

The long range airpower panel says we should upgrade the B-2 to its full potential—and start planning for the next bomber.

The B-2 *and Beyond*

By John T. Correll, Editor in Chief

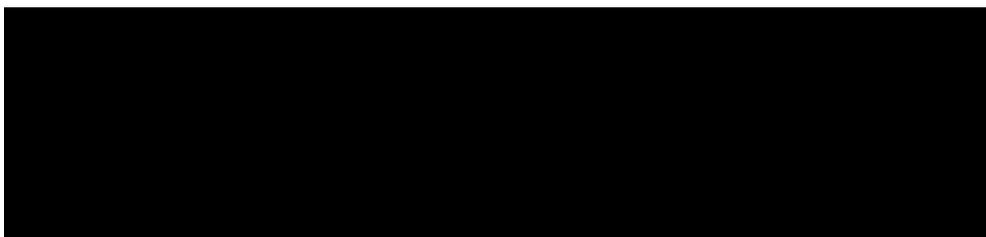
THE B-2 bomber was no stranger to controversy when the first airplane rolled out of the plant in Palmdale, Calif., in November 1988.

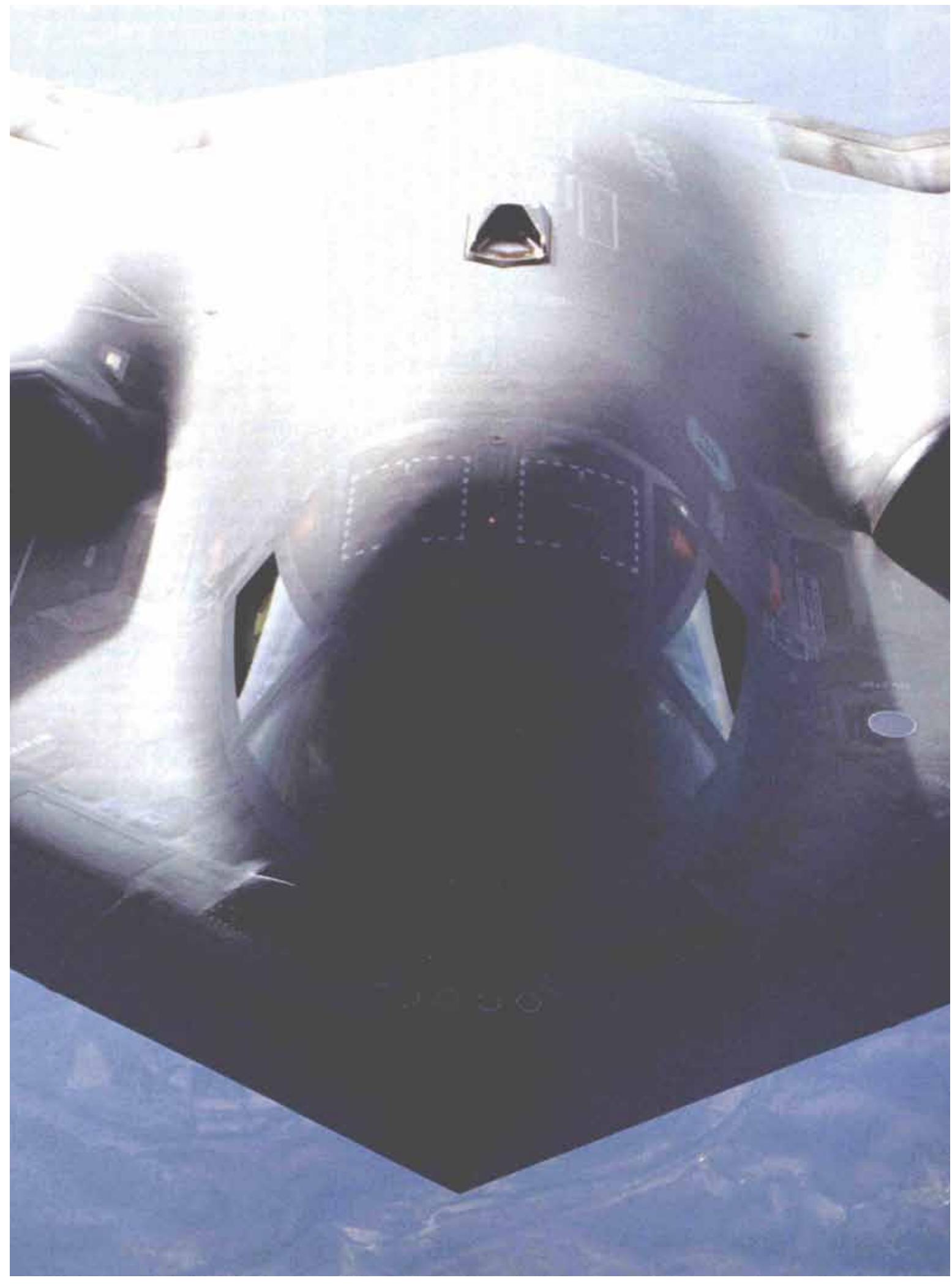
The existence of the B-2 program had been revealed to the public almost eight years previously by means of a news leak during the election campaign of 1980. “Some Air Force enthusiasts have nicknamed this new bomber ‘Stealth’ because of its ghost-like qualities,” the *Washington Post* reported.

