



ADA Vision 2010

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ADA Vision 2010



ADA Force XXI . . . *An integral part of Army Force XXI.*
Poised to defeat tomorrow's complex and highly lethal air and missile threat.

- **A stabilized, reorganized, standardized, modernized, modularized and rightsized air and missile defense force superbly trained and ready for victory.**
- **A fighting force forged on the cutting edge of technology but imbued with age-old Army values and traditions.**
- **A homogenous force with common goals and purposes that, nevertheless, reflects America's ethnic, racial and gender diversity.**
- **A forward-looking force that anticipates and adapts to meet whatever challenges the 21st century may unveil.**

A handwritten signature in black ink, appearing to read "John Costello".

John Costello
Major General, United States Army
Chief of Air Defense Artillery

ADA MISSION



Protect the force and selected geopolitical assets
from aerial attack, missile attack and surveillance



ADA Vision 2010

INTRODUCTION

At the end of the 19th century, the international community viewed the United States as an insignificant player on the world stage. The Army of 1897 consisted of just 25,000 officers and men who were unconcerned about the “air threat.” Orville and Wilbur Wright would not roll Flyer No. 1, the world’s first powered aircraft, out onto the sand dunes of Kitty Hawk, N.C., until 1903. And America’s soldiers little imagined what cataclysms the approaching millennium held in store.

But for the next 100 years the nation’s armed forces waged hot and cold wars against forces of imperialism, fascism and communism. The United States emerged at the end of the century as the world’s predominant military power with a unique opportunity to help shape a “new world order” espousing democratic values and ideas.

At the end of the 20th century, the Army of 1997 is smaller than at any time since before World War II, but it is ***a forward-looking Army with a clear vision of the challenges that lay ahead on 21st-century battlefields.*** The Army has changed, and will continue to change, to ensure decisive results in today’s complex global environment.

For the moment, the danger of global warfare has greatly diminished. Soldiers of the once proud and formidable Red Army, battered in Afghanistan and humiliated in Chechnya, sell their weapons on the streets in exchange for shelter or money to buy food. And it is unlikely that a new superpower with either the inclination or military capability to mount a serious global challenge to the United States will soon emerge. However, a profusion of regional conflicts, some of which have the potential to escalate into major regional conflicts, threaten U.S. interests and the advance of democracy.

During the early part of the 21st century religious, ethnic and cultural strife will explode into regional conflicts that are likely to multiply in intensity and violence as expanding global markets and information technologies spread democratic ideas and aspirations, challenging



Stinger-based systems (Bradley Linebackers and Stinger Fighting Vehicles, Avengers and manportable Stingers) can adequately counter rotary- and fixed-wing aircraft. (Photos by Dennis McElveen)

established hierarchies and toppling oppressive regimes. The leaders of “rogue states” or “sub-states,” unwilling or unable to make the transition from the old to the new world order, will violently resist the influx of the new.

The creation of Force XXI, a smaller, more affordable, power-projection force based primarily within the continental United States, *is America’s strategic response to the challenge posed by regional conflicts*. Force XXI is a transitional force structured and equipped to deal with the threats we see emerging in the twilight of the 20th century. It will serve as the foundation for the “Army After Next,” the force that will contend with rival superpowers that may arise later in the new century.

ADA Vision 2010 is the conceptual template for Air Defense Artillery’s contribution to the operational concepts described in *Army Vision 2010* and *Joint Vision 2010*. It describes how Air Defense Artillery will harness emerging technologies and channel the energies, talents, innovation and dedication of its soldiers to achieve higher levels of capabilities and effectiveness as the Army’s active air and missile defense component. This template will guide Army air and missile defense modernization into the next century.

ADA Vision 2010 aligns, in construct and in spirit, with *Army Vision 2010* and *Joint Vision 2010*. The defining characteristic of these three documents is their common emphasis on seamless synergy between battlefield operations systems and services, a synergy that will partly erase the distinctions among combat arms and will blur the divisions among our land, sea and air components.

Joint Vision 2010 provides a coherent view of the future and its implications for joint operations expressed in terms of emerging operational con

cepts. It establishes *full spectrum dominance* as the collective goal and identifies four operational concepts — *full dimensional protection, dominant maneuver, focused logistics* and *precision engagement* —as the “enablers” that will equip our armed forces to achieve the designated objective.

Army Vision 2010 identifies the operational imperatives and enabling technologies the Army needs to fulfill its role in achieving *full spectrum dominance*. It breaks the *dominant maneuver* operational concept expressed in *Joint Vision 2010* into six operational patterns: *project the force, protect the force, gain information dominance, shape the battlespace, conduct decisive operations* and *sustain the force*.

Army Vision 2010 also recognizes that the rapid and widespread proliferation of weapons of mass destruction and missile technologies poses an unacceptable threat not only to U.S. forces deployed to force projection or contingency theaters of operation, but to America itself. Fitting into a detection and command and control architecture with the air and sea components, the Army will provide the teeth of the missile engagement capability to protect the U.S. land mass against its most serious external threat — ballistic missile attack.

ADA Vision 2010 enables *Army Vision 2010*, which in turn enables *Joint Vision 2010*. *ADA Vision 2010* tells how ADA units will function synergistically with other joint and multinational air defense forces to provide Force XXI continuous protection against air and missile threat platforms across all patterns of operations. It also relates how ADA soldiers assigned to national missile defense units will be following a constitutional directive issued in 1776 as they “provide for the common defense” of the American heartland.

WHY AN AIR DEFENSE ARTILLERY?

The air and missile threat to force projection operations is rapidly growing in diversity and complexity. It poses the most significant threat Force XXI will encounter on battlefields of the early 21st century and the greatest peril to U.S. population centers and infrastructure. The importance of Air Defense Artillery to Force XXI is best illustrated by what might occur if it were **not** present on Force XXI battlefields.

Few post-Cold War scenarios exist in which the United States would willingly sacrifice the lives of thousands of its soldiers as it did in World War II, Korea and Vietnam. Force XXI must win quickly with minimal casualties. Potential adversaries realize the ability to inflict mass casualties on U.S. forces or significant damage to allied or friendly population centers might eliminate military intervention as an attractive option to U.S. foreign policymakers.

Few adversaries likely to confront Force XXI possess the resources to equip, train, sustain or deploy large conventional armies, navies or air forces. But most can easily mount a signifi

cant air and missile threat by simply purchasing fixed-wing aircraft, attack helicopters, rockets, UAVs and cruise and ballistic missiles from the worldwide arms bazaar.

The tactical ballistic missile and cruise missile threat will be present in most, if not all, theaters of operation. Integrated guidance and weapon systems technologies will allow accurate targeting.

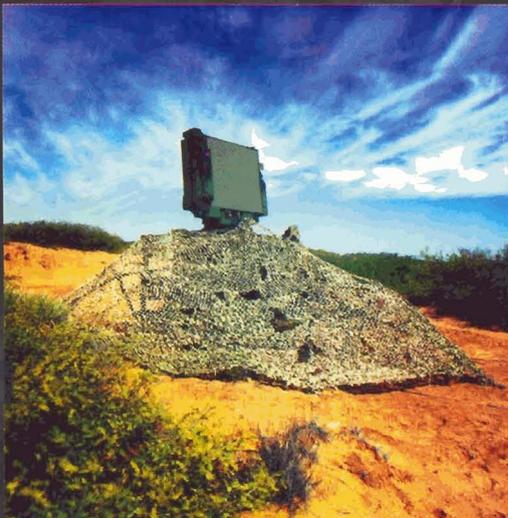
Uncountered, the combination of cruise and tactical ballistic missiles and modern warhead technologies will produce mass casualties and devastate population centers.

