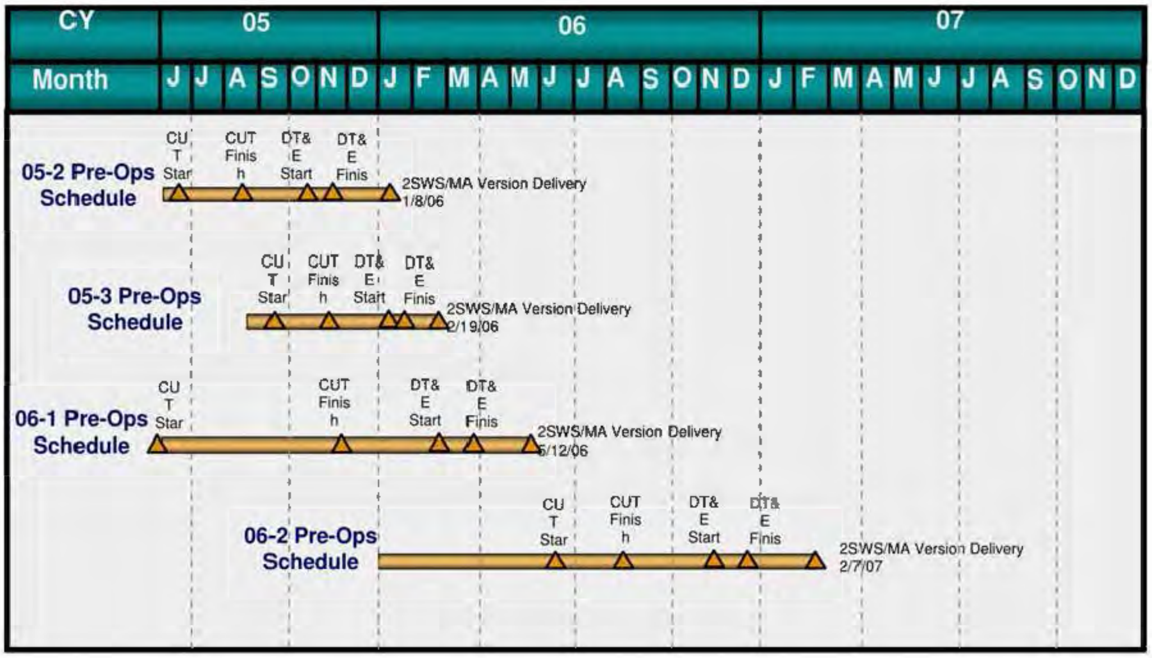
5.1. Current Program Status

Current SBIRS baseline software (SBR 05-1 and beyond) supports the BMDS via missile defense messages to BMDS Elements. Software upgrades, specifically designed to enhance SBIRS support to the BMDS, are funded by MDA and executed by the USAF as part of the SBIRS prime contract with Lockheed Martin.

Upgrades to SBIRS baseline software to enable increased functionality (Active C2BMC and Auto Process and Promote) are currently funded and under development:
The active C2BMC interface will replace the one-way C2BMC Passive Interface. This change will allow C2BMC to receive individually addressed messages instead of a duplicate GMD message. This effort also adds "Feature 2"; Automatic tactical parameter estimation and re-promotion of manual tracks. This applies to both the GMD and C2BMC interfaces. Estimated completion date for this effort is Dec 06. MDA is funding the addition of this capability.

5.2. Schedule

Integrated SBIRS Ground Increment 1 Pre-Ops Milestones



5.3. Future Development

5.3.1 SBIRS Test Support Capability (TSC)

The SBIRS TSC will utilize existing ISMDC hardware at the MCS and IMCSB to provide dedicated test support to BMDS. MDA and USAF working to refine cost estimate. MDA has agreed to fund the hardware development effort and manning through FY07. Funding FY08 and beyond is TBD.

5.3.2 SBIRS Accreditation of MDA Modeling and Simulation (M&S) Tools

There are numerous M&S tools currently being used by MDA. Many tools are capable of simulating SBIRS performance. SBIRS will perform Verification and Validation (VV) of MDA M&S tools as requested, agreed to, and funded appropriately by MDA Currently HQ AFSPC has received a formal MDA request to accredit the Missile Defense Space Warning Tool (MDST) and Missile Defense System Exerciser (MDSE).

5.2.3.1 SBIRS support to Verification Validation & Accreditation (VV&A)of MDST

MDST is a MDA simulation suite hosted at the Joint National Integration Center (JNIC). MDST functionality includes the modeling of DSP, SBIRS, and STSS sensors. MDST will be used to model SBIRS inputs in to international, constructive analysis, COCOM, and individual element testing. The SBIRS contractor will perform a performance assessment to ensure MDST faithfully represents SBIRS performance and will participate in on-going MDST development, test and VV&A. This effort will be funded by MDA.

