

# Bomber Program Choices Near

Administration must decide on whether to build both B-1 version, Stealth technology aircraft, or only the latter

By Clarence A. Robinson, Jr.

Washington—The Reagan Administration is facing a major decision on whether to accept an Air Force recommendation and build two bombers or opt for a single aircraft based on Stealth technology. USAF wants first to build a modified version of the Rockwell International B-1 bomber and then follow it with an advanced technology Stealth bomber.

Defense Secretary Caspar W. Weinberger expects to decide by June 15 and recommend to President Ronald Reagan a U. S. bomber aircraft program. That decision is expected to be followed closely by another selecting a team of aerospace companies to be awarded a contract to develop and build a preproduction advanced technology bomber—the so-called Stealth aircraft.

## Air Force Recommendation

If the strong Air Force recommendation is accepted, the U. S. will build first a modified version of the Rockwell International B-1 bomber and have the first squadron operational by 1986.

During this period the Defense Dept. would continue to fund through USAF a Stealth aircraft development program leading toward an initial operational capability in 1991.

This approach would provide approximately 100 modified B-1s, known as the long-range combat aircraft (LRCA), followed by a second bomber force of approximately 110 Stealth bombers in the 1990s.

The two-bomber plan would cost

approximately \$19.7 billion for the 100 LRCAs and \$30 billion for the 110 Stealth aircraft fleet.

In seeking to convince the Defense Dept. to take this route, USAF already has included approximately \$3 billion in the Fiscal 1982 budget request now being considered in Congress.

Two-thirds of this sum is earmarked for the modified B-1 program and the remainder for the advanced technology bomber program.

The service already has structured in the Fiscal 1983 program objective memorandum draft plan \$4 billion for the two-bomber concept.

The funding is divided about the same as in Fiscal 1982.

Aerospace contractor teams believe that the U. S. can decide to build a single advanced technology bomber and have the preproduction model flying by 1986, with an initial operational capability in 1988.

While taking the single advanced technology bomber approach would save money, it also adds an element of risk should problems develop in building the large composite structure of the bomber, according to high-level Defense Dept. officials.

"It also means a delay in getting an operational bomber into the inventory as soon as possible, and that must be weighed against any possible savings," an official said.

"It also must be realized that those savings based on a single-bomber program are only hypothetical and would evaporate

if the development program ran into difficulty and was delayed," the official said.

In an effort to sort out claims on the availability and costs of the Stealth bomber program, Weinberger has called the four companies involved in development to the Pentagon.

Lockheed's Roy Anderson and Rockwell International's Robert Anderson, chairman of the board and chief executive officer, respectively, already have briefed Weinberger and his deputies.

Lockheed has developed the design for a fighter-sized Stealth aircraft and is flying a technology demonstration aircraft in the fighter category against Soviet and simulated Soviet surface-to-air missile system radars.

## Stealth Technology

Lockheed would team with Rockwell in building an actual bomber aircraft based on Stealth technology.

Both companies have designs that take advantage of a low radar cross-section based on aeronautical characteristics, the use of radar-absorbent materials and application of electronic counter-measures (ECM) technology. The combination makes it difficult for ground-based air defense radars to detect the bomber and all but impossible for the tracking radars to locate the target within the radar beam, according to Pentagon officials.

The second industry team also briefed Weinberger and his deputies late last week. Thomas Jones, chairman of the board of Northrop, and T. A. Wilson, chairman of the board and chief executive officer of Boeing, presented cost and schedule information on the advanced technology bomber that the two companies would team to build.

Northrop is building a fighter-sized Stealth aircraft that is expected to fly soon, according to Pentagon officials, based on a design proposed by the company.

Neither of the teams have constructed or flown an aircraft or aerodynamic test vehicle approaching the actual size of an advanced technology bomber, the Pentagon officials confirmed.

## Results of Study

The Air Force presented the results of its months-long bomber study to Weinberger on May 21, with a strong pitch to build first the LRCA and then to follow it with the advanced technology bomber.