The Carter Administration—under criticism for having canceled the B-1 bomber—followed up right away with a press conference to confirm that a new bomber with “so-called stealth technology” was in the works, representing “a major technological advance of great military significance.”

Republicans accused the Administration of engineering the leak to make the B-1 decision look better and with taking the cover off a national security program for political advantage.

When the Reagan Administration subsequently restored the B-1, defense critics attacked the overlap of two bomber programs as excessive. Agitation about the B-2 has been a staple







The long range airpower review panel recommends upgrading the existing B-2 fleet. Here, A1C Ryan Hill, 509th Maintenance Squadron, Whiteman AFB, Mo., prepares a B-2's surface for painting during an October 1997 exercise.

of the defense debate ever since. The B-2 was still in flight testing when the Cold War ended and the economies of the 1990s went into effect.

The Major Aircraft Review of 1990 reduced the planned B-2 fleet from 132 aircraft to 75. In 1992, the Air Force's Bomber Roadmap cut it further, to 20. (The number edged up slightly in 1996 with a decision to upgrade the first test aircraft to operational configuration, setting the total at 21.)

B-2 backers in Congress and elsewhere have waged a long-running campaign to get the total increased. In 1995, seven former Secretaries of Defense wrote to the President, asking him to consider the purchase of more B-2s. However, B-2 supporters could not overcome the opposition, which included the White House, the Department of Defense, and the Air Force.

The last major subassemblies were completed in 1994, and the 21st aircraft was delivered to the Air Force in 1997. The subcontractor team has dispersed, but Northrop Grumman, the prime contractor, said it would be possible—if expensive—to reconstitute the production line and a supplier base.

Last year, in what even some of the staunchest B-2 advocates said was the “last stand” on the production issue, Congress established the Panel to Review Long Range Airpower and told it to study a list of questions, the pivotal one being whether \$331 mil-

lion appropriated for the B-2 program should be applied to “further low-rate production” or be spent on improvements to the baseline program.

That panel was chaired by Gen. Larry D. Welch, former Air Force Chief of Staff and now president of the Institute for Defense Analyses.

A Recommendation—and a Warning

The panel's report to the Administration and Congress in March said that all of the money should be used for upgrades to improve the deployability, survivability, and maintainability of the existing fleet.

In fact, Welch told the House National Security subcommittee on Military Procurement April 1, “Doing anything to disrupt the upgrades would be *very* ill-advised. It was our strong feeling that it would really be a very bad decision to not do the work needed to make these 21 airplanes reach their full potential. Because if the work is not done, they clearly will not serve the purpose that you will hope they will serve.”

It will take several years of upgrades to make the B-2 fleet all it can be, he said. “As it stands today, the B-2 is a valuable asset, but it has nothing like the value that it ought to have,” Welch said.

Among other things, he said, “The sortie rates as of now do not meet the original expectations. The CINCs [theater commanders in chief] won't be

happy with the current sortie rates. Plans assume rates higher than now available.”

Upgrades and improvements, especially those that make the B-2's “low observable” (stealth) features easier and less time-consuming to maintain, will go a long way toward solving the problem.

“If you believe that you need more B-2s, what you really mean is you want more B-2 sorties,” Welch told the subcommittee. “The way to get more B-2s over targets is to fix the sortie rate to what you want to have. The way to get the capability is to bring these airplanes to their full potential.”

