

## Chapter 6 - Capabilities Assessment

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bilities are generally more complementary than redundant. The Army AMD weapon systems, integrated with one another and with joint AMD systems, focus on the protection of the force against the challenge of an evolving, more capable aerial threat.

### INTRODUCTION

The degree of modernization, with respect to the overall capabilities attained and the realization of fielded capabilities, will determine how well AMD systems fulfill their individual and collective missions. While AMD operations are inherently joint in nature, each service and service system provides unique capabilities. These capa-

This chapter presents subjective assessments of the AMD force's ability to satisfy the required operational capabilities presented for the Army Vision 2010 patterns of operation in Chapter 3. The assessments are the basis for the operational shortfalls identified at the conclusion of this chapter and the investment recommendations articulated in Chapter 10.

### ASSESSMENTS

Assessments measure the adequacy of AMD systems and system improvements, qualitatively and quantitatively, to meet the required operational capabilities across the levels of war (strategic, operational, and tactical) over time. While subjectively derived, they are based upon postulated growth in threat capabilities, anticipated or constrained funding, and the fielding of techno-

logical improvements. The color codes for these assessments are RED, AMBER, and GREEN. In addition, BLACK denotes systems that, while funded for development, are unfunded for fielding. The BLACK color code allows the distinction between systems having capabilities if fielded and those without the required capabilities.

#### Chapter 6 Key Points

- The AMD force has some ability (AMBER) to meet the required operational capabilities.
- Funding shortfalls preclude the AMD modernization realization of full operational capabilities (GREEN).
- Without continued modernization, the ability of the AMD force to protect the force will be difficult to sustain.

RED – inadequate capability or quantity to meet mission needs.

AMBER – limited capability or quantity to meet mission needs.

GREEN – adequate capability and quantity to meet mission needs.

The following assessments for each AMD system are presented for three time periods: FY00 (the Budget Year), FY01-05 (the mini-POM), and FY06-15, the Extended Planning Period. The discussion of systems and system improvements assesses only those achieving FUE, funded to meet FUE in the projected time frames, or having high-level Congressional or Army support.

This section groups systems by Army investment categories – Information Dominance, Combat Overmatch, Essential S&T/Leap-Ahead Capabilities, and Recapitalization – to align the discussions with the overall Army modernization approach. Category definitions, expressed in Department of the Army terminology, are presented in subsequent paragraphs.

While all services contribute to the execution of AMD operations, the narrative and assessments focus on the adequacy or inadequacy of the Army elements. This process allows for the isolation of operational shortfalls in fielded Army systems and leads to the recommendations for specific materiel improvements.

Unless specifically noted, capabilities and mission enablers realized through programs outside AMD (e.g., JTIDS and EPLRS for AMD connectivity and data distribution) are assumed to be in place when and as needed.

The following paragraphs present the system-specific assessments. Assessments address the ability of each system to meet required operational capabilities. The accompanying figures summarize the assessments of each system within the investment category. Systems are presented alphabetically; the order of presentation does not imply prioritization.

### **Information Dominance**

*Information Dominance is the degree of information superiority that allows the possessor to use information systems and capabilities to achieve an operational advantage in a conflict or to control the situation in operations other than war while denying these capabilities to the adversary.* The AMD systems in this category are the AMDPCS, FAAD C<sup>2</sup>, JTAGS, and Sentinel. System assessments appear in Figure 6-1.

The AMDPCS provides the required interoperability capabilities for AMD units in the digitized Army XXI. It enables the automated technical and functional integration within the AMD force, with JTAMD weapon systems and C<sup>2</sup> elements, and with the supported force. It further integrates FO software products to provide common AMDWSs for all echelons of command – from the AAMDC to the platoon. The robust AMDPCS capabilities are not realized due to shortfalls in software development and hardware and software modifications to the ADSI. The lack of a “full up” ADSI necessitates the continued use of the obsolete AN/TSQ-73 brigade fire control

