Senior officers survey programs and prospects at an AFA symposium.

Perspectives on Air Warfare

By John A. Tirpak, Senior Editor

All photos by Randy Jolly

THE Air Force Association held its annual Air Warfare symposium February 15–16 in Orlando, Fla. The speakers included not only the Air Force Secretary and Chief of Staff *[see "The New American Way of War," p. 20]* but also heads of four USAF operational commands—Air Combat Command, Air Mobility Command, Air Force Space Command, US Air Forces in Europe—and a senior Air Force acquisition official. The Army's senior general for doctrine also made a presentation.

Gen. Joseph W. Ralston, then ACC commander and now vice chairman of the Joint Chiefs of Staff, praised the symposium as the AFA event "that does the best job of bringing the senior leadership of the Air Force and industry partners together."

Air Combat Command: General Ralston

The Air Force cannot afford all the programs already in its pipeline and can scarcely look at new projects unless they promise tremendous new capabilities, General Ralston told the Orlando attendees.

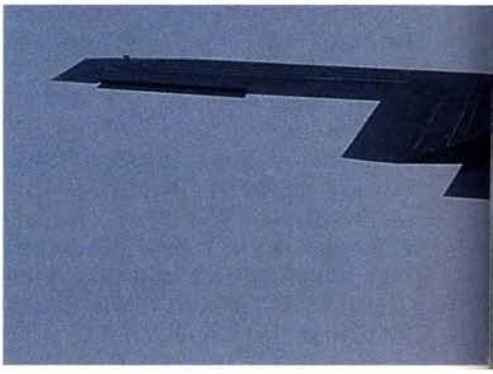
"At best, we are in a zero-sum game," he cautioned.

In the Air Force's 1998–03 Program Objective Memorandum—the upcoming six-year defense spending plan—the Air Force is already facing a $4.5 billion shortfall "just for the programs that we've got on the books," the General pointed out. "So, anyone who comes forward with a new, grand idea, we're going to have to kill something to proceed with that grand idea, no matter how good it is."

He added that the Air Force has an obligation to be honest with industry about the money situation, so contractors don't waste effort on projects that won't make the cut.

"When you are about to spend your discretionary dollars on a program," he said, addressing industry attendees, "it certainly needs to be one that has some prayer of success, in terms of the overall funding."

The F-22 advanced fighter is "absolutely fundamental" and remains the top Air Force modernization program, General Ralston said, adding that it is "not an overstatement" that the airplane will provide air superiority for US forces "for the first half of the twenty-first century," given its expense and predicted service life.



The F-15 will need improvements to keep it viable until the F-22 enters service, "but we can't do much," General Ralston acknowledged. Priorities include an upgrade to the APG-63 radar and the Link 16 digital data-sharing system.

Air Combat Command considers the Airborne Laser for theater missile defense a "revolutionary system" and has fully funded a concept demonstrator that should fly in 2001, the General noted.

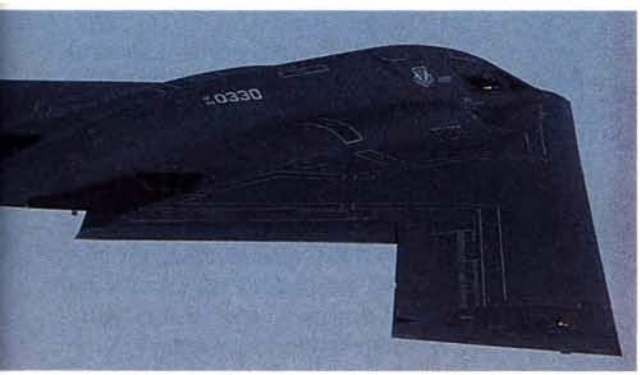
The thirty-year-old computers that power the Region and Sector Operations Control Center system "just can't do the job" and will be modernized.

General Ralston put to rest the idea that the days are numbered for the A-10 Thunderbolt II attack aircraft, saying it has "served us well and will continue to do so as far into the future as I can see." It has been funded for embedded Global Positioning System (GPS) capability and the Enhanced Position Location Reporting System (EPLRS) radio, so it can communicate with the Army ground troops it supports.

The F-16 pilot force is getting night vision goggles, and the aircraft is receiving a capability for carrying the Joint Direct Attack Munition (JDAM), Joint Standoff Weapon, Wind-Corrected Munition Dispenser (WCMD), and EPLRS radio.