“Can you double the sortie rate with the investments you recommend?” asked Rep. Norman Sisisky (D-Va.).

“We can more than double it,” Welch replied.

The report said that “from an investment perspective, increasing the efficiency of the bomber force is more cost effective than procurement of additional aircraft.”

Welch said the report reflected a “common understanding” and “was not a compromise.” He said that not “even the most avid B-2 supporters” on the panel favored a concept, advanced by Northrop Grumman, that would have reopened the line to produce nine more B-2s at a cost of \$14 billion.

The other members of the panel were Samuel D. Adcock of Daimler-Benz Corp., former Sen. James J. Exon of Nebraska, John S. Foster Jr. of TRW, Inc., Frederick L. Frostic of Booz•Allen & Hamilton, Inc., former Air Force Chief of Staff Gen. Merrill A. McPeak, Walter E. Morrow Jr. of MIT Laboratory, former Secretary of the Air Force Donald B. Rice, and retired Air Force Gen. Robert L. Rutherford.

What Plan?

The panel's report said, with considerable understatement, that “current plans do not adequately address the long-term future of the bomber force.” More to the point, there wasn't any plan until very recently.

“This bomber force, given that you make smart upgrades and do the things that Air Combat Command wants to do to it and that we think should be done, this is a pretty good bomber force for at least the next 15 years,” Welch said in an interview with *Air Force Magazine*.

“But we couldn't find a long-range

plan. The Air Force acknowledged [that] it had been in the 'too hard' pile for them for some time because of the B-2 issue. This whole B-2 [additional production] issue that's been dragging on for so long—it's really been an inhibitor for a lot of things. So now they are embarked on developing a long-range plan."

The need for such planning is driven not only by anticipated changes in technology but also by the inevitability of attrition. The Air Force's total inventory of bombers consists of 94 B-52Hs, 94 B-1Bs, and 21 B-2s.

Attrition occurs both in combat—15 B-52s were lost in 10 days during Operation Linebacker II in December 1972, for example—and in peacetime. The B-52 force has experienced losses of about one aircraft per year over its 40-year service life. B-1B losses have been approximately one aircraft about every two years. The B-2 loss rate is yet to be seen.

There will be an ample reserve of B-52s. The Defense Department intends to retire another 23 of them in 1999. Losses over the next 15 years will hit hardest at the newest bombers in the fleet, especially the B-2s, which are in the shortest supply of all.

The Bottom-Up Review of 1993 said 100 heavy bombers would be required per Major Regional Conflict, but projected a total of 184 operational bombers for the two-conflict strategy.

The difference, it was said, lay in having the bombers "swing" their attention from one conflict to the other. The requirement is further offset by increasing capability. The B-2, for example, has demonstrated that it can strike 16 separate targets on a single sortie.

Of the present fleet of 209 bombers, 121 are in operational (Primary Aircraft Inventory) status.

The Next Bomber

Among the alternatives for the long-term future of the bomber force, the panel report said, are "a variant of the B-2, incorporating upgrades suggested in this report and those that will emerge in the future" and "development of more advanced technologies that might lead to a better solution for the next generation aircraft."

Although the report did not specifically say so, the options other than the B-2 variant might include an all-new manned bomber, which some in the press have dubbed the "B-3" or the "B-X," and an Unmanned Aerial Vehicle.

At present, the panel said, there is not enough information to make a choice from these alternatives, nor is there yet any need to choose. "A continuing program to demonstrate advanced technologies in support of long range airpower should be given high priority," the report said.

Welch said that UAVs may be part of

the solution but that "it's very difficult for me to believe that you won't always want a large, high-payload, long-range, manned platform."

The panel also examined the value of stealth—low observables technology to reduce the radar signature—to bomber aircraft at some length.

"Today, after 15 years of stealth aircraft operation, the most modern air defense systems on the international arms market have increasing capability against current levels of deployed stealth," the report said. "Even so, most targets can be attacked with minimum external support other than air refueling."

The Russian-built SA-10 surface to air missile is the best-known example of a weapon system that has some effectiveness against stealthy aircraft.

"It was expected and it occurred that air defense systems have evolved over these 15 years, so that stealth is not an adequate stand-alone survivability feature," Welch said.

"On the other hand," he said, "stealth technology has not stood still." Developments in the next few years could affect the decision on the next bomber.