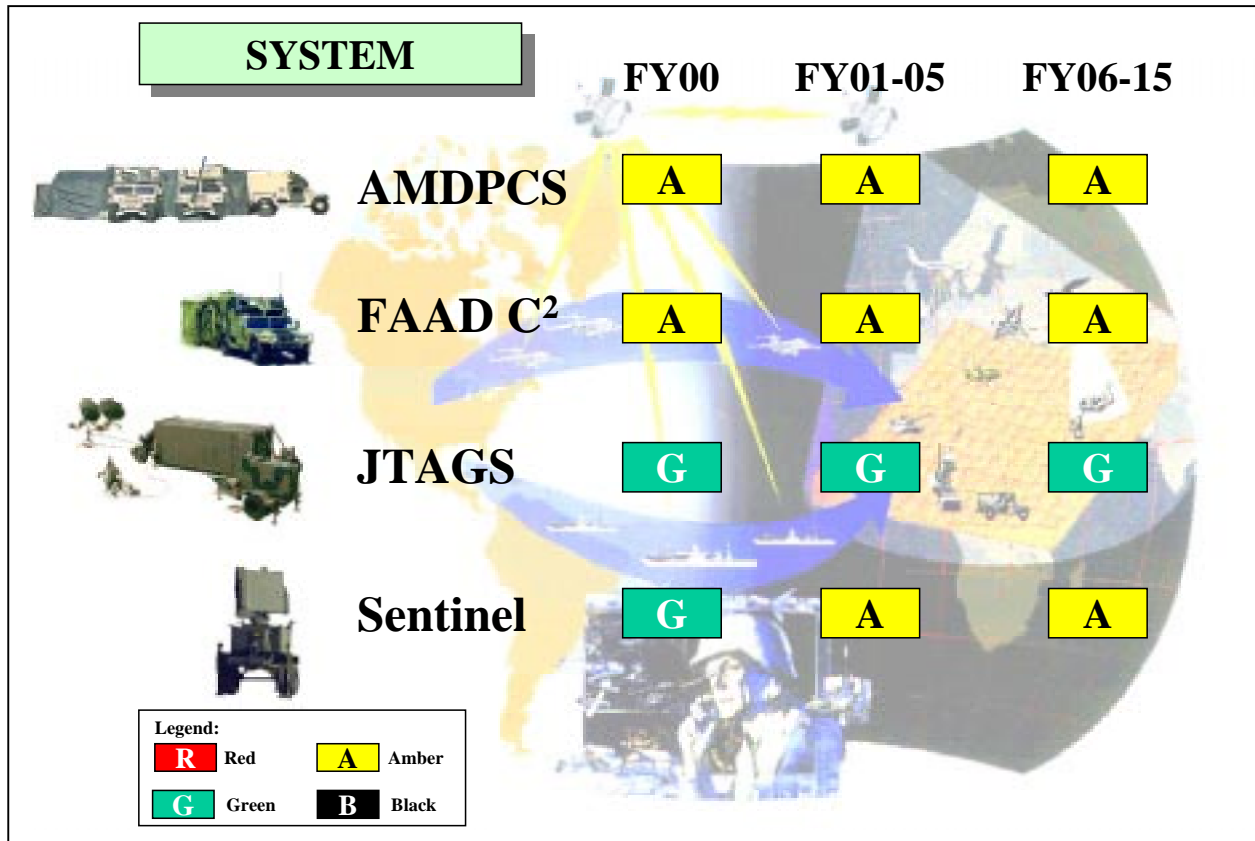


Figure 6-1. Information Dominance

system, resulting in decreased defense effectiveness.

FAAD C<sup>2</sup> provides the interoperability of SHORAD weapons, sensors, and C<sup>2</sup> facilities. Its digitized EO capabilities – real-time early warning, target pointing (cueing data), and BM – optimize weapon engagements. The system, in a SICPS-mounted HMMWV, can sustain operations while on the move. FAAD C<sup>2</sup> CHS-2 equipment, fielded during the FY01–05 period, provides increased functionality and the synchronization of FAAD C<sup>2</sup> and FBCB<sup>2</sup> in the Bradley Linebacker and Avenger systems. However, the ARNG battalions in the corps and theater will have insufficient SINGARS and EPLRS to fully realize FAAD C<sup>2</sup> capabilities.

JTAGS provides capable, in-theater situational awareness and dissemination of TBM launch data to the force. Fielded Phase I improvements enhance ground impact point predictions and warning time, allowing units, rather than the entire force, to take defensive measures. Improved launch point accuracy, disseminated in near-real-time to attack operations forces (e.g., Multiple Launch Rocket System [MLRS], Army Tactical Missile System [ATACMS], and Apache), increases opportunities for the detection and engagement of TELs. JTAGS also provides long-range cueing to Army and JTAMD active defense forces, thereby facilitating early engagements. The fielding of the M3P during FY01-05 allows for the uninterrupted integration of JTAGS with the next-

generation infrared surveillance satellites (SBIRS) and direct down-link to theater forces.