According to this plan, the program would be structured to provide the Stealth bomber in the 1990s.

The two Stealth bomber teams from industry were asked to submit cost and schedule data to USAF based on that approach.

## EA-6B Crashes on Nimitz Flight Deck

Crash of a Marine Corps Grumman EA-6B on the flight deck of the aircraft carrier USS Nimitz on May 28 resulted in destruction of four aircraft and at least 14 deaths.

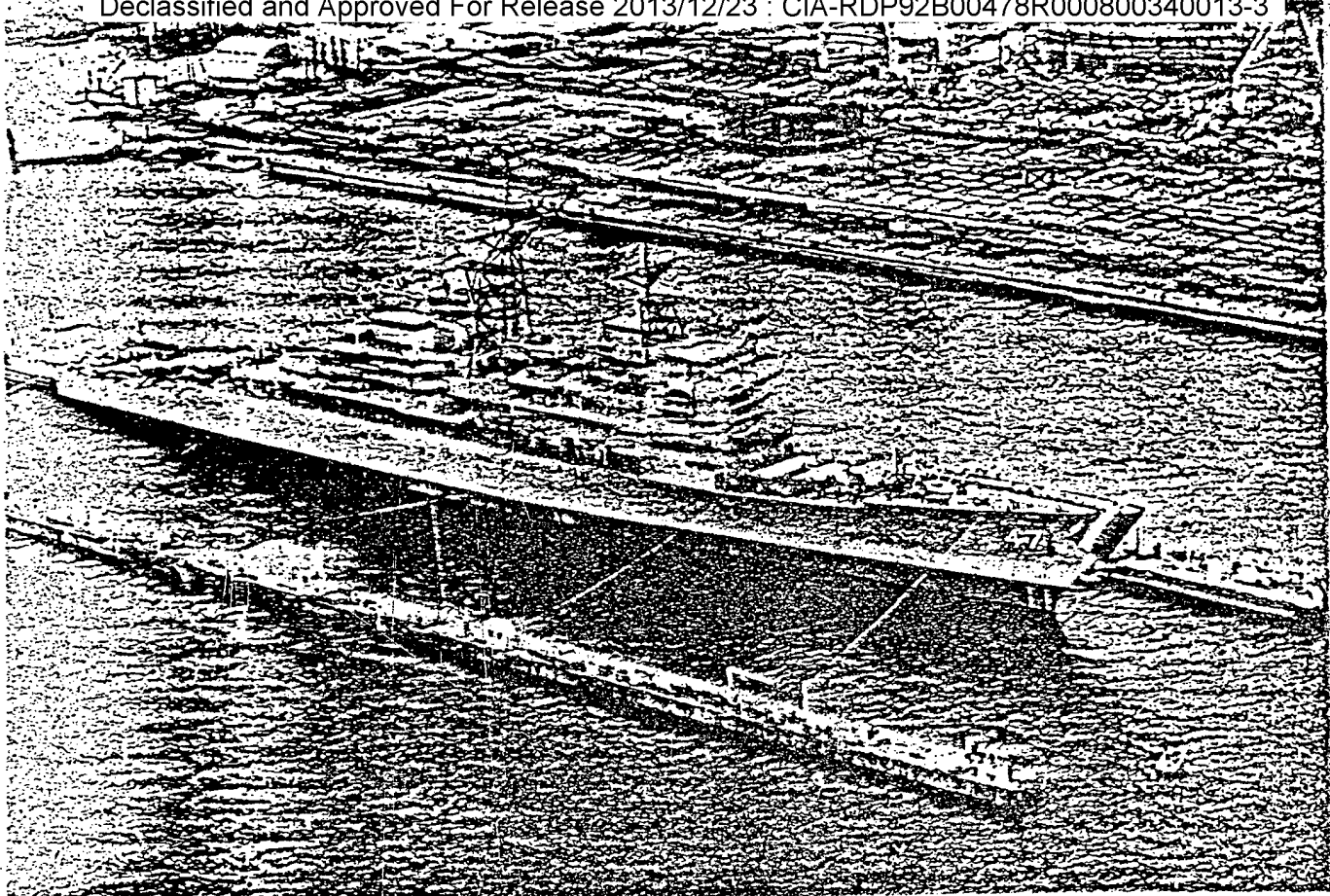
The Nimitz was operating approximately 60 mi. from Jacksonville last week when the electronic countermeasures aircraft landed to the right of the angled deck centerline during night carrier operations. The ensuing fire took Navy personnel 70 min. to extinguish.

