



Long-Range Strike in a Hurry

By Adam J. Hebert, Senior Editor

The Air Force has decided to speed up its bomber replacement with a “system of systems” approach.



IN RECENT US wars, heavy bombers played starring roles, reaffirming the value of aircraft that can deliver huge payloads, cover long distances, strike with precision, and loiter over a battlefield for extended periods. The Air Force wants more of this long-range strike capability, and is moving to get it.

USAF in recent months has gone beyond its former roadmap for sustaining bomber forces. That plan, hammered out during the Clinton Administration, would have delayed the fielding of *any* new long-range strike system until the mid-2030s or beyond. Air Force leaders now say the nation can't wait that long.

As a result, the service is preparing to move faster to acquire new systems and capabilities. The first actual hardware—an “interim” strike system of some type—could be on the ramp in a decade. The Air Force, judging from its public statements, also wants to speed delivery of a second, much more advanced “next generation” system, which would follow the interim system.

Meanwhile, USAF is moving out to upgrade, strengthen, and increase the combat power of its existing fleet of B-1B, B-2, and B-52H heavy bombers, all of which are expected to play pivotal combat roles for decades to come.

Maj. Gen. (sel.) Stephen M. Goldfein, former Air Force requirements director, said the service has concluded that “out in the 2030s” is “just too far away.” Goldfein said the Air Force wants the new “interim” system to become operational around 2015.

Gen. T. Michael Moseley, Air Force vice chief of staff, announced that the next generation system could be ready as early as 2025.

The service has embarked on an effort to meet these demanding goals. Air Combat Command is studying the “mission area” to determine what might be needed, and Air Force

Materiel Command is working with industry to identify realistic options.

It is apparent that there will be no single “solution” to the Air Force’s overall long-range strike needs. “It’s not going to be just about a bomber or just a weapon,” Goldfein noted. He expects to see a “system of systems.”

In fact, the Air Force has abandoned the notion that future systems have to be bombers at all, at least in the classic sense of the word. A broad range of options—including new unmanned systems, updated bombers, an F/A-22 derivative, and conventionally armed ballistic missiles—are all being weighed as options for meeting future strike requirements.

Do It Faster

In a reversal of form, USAF has now formally concluded that its existing bomber fleet, upgraded and modernized though it may be, will not meet all future long-range strike needs.

The service last April issued to industry a request for information seeking new ideas to meet the challenge on an interim basis. According to the RFI, “a development effort could start as early as 2006,” with initial operational capability coming as soon as 2015.

Goldfein said in an interview that “it became clear that enough studying had probably been done,” and it was time to move ahead with a new program. Long-range strike, he said, is “at the heart” of the Air Force’s ability to hold targets at risk on a global basis.

The RFI noted that new capabilities are needed to “ensure that the Air Force can strike a variety of targets, including hardened or deeply buried targets ... in nonpermissive environments.”

Long-range strike proponents have long argued that the mission area needed more attention. The Air Force is investing heavily in short-range

fighters, bomber advocates say, but potential enemies, with sophisticated air defenses and anti-access strategies, could limit the initial effectiveness of short-range aircraft.

This argument was under way long before the Sept. 11, 2001, terrorist attacks made it necessary for Air Force bombers to strike targets half a world away in Afghanistan.

Retired Air Force Gen. Richard E. Hawley, the former commander of Air Combat Command, wrote in early 2001 that it would be “far more prudent” to optimize US airpower for strike over long ranges.

At that time, Hawley had in mind Russia, China, and Iran. “The common challenge posed by all these threats is strategic depth. ... A bomber-centric attack force has much more relevance in all of these scenarios,” Hawley wrote. The Global War on Terror, however, raises many of the same issues.

Similarly, an industry analysis last year noted that “only the stealthy B-2 possesses the right combination of attributes ... to even begin addressing” the Air Force’s global strike requirements. “Unfortunately, B-2 production was capped at just 21 total aircraft, ... so the B-2 force’s aggregate capability remains distinctly, if arbitrarily, limited.”

The Air Force now agrees with this line of reasoning, hence its two-step approach to the problem.

The Air Force is reviewing a host

of ideas submitted by contractors that could meet USAF’s interim strike requirement. Of all the options, the best known is the FB-22. This would be a two-seat, extended-range derivative of Lockheed Martin’s F/A-22 single-seat, short-range Raptor.