The Sentinel system provides capable aerial situational awareness to the force and cueing data to the SHORAD systems. Generally positioned in the forward area and oriented toward the most likely low-level ingress routes, the Sentinel acquires and identifies the CM, helicopter, UAV, and fixed-wing aircraft threats and provides precise targeting data to the SHORAD weapons to optimize engagements. The P<sup>3</sup>I program will allow the system to offset expectant threat improvements through FY14. Increased transmitter power allows enhanced detection of the smaller signature threats; new target classification capabilities enhance the ability to discriminate between manned and unmanned platforms; and the adjunct sensor provides a passive detection capability. Sentinel is being fielded to all AC and ARNG units, less the ARNG divisional AMD battalions. SINCGARS radio shortages hamper Sentinel fielding to the ARNG units. There are insufficient radios to field to all ARNG battalions in the corps and theater AMD brigades. These units must therefore rely upon Manual SHORAD Control System (MSCS) teams, with the resulting degradation in timely, precise threat warning and SHORAD engagements.

### **Combat Overmatch**

*Combat Overmatch is the advantage in combat capabilities over current or potential opponents by virtue of superior combat systems that employ advanced technologies.* The AMD Combat Overmatch systems are Avenger, Bradley Line-

backer, MEADS, PAC-3, Stinger Block II, and THAAD. System assessments are in Figure 6-2.

The Avenger, enhanced with the STC, is capable against helicopters, CMs, UAVs, and fixed-wing aircraft. STC provides the means to increase the target engagement window and to increase target kills. The complementary FLIR upgrade improves visual detection and the identification of LOs at greater ranges, thus increasing the capabilities of today's FLIR by 1.5 times. Technical improvements further enhancing system performance – fire control computer upgrades to promote digital integration with the force and the redesign of the RCU to further survivability – are insufficiently funded for fielding to the entire force. More than half of the ARNG battalions in the corps and theater AMD brigades will not realize these improvements. In addition, Avenger suffers – as do all SHORAD systems – the lack of an organic positive identification capability. Current doctrine and engagement procedures require that weapon systems without such a capability visually identify targets before engagements. Visual identification, even when enhanced with the improved FLIR, results in reduced engagement time and range.

The M2A2 Bradley Linebacker has capabilities against the helicopter, UAV, CM, and fixed-wing aircraft threats. Its ability to shoot on the move, with the crew “buttoned up,” allows the Linebacker to maintain pace with the maneuvering force while enhancing crew survivability. The integrated STC capability enhances detection, acquisition, and engagement of targets.