As of late last week, the Navy had identified the following aircraft damage sustained in the crash and the fire:

- Destroyed—One EA-6B and three Grumman F-14s.
- Major damage—One F-14 and three Vought A-7s.
- Minor damage—One F-14, one Sikorsky Aircraft SH-3, five A-7s, one Grumman A-6 and three Lockheed S-3As.

At least 14 crewmembers died as a result of the crash, including crewmembers in the EA-6B. Two more were reported missing, 21 receiving major injuries and another 24 as receiving minor injuries. Many of the seriously injured were airlifted to hospitals on shore.

The Nimitz was scheduled to return to its home port of Norfolk late last week. Navy officials said it is too early to determine the cause of the crash, but that weather was not a factor.



## Navy Guided-Missile Cruiser Launched

First U. S. Navy Aegis guided-missile cruiser floats at a support dock after her launching Apr. 25 at Ingalls Shipbuilding Div. of Litton Industries at Pascagoula, Miss. Named the Ticonderoga after the World War 2 carrier CV-14, the ship was christened on Armed Forces Day, May 16, by Mrs. Nancy Reagan, wife of the President. Designated CG-47 Class, the Ticonderoga is the first of five Aegis-equipped ships that will provide the primary surface protection for aircraft carrier battle groups. Ticonderoga also

carries two Sikorsky Seahawk surveillance and antisubmarine warfare helicopters. Powerplants are four gas turbine jet engines producing 80,000 hp. Primary weapon for the Aegis system in defending against hostile attack is the General Dynamics Standard 2 (SM-2) missile. Inventory includes SM-2, the McDonnell Douglas Harpoon surface-to-surface missile, the Phalanx anti-aircraft gun, 5-in. deck guns, rocket-launched torpedoes and depth charges.

The service in turn, along with some Defense Dept. officials, believes that the teams should be maintained in a competitive development program while the LRCA is being produced.

"This would avoid technological risks in trying to move too fast by selecting a single industry team and moving straight to preproduction hardware, with a production decision right on the heels," one high-level Pentagon official explained.

"The fundamental technology issue is not whether the aircraft will have Stealth qualities, but rather how to move from subscale fighter-size aircraft to full-scale bomber aircraft using new materials—the heavy use of composites and radar-absorbent materials that have composite characteristics," the official said.

One high-level expert close to both the LRCA and advanced technology bomber programs said the question Weinberger wants answered by the Air Force is whether the service will establish both bombers

as priority programs, which will cost \$50-\$60 billion through the 1980s, and make a firm commitment for both aircraft.

USAF claims that it has already committed to a two-bomber approach with funding requested in Fiscal 1982 and in the Fiscal 1983 program objective memorandum.

However, according to the high-level expert, the Office of Management and Budget already expects to have to increase USAF's total obligational authority in Fiscal 1982 by \$500 million to \$1 billion to maintain the Stealth bomber program pace.

"The Air Force needs two new bombers in the force, but USAF won't commit to it now, and there is not enough budget authority to fund it on top of the force already planned," he said.

"The Air Force can't buy more F-15s, more F-16s and CXs and MXs and still make both bombers a priority," the expert explained.