Modern technologies have made the conventional air threat, represented by fixed- and rotary-wing aircraft, so lethal that, even in small numbers, we cannot discount it. Stealth technologies will permit lethal attack helicopters — still the greatest threat to forward area maneuver forces — and fixed-wing aircraft to evade U.S. Air Force interceptors. Uncountered, they will pounce on armored columns, destroy command and control centers and attack other vital assets. Uncountered, advanced reconnaissance, intelligence, surveillance and target acquisition (RISTA) platforms will permit the enemy to quickly and accurately locate and target critical assets for destruction by indirect fire or other means.

Since World War II, combatants have refrained from using nuclear, biological or chemical weapons during conflicts in which the other side possessed the means to retaliate in kind. However, there is no guarantee that the mutually assured destruction deterrent will work in future confrontations. During the Cuban Missile Crisis of 1962, Cuban dictator Fidel Castro urged his Soviet patrons to launch Cuban-based short-range nuclear missiles at U.S. forces poised to invade the island. Cooler heads may not always prevail.



C³I centers (top), with input from JTAGS, theater missile defense system radars and Sentinel radars (bottom), will give the force commander a real- or near-real-time picture of the air defense battlespace. (Photos by Dennis McElveen)



Many potential adversaries are developing or seeking to acquire nuclear, biological and chemical weapons of mass destruction. Aimed at host population centers, coalition capitals or the United States itself, rockets, cruise missiles or ballistic missiles tipped with nuclear, biological or chemical warheads could, in the absence of an effective ballistic missile shield, force U.S. presidents to take a hideous gamble: Is the leader of a rogue or fanatical sub-state only bluffing when he threatens to launch nuclear-tipped ballistic missiles the moment 82nd Airborne Division parachutes blossom overhead?

Uncountered, the air and missile threat could make force projection and contingency operations prohibitively expensive. Aimed at the American heartland, it could make operations short of total war a non-option.

Countering the 21st-century theater missile threat will be a team effort. Force XXI will rely on *passive defense* measures, *attack operations* and *active defense* measures to defeat the air and missile threat. Vertically and horizontally integrated theater missile defense command, control, communications, computers and intelligence (*C⁴I*) centers will synchronize the air and missile defense battle, linking theater missile defense systems and disseminating missile warning and cueing information. *Passive defense* measures, such as reduced target signatures, dispersion, early warning, camouflage and concealment, will reduce vulnerability to, and minimize the effects of, theater missile attack. *Attack operations* will destroy, disrupt or neutralize theater air, land and sea missile launch platforms, their supporting infrastructure and RISTA platforms. *Active defense* measures, which involve detecting, identifying (classifying), tracking and engaging theater missiles, will destroy, disrupt or neutralize theater missiles and their warheads in flight.

Air Defense Artillery will be the land component commander's primary active defense means. Diplomats will strive to limit the proliferation of weapons of mass destruction. The U.S. Air Force will bomb airfields and obliterate launch sites. Its fighters will scramble to intercept intruders. Army attack helicopters will seek out and destroy mobile launchers and engage enemy attack helicopters in air-to-air combat. Special Forces teams will ambush missile resupply columns. But when enemy attack helicopters pop up above the tree line, when fighter-bombers penetrate outer defenses and when missile warning sirens wail, *Air Defense Artillery will bear the ultimate responsibility for defeating the air and missile threat.* If Force XXI is to prevail, Air Defense Artillery must prevail.

Six “enablers” — stabilize, reorganize, standardize, modernize, modularize and rightsize — are rapidly converting present-day Air Defense Artillery into the air and missile defense force of the 21st century. ADA Force XXI will be a *stabilized* force fully recovered from the personnel and organizational turbulence caused by post-Cold War force reductions and adaptation to a radically altered geopolitical environment. It will be a *reorganized* force that consists of organizations specifically structured for the Force XXI battlefield. ADA Force XXI will be a *standardized* force made up of standardized organizations, systems and battle elements

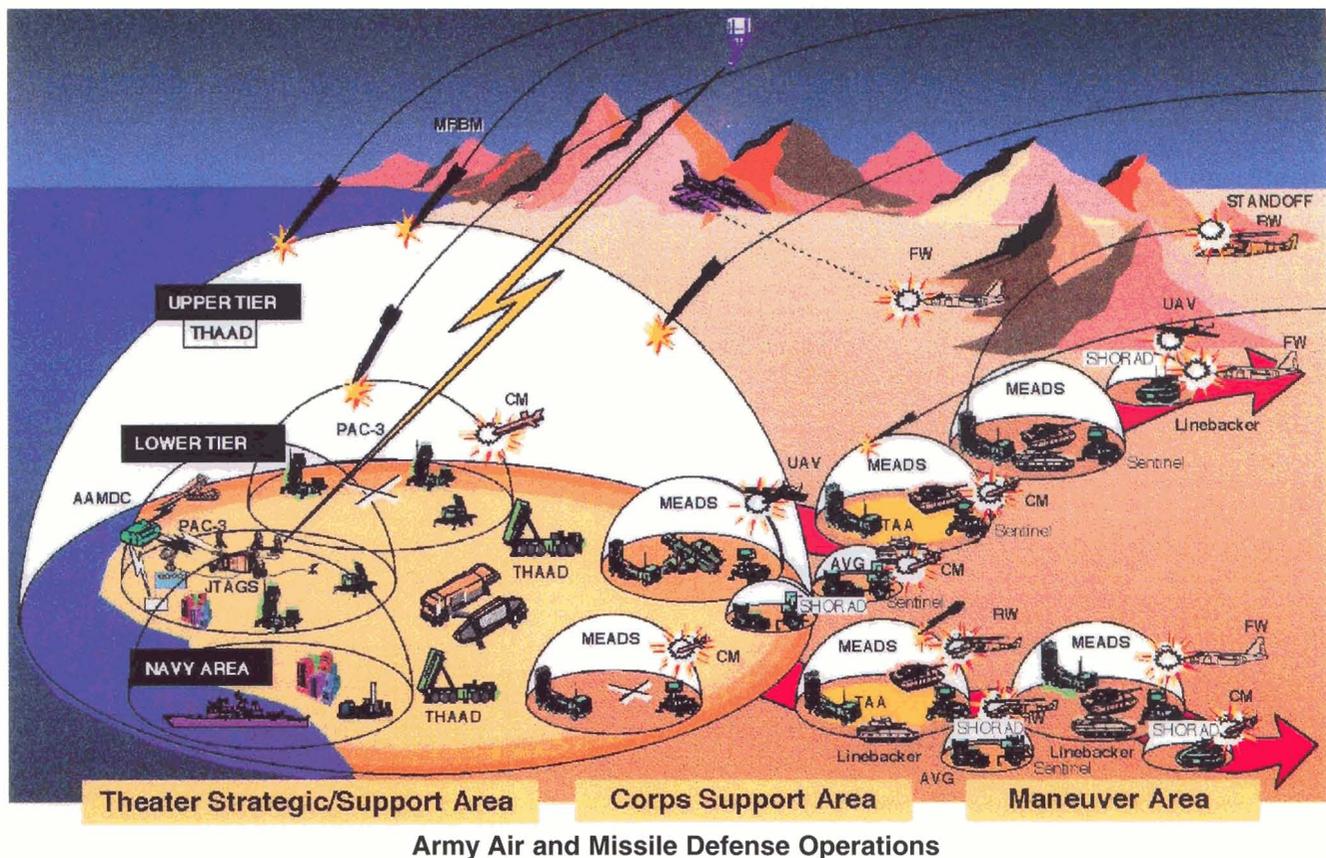
By fielding the PAC-3 and THAAD systems, Air Defense Artillery will mount the objective two-tiered, near-leakproof defense of critical assets. (Patriot photo by Mike Wilson; THAAD photo by Dennis McElveen)



ready tailorable for a wide range of task force applications. Standardized technologies and operating procedures will ensure component parts compatibility and interoperability with one another and with Army, joint service and multinational forces. Force XXI will be a **modernized** force armed with weapon systems forged on the cutting edge of technology. It will leverage maturing technologies to constantly upgrade and enhance its systems and explore emergent technologies to create new systems. ADA Force XXI will be a **modularized** force consisting of modular organizations and systems we can easily task force-organize for force-projection and force-protection operations. It will also be a **rightsized** force, optimally structured to balance affordability, effectiveness and operational risk.