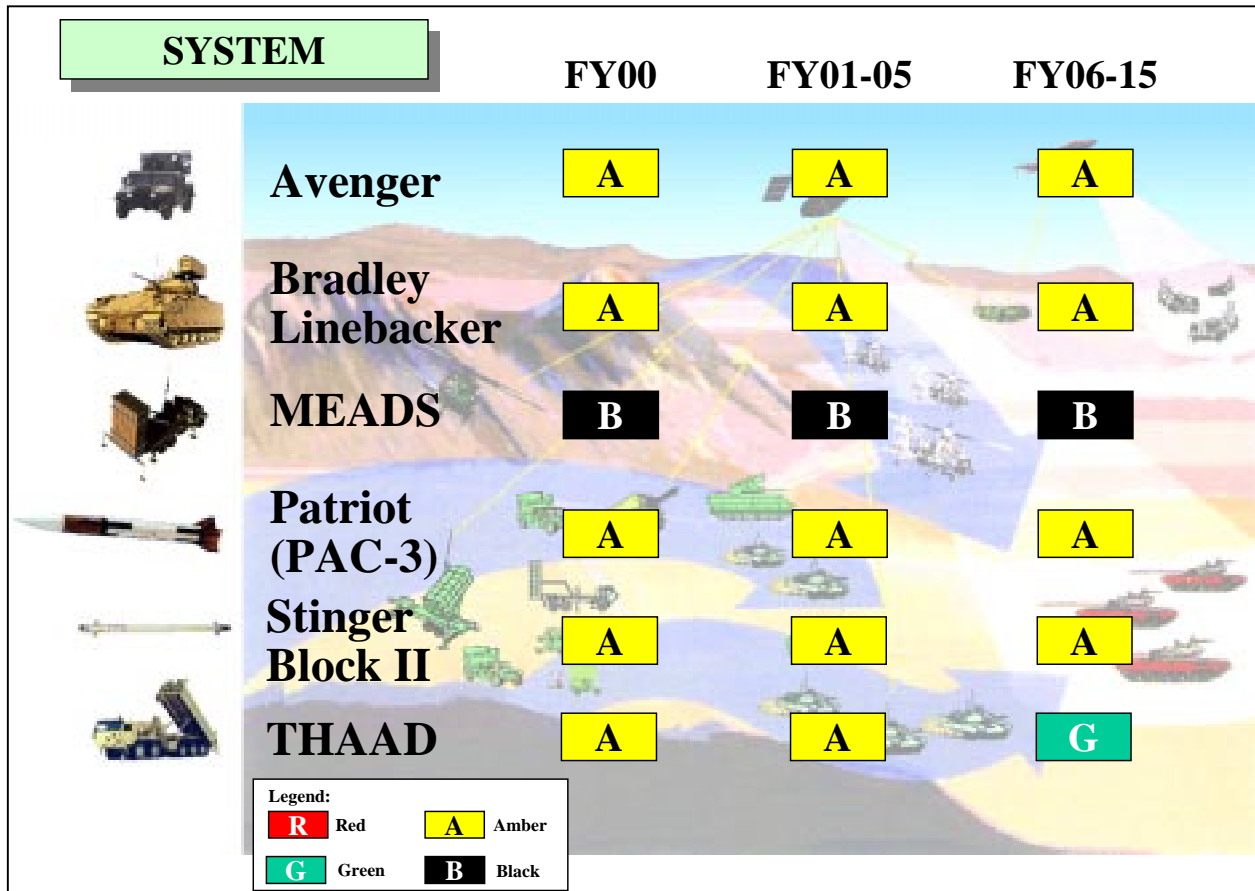


Figure 6-2. Combat Overmatch

As projected, the MEADS system will provide continuous protection of the force from entry through redeployment. It is the key to defeating the TBM and CM threats, as well as extended range UAVs and standoff helicopters, in the forward area. The highly deployable MEADS battle elements, incorporating modular components, are ideal to deploy with initial entry force projection units, providing the requisite firepower, lethality, and interoperability with other Army and JTAMD forces. Operating in the theater and corps rear, MEADS provides the lower tier of the two-tier TBM defense, complementing the upper-tier THAAD system and other lower-tier PATRIOT systems. In the forward areas, MEADS and

SHORAD systems, organized in AMD task forces, counter the low-altitude air and missile threats to the maneuver forces; MEADS provides the overarching defense – higher altitude, longer range engagement capability – to preclude threat aerial vehicles from “hopping over” or skirting the SHORAD systems. While fully capable of meeting mission requirements and defeating the threat spectrum, MEADS remains unfunded for fielding.

PATRIOT improvements continue to upgrade system capabilities to ensure overmatch of much of the threat spectrum. The PAC-3 system, with enhancements to the radar set, engagement control station, and launcher and incorporating the highly lethal, HTK missile, will kill the evolving

SRBMs, CMs, and the high-altitude aerial threats. The PATRIOT tactical operations center is digitally integrated with the joint air defense and air control elements, contributing to the overall air picture and developing TBM launch point data for transmission to joint attack operations units. In concert with THAAD or the Navy Theater-Wide System, and complemented with MEADS or the Navy Area Defense System, PATRIOT enables the extended, multilayered defense of the force and critical assets. PAC-3 requires a significant commitment of strategic lift resources to provide a sustained firing capability and lacks the mobility to maintain overarching protection of rapidly maneuvering forces in the forward areas. In addition, the procurement of PAC-3 missiles (757 projected) is insufficient to counter the combined TBM and CM threats.