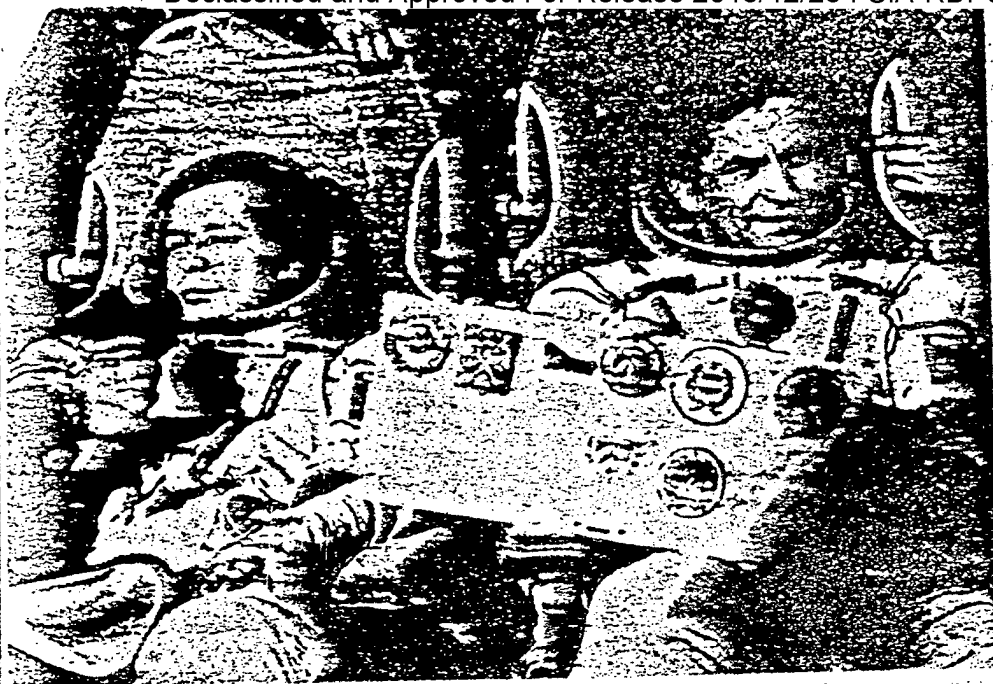
"Unless they give in other areas and convince Weinberger they mean it, USAF may find that he favors the Stealth bomber as a single bomber approach and not the B-1."

The expert explained that the briefing to Weinberger by USAF was slanted heavily toward the modified B-1 and that didn't escape Weinberger's "accountant's eye."