"I would also like to see a way to do Link 16," as well as the EPLRS on the F-16, General Ralston said, and "perhaps there is a way you could do both" in the same box.

The B-1 heavy bomber is funded for a conventional-weapons upgrade and defensive-systems improvement, "so it can face the threat of the twenty-first century," said the General. Congress added funding to the Fiscal



1996 budget for a "virtual umbilical" that will allow the B-1 to drop a "JDAM-like" weapon within the next two years, and General Ralston said ACC considers this a "smart hedge" to provide some near-term, near-precision capability for the B-1.

Though he says he is a "strong supporter" of the B-2 stealth bomber, General Ralston noted "we still have over $1.5 billion worth of development . . . to do" on it.

"As you know, Congress has appropriated $493 million for the B-2, and those decisions will be made in Washington on how to spend that," but "certainly we need at least that much" money to fund necessary testing and spare parts for the stealth bomber.

The General said he expects that the Defense Department's ongoing—and newly expanded—"deep strike" study will "build very heavily on [DoD's] heavy bomber study last year," which concluded that a force of twenty B-2s was sufficient for the Air Force. He noted that ACC was involved in developing last year's conclusions, but he expressed his belief that the issue will get "a fresh look."

He also said he expects the B-52 will remain a combat asset for a long time to come.

"I find it an interesting statistic that the average B-52H has fewer flying hours and fewer landings than the average 767 in the commercial fleet," the General remarked, "so it has got a lot of life left on it." The airplane could serve "for well beyond the lives of just about anybody in this room."

The Joint Air-to-Surface Standoff Missile, Sensor-Fuzed Weapon, and AIM-9X short-range dogfight missile are all "fully funded," he said.

Two E-8 Joint Surveillance and Target Attack Radar System aircraft are meeting expectations in their deployment to Bosnia-Hercegovina. However, the number of E-3 Airborne Warning and Control System airplanes worldwide is not sufficient to meet CINC desires, General Ralston said. "We're doing all that we can to generate more sorties," and the Radar System Improvement Program for AWACS is considered a priority, he added.

The case is much the same when it comes to the RC-135 Rivet Joint electronic surveillance aircraft. "We need some additional Rivet Joint" craft, the General emphasized. Congress added money to reengine the existing aircraft, he added, but "that's an expensive program, and we've got some work to do to sort out how we approach that."

General Ralston is also very supportive of unmanned aerial vehicles and the C-130J theater transport aircraft, which will be "very important to us, as we have a good-size fleet of C-130s aging out" of the inventory.

General Ralston was pleased to report that Air Force "combat readiness is at an all-time high," with ninety-four percent of active squadrons and ninety-six percent of Guard and Reserve squadrons at readiness condition C-1 or C-2. This, he claimed, indicates that decisions made to cut force structure in order to preserve readiness were "the right ones."

Air Mobility Command: General Rutherford

In spite of inadequate warning, "screwed-up planning," and "stinko" weather, the Air Force's movement of US troops to Bosnia for Operation Joint Endeavor was a huge success and vindicated the C-17 and the requirements that led to it, according to Gen. Robert L. Rutherford, head of USAF's Air Mobility Command and the joint-service US Transportation Command.

The Bosnian lift "was a relatively small effort," General Rutherford explained, but the poor conditions and activation of long-dormant facilities taught important lessons, he said.

"We need to pay more attention to our infrastructure, especially that infrastructure in Europe [that] we've moved out of"—such places as Torrejon and Moron ABs, Spain, and Rhein-Main AB, Germany, the General said. This is true, he continued, "because we may well have to go back in there and use it again, and we'd better . . . keep it in pretty good condition [and] exercise it, which we have not been doing enough."

When the operation began, AMC planned to do the job with only twenty-six C-130s. However, "as the elements started to take their toll," said the General, "and we wanted to stay on the time line, it became obvious that we needed additional lift. Consequently, we ended up moving twelve of our nineteen C-17s into the theater."

The fields from which AMC operated were austere at best, with "holes in the runway, . . . minimum lighting, and no precision approach capability." Crews had to rely on the C-130's radar altimeter and the C-17's GPS "to get down to 400 feet" in visibility that was typically only one mile.

At Tuzla, Bosnia—the main operating field—available ramp space was only 200 by 600 feet, and operations were conducted off taxiways a mere fifty feet wide.

"No way you were going to get a C-5 in there unless you parked it on the runway," General Rutherford asserted. "And if you parked it there, and you broke it, you were out of luck."