5.2.3.2 SBIRS support to VV&A of MDSE

MDSE is a network based simulation system used by MDA for BMDS Ground Tests (GTs) and Hardware-in-the Loop Tests (HWILTs). MDSE is centrally controlled from the JNIC or Huntsville, Al. The SBIRS MDSE Representation (SMR) is currently located at the Northrop Grumman facility in Azusa, CA. The SMR uses a driver to convert threat trajectory information into DSP representative (rep) returns which are passed to a SBIRS back-end processing simulator for track processing. The SMR then transmits SBIRS warning messages back out to other BMDS HWILT simulators on the network. This effort will be funded by MDA.

6. ORGANIZATIONAL RESPONSIBILITIES

6.1. Doctrine

No change to MDA or USAF doctrine is anticipated as a result of the SBIRS-BMDS interface.

6.2. Organization

No change to MDA or USAF organizations is anticipated as a result of the SBIRS-BMDS interface.

6.3. Training

Changes to the SBIRS and BMDS operations will require changes to the existing SBIRS and BMDS training programs. HQ AFSPC requires the changes to the SBIRS training program be costed and incorporated into the program change costs. For BMDS, this means that any new changes to SBIRS driven by MDA requirements will include funding from MDA to make the necessary changes to the SBIRS Integrated Training Suite (ITS). This will ensure the BMDS changes will be handled in the same manner as any change to the SBIRS program.

6.4. Materiel

A determination will be made regarding the CNE resident at the SBIRS MCS as to who owns and maintains it.

The ISMDC hardware, owned by MDA, is proposed to be upgraded and maintained to meet long term BMDS testing needs for FY06 and beyond.

6.5. Leadership Development

N/A

6.6. Personnel

USAF personnel (2 SWS) operate the SBIRS ground station, which provides missile defense data to the BMDS.

MDA will arrange for the necessary contractor manning of SBIRS TSC for use in off-line BMDS tests and test preparation (avoiding the need for support from operational personnel or assets).

6.7 Facilities

USAF is expected to host a SBIRS representation for test purposes within existing facilities. At this point in time the only facility change envisioned is a move of the equipment at IMCSB to the MCSB at Schriever AFB.

6.8. Security

Security will be handled within existing USAF and MDA processes.

6.9. Test Strategy

SBIRS operational software modifications will be tested according to established USAF processes and scheduled via the BMDS Operational Schedule/Weekly Activity Message (BOS/WAM). The BMDS C2BMC and GFC current software and interface to the SBIRS will be regression tested for function and compatibility during the USAF processes. Similarly when the BMDS C2BMC and GFC software configuration is changed the SBIRS interface will be regression tested for function and compatibility and scheduled via an Event Owner Worksheet (EOW) and placed in the BOS/WAM scheduling.

After installation and checkout of each SBIRS operational system software upgrade, the TSC software will be migrated to the current SBIRS software version and the associated simulation tools will be upgraded as necessary.

Scheduling of the operational SBIRS node (MCS or IMCSB) will be done using the BOS/WAM process via the Asset Owner, the 14th Air Force. The BOS/WAM is an integrated schedule that includes both EOWs developed by BMD test directors and the Test Owner Worksheets (TOW) developed for ITW/AA. USSTRATCOM will be notified of all testing being conducted by the MDA. Use and coordination of the TSC, although not directly impacting the operational SBIRS configuration, will be coordinated via the BOS/WAM.

6.10. Supportability Strategy

Supportability will be provided through existing SBIRS MCS supportability arrangements and contracts. No new relationships are anticipated to cover the additional test equipment.

7. CONTRACT STATUS

BMDS – SBIRS interface activity is accomplished through modification to a variety of existing contracts held by MDA and the USAF.

8. PLAN FOR TRANSITION ACTIONS/MILESTONES

N/A

9. FUNDING

	Funding Source	FY07	FY08	FY09	FY10	FY11	FY12	FY13
BMDS initiated modifications to SBIRS Baseline Software (ECP-10 completion)	**MDA**	**21.3 M***						
SBIRS Test Support Capability (TSC)	**MDA**	**< 2.7****						
Integration and Accreditation of SBIRS modeling tool into BMDS system level M&S Tools	**MDA** **AF**	**TBD** **TBD**						
Aerospace support to SBIRS Missile Defense mission	**MDA**	$1.0M	1.0M					

* Budgeted Estimate at complete: Funded across multiple FYs

** Funding amount, and allocation to specific FYs under discussion

10. AGREEMENTS AND COMMITMENT

NA

11. REFERENCES

ICD
SS0017

12. ACRONYMS

BOS/WAM	BMDS Operational Schedule/Weekly Activity Message
C2BMC	Command Control Battle Management and Communication
DSP	Defense Support Program
GFC/C	Ground Based Missile Defense Fire Control/Communication
IMCSB	Interim Mission Control Station Backup
JNIC	Joint National Integration Center
MCS	Mission Control Station
SBIRS	Space Based Infrared System
TSC	Test Support Capability

13. COMMON DEFINITIONS

N/A

14. LIST OF FIGURES AND TABLES

N/A