### USAF Briefing

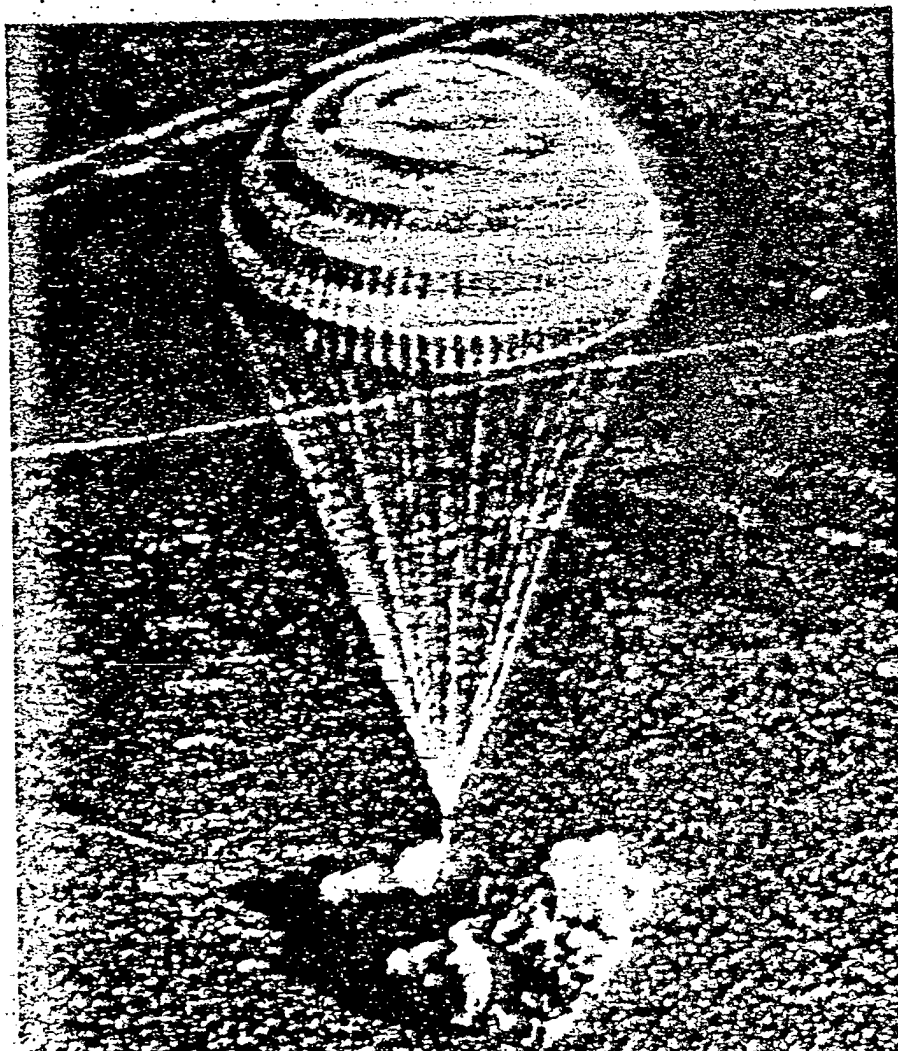
Other officials said the problem with USAF's briefing of Weinberger and his deputy Frank C. Carlucci, 3rd, is that they tend to go off on tangents and ask questions on side issues while ignoring the central issue. "The questions they ask are not simple questions, and they don't lend themselves to simple answers; an hour is allotted for what really takes days or weeks to detail," one official said.

Air Force officials believe the service has made a compelling case for the LRCA



### Soyuz T Cosmonauts Return to Earth

Soviet cosmonauts Viktor Savinykh (above, left) and Vladimir Kovalenok relax in recliner couches following their May 26 return to Earth after 75 days in the Salyut 6 space station. The Soyuz T spacecraft carrying the cosmonauts lands in a dust cloud kicked up by its retrorockets (below) near Dzhezkazgan in the Kazakhstan republic. Soviet/Romanian cosmonaut crew, Leonid Popov and Dumitry Prunariu, who made a 6-day visit to Salyut 6 (AWAST May 25, p. 23), returned to earth May 22 in their Soyuz 40 spacecraft. Soviets said this was the last use of the older Soyuz spacecraft, and that all manned flights would be suspended for several months.



bomber.

Some Defense Dept. officials said last week that Weinberger has not made up his mind, and that he may in fact be leaning somewhat toward selection of the advanced technology bomber by accelerating the program toward an operational capability sometime in the late 1980s.

USAF officials have taken a strong stand in backing the modified B-1, but that stand came late and only after the user command—Strategic Air Command—pressed for an interim bomber based on a stretched version of the General Dynamics FB-111.

### Interim Bomber

SAC's commander-in-chief, Gen. Richard Ellis, pressed for the FB-111B/C interim bomber because he is convinced that the U.S. will not continue to fund both the LRCA and Stealth aircraft. He also is certain that his command must have the Stealth aircraft to insure survivability in penetrating Soviet air defense. Ellis was backed by other Air Force general officers from the Air Force Systems Command in his cost estimates of a two-bomber program.

"USAF paid dearly for not having a single position at the outset; the problem with SAC got Weinberger and Carlucci confused. It's difficult to go against the operational commander, and this created a lot of doubts," a high-level Pentagon official said last week.

He said that from the technological and military points of view the proper decision for the U.S. is to procure a limited number of modified B-1s while moving along with the advanced technology bomber as rapidly as prudent.