ADA FORCE XXI CAPABILITIES ASSESSMENT

The diversity, complexity and lethality of the 21st-century air and missile threat make Air Defense Artillery the Army's most technically challenged combat arm. The air and missile arena is the only arena in which threat capabilities threaten to outmatch our capabilities to respond. To meet the air and missile threat challenge, the branch must perfect and field technologies thought unworkable just a decade ago. Therefore, ***the branch's ability to fully accomplish its mission on 21st-century battlefields depends on funding and force structure battles currently being waged.*** The outcome of these battles, which hinge on hard decisions that must be made to balance modernization budgets with acceptable risks, are still uncertain. One thing is certain: those who prefer to pretend the 21st-century air and missile threat does not really exist must also be prepared to pretend that soldiers killed by air and missile attacks are not really dead.

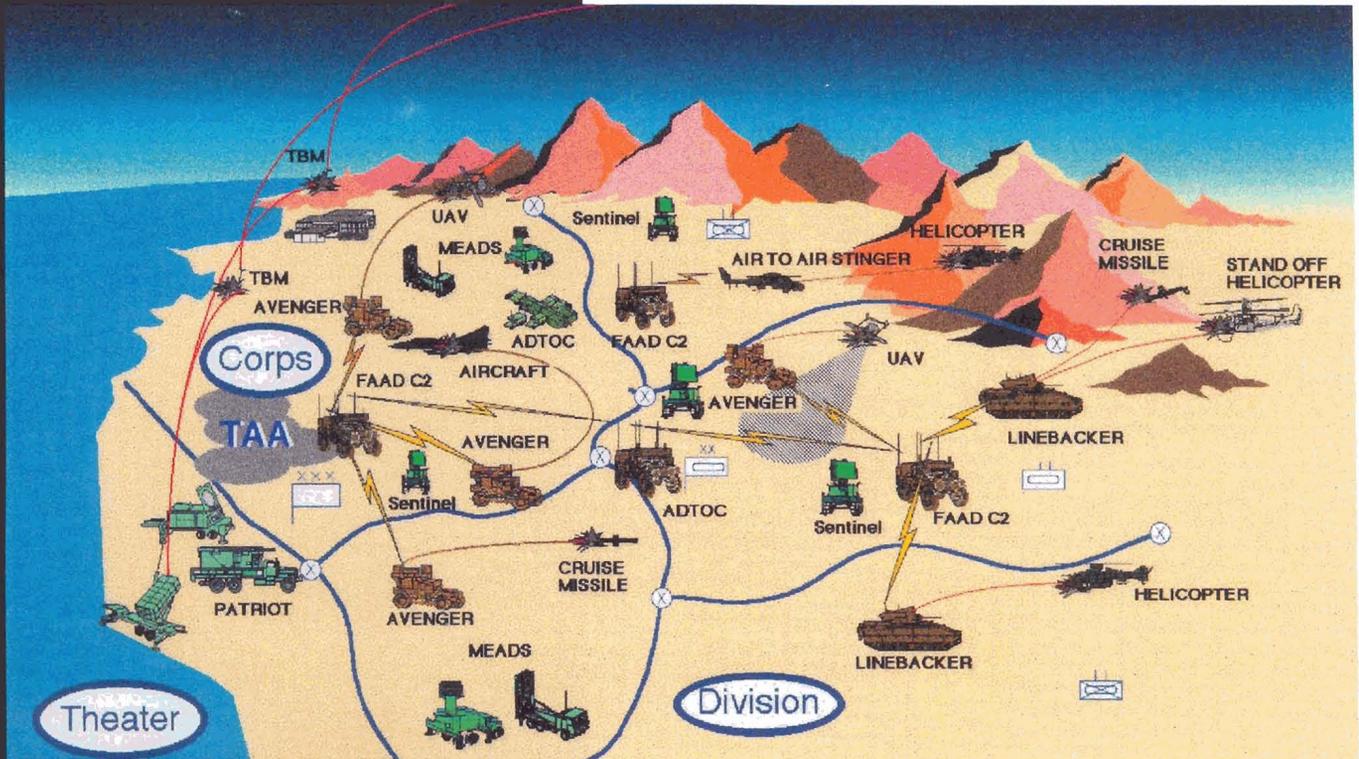


We express Air Defense Artillery's capability to fully accomplish its 21st-century mission across all patterns of operations in terms of *green* (adequate), *amber* (limited) or *red* (inadequate). Modernization, acquisition, preplanned improvements and fielding programs will change some capabilities from red to amber to green. The branch's overall capabilities assessment is currently amber for all patterns of operations, but serious shortfalls exist within each pattern. To change red and amber lights to green lights, we will point to the results of Force XXI warfighting experiments and to incontrovertible evidence that the enormity of the global air and missile threat grows daily. We will aggressively push ADA acquisition and modernization programs, such as Patriot Advanced Capabilities-3 (PAC-3), Theater High-Altitude Area Defense (THAAD) and Avenger Slew-to-Cue, to fulfillment. We will create more efficient working relationships with industry to produce more affordable, yet more effective, air and missile defense systems. We will continue to channel the vitality and innovation of ADA soldiers and federal civilian employees to achieve higher levels of productivity and combat effectiveness.

PROJECT THE FORCE

AMBER

Air Defense Artillery will defend the force against air and missile attacks during its most vulnerable period, the entry stage of force-projection operations. It will also protect the force



Divisional short-range air defense resources generally defend their organic divisions in staging and assembly areas. The corps short-range air defense battalion will task organize with MEADS elements to leverage the synergy provided by combining individual systems' firepower and surveillance capabilities.

deployment and sustaining base-the continental United States-from limited strategic ballistic missile strikes.

Force-projection operations will begin with the deployment, probably by air, of forces from the continental United States or a forward area. The force commander will seek to maximize the force's firepower, lethality and survivability while minimizing its lift requirements. *When the threat of air and missile strikes exists, ADA units will deploy with the initial force.*

Air Defense Artillery will deploy a mix of ADA systems tailored to meet mission and threat considerations. With space aboard airlifts at a premium, easily deployable, multithreat-capable Medium Extended Air Defense Systems (MEADS) will likely be the first ADA systems to roll off strategic airlifts. But if the tactical ballistic missile threat is significant, THAAD and PAC-3 systems will assume high movement priority. These theater missile defense systems will provide a two-tiered defense for the lodgment area, wrapping initial force concentrations and air and seaports of debarkation under

their protective envelope.

Short-range air defense systems will integrate with theater missile defense systems to mount a composite and complementary defense against cruise missiles, UAVs, helicopters and fixed-wing platforms. Additionally, ADA systems, such as Sentinel, will provide aerial situational awareness to the force, tremendously enhancing its agility and increasing the effectiveness of its passive defense measures against air and missile attack.

Early in the force-projection pattern, an element of the Army Air and Missile Defense Command will deploy if theater and or corps ADA assets are needed to counter the air or missile threat. The capstone air defense command will centralize ADA planning, coordination, integration and synchronization. It will seamlessly interface ADA assets into theater-wide air and missile defense planning and into theater command, control, communications, computers and intelligence architectures. Army, Navy, Air Force, Marine and multinational counterair and counter-missile forces will operate synergistically to achieve full-spectrum force protection.

Air Defense Artillery's ability to meet *project the force* mission requirements is rated **amber**, but there are serious shortfalls.