Because there was "an airplane landing every fifteen minutes [at Tuzla] at the height of operations, space was at an absolute premium." Given the tight ramp space, the need to maneuver on the ground, and the pace of operations, the General concluded, the situation was a textbook illustration of "the reasons we bought the C-17, and I can't think of a better example of why we needed it."

The dozen C-17s moved "17,000 short tons in a thirty-day period" and carried a third of the whole airlift operation, General Rutherford said. Also participating were ten C-141 Starlifters and two C-5 Galaxys, but they had to operate at sites more distant from the action, he added.

"What did we learn?" he asked rhetorically. "We learned that we would have liked to have had some more planning time. We learned that there are some seams in an operation like this where you start using strategic lift in a tactical role, and we need to go back and think about that."

General Ralston also highlighted the fact that "we still don't have a good feel for in-transit visibility"—for knowing where certain cargo is and how it's getting to its destination. AMC also discovered that "even a small operation like this can be very manpower-intensive." He noted that AMC deployed 1,700 troops into the Balkan theater.

Asked if the currently planned buy of C-17s is adequate to AMC's needs, General Rutherford said the question is being reviewed.

"We've said all along, somewhere between 120 and 140 is probably the right number for strategic lift," he noted. More C-17s might fill the unmet brigade-airlift requirement and modernize the aeromedical evacuation fleet.

Soon, it will be time to "look at replacing that C-5A," the General added. It took fourteen years from concept to production on the C-17, and "we cannot wait another fourteen years to . . . replace the C-5A," he said.

Air Force Space Command: General Ashy

The North American Air Defense system, run jointly by Canada and the US, has not gone out of business with the end of the Cold War, reported Gen. Joseph W. Ashy, head of North American Aerospace Defense Command (NORAD), US Space Command, and Air Force Space Command.

At the time of the symposium, the Canada-US agreement keeping NORAD going was on the verge of being renewed "for the eighth time," General Ashy said, "so we'll be around at least another five years."

The organization has "downsized, . . . resized, and . . . reconfigured," he continued, to be more relevant "and more cost-effective."

NORAD still provides nuclear attack warning and assessment and performs the air sovereignty mission, though in a much-reduced, "readjusted" manner to be less expensive, General Ashy said. If deterrence ever fails, NORAD will, in fact, be in charge of continental air defense.

The organization continues to keep an eye on the movements of Russian submarines, as well as on the operations tempo and training of Russian bomber crews. Russia has 101 "fairly modernized" bombers that bear watching, the General noted. Also of keen interest is the Russian intercontinental ballistic missile force, particularly "road- and rail-mobile SS-24s and SS-25s," General Ashy said.

Increasingly, though, NORAD and US Space Command are being more integrated with the civilian space program, particularly when it comes to communications, navigation, and weather satellites.

Asked to comment on the increasing civilian dependence on GPS *[see "GPS in Peace and War," p. 76]*, General Ashy said GPS was fielded "as a military system for a very good reason"—because of the navigational accuracy it can provide to combat systems. It required a military investment of nearly $8 billion.

Still, the system has generated civilian business worth as much as $30 billion, and "what we have to do is balance this whole thing," the General said. "President Clinton will soon sign a new policy on Selective Availability, which . . . will probably be a compromise." Technologies are germinating that "I can't comment on," he said, but these technologies may make it easier to ensure that GPS is available only to US military users at one level of accuracy and to commercial users on another, "to the benefit of all."

General Ashy asked his listeners to spread the word that Cheyenne Mountain AS, Colo., remains the hub of NORAD and US Space Command activities and is not a Cold War relic.

"Some question why we need Cheyenne Mountain in the mountain," he said. "It is our command-and-control node. . . . It is critical to the defense of North America. It was built there for a very good reason," and it would make no sense to relocate it. Besides the increased vulnerability of another site, "it costs resources to move it out," he said.

"We are modernizing it," he said. "We've spent over a billion dollars on it, and we are well into the second phase. . . . I want to make sure we keep our modernization program on track."

General Ashy said NORAD and US Space Command are in the process of evaluating a new estimate of the threat from ballistic missiles and that threat's implications on field-

ing a ballistic missile defense of the continent.

Missile proliferation "is something we watch very closely," the General said. "We're posturing ourselves to be prepared to deal with this threat when the time is appropriate."