"Bombers have diminishing marginal utility and we need more than one to compound the Soviet air defense problems with Stealth. But it is hard to pay for two bombers at the same time," the high-level Pentagon official explained.

"In this case, however, that largely doesn't apply because the Air Force already has spent approximately \$6 billion in non-recurring costs on the B-1 program and owns some tooling and at least two shipsets of equipment that can apply to the production of the LRCA."

### \$2-Billion Cost

USAF officials told Weinberger that it will cost approximately \$2 billion more in non-recurring costs for the rate production tooling to establish the LRCA line, and for that additional cost plus the production cost per aircraft the service will get an operational capability with a new bomber that is much faster.

Rockwell International officials also were called to the Pentagon to make the case for the modified version of the B-1 and to confirm cost and schedule data.

In briefing Weinberger on the USAF two-bomber approach to meeting the

"But there were still some unanswered questions, and that is the reason why the advanced technology bomber contractors were called in," one high-level Defense Dept. official said. Carlucci and USAF Gen. David C. Jones, chairman of the Joint Chiefs of Staff, also attended the May 21 bomber study briefing.

"To meet the late 1980s initial operational capability with a Stealth bomber would mean having to commit now to an aircraft design, and it's just too soon for that."

### Preproduction Stealth

"We must first build a research and development Stealth bomber—a preproduction aircraft that uses a high fraction of composite materials," another high-level Pentagon official said.

The theme of both Weinberger and Carlucci has been that the Defense Dept. will give total obligational authority to the

Initial Tomahawk sea-launched cruise missiles have been delivered to the U.S. Navy by General Dynamics for a series of operational test and evaluation (Opeval) missions scheduled to begin this summer.

The missiles will be launched from a submarine for long-range, over-the-horizon flights designed to demonstrate their capability to seek, locate and strike target ships. Some of the missiles will be equipped with live warheads.

The antiship Tomahawks concluded a series of developmental-operational tests in March that led to the upcoming operational tests series, and the initial operational capability of the submarine-launched missile scheduled for early next year.

General Dynamics' Convair Div. is the prime airframe contractor for the Tomahawk sea-launched cruise missile for the Navy and the Tomahawk ground-launched cruise missile for the Air Force. The company plans to deliver six additional sea-launched versions to the Navy by end of the third quarter of this year for the operational tests.

services and let them make the major weapon systems decisions.

"USAF has made a forceful case for the modified B-1 followed by the advanced technology bomber," the Pentagon official said. "If they mean what they say about letting the services make their own decisions, that's the way we will go," the official said.

The official also said there is a delicate matter of politics involved if President Reagan asks Congress for a Stealth bomber without first seeking production of the long-range combat aircraft. "It tells the Republican leadership in Congress that they were wrong, and that Jimmy Carter's effort to go to a Stealth bomber instead of the B-1 was not politics at election time

## Administration Sets Arms Transfer Guides

Washington—The Reagan Administration has developed principles for arms transfer policies that differ sharply from the strict controls imposed by the Carter Administration. James L. Buckley, under secretary of State for security assistance, enunciated these principles in a recent speech before the Aerospace Industries Assn.

Military and economic "some sense of equilibrium" in a world of "global disorder" is likely to persist through the 1990s, according to Buckley. Further, "the strengthening of other nations with which we share common security interests is an essential component of our global effort to restore effective deterrence to the region."

Buckley said the Reagan Administration believes that arms transfers should be applied "flexibly" with "new constructive instruments" for arms control negotiations. The new approach will emphasize "a more rapid response" to "changing circumstances" and "a more active role" in the security of the world.

Buckley said that President Carter's view of transfers was "inherently and morally repugnant" and weakened U.S. influence over the arms problem. On other nations, Carter's policies led to "disorientation" of U.S. military and strategic positions and needs. Coupled with congressional human rights and nuclear proliferation restrictions on arms transfers, Buckley said, Carter's policies undercut the capabilities of nations to defend themselves—nations whose "the U.S. has—the most immediate and urgent self-interest." Pakistan is a "spectacular case in point," he said.