The THAAD and PAC-3 systems will provide the force with a multilayered, near-leakproof defense against tactical ballistic missiles, cruise missiles, fixed-wing aircraft and other aerial threats in lodgement and staging areas, but their size and strategic lift requirements limit our ability to rapidly deploy enough fire units to defend widely dispersed Force XXI assets. With THAAD committed to tactical ballistic missile defense, we need an "overwatch" system to back up short-range divisional ADA units as maneuver forces advance to conduct decisive operations. Commanders will be reluctant to expose the sustainment base to air and missile attack by pushing Patriot fire units forward. ***The easily deployable, more mobile MEADS, which could keep pace with rapidly advancing maneuver forces more easily than Patriot, is unfunded. Its absence from Force XXI contingency battlefields will expose an Achilles Heel to enemy air and missile attack.***

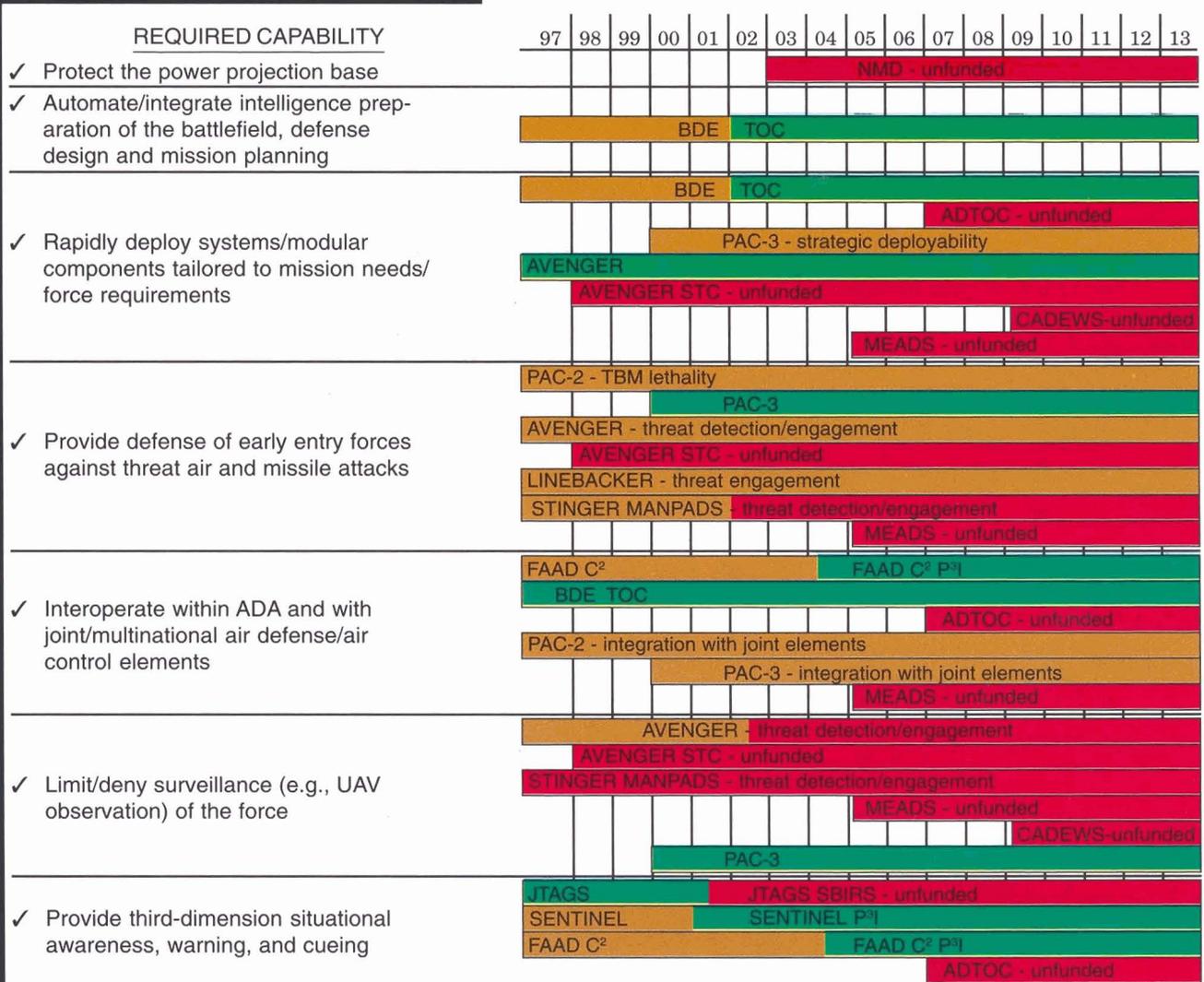
The Stinger Block I missile has improved accuracy and lethality in a reduced target signature environment. The Stinger Block II missile, scheduled to begin fielding in 2004, will have improved range capabilities against advanced UAVs and cruise missiles. Bradley Stinger Fighting Vehicles and manportable Stinger teams cannot receive "cueing data" and are therefore unable to detect and engage reduced-signature threats.

Avenger suffers these same drawbacks, and will lose its optimum effectiveness against cruise missiles and other low-signature threat platforms if it goes into battle without the ***slew-to-cue*** enhancement (currently unfunded). Bradley Linebackers have adequate capabilities, but in the future may be outranged by UAVs and some standoff rotary-wing platforms. The Combined Arms

Directed Energy Weapon System (CADEWS), which would bring new air and missile defense technology to the battlefield, is also unfunded.

In the future, Army National Guardsmen will “defend the common interests” by defending the continental United States against ballistic missile attacks. The National Missile Defense Deployment Readiness Program is geared to field an initial national missile defense capability as early as 2003 to protect the United States against a limited ballistic missile strike, such as a few ballistic missiles launched by terrorists. The currently planned development phase is not fully funded and there are no funds programmed for any of the deployment opera-

**Project the Force
Capabilities Assessment**

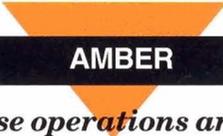


tions. America's national missile defense strategy, therefore, is largely based on assumptions that "rogue states" will not develop long-range ballistic missiles until later in the century. However, even those who oppose a "crash" national missile defense program agree that threat trends will one day make a more robust national missile defense essential.

Funds exist to automate all ADA brigade tactical operations centers by 2002, but the fully automated objective air and missile defense planning and control system is unfunded. Until it is funded, air defense forces will not achieve full integration or interoperability with Army and joint command and control elements, and we will continue to employ air defense weapons at less-than-optimal levels of effectiveness.

Joint tactical ground stations (JTAGS) may lose their connectivity with Defense Support Program satellites — and therefore their capability to relay tactical ballistic missile warnings — when Space-Based Infrared Systems replace Defense Support Program satellites around 2002. Modifications to connect JTAGS to Space-Based Infrared Systems are not sufficiently funded. This results in a degraded in-theater capability to expeditiously broadcast tactical ballistic missile warnings.

Defense design and tactics will alleviate some deficiencies. However, Stinger-based platforms still lack positive target identification capabilities and will continue to visually identify targets before engaging them, a hindrance that shrinks the engagement envelope and limits engagement opportunities.