Stinger Block II improves overall capability against the evolving CM, UAV, helicopter, and fixed-wing aircraft threats. Its advanced focal plane array seeker allows the system to acquire the standoff helicopter in clutter and incorporates full night and advanced electronic counter-countermeasures capabilities. Development efforts are also underway to extend the engagement range to counter the evolving, longer range, standoff helicopter and UAV threats. The Stinger system continues to overmatch the running and hovering helicopter and fixed-wing threats – even those with sophisticated, integrated EW suites – and the short-range UAVs. However, Stinger Block II will be fielded in insufficient numbers, and Stinger engagements are hampered by the doctrinal man-

date for visual identification, reducing engagement time and range – an engagement limitation particularly pronounced with respect to CMs. Stinger must be able to engage and destroy CMs, potentially armed with mass destruction warheads, at a range sufficient to limit or deny dispersion effects upon friendly forces. Without the capability to engage at maximum range, Stinger Block II capabilities are sub-optimized.

The THAAD User Operational Evaluation System (UOES) provides a limited capability against the MRBM threats in the FY01-05 period. It interoperates with PATRIOT to form the multi-tiered defense. However, the UOES, while available for use during a national emergency, is primarily the test vehicle for the examination and validation of proposed hardware and software components in the objective THAAD system. In addition, with limited missiles, sensors, and supporting equipment, it cannot defend critical assets over extended distances and duration. The objective THAAD system, with a projected FUE of FY07, will be fully capable against most SRBMs and all MRBMs. In the theater and corps rear areas, the THAAD system provides the requisite upper tier of the two-tiered, near-leakproof defense of widely dispersed CINC assets. The system develops and transmits threat early warning, and it enhances situational awareness and the integration of airspace operations with joint AMD C<sup>2</sup> entities. The THAAD system also provides TBM launch point cueing to attack operations systems; however, this cueing, much like that generated by

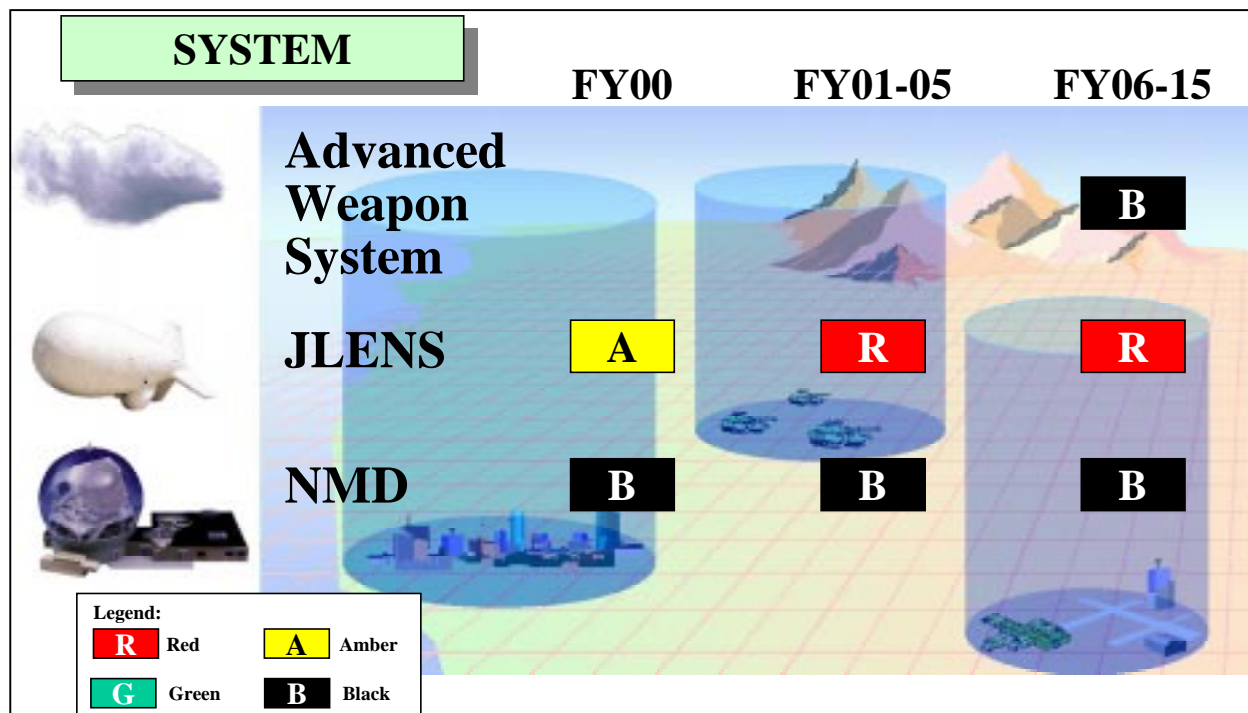


Figure 6-3. Essential Science and Technology/Leap-Ahead

PATRIOT, is not as timely as that provided by JTACS for the longer range threats.