"Given the evolution of stealth technology, there could be a next step where you could have a level of stealth that changes the game again," Welch said.

Making the B-2 Better

The panel found "compelling arguments for measures to leverage the [B-2] investment by adequately supporting and upgrading the existing force."

Welch left no doubt about the importance of the upgrades. "If you had asked me two years ago where we would be in 1998 with deployability and maintainability of this airplane, I would have been an awful lot more optimistic than would have been warranted," he said.

He was equally emphatic about the results if the improvements are made.

"Once they are upgraded and the maintainability problems are addressed so that you can fly these airplanes at the kind of sortie rates which you should expect to be able to fly them—once you do that, these 21 airplanes are a very high leverage force."

Some of the improvements were already scheduled as the B-2s progress



The panel believes there will always be a need for a large, high-payload manned platform, but the future bomber force might include Unmanned Combat Aerial Vehicles like this Northrop Grumman concept.

from the initial Block 10 configuration, through the interim Block 20, to the eventual Block 30. Thus far, six of the aircraft have reached the Block 30 configuration.

The prescribed upgrades and improvements are of four kinds.

Low observables. The panel reported that “significant improvements are needed on low observables maintainability.” Welch added that “given the maintenance man-hours that it takes to maintain the stealth characteristics, we are only able at the present time to get a very low sortie rate out of these airplanes.”

However, he said, “When all the airplanes are upgraded to Block 30, for example, just that step, which is ongoing through about 2001, just that alone significantly improves maintainability, and that step alone will just about double the sortie rates. But there are other initiatives that we regarded as mature enough for very serious consideration—in fact, mature enough to fund—[that] go well beyond that and really make low observables maintainability a fairly routine matter.”

Deployability. “Second, if you really are going to get the weight of effort from these airplanes that you need in a major contingency, they have to be forward deployed,” Welch said. “You can do small scale operations from the CONUS [continental United States], but a 36-hour round-trip flight by itself tells

you that’s not the best way to operate if you’re trying to focus a lot of weight of effort.”

The panel report said that “while bombers can operate from the continental United States, they must be deployed forward to generate the sustained high sortie rates needed in major contingencies.”

That means having at selected forward locations the equipment, materials, munitions, and facilities needed to maintain and sustain the B-2s at combat tempo. The most likely bases are on Guam and on Diego Garcia, the British-owned island in the Indian Ocean.

(Two B-2s deployed from Whiteman AFB, Mo., to Guam for a 10-day exercise in March and April. They achieved a 100 percent sortie success rate, flying almost 90 hours during the exercise. Because of recent damage to hangars at the base, one of the B-2s had to be left outside, exposed to the weather, which included driving rainstorms. The Air Force said that most maintenance, including that of low observables coatings, was performed outdoors. A spokesman for the 509th Bomb Wing said this “shot a hole” in the wild news reports last year that the B-2’s stealthy coatings melt away in the rain.)

The panel said that the much-discussed “lockout” problem, in which US forces are denied the use of foreign

bases, must be overcome. “The concept that says I can’t deploy tactical air to a forward base because I’m going to get locked out by chemical or biological attacks—we have to deal with that,” Welch said. “Neither one of those ought to be in the ‘too hard’ pile anymore. They were in the too hard pile for a long time, but now we’ve done enough work and we have approaches that those things ought not to be in the too hard pile anymore.”

Mission planning. “A third category is the mission planning system,” Welch said. “You have to be able to change the target on the fly, and have a command-and-control structure that can support that. So the mission planning system is far, far more important than people are used to thinking about a mission planning system.”

Survivability. “The other upgrade issue has to do with survivability features,” he said. “There are some important improvements that can be made to the basic survivability features. And I really can’t say much more about that, but they’re significant.”

As a separate action to improve capabilities of the bomber force, the panel suggested that the planned procurement of the Joint Air to Surface Standoff Missile should be “substantially increased.” It said that “the addition of enough standoff precision guided munitions and other survivability features can make this force effective throughout the life of the aircraft.”

The Production Issue

Whether B-2 production should go beyond 21 aircraft has been a matter of fierce contention in Congress, the defense community, and the news media. For its part, the Pentagon acknowledges the value of more B-2s but opposes further production as a matter of budget priorities.

