

# The Air Force and Missile Defense

The task includes not only destroying these weapons but also finding them before they can launch.

By Bill Gertz

**S**ATURATION ballistic missile attacks against littoral forces, ports, airfields, storage facilities, and staging areas could make it extremely costly to project US forces into a disputed theater, much less carry out operations to defeat a well-armed aggressor. Simply the threat of such enemy missile attacks might deter the US and coalition partners from responding to aggression in the first instance.”

Gen. Ronald R. Fogleman, the Air Force Chief of Staff, conjured up this bleak scenario in a recent statement about the threat posed by Third World missiles and the Air Force's determination to help counter it.

USAF leaders say it is the threat elaborated on by General Fogleman that has pushed the Air Force more deeply than ever into the world of missile defense. The Air Force's existing system of air- and space-

based sensors, communications channels, and intelligence systems has improved dramatically since the Persian Gulf War, when US forces put together an *ad hoc* system to feed launch detection data picked up by Defense Support Program (DSP) satellites through USAF's communications channels to the Army's Patriot antimissile batteries.

USAF today is assuming a key role in plans for active defense of US and allied forces against missile attack. The Air Force, with its fleet of attack fighters, surveillance systems, and communications, would, in most cases, be a prime instrument for preemption of enemy missiles on the ground. Moreover, it is developing a laser weapon that it believes would be able to shoot down missiles shortly after they were launched. [See "The Airborne Laser," January 1996, p. 54.]

USAF also is cast for a major support role, providing the means for the complex task of commanding and controlling US forces engaged in finding missiles, monitoring their status, detecting their launch, and shooting them down.

The Air Force has the job of building the architecture for missile defense command and control, and USAF's authority over the joint-force command-and-control function has been enshrined in joint doctrine. A Defense Department memorandum of understanding to this effect was signed July 8, 1994, designating the Air Force as the lead agency in this area.

Last year, the Air Force established a Theater Air Defense Office within the Air Staff, directed until recently by Maj. Gen. W. Thomas West. Setting up a definable entity with responsibility for all aspects of theater air defense, including missile defense, was a major step for the Air Force. The office's functions

were recently placed under the deputy chief of staff for Plans and Operations.

Theater Missile Defense (TMD) has not traditionally been an Air Force priority, but the service's substantial budget commitment to its programs appears solid.

### Attack Operations

For their part, the Army and Navy are developing six terminal- and wide-area TMD systems. The Army entries are the standard Patriot system, the Patriot Advanced Capability-3 system, the Medium Extended Air Defense System (also known as Corps SAM), and the Theater High-Altitude Area Defense system. The Navy has a pair of seabased systems known as Lower Tier and Upper Tier, the latter a wide-area defense viewed as the most promising.

The Air Force expresses no institutional interest in embracing such "catcher's mitt" systems—designed to intercept speeding warheads late in their flight as they are about to strike the target.

"When you look at terminal defense, the Air Force really doesn't have a dog in that fight," said General Fogleman. "That's a combination of Army and Navy systems. . . . We think the major contribution we're making is in the areas of battle management, attack operations, and boost-phase intercept" (BPI)—areas focused on the early stages of an enemy's missile attack.

"What we would like to do is get those things [ballistic missiles] with attack operations before they ever have a chance to launch," said Col. William R. Carter, the Air Force official heading the command-and-control combat integration requirements division. "That's really the first line."

To that end, the service has been developing new means of detection and ways to get information instantly to the pilot flying Scud-hunting missions. However, the Air Force concedes that direct attack will always be hampered by skillful use of camouflage, mobility, and concealment.

Colonel Carter acknowledged this, adding, "If [the missiles] do launch, we would really like to get them in a boost phase [just after launch, before the rocket engines burn out], where the bad stuff falls all over the bad guys. And maybe that's a disincentive, so if they [prepare to] light

the wick on that thing the next time, they'll think twice about it falling back on them."

The deterrent would be especially strong if the missiles were armed with nuclear, biological, or chemical warheads.