In evaluating arms transfer requests, Buckley said the Reagan Administration will analyze the military threat faced by the prospective recipient, the possible impact of the arms transfer on U.S. allies that are hostile to one another and effects on the recipient's military support system and national economy.

To avoid adverse economic consequences, the Administration will encourage U.S. manufacturers to produce equipment "more appropriate" to the needs of non-industrialized nations in terms of cost, complexity and sophistication. In the case of nations unable to afford weapons on commercial terms, the Administration may seek congressional authority for concessional financing, Buckley said.

Requests for coproduction or co-assembly of military equipment will be given "serious consideration," but Buckley expressed concern about the "extreme complexity" of joint programs and the "potential for conflict between foreign and domestic economic policy objectives."

Specific guidelines for coproduction are still being developed, Buckley said, as detailed "policy statement" on arms transfers would be issued in the near future.

In a related matter, the General Accounting Office recently repeated before a congressional panel its long-standing concern that the Defense Dept.'s foreign military sales program is handicapped by poor accounting and pricing practices.

The GAO criticized the Pentagon for a "continued failure" to recover hundreds of millions of dollars in costs incurred in foreign military sales and Defense's inability to give foreign governments a proper accounting of how their money was spent. It admonished the Defense Dept. to act faster on previous recommendations to develop a centralized accounting system of foreign sales and adopt pricing policies to recoup full costs.

In testimony before the House Appropriations defense subcommittee, the GAO said failure to charge the right amount for equipment and spare parts is "the most significant overall problem Defense has experienced in pricing foreign sales."

Herbert Morris, comptroller for the Defense Security Assistance Agency, which administers foreign military sales, told the subcommittee the growth of his agency's manpower had not kept pace with the expansion of the sales program and that the complex nature of sales transactions and price computations was the major cause of erroneous pricing.

Morris contended the General Accounting Office failed to recognize the manpower shortage.

Conceding "we do have problems," Morris said a "quality assurance function" was being developed to test randomly the pricing or sales to insure compliance with Defense Dept. policy.

Morris said the Security Assistance Agency would complete a test Sept. 30 to determine the validity of GAO's recommendation for centralized accounting.

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advantage of advanced technology and save some money," the official said.

Lockheed is flying a Stealth aircraft now described as an F-18-size airplane with rounded surfaces. The contractor built and tested two earlier model fighter-size Stealth aircraft in the southwestern desert area of the U.S. The two aircraft in the flight test program eventually crashed, but the crashes were unrelated to Stealth technology, according to Defense Dept. officials.

### Cost Cutting

"They were caused by trying to cut corners on costs and by accelerating construction to get the aircraft flying, not at all related to Stealth features," one official close to the development effort said.

A number of experiments have been conducted on subscale aircraft using Stealth technology in the wind tunnel and in radar cross-section tests.

The technology-demonstration Stealth aircraft in flight tests have been pitted against radar in lower frequencies, against radar in higher microwave frequencies similar to those operated by the USSR and even against bistatic radar to determine detection and tracking capability of Lockheed's Stealth effort.

"The technology works; it works better than we have any right to expect, and it is exciting because it could cause the Soviet

### ENGINE FIRM LAYOFFS

About 1,000 employees of Pratt & Whitney Group will be laid off starting the week of June 8 because of what company officials described as a "low level of demand for jet engines and spares for the world's commercial airlines."

The majority of the employees affected have less than two years of service with the East Hartford, Conn., firm and all reside in Connecticut. It is the second time Pratt & Whitney has cited a slowdown in its commercial business as justification for layoffs (AWAST Mar. 23, p. 28).

Layoffs will affect company plants in East Hartford, Middletown, North Haven and Southington. The firm has notified its 37,000 employees that actions to reduce layoffs include major reductions in overtime, taking back work subcontracted to vendors and reassigning workers to other departments and shifts.