PROTECT THE FORCE

AMBER

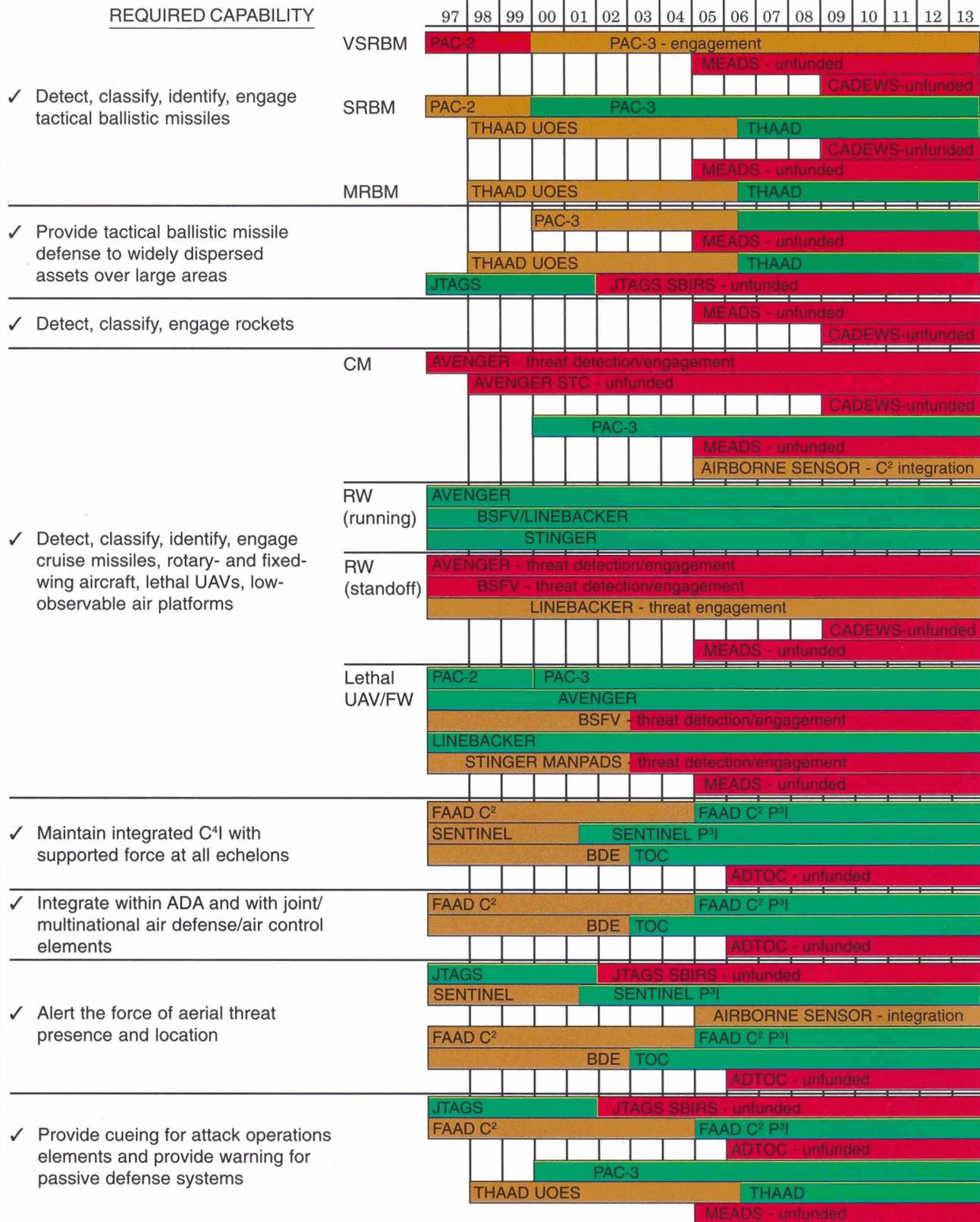
Multidimensional air defense operations are key to the force's survivability, the paramount consideration from deployment through redeployment.

Theater missile defense units will defend selected assets according to the joint force commander's priorities. Lower-tier MEADS and PAC-3 systems will generally employ close to defended assets. A THAAD unit will normally attach to the lower-tier systems to mount a multi-layered defense against medium- and short-range tactical ballistic missiles. JTAGS will transmit launch warning, alerting and cueing reports to support attack operations, passive defense and active defense measures. Short-range air defense assets will integrate with theater missile defense systems to defend against cruise missiles, UAVs, helicopters and fixed-wing platforms.

As forces continue to build up and expand in the theater, more MEADS and PAC-3 systems will arrive to augment the defense, extending ADA coverage to protect maneuvering forces. Arriving PAC-3 battalions will replace MEADS elements employed in lower-tier missions, allowing these units to protect maneuver forces moving to or within assembly areas.

Protect the Force

Capabilities Assessment

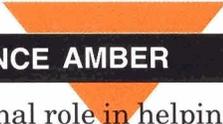


Divisional short-range air defense assets will defend their organic divisions in staging and assembly areas. Corps short-range air defense battalions will task-organize with MEADS elements to leverage synergy provided by combining firepower and surveillance capabilities.

Air Defense Artillery will continue to protect the force throughout the *decisive operations* and *sustain the force* patterns of operations. ADA units will engage and destroy tactical ballistic missiles, cruise missiles, rockets, UAVs, low-observable platforms, helicopters and fixed-wing aircraft. They will maintain integrated C⁴I with supported forces at all echelons. Integrated with joint and multinational air defense and air control elements, they will provide cueing for attack operations and early warning for passive defense.

Fielding PAC-3 and objective THAAD systems will enable us to mount the objective two-tiered, near-leakproof defense of critical assets against medium- and short-range ballistic missiles. However, defense of the maneuver forces in the corps and division areas against short-range ballistic missiles and rockets will be very limited. PAC-3 forces lack the tactical mobility required to protect the dispersed force from the theater through the forward areas. In theater and corp support areas, PAC-3 systems can protect logistical complexes and command and control centers from cruise missiles, but most likely will position for tactical ballistic missile defense. In forward areas, Avenger (without slew-to-cue) and Bradley Stinger Fighting Vehicles or manportable Stinger teams (without cueing) have no capability against cruise missiles. Bradley Linebackers can engage cruise missiles that transit their defended area; however, cruise missiles will not generally target the units Linebackers defend unless the armor units are massed. Fielding an airborne sensor in 2005 will enhance cruise missile defense by providing over-the-horizon surveillance and precision-tracking data.

ADA systems will adequately counter fixed- and rotary-wing aircraft and lethal UAVs, but Bradley Linebackers and PAC-3 systems have only a limited capability against standoff helicopters. *Avenger Slew-to-Cue, CADEWS and MEADS would provide a substantial capability against the formidable air and missile threat to forward maneuver forces.* ADA brigade tactical operations centers, upgrades to Patriot radars and battalion tactical operations centers, and Sentinel improvements will enhance command and control. However, funding for the objective air and missile defense planning and control system is elusive. A lack of funding for JTAGS modifications will degrade early cueing for attack operations and passive defenses. PAC-3 and THAAD systems cannot provide launch and impact data in as timely a fashion as JTAGS.



GAIN INFORMATION DOMINANCE AMBER

We will play a multidimensional role in helping Force XXI win the information war — a key, 21st-century tenet of battlefield success. Air Defense Artillery's overall ability to execute its *gain information dominance* mission requirements is rated *amber*.

REQUIRED CAPABILITY



Gain Information Dominance Capabilities Assessment

Air Defense Artillery's sensor data network, with input from JTAGS, theater missile defense system radars and Sentinels, will give the force commander a real- or near-real-time picture of the air defense battlespace. The Army Air and Missile Defense Command will establish an integrated air, sea and ground picture. They also will refine and update the third-dimension intelligence preparation of the battlefield, monitor friendly and threat air operations, recommend defense designs and coordinate theater missile defense priorities with maneuver plans.

Air Defense Artillery will protect C⁴I assets from aerial attack and will counter RISTA platforms. Forward-positioned short-range air defense

fire units, which are highly effective against low-altitude UAVs, will limit or deny observation by RISTA UAVs. Integration with MEADS will further enhance short-range air defense weapons and sensor capabilities against the low-altitude UAV threat.

Short-range air defense forces have limited capabilities to defeat RISTA platforms. Only ***Bradley Linebackers and Avengers, positioned with their supported maneuver units, can detect and engage RISTA UAVs.*** PAC-3 systems, although normally deployed in rear areas, could move forward to counter UAVs. This will be an attractive option if MEADS and Avenger Slew-to-Cue units are not available, since the forward-deployed PAC-3 systems would extend air and missile defense to corps maneuver units.