**Essential S&T/Leap-Ahead Capabilities**

*Essential S&T refers to those high-leverage or critical technologies designed to provide future capabilities required for full spectrum dominance. Leap-ahead technologies are those technologies that can provide a significant, almost revolutionary, improvement over current capabilities.* The AMD systems in this category are the advanced weapon system, JLENS, and NMD. System assessments are presented in Figure 6-3.

The advanced weapon system responds to the operational needs identified in the ECAC mission needs statement. The system will counter the aerial threats against which existing, programmed or proposed service systems have limited capabilities.

These threats include multiple threats employed in near simultaneous or saturation attacks, long-range reconnaissance UAVs, unguided rockets, and artillery and mortar projectiles. This advanced weapon system, incorporating either directed energy, KE, or advanced missile technologies (or combinations of these), will be characterized by accurate targeting, high intercept speed, rapid reload, large basic load or magazine, and cost effectiveness (cost per engagement). While funding to explore operational concepts and materiel alternatives begins in FY06, the system remains unfunded for fielding.

The JLENS deployable prototype, projected to be fielded in FY05, will provide the requisite detection and precision tracking data for over-the-horizon engagements by ground-based AMD systems. The JLENS aerial sensor extends

range surveillance data on CMs, supports air situational awareness and warning to alert the force of aerial threat activity, and complements other air and ground surveillance systems. JLENS' limited availability (one system funded for fielding, 13 systems required) negates its full integration and surveillance capabilities.

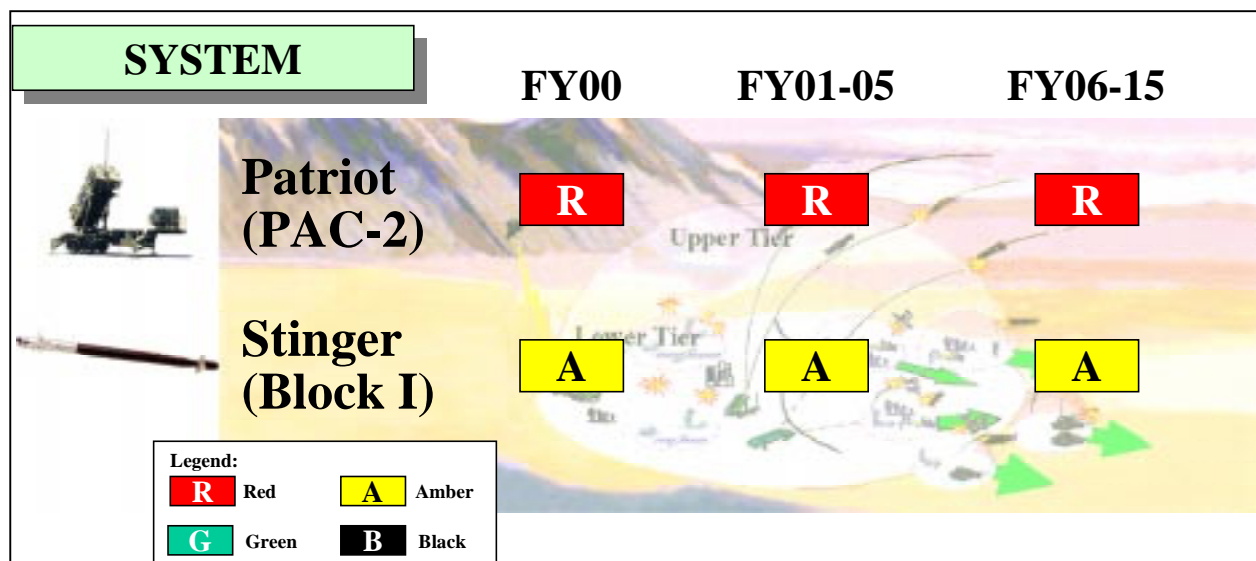
The initial NMD system, in keeping with the 3+3 deployment plan for system development and fielding, will provide some defense against limited strategic missile attacks. The evolving system will employ a "plug and defend" capability, using flexible systems engineering and integration to incorporate sensor, missiles, and command and battle management elements, to respond to unknowns in threat and constraints. System development should progress from the countering of simple, limited threats to the more complex threats, with concomitant system enhancements in surveillance, extended defense, engagement planning, and shoot-look-shoot capabilities. NMD assessment is BLACK for system procurement and

fielding. However, even with funding, the initial system assessment is AMBER due to insufficient missiles and limited sensors and sensor netting to meet even the limited strategic threat.