At the CINC NORAD level, "we have postured ourselves to think this through as a concept of operations, so [the Ballistic Missile Defense Organization] can model and simulate capabilities that would be produced by the Air Force and Army in an operationally pertinent way."

Ballistic missile defense will have to be undertaken in cooperation with Canada, under the terms of the NORAD agreement, the General noted.

US Air Forces in Europe: General Hawley

Gen. Richard E. Hawley, then USAFE commander, noted that the United States possesses a "zeal to exploit the potential" of new technologies, which can rapidly project power anywhere in the world within hours. The General worries, however, that in its zeal, the US "might lose sight of some of the more subtle benefits" of keeping forces based overseas, he told the Orlando conference.

The alliances formed by the US around the globe have safeguarded the world "through half a century of unparalleled danger to mankind," he said. The track record—which shows that the presence of US forces has a calming influence on simmering conflicts—suggests that there should not be a wholesale retreat to US shores, projecting power from afar, but rather a continued policy of "active engagement," he asserted.

General Hawley observed that forward presence is often "the best and least expensive way" to effectively head off a problem.

"Let's not lose sight of the critical role of forward-deployed forces in areas of instability," he said.

He explained that such forces "give us a seat at the table—usually the most influential seat—when issues of interest to the US are being debated. They sustain our system of alliances, which in turn allows us to leverage the military capabilities of allies in pursuit of common interests. They preserve our access to bases, ports, and airfields, without which we might not even have the option to engage. They give us a pool of regional experts both in and out of uniform, frequently very senior experts, who have served as leaders in the region of interest."

It is "often overlooked" that US allies provided a quarter of the forces in the Persian Gulf War, half the aircraft in Operation Deny Flight, and seventy percent of the ground force in Joint Endeavor, he noted.

There is a "multiplier effect," in that allies use similar tactics and procedures and "often equip their forces with weapons of US manufacture," providing interoperability advantages.

Having access to overseas bases is the "most critical" benefit of being forward deployed, General Hawley said. "If we didn't have access to Rhein-Main and Ramstein, [Germany,] you couldn't 'do' Bosnia," he pointed out. "If you want to put a fire out while it's still small, you better have a firehouse close to the action."

While he does not advocate abandoning the pursuit of new capabilities that can give the US the advantage of long reach, the General instead argued for maintaining "a balanced approach" that recognizes and capitalizes on the advantages of both

The Force XXI Tool Kit

The Army got a late start shifting gears for the post–Cold War world but is following the Air Force's lead in preparing itself for a new strategy and a new range of threats, reported Army Gen. William W. Hartzog, commanding general of the Army's Training and Doctrine Command.

General Hartzog told attendees that, after events in eastern Europe "signaled a change in where our world was and where it was going, . . . [USAF] had a strategy and you had it articulated very rapidly. We took longer to do that." For two years, the Army has been developing a hardware and doctrine plan that will convert it into "Force XXI," which will be more of a "tool kit" for world crises than "a threat-based Army," he explained.

Only recently has the Army progressed from "grease pencils on acetate" to "light pens on video screens" in an effort to collect and make sense of battlefield information, the General said.

"Technology had come upon the Army in a way we had not anticipated," he explained. "We decided . . . we can't afford to take this cautious, casual way of making changes; we have to make a major step."

After a long internal debate about what the Army should do and be, General Hartzog said the mission has boiled down to several key concepts: deterring war, compelling an adversary to submit, reassuring allies, and supporting other services and national strategy.

"We have to be more doctrinally flexible and operationally agile," he said.

The new Army will focus on being "more tailorable" to the situation and "more modular," to be able to assemble the right ingredients for a given mission. This has required "redesigning the tactical Army" in such a way that the result will be relevant for the next twenty years. It will involve unprecedented sensor data, from such eye-in-the-sky systems as the Joint Surveillance and Target Attack Radar System down to "a flip-down monocle on a soldier's helmet." This, in turn, will require sensor fusion systems that will collate information so that everyone on the "blue force" knows who is where.

Special attention will have to be given to not overloading people with extraneous information, General Hartzog said. But information will be the key because most of the equipment will be "legacy systems" that cannot be easily replaced, and the only way to make them more powerful will be to use them more effectively, "in the right place at the right time, . . . linking the sensors to the shooters."

What "it all boils down to is real-time situational awareness," he said.

"We have to redesign the institutional Army," which has had "the same staff organization since 1911." It could use some "deep thought" about what aspects of it are still really necessary, the General said.