Union to have to spend billions to modify its entire surface-to-air missile force, and even then they get no guarantees as the technology continues to mature," a Pentagon official said.

The official added that the Stealth bomber will be able to take advantage of state-of-the-art engine technology, using an engine already developed and flight

ated. "We must pay a lot of attention to off the fan blades, reduce the right-angle-type reflections in the aerodynamic design of the bomber and combine these techniques with absorbent materials and ECM. It's a combination of shape, radar-absorbent materials and ECM," the official explained.

"When you bring down the radar cross section, you can do great things with ECM equipment," according to the Pentagon official. "Once we do these things in combination, then we turn our attention to infrared signatures and control engine exhaust airflow."

Another high-level official explained that Stealth techniques are intended to minimize bomber detectability at the microwave frequencies at which current Soviet radars operate.

To overcome this reduced detectability, the official said, the Soviets can develop and deploy radars that operate at longer wavelengths/lower frequencies to take advantage of the increased echo signal obtained when the wavelength of the radar and the length of the target are approximately the same, i.e., resonance enhancement.

But, according to the official, this raises other serious problems for Soviet air defenses.

While lower-frequency radars that operate at sub-microwave frequencies can detect large targets by exploiting resonance enhancement, unless the Soviets employ extremely large radar antennas, the broad beam radiated makes it difficult to determine accurately target position.

### Size Differences

If the Soviets greatly increase the size of the radar antenna to maintain present-day target resolution, then it becomes very difficult to deploy such large structures in mobile surface-to-air missile (SAM) systems.

And the larger the size of the Stealth bomber, the larger the radar antenna that must be used to exploit resonance enhancement of the radar echo.

While the use of lower-frequencies and giant antenna radars is possible for early warning, they are not suitable for use in target tracking radars whose antennas must be able to move at high rotational velocities.

If more modest-size tracking radar antennas are used, the broad beam is unable to determine precisely the location of both the target and the surface-to-air missile.

This is because the target and missile positions must be known accurately so that appropriate guidance commands can be computed.

If the Russians opt to retain their X-band tracking radars, these can be frustrated by means of radar-absorbent materials that can be effective over a relatively narrow part of the spectrum. □

### MX Popularity Falls in Utah Poll

The MX missile system is continuing to lose favor with residents of Utah. The latest survey shows 75% of southern Utah residents are opposed to full deployment of the advanced intercontinental ballistic missile in the Great Basin of Utah and Nevada.

The poll, conducted two weeks ago by a private firm for a Salt Lake City television station, also indicates that growing negative sentiment may have been at least partially caused by the recent statement on MX by the leadership of the Mormon church. About 70% of the state's 1.4 million residents are Mormon church members, according to officials.

The survey showed that 75.8% of 200 residents contacted in southern Utah were opposed to full deployment of the missile system in the Great Basin, while 18.8% favored deployment of the system. The same question—asked of 400 persons in more populated areas of the state that would not be directly affected by the MX system—showed that 71% were opposed.

The survey also showed that about one-third of those polled in southern Utah and the metropolitan areas of the state would be less likely to favor the system because of the Mormon church's stand.

In its MX statement, church leaders said that one segment of the U.S. population would have to bear a large portion of the defense burden in lost lives and destroyed property in the event of an attack, and that a concentration of missile forces might invite an attack under a first-strike strategy. The church also cited adverse consequences for the region's water resources, ecology and sociology because of the magnitude of the MX project.

Utah state senator, Frances Farley (D-Salt Lake City), said the church statement may have been a catalyst to bring together those residents who were leaning against the missile system but had not decided to take an opposition stand on the issue. "There is no question now that the state is solidly against [the MX]," she said, adding that local public interest in the program has been growing in recent months.

Utah Gov. Scott M. Matheson is opposed to the current MX horizontal multiple protective structure basing system for the missile, favoring instead possible silo or submarine-launched basing concepts. The governor has maintained that the impact of MX deployment in the current basing configuration—in addition to the impacts resulting from planned energy development in the state—would be unmanageable.