In 1995, the Defense Department’s Heavy Bomber Force Study, in which the Institute for Defense Analyses was a leading participant, confirmed the earlier decision to end the production at 20 aircraft (actually 21, counting the test aircraft that was later upgraded to operational configuration).

It said more B-2s would be useful but that the strategic bomber requirement could be covered adequately and

USAF photo by SSGT. David L. Wilcoxson



Precision guided munitions such as this Air Launched Cruise Missile being loaded by munitions personnel at 2d Bomb Wing, Barksdale AFB, La., fundamentally alter the role of bombers, noted the panel.

less expensively by force upgrades and additional precision guided munitions. Cost estimates for 20 additional B-2s, the number then proposed, ranged from \$14.8 billion to \$24.5 billion, depending on what was included.

In 1997, the Quadrennial Defense Review, drawing on the recently completed Deep Attack Weapons Mix Study, said additional B-2s would improve US ability to halt an enemy's advance in early days of Major Theater War, especially in cases of little or no warning, but the QDR rejected the option to produce more B-2s because it would take money from other priorities.

The QDR finding was lambasted by an independent commission headed by Brent Scowcroft, former national security advisor, which said the decision "does not appear to have been made on sound strategic grounds. Instead, it seems to have been driven primarily by a rare service consensus that further B-2 production would jeopardize other, more favored modernization programs within all services."

The question put to Welch's long range airpower panel by Congress, however, was not whether additional B-2 production was desirable but whether the appropriated \$331 million would be better spent on "continued low-rate production of the B-2 or for upgrades to improve its deployability, survivability, and maintainability."

Furthermore, the phrase "continued low-rate production" was a misnomer since the line closed in 1997. The final assembly plant in Palmdale is empty except for upgrade work.

"We had a whole complex flow of information on which we based our decision, and only one of the factors was that there is no production line," Welch said.

Even so, the production issue hung palpably over the panel's work.

"Should the Department decide to reestablish production, the current estimate, not supported by a firm commitment from major subassembly contractors and the array of essential vendors, would deliver the first additional B-2 in 2005," the report said. "The only cost proposal available to the panel was based on a recent Northrop proposal, about \$14 billion for nine additional aircraft. When start-up time for



Photo by Erik Hildebrandt

Upgrades and improvements in the B-2's low observables maintainability, deployability, mission planning, survivability, and sortie rate will turn USAF's 21 stealth bombers into a high leverage force.

subassemblies, requalifying vendors, and fabrication and checkout time after delivery of subassemblies are considered, 2005 is probably optimistic."

Welch told the Military Procurement subcommittee that "no member of this panel—even the most avid B-2 supporters—thought that you ought to spend \$14 billion for nine more."

In his mark on May 5 to the Fiscal 1999 defense appropriations bill, the subcommittee chairman, Duncan Hunter (R-Calif.), added \$86 million—on top of the money voted last year—for post-production support and enhancement of the B-2.

The mark also directed the Secretary of the Air Force to provide a "long-term bomber force structure plan" to the congressional defense committees by March 1, 1999.

Long Range Airpower

Most of the panel's findings responded directly to questions about the B-2, but one section of the report emphasized that "long range airpower is an increasingly important element of US military capability" in operations ranging from a show of force to Major Theater War.

"The ability to strike from longer range reduces some of the constraints associated with basing restrictions and reduces the force's vulnerability to attack," the report said. "Long-range bombers provide a rapid initial response

to threats. With the assistance of aerial refueling, long range airpower can strike targets anywhere on Earth. Such capability, if properly supported, would give long range airpower the virtual presence cited by its proponents. This ability to operate from beyond the immediate area of operations also enables long-range aircraft to influence a region of interest while remaining distant enough to keep diplomatic tensions low.

"The potential of the bomber force is multiplied by the addition of precision guided munitions, both direct delivery and standoff. Precision guided munitions extend the capabilities of all bombers in the force and should dramatically alter and strengthen their role.

"While bombers have been used heavily in virtually every major conflict to include Vietnam and the Gulf War, they have been employed as 'aerial trucks' delivering large payloads of unguided munitions against areas of interest.

"With the addition of precision guided munitions, this force can now attack multiple, discrete targets with high effectiveness, fundamentally altering the role of bombers. Because these capabilities are just emerging, existing plans for supporting and employing bombers do not fully exploit their capabilities. The panel believes that more attention is needed to exploit this expanded capability of the bomber force." ■