USAF officials warn that attack and BPI operations should not be regarded as a complete missile defense. A complete system would require other layers, such as the Army and Navy area and point-terminal defenses.

### The Second Line

The Air Force has adopted BPI as the second line of defense after attack operations. The BPI mission initially went on the drawing board as a high-speed interceptor missile that would be fired from a fighter aircraft.

The Clinton Administration asked for a relatively small amount—\$49 million in the current fiscal year—for kinetic-kill missile research, out of a missile defense budget request of \$2 billion. The future of this system is uncertain.

The most important Air Force BPI TMD system being developed is the airborne laser (ABL). "As we look at boost-phase intercept, it's no secret that we're looking at the ABL as really the weapon that will probably provide us with the most capability in that area, so we're engaged there," General Fogleman said.

The service is working hard to build a chemical-fired laser gun fitted aboard a Boeing wide-body jet, and tests so far have been encouraging.

"We're going to intercept [the missiles] when [they are] in powered flight," said Col. Richard Tebay, program director for the ABL. "If we can get them in the boost phase, it's a way of reducing the number of targets subsequent tiers have to deal with."

The ABL is in the concept design phase. Competing for the program are two industry teams—one led by Rockwell International (teamed with Hughes and E-Systems) and a second led by Boeing (teamed with Lockheed Martin and TRW).

Once the design has been worked out, a demonstrator phase will begin, probably in 1997. Plans call for this phase to culminate in 2002 with the shutdown of an actual theater ballistic missile, said Colonel Tebay,

who added, "We've come a tremendous way" with the program.

The system will have its own infrared sensors capable of picking up a missile launch hundreds of miles away. The ABL also has its own tracking, detection, and acquisition sensor, with a 360° sweep and can use external target "cuing" from spacebased sensors.

The ABL is strictly a theater weapon that would operate over friendly territory and yet be able to fire at threatening missiles as they rise through enemy airspace—all without violating borders.

Col. Patrick Garvey, an Air Combat Command officer serving as an advisor to ABL officials, sees great value in the system, as in the protection of forces deployed abroad for military operations. "We are committed to the airborne laser development," he said.

Colonel Tebay noted that the ABL would be able to deploy rapidly from the United States and go into action almost right away. "You don't deploy it and then spend a month getting it ready to go," he said. "It arrives ready to do its mission."

Once the first demonstrator is fielded in 2002, the Air Force will have the capability to position aircraft outside enemy territory and set up on-orbit combat air patrols that can protect arriving friendly troops.

### Battle Management

General Fogleman believes USAF will play the key role in battle management and command and control, adapting and upgrading systems once focused on the Soviet threat to support forces threatened by short- and medium-range missiles.

He asserted that the Air Force is committed to its role as the lead missile defense command-and-control agency. The General pledged that the Air Force "will integrate existing architectures and develop future ones that provide warfighting CINC's a flexible and seamless command-and-control system."

Colonel Carter noted that the problem has always been the high speed needed to attack enemy missiles and the lack of time available for making decisions. "We haven't had the command and control to use the destructive capability or the intrusion capability or the attack capability to do much about it," he said.

"In the Gulf War, we were not very effective" against Iraqi Scuds, he added. "We just didn't have the intelligence fusion, the rapid decision-cycle capability, [or] the target-recognition tracking capabilities to get those things, on the ground or in the air."

Of all the elements of battle management/command, control, communications, computers, and intelligence (BM/C<sup>4</sup>I), control over forces is most important, in the view of Colonel Carter. "If you don't have control, you can be the best commander in the world and it does not matter," he said. Communications is the medium for working; computing is merely one of the tools. Intelligence was brought into the function because of the surveillance and reconnaissance mission.

"Information on the battlespace is what I need, and I don't care if it comes off X sensor or Y platform," Colonel Carter said, adding that command-and-control functions must make sense of the vast amounts of data that systems provide and then be able to sift through and use the data in making battlefield decisions.