Patriot and THAAD systems' and ADA brigade tactical operations centers' ability to integrate joint airspace operations will contribute to countering UAV operations, but the absence of the objective air and missile defense planning and control system will produce a less-than-optimal understanding of the air picture within the maneuver area of operations.



SHAPE THE BATTLESPACE

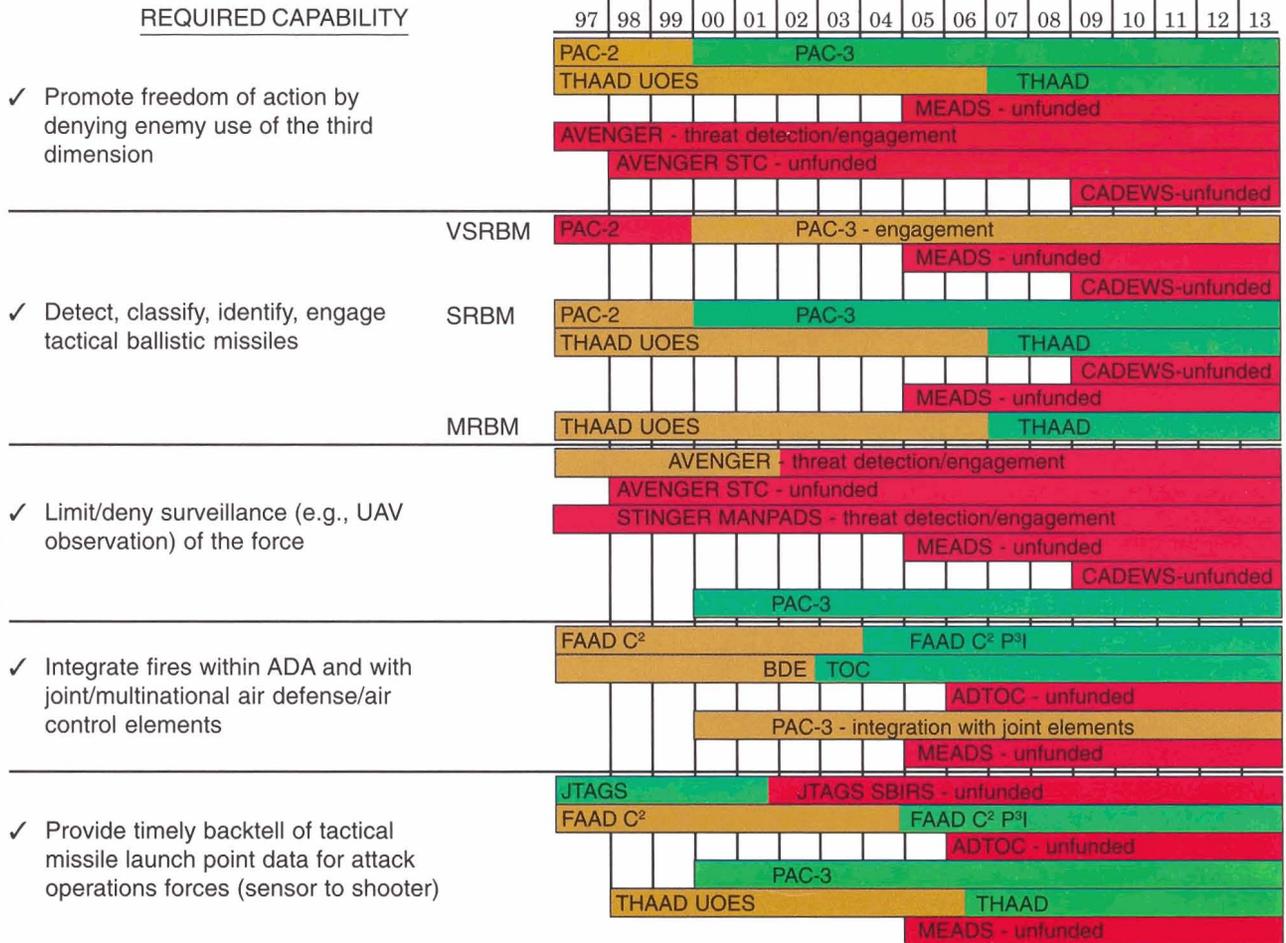
AMBER

Air Defense Artillery will lay an air and missile defense blanket over critical command and control centers, deep-attack assets, support elements and maneuver units as the force establishes conditions to launch decisive operations. ADA units will focus on denying or limiting the enemy's understanding of friendly intentions. Short-range air defense systems will shield routes of movement from aerial attack and observation. MEADS will engage tactical ballistic missiles, cruise missiles and rotary- or fixed-wing aircraft that attempt to overfly or stand off from short-range air defense systems. Sentinel radars will orient on low-altitude targets, cover gaps and extend MEADS' coverage forward. PAC-3 and THAAD systems will continue to protect critical assets, generally in rear areas.

The Army Air and Missile Defense Command and brigade and or battalion air defense tactical operations centers will process intelligence data provided by space-based, aerial and ground sensor platforms to reassess threat situations. Sensor data relayed by MEADS, PAC-3 and THAAD systems and JTACS will help pinpoint launch sites for destruction by deep attack systems.

Air Defense Artillery's capabilities to support Force XXI's efforts to ***shape the battlespace*** are degraded by some of the same deficiencies that affect its ability to ***protect the force***. ADA brigade and battalion tactical operations centers will satisfy many of the fusion, distribution and interoperability requirements. These tactical operations centers, however, cannot achieve horizontal and vertical integration, a shortfall that objective air and missile defense planning and control systems would eliminate.

REQUIRED CAPABILITY



Shape the Battlespace Capabilities Assessment

PAC-3 and THAAD systems can protect information nodes in theater and corp areas, but have only a limited capability to protect the same assets in the forward area. In addition, no forward area ADA systems have been tasked to engage smaller, standoff surveillance UAVs that could uncover friendly intentions or target command and control centers or friendly deep-strike systems for destruction by indirect fires.

DECISIVE OPERATIONS AMBER

The force commander's objective during decisive operations will be to achieve decisive victory, quickly with minimum casualties. The commander will seek to combine the element of surprise, concentration of fires, rapid tempo and audacity to overwhelm the enemy. *Air Defense*

Artillery will supply the essential ingredient — freedom of maneuver — that makes these effects possible to achieve.

ADA units will counter air and missile strikes against maneuver forces and theater assets while denying threat RISTA platforms access to the battlefield. During decisive operations, PAC-3 and THAAD systems will maintain their defense of air and seaports of debarkation and priority geopolitical assets throughout the theater. Short-range air defense systems will move forward with the attack. They will protect the maneuvering forces, particularly at potential chokepoints and such critical assets as aviation forward operating bases and refueling and ammunition points. Some PAC-3 units may also move forward to augment coverage of corps logistical concentrations.

Short-range air defense systems will position within maneuvering formations and along routes of advance. Bradley Linebackers, positioned immediately behind the lead maneuvering elements and weighted toward the flanks of formations, will roll into combat to counter attack helicopters and lethal UAVs. Avengers, deployed farther back along the routes of advance to enhance their survivability, will counter helicopters, lethal UAVs and RISTA platforms. Integrated data relayed by Sentinel, MEADS and other air defense and joint service sensors will enhance the forward air picture.