The new doctrine will emphasize force projection and protection, information dominance, shaping the battlespace—setting the conditions under which the Army will fight—decisive operations, then sustaining operations and making the transition to future operations.

Many experiments have been run, and a prototype unit is being organized that will put the new thinking and technology to the test at the National Training Center, Fort Irwin, Calif., next year. With regard to new hardware, General Hartzog said, "We will only buy those things that are critical" to the Army's future success.

long-range weapons and forward deployment.

He also disputed the claim that overseas-based forces are "somehow more expensive" than US-based ones. Because host nations pay some support costs for US forces on their soil, "the only way we can save money by withdrawing forces from overseas is if we decommission them and put them in the boneyard."

General Hawley made a plea on behalf of 73,000 Air Force troops and dependents in USAFE "who are living and working in some of the worst facilities found anywhere in our Air Force." The US, he said, stopped investing in facilities in Europe when the Berlin Wall came down because of the uncertainties about what would happen next.

"But that period of uncertainty is now over. We know with some confidence what our posture in Europe will be for the next decade or so. It is time to fulfill our obligation to give our people facilities that meet Air Force standards and are able to support the missions that we call on them to do." Because his troops don't "live in anyone's district, their needs sometimes get pushed to the bottom of the stack. . . . I'd appreciate your help in keeping that from happening."

USAF Acquisition: General Muellner

Only a few years ago, the C-17 airlifter "was in great, great trouble, . . . but [it] has become a model program," in large part because the acquisition process has been streamlined, Lt. Gen. George K. Muellner, principal deputy assistant secretary of the Air Force for Acquisition, said in his Orlando address.

At the depth of the aircraft's problem period, the C-17 was costing USAF $330 million a copy, but "the government and industry got their act together," and now the C-17 may come in for as low as $173 million a copy, saving $4 billion over the life of the program. "That's what streamlining can do for you," General Muellner said.

Across the Air Force, cost has become a paramount consideration in any program. General Muellner assured his listeners that "there's still a focus on meeting the warfighter's needs but doing so in a much more effective manner." The C-17 is an example of success in doing so, he said.

It is a myth that streamlining will work only on major projects, the General continued. Experience on numerous smaller efforts has shown that "it works at all levels."

The F-22 fighter program has become the flagship of acquisition reform because it has pioneered the use of integrated product teams "of government and industry people working hand in hand" to make the program perform technically as well as financially, said General Muellner.

"It has now become a model not only for our other programs and our sister services but also [for] the way the Defense Department now functions in the acquisition process," the General asserted.

He cited numerous cases of programs in which the act of relaxing military standards or shifting to commercial practices sped up the acquisition process and saved money while not harming—or while actually improving—the performance of the system. These model programs included JDAM, WCMD, Milstar satellite program, and GPS.

General Muellner also said the Air Force won't hesitate to cancel a system that can't meet target cost. He argued that the AGM-137 Triservice Standoff Attack Missile, while technically sophisticated, was "a failure."

TSSAM "would have cost us in excess of $2 million a round," said General Muellner. "Clearly that would not fit in" with Air Force spending limits. Its replacement program, the Joint Standoff Air-to-Surface Missile, has "cost as one of its key performance parameters. If we fail to meet the cost, the program is at risk of cancelation, just as if you failed to meet the survivability requirement."

The Joint Strike Fighter, a prospective aircraft that is to emerge from the Joint Advanced Strike Technology program, was set up "as a pilot program to capture all the benefits of acquisition reform and streamlining," said General Muellner, who previously headed the JAST effort. The program does all its business in a paperless format over the Internet and involves industry "in every aspect," such as writing requirements and choosing models to verify performance and trade-offs.

Commonality savings will be realized by getting all the services to use the airplane. Britain's participation will increase efficiency, spread development costs further, and expand the production run.

"We've had a lot of successes, but we've got a long way to go," the General said. He cautioned that warfighters are now "very, very serious about trading off cost over performance. That is an ongoing part of every acquisition program from the front end and throughout its life."

The Air Force Scientific Advisory Board's "New World Vistas" report *[see "New World Vistas," March 1996, p. 20]* has given the acquisition department "a very good roadmap of where we need to go in the future," the General said.

"We . . . are responding to that by reorganizing our [science and technology] program right now in line with that, identifying when and where we divest activities . . . more readily available on the commercial market, . . . and making sure we're putting the right amount of money into these technologies of the future." ■