Speaking in February, Gen. John P. Jumper, Air Force Chief of Staff, described the concept thus:

“The FB-22 would carry some 30-plus Small Diameter Bombs, have a range of about 1,600 miles, and be able to persist behind enemy lines and penetrate with some element of supercruise—and still [have] some element of maneuverability and the ability to protect itself.”

Jumper described the FB-22 as a “regional bomber.”

The Congressional Research Service noted in a report that this FB-22 idea “appears to be the only bomber concept that Air Force leaders are discussing with any enthusiasm.”

However, a regional bomber may not meet long-range strike needs, CRS observed. With a range of 1,600 miles, the FB-22 “appears to be clearly a different class of aircraft than today’s long-range bombers, which typically exhibit unrefueled combat radii of 3,400 to 4,400 miles.”

The much-prized “long loiter time,” CRS added, “is a direct function of long range.”

Actually, however, the FB-22 is only one of many options available

to the service. Over the summer, the Air Force reviewed more than 20 specific proposals submitted by the defense industry for new long-range strike capabilities.

Options Abound

Air Force Magazine spoke with representatives from Boeing, Lockheed Martin, and Northrop Grumman about their responses to USAF’s April request for information. Here, in a nutshell, are their responses:

■ Northrop Grumman. The program manager for future strike systems, Charles Boccadoro, said the firm submitted eight concept proposals. These included a B-2 Global Strike Capabilities Initiative, a low-risk block upgrade to the highly successful stealth bomber. (The company did not propose restarting new B-2 production.) A higher risk, “cutting edge” option was an Unmanned Regional Attack aircraft derived from existing unmanned aerial vehicle programs. Finally, there was a “niche” option—a conventionally armed intercontinental ballistic missile. Boccadoro noted that a conventional ICBM could quickly destroy a hardened or buried target anywhere in the world. However, it could not maintain a persistent presence in the battlespace.

■ Lockheed Martin. Kevin J. Renshaw, manager of advanced air combat programs, outlined four system proposals. These included the FB-22; an “arsenal ship” aircraft based on the C-130 airframe; a hypersonic missile tipped with the so-called “Common Aero Vehicle”; and a “clean sheet bomber” built from scratch. The FB-22 and the arsenal ship are probably “easier to get to,” he said, but all of the concepts were deemed achievable by 2015. John Perrigo, another Lockheed manager, asserted that USAF might go for an unmanned system, even for the interim capability.

■ Boeing. The director of global strike integration, Rich Parke, noted that his company had submitted six proposals. These included a Prompt Global Strike Missile using decommissioned ICBMs; an X-45D direct-attack unmanned combat air vehicle with increased range and payload; a blended wing body arsenal ship aircraft that could hold 96 cruise missiles; and a “B-1R” bomber. Parke said the B-1R (R stands for “regional”) would be a Lancer with advanced radars, air-to-air missiles,



Upgrade. B-2s are getting a new stealth coating that will improve their combat readiness. USAF plans upgrades to each of its current bombers to keep them viable, even as it moves to field a new long-range strike system.