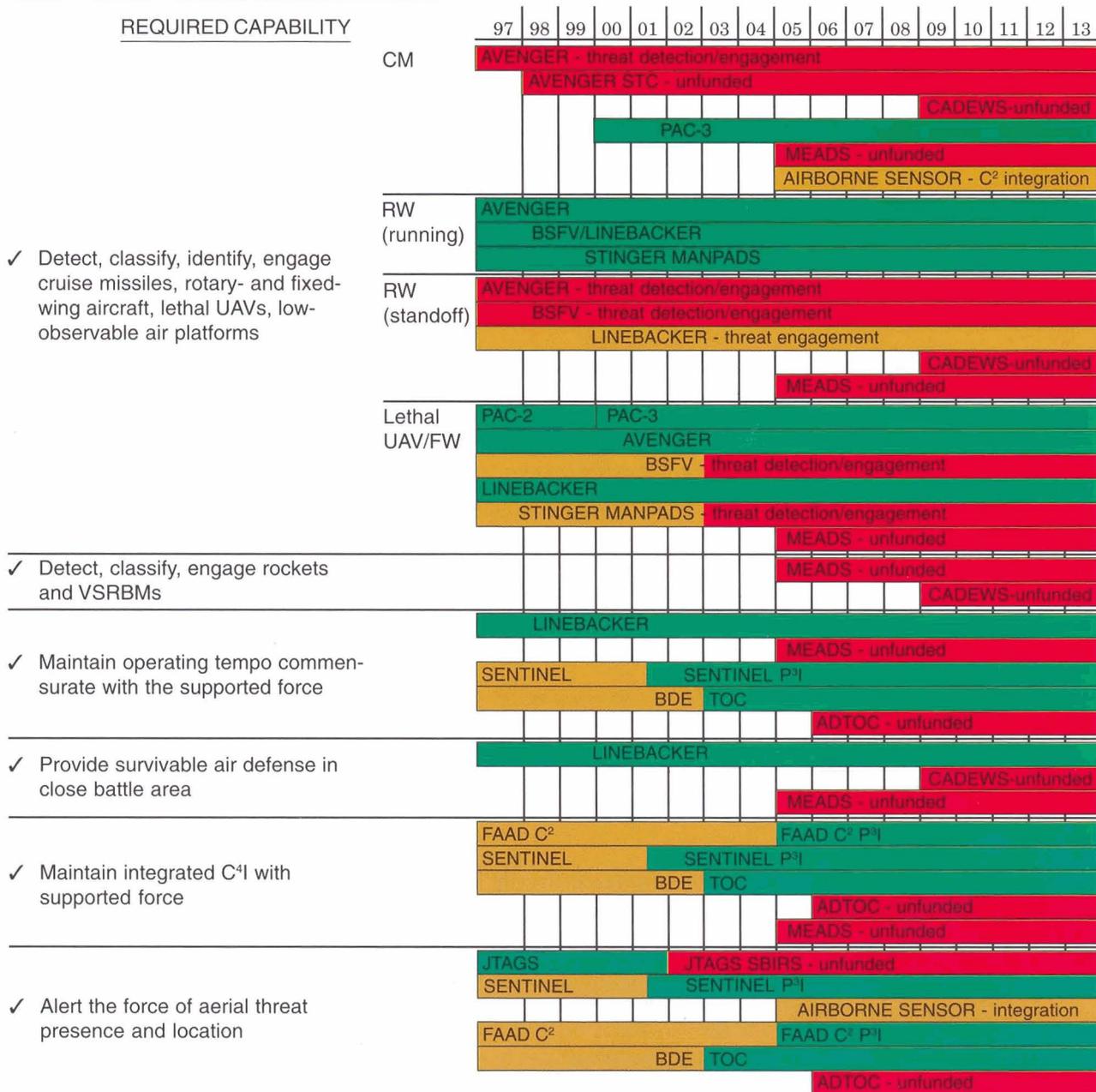
MEADS will move forward, assuming overwatch positions to protect maneuvering forces against tactical ballistic missiles, cruise missiles and, in conjunction with short-range air defense units, low-altitude air-breathing threats. MEADS units will position their sensors to extend surveillance forward of the close-combat area, permitting their fire units to engage fixed-wing aircraft, standoff helicopters and UAVs deployed beyond the range of short-range air defense systems.

PAC-3 systems, operating synergistically with short-range air defense systems, will adequately counter all potential air threats except very short-range ballistic missiles and rockets. In forward supporting positions in the corps area, the PAC-3 system's effectiveness against cruise missiles ranges from poor to very good, depending on the missiles' radar cross section and the terrain. In some scenarios, PAC-3 systems will prove effective against fixed-wing aircraft in the corps area and, perhaps, the division rear as well.

Stinger-based systems (Bradley Linebackers, Bradley Stinger Fighting Vehicles, Avengers and manportable Stingers) have adequate capabilities against running rotary-wing and fixed-wing aircraft. Bradley Linebackers are adequate against standoff helicopters if defense designs are sound and third-dimension intelligence preparation of the battlefield is properly conducted. Bradley Linebackers also have the survivability, mobility, agility and lethality to support the quick-striking Force XXI Army. Preplanned product improvements will supply short-range air defense battalion tactical operations centers, forward area air defense command and control nodes and Sentinel ground-based sensors required connectivity and interoperability.

The absence of critical but unfunded war-fighting systems will degrade our ability to protect the force during **decisive operations**. We need MEADS, Avenger Slew-to-Cue, CADEWS and the objective air and missile defense planning and control system to fully accomplish this mission.

Decisive Operations Capabilities Assessment



Future historians will likely assign chief credit for “winning” the Gulf War to the logisticians who stockpiled and repositioned the mountains of materiel and munitions that sustained Operation Desert Storm’s grand flanking maneuvers and armored sweeps across vast expanses of desert. Patriot, Hawk and Avenger protected air and seaports and the huge logistic complexes that suddenly blossomed in the desert sands. Short-range ADA units guarded the seemingly endless caravans of cargo, ammunition and fuel trucks that rumbled ceaselessly along “Tapline Road.” Air Defense Artillery will perform similar duties in 21st-century theaters of operation.

Secure supply lines have always been the lifeblood of armies and they will be the lifeblood for Force XXI. Modular components, tailorable organizations, commonality of logistical items and integrated combat service support automation systems will satisfy anticipated logistical flow and synchronization needs in 21st-century theaters of operation. ***ADA units will ensure the logistics flow is uninterrupted by protecting airports, seaports, logistical facilities and reconstituting forces throughout all patterns of operations.*** Since many contingency operations will be “split-based,” ADA units may also defend sustainment facilities outside the theater of operations and their connectivity to the theater of operations. They may even protect non-combatant nations, as they did Israel during the Gulf War, from ballistic missile attack.

Although the air and missile threat will probably abate as a campaign progresses, “desperation” or “last-ditch” air and missile attacks remain a significant threat. Therefore, ***ADA units will remain on “full alert” from the moment they enter the theater to the time they redeploy.***

Short-range air defense systems will counter RISTA platforms, thereby preventing surprise attacks and enhancing force security. MEADS will defend against tactical ballistic and cruise missile attacks and complement short-range air defense counter-RISTA efforts. PAC-3 and THAAD systems will continue to protect air and seaports, as well as redeployment areas, from tactical ballistic missiles.

PAC-3 and THAAD systems can adequately protect reconstituting and redeployment forces in theater-level assembly areas and ports of debarkation, but the defense of reconstituting forces in the forward area will be limited. Bradley Stinger Fighting Vehicles, Bradley Linebackers, manportable Stingers and Avengers (even without slew-to-clue) have some capabilities against most aerial threats, but Bradley Linebackers are the only forward area system with a capability against cruise missiles.

ADA brigade and short-range air defense battalion tactical operations centers can interact with, but cannot fully integrate with, supporting and supported combat service support elements.