A recent joint military exercise in the Atlantic illustrated the problems of not having strong central control over the battlespace. During a simulation, a Patriot antimissile battery acted unilaterally and unintentionally shot down a Navy F-14. During a second simulated engagement, a Patriot shot down an incoming missile armed with a mass destruction warhead at the worst possible time, spreading deadly debris over a large civilian population area.

"This is what happens when you don't have integrated command and control," one Pentagon official remarked.

The Combat Integration Center, another command-and-control element, is being developed by the Air Force, along with the Ballistic Missile Defense Organization and the Marine Corps. The CIC is a version of the Command Report Center used in tactical air defense efforts. It will be improved and adapted for missile defense. The goal is to decentralize attack operations against mobile theater ballistic missiles. The center takes sensor data from satellites and joint radar and flashes the information throughout a battle theater.

A prototype CIC used during a re-

cent exercise helped to connect sensors with shooters effectively within two minutes.

In addition, the Air Force has developed a new system that provides intelligence fusion to the air commander in regional conflicts. The Joint Force Air Component Commander Situational Awareness System (JSAS) was also used successfully during Roving Sands, a Joint Chiefs of Staff exercise held each year in Texas and New Mexico. The system puts tactical intelligence imagery into what General Fogleman said is an easily viewed presentation on a laptop computer.

"Marine Corps and Air Force users lauded its contribution to the conduct of the air battle [during Roving Sands], particularly missile defense operations," said the Chief of Staff.

As part of the BM/C<sup>4</sup>I function, the Air Force also is upgrading its theater air control systems to adapt them to deliver the type of command and control needed for missile defense operations.

In April 1995, initial operational capability was declared for the Attack and Launch Early Reporting to Theater system, an array of satellite ground stations that collect and pass on information from spacebased sensors. ALERT will give the Air Force quicker warning of missile launches detected from spacebased sensors and will provide better cuing data to missile defenses than is provided by the groundbased equipment that is part of the weapons.

### Space and Airborne Sensors

A crucial part of the Air Force role in missile defense is the contribution of its sensors, and the centerpiece of that effort is a new advanced satellite constellation being built to replace the DSP satellites. Right now, DSP is the mainstay for providing missile warning information to strategic and theater commanders and their forces.

The new system being developed is a layered constellation of satellites that goes by the generic name Spacebased Infrared system. Lt. Col. Robert R. Fisher, an SBIR system

program official, said Operation Desert Storm showed that the DSP missile launch warning systems needed improvement, and, after several false starts, the Air Force is moving ahead.

"DSP was built for strategic operations during the Cold War," Colonel Fisher noted. "Its secondary mission was to support theater operations and obviously [we] can only do so much improvement with the Defense Support Program satellites."

DSP satellites were used successfully in the Gulf War to help Patriot missile batteries target Iraqi Scud missiles, but the data transfer rate from Cheyenne Mountain AS, Colo., where US Space Command received the satellite information, was slow. A system had to be cobbled together during the war to link the data to the Patriot batteries.

The new system will be composed of three levels of spacecraft. One will be a group of low-Earth-orbit space and missile tracking system satellites, formerly known as Brilliant Eyes. Another level will comprise two satellites that orbit Earth's poles. The last will be composed of four geosynchronous-orbit satellites that will provide wide coverage of Earth. The first elliptical and geosynchronous orbiting satellites will be launched in 2002; the lower satellites will be launched starting in 2006.

The new system will have improved data-processing hardware and software, with improved communications systems.

Colonel Fisher said the SBIR system will provide greatly improved warning of missile launches around the world and better data for active defenses, such as attack operations against missile sites on the ground, as well as for various phases of interception. It will provide more information for situational awareness.

"This system will report ballistic missile launches directly to affected theater forces and provide critical midcourse tracking and discrimination data for terminal defenses," General Fogleman said. "This cuing by the SBIR system will, in effect, extend an interceptor's range and increase its effectiveness against ballistic missile warheads." ■

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*Bill Gertz covers national security affairs for the Washington Times. His most recent Air Force Magazine article, "Horror Weapons," appeared in the January 1996 issue.*