**Recapitalization**

*Recapitalization encompasses the replacement or retrofit of an existing system due to mechanical aging, technological obsolescence, or excessive expense to maintain.* The goal is economic sustainment of a current capability, as opposed to the more costly investment in a significantly improved capability. The AMD Recapitalization systems are PATRIOT (PAC-2) and Stinger Block I. System assessments are in Figure 6-4.

The fielded PAC-2 system with the GEM+ modification provides capable defense against the current and future CMs and enhanced capability against TBMs. Primarily designed to counter the CM threat, the PAC-2 upgrade (GEM+) missiles are uploaded in PATRIOT batteries in areas or scenarios where that threat is adjudged the greatest.



**Figure 6-4. Recapitalization**

The addition of the GEM+ missile to the PATRIOT force also facilitates the conservation of PAC-3 missiles for use against the more stressing TBM threat. However, GEM+ missiles are unfunded.

Stinger Block I provides capable defense against the running and hovering helicopters, fixed-wing aircraft, and UAVs and a limited capability against CMs during the FY00-05 period. The Block I increases missile accuracy and performance against advanced IR countermeasures, and it incorporates a limited night engagement capability. Stinger MANPADS teams, Avengers, and Bradley Linebackers equipped with Block I missiles are restricted by the visual identification

requirement. MANPADS engagements are further restricted by the inability of the gunner to accept a cue – digitized pointing information that directs the gunner to the target. The MANPADS teams must, therefore, rely on visual search via binoculars. If the gunner can see the target and if the target is within range, the Block I can engage it; however, without significant increase in battlespace, achieved through doctrine, precise cueing, and electronic identification means, this engagement will not be realized. Additionally, insufficient Block I missiles will be procured for fielding to the entire force.

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### **CAPABILITY SHORTFALLS**

The AMD systems and the AMD force continue to sustain shortfalls against some of the required operational capabilities identified in Chapter 3. The summarized shortfalls (Figure 6-5) are identical to those presented in the FY98

AMDMP. The shortfalls DO NOT appear in priority order, and they exist during the FY00-25 time frame. *They remain the products of inadequate funding for AMD programs.*

- **Limited capability to ensure continuous AMD of the maneuver force from deployment through redeployment operations**
- **Limited capability to defeat low-signature, low-altitude CMs**
- **Limited capability to engage MRBMs; two-tiered tactical missile defense of CINC-designated critical assets not achieved until 2007**
- **Limited C<sup>4</sup>I capabilities to ensure seamless, horizontal/vertical, joint/multinational C<sup>2</sup>; coordination of fires; and exchange of digitized, relevant air pictures**
- **Limited capability in the forward areas to protect against TBMs, CMs, and standoff helicopters and to deny/deter observation by low-altitude, standoff UAVs**
- **No capability to positively identify all aerial platforms**
- **No capability to engage LCRs**
- **No capability to engage potential missile threats against the United States**

**Figure 6-5. Required Capabilities Shortfalls**

## **SUMMARY**

As reflected in the assessment snapshots, the AMD force achieves some capabilities (AMBER) to meet the required operational capabilities and execute Army Vision 2010 operations. Although the complementary capabilities of other JTAMD weapon systems and C<sup>2</sup> elements enhance these Army AMD capabilities, an adequate capability (GREEN) is not achievable. Systems' availability and quantities and threat capabilities and presence adversely influence operations. *Shortfalls*

*remain the products of inadequate funding.* Without the unfunded MEADS, adequate funding to achieve sufficient quantities of systems and missiles (e.g., Avenger STC, Stinger missiles, PAC-3 missiles, JLENS, NMD), and the successful development, procurement, and fielding of the other projected JTAMD systems, the AMD forces' execution of the National Military Strategy in the post-2005 time frame will be difficult to sustain. Protection of the force is at risk.