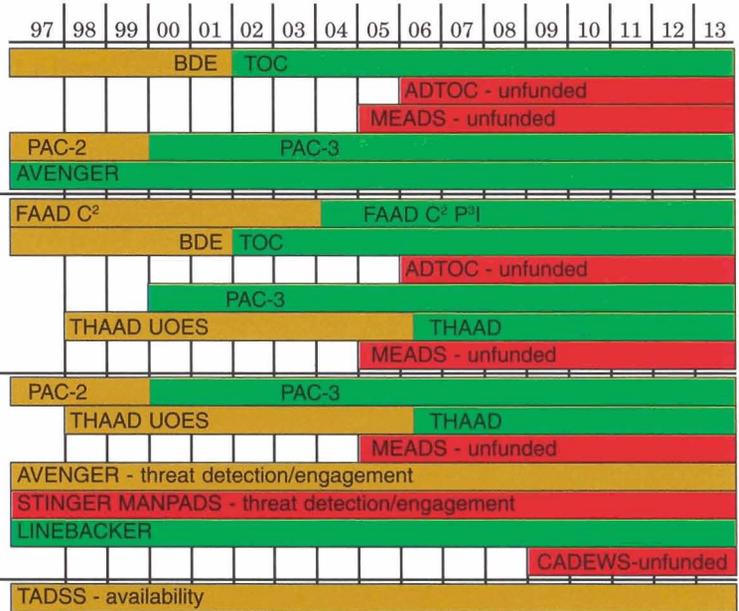
REQUIRED CAPABILITY

- ✓ Provide tailorable forces/modular components to facilitate logistical commonality and synchronize support activities

- ✓ Horizontally integrate with supported force and supporting combat service support elements to facilitate/expedite logistics requirements

- ✓ Provide defense of reconstituting/redeploying forces against threat air and missile attacks

- ✓ Automate soldier training, stand-alone and netted, to exercise all essential warfighting activities in a fully virtual, integrated, embedded battlespace environment



**Sustain the Force
Capabilities Assessment**

ASSESSMENTS SUMMARY

Air Defense Artillery's capabilities to support Force XXI vary. Time and the evolving air and missile threat will erode some capabilities, while preplanned product improvements will enhance others.

PAC-3 and THAAD systems, Bradley Linebackers, forward area air defense command and control components, and brigade and battalion tactical operations centers can meet their mission requirements. However, failure to field them in adequate quantities will compromise force protection.

MEADS, Avenger Slew-to-Cue, objective air and missile defense planning and control systems, CADEWS and national missile defense systems are unfunded. Unless we fund and field them in

sufficient quantities, we will not achieve the levels of force protection prescribed in *Army Vision 2010* or the levels of full spectrum protection envisioned in *Joint Vision 2010*.

During Task Force XXI, a brigade-level experiment recently conducted at the National Training Center, Bradley Linebackers and Avengers (equipped with slew-to-cue and fed target data by Sentinel radars via FAAD C⁴I sensor nodes) achieved unprecedented levels of effectiveness against opposing force air attacks. In presenting Air Defense Artillery's argument for adequate funding, we will continue to stand on the irrefutable evidence supplied by Task Force XXI and other Force XXI advanced warfighting experiments and exercises.

Air Defense Artillery will pursue an aggressive research, development and acquisition modernization strategy that responds to Force XXI warfighting doctrine by setting modernization priorities according to total force requirements. We will invest broadly in militarily relevant basic research, use commercial off-the-shelf technology where possible, access international scientific and technological innovations, forge more effective working relationships with industry and mobilize resources in an enhanced intraservice and interagency fashion. New technology insertions will continually upgrade fielded systems. Next-generation ADA systems will be in development even as present-generation ADA systems are rolling off production lines.

This strategy will equip ADA soldiers with the most modern ADA weapons and command, control, communications, computers and intelligence systems the country can provide in the shortest possible time consistent with sound business practices and within affordability constraints. It will maintain and expand America's technological advantage over potential adversaries and give ADA soldiers a winning edge on the battlefield.

ADA FORCE XXI TRAINING

Operation Desert Storm was the baptism of fire for virtually all ADA soldiers who served in the Gulf War, yet they performed like seasoned combat veterans. We attribute their exceptional performance to the high-training standards achieved during the last decades of the 20th century. During the next century, duty, honor and love of country will again send ADA soldiers into battle, but it will still be training conducted to high standards that prepares ADA soldiers, crews, leaders and units to fight and win.

Air Defense Artillery's training goal will be to execute tough, realistic field exercises as the primary means of validating training. However, shrinking resources, increased weapon system ranges, the growing diversity of threat targets and environment constraints will increase our reliance on simulations and synthetic battlefields. Simulation-based training is the path we will follow to victory in the campaign to maintain training standards. Leveraging training technologies in the same manner we leverage weapon system technologies, we will

field training aids, devices, simulations and simulators simultaneously with weapon systems.

The inability to adequately portray the air threat in field exercises and the prohibitive cost of launching live air defense missiles has traditionally made combat in the third dimension difficult to replicate. But in many ways, simulation training technologies increase rather than decrease training realism. Many ADA combat operations, particularly theater missile defense engagements, can be faithfully replicated in computer simulations and on synthetic battlefields. For example, training scenarios are already virtual reality for Patriot tactical control operators whose attention is fixated on computer screens during actual combat as well as during training exercises. Embedded training simulators in theater missile defense and short-range air defense systems also provide excellent diagnostic tools.

Fiscal realities and environmental concerns normally limit field exercises to task-force-size forces; synthetic battlefields have no boundaries and will provide realistic training for combat staffs at all echelons. In the future, ADA soldiers and units will train on digital battlefields alongside international forces as well as other combat arms and joint services. We will continue to send seasoned professionals rather than raw recruits into battle.

ADA FORCE XXI SOLDIERS

Sophisticated 21st-century technology will not eliminate nor reduce our reliance on soldiers. Their willingness to serve, endure hardships, withstand the rigors of combat and put their lives on the line for their country remain the key to victory. Attracting, assessing, training, educating, motivating, developing and retaining bright,



Air Defense Artillery's training goal will be to execute tough, realistic field exercises . . . to send seasoned professionals, rather than raw recruits, into battle. (Photos by Dennis McElveen)



physically fit, aggressive caring men and women with the potential to assume leadership positions is not only our greatest challenge, it is our top priority.

The total ADA objective force will remain relatively constant into the next century. The active ADA component will increase slightly, with the activation of the first THAAD battalion, while the Army National Guard ADA force will decrease somewhat with the loss of two brigade headquarters and headquarters batteries and with smaller Avenger battalions replacing Hawk and Chaparral battalions. The proportional size of the ADA force will grow from 2.7 percent of the total Army in 1987 to 3.1 percent (12,953 soldiers) of the total Army (424,413 soldiers) in 2003. Some 2,200 new non-ADA jobs will open up to female soldiers in Avenger and divisional air defense headquarters and headquarters batteries. Job opportunities for women within Air Defense Artillery will continue to grow with the fielding of high-tech weapon systems such as THAAD. By consolidating ADA military occupational specialties, we will continue to streamline branch personnel management functions and create more equitable promotion opportunities and more versatile assignments for all ADA soldiers.

We will recruit ADA soldiers but will retain ADA families. We will continue to offer traditional recruiting and retention incentives (such as compensation, educational benefits and reenlistment bonuses), and will work to improve medical care, child care, schools, housing, post exchanges and commissaries. But the biggest attraction we will offer new generations of soldiers is the privilege of wearing the uniform — a life of purpose and direction built on the enduring bedrock of shared Army values.

YESTERDAY, TODAY AND TOMORROW

Force XXI is not the end state, but rather the first stage, of our grander metamorphosis into the “Army After Next.” Air Defense Artillery will remain, as always, in the Army’s vanguard of change. Even as we complete the transition to Force XXI, we focus on more distant horizons, on future threats yet dimly perceived.

We will not abandon our past in our surge toward the future. We will maintain and nurture the heritage and traditions that have long sustained ADA soldiers in combat. Our sacrifices will validate the sacrifices of soldiers who fought on battlefields growing remote in time. The price they paid, we will pay; the burdens they bore, we will bear as we march forward into the new millenium and the colossal responsibility of time.