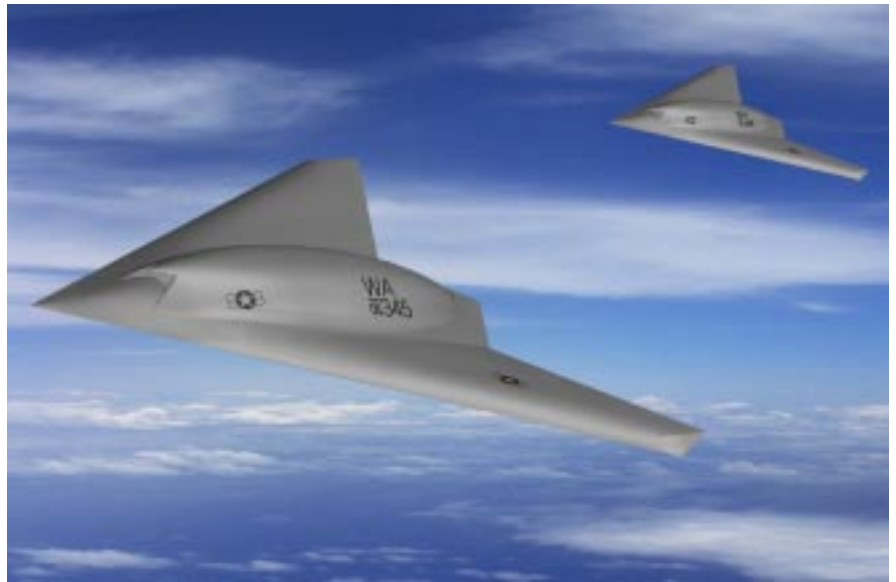
Northrop Grumman photo

and F/A-22 engines. Its new top speed—Mach 2.2—would be purchased at the price of a 20 percent reduction of the B-1B's combat range.

Some analysts are looking longer term. A Defense Science Board study released this year contemplated USAF strategic strike requirements 30 years in the future. The DSB determined that the long-term mission requires systems that can do three things:

- Hit time-critical targets quickly, from long range, in bad weather.
- Destroy hardened and deeply buried targets.
- Be more reliable, accurate, and stealthy than “battlefield systems.”

The DSB recommended converting 50 Peacekeeper ICBMs, now being decommissioned, to “a conventional role” and relocating them to Vandenberg AFB, Calif., and Cape



Future Strike? The Air Force does not rule out the use of unmanned air vehicles for long-range strike. Boeing, Lockheed Martin, and Northrop Grumman included unmanned systems among their proposals.

Bombing With Electrons

The Air Force plans to add a standoff jamming capability to the B-52 bomber in the near future. Gen. John P. Jumper, Chief of Staff, noted in February that the Air Force has “a growing need for adequate standoff jamming” and that the B-52 flies with empty wingtip fuel tanks simply to help stabilize the wing.

The wingtip pods are so large, Jumper said, that “when you open one up, you can build a small condominium.”

The Air Force wants to create a missionized standoff jammer (SOJ) system that can be added and removed from B-52s as required.

“It wouldn’t be a dedicated capability,” Jumper noted, but one that “takes advantage of the superb range of that airplane, to be able to stand off and provide jamming.”

Boeing believes that with a Fiscal 2005 start, a full reactive SOJ capability could be operational aboard six B-52s by 2012, giving the bombers simultaneous jamming, decoy, and strike capability.

The newsletter *Inside the Air Force* reported this summer that USAF would like to modify 76 of its B-52s to carry these electronic warfare pods. That is every B-52 the Air Force considers a requirement. (The Air Force also owns 17 additional BUFFs, in attrition reserve status, that it considers excess.) One B-52 is on permanent loan to NASA to serve as a “mothership.”

A long-standing disagreement between the Air Force and Congress over the proper number of B-52s has developed an annual solution. Every year, the Air Force requests funding for 76 B-52s. Lawmakers then provide additional funds to keep the 17 additional B-52s active at Minot AFB, N.D. The Air Force typically rotates individual bombers in and out of the attrition reserve fleet.

Canaveral AFS, Fla. “These weapons would give the United States a 30-minute response capability for strategic strike worldwide,” the report noted.

The Air Force still plans to field a separate, breakthrough long-range strike capability, so scientific development work will continue. Future

technologies incorporated into a “2030 system” could include sustained hypersonic flight, directed energy weapons, or orbital or semi-orbital vehicles.

Air Combat Command recently completed a functional area assessment, which determined what long-range strike capabilities the Air

Force will probably have available around 2011, based on current programs.

A functional needs analysis was also conducted this summer, according to Lt. Col. M.D. Dates, deputy chief of ground dominance requirements for ACC. The needs analysis compared what USAF should have in 2011 to what it needs to have around that time.

The two studies will feed into a formal analysis of alternatives (AOA) that will provide a roadmap for the future long-range strike capability. The AOA is scheduled to be completed in 2007.

Meanwhile, the Air Force has launched far-reaching programs to keep its current bomber fleet ready for combat for decades.

Expanding the B-1 Fleet

The B-1B, once the target of gibes and harsh criticism, has proved so valuable that the Air Force has scaled back a 2001 decision to retire 33 of the long-range “Bones.”

Seven retired Lancers are on their way back to active status. When they are on station, they will increase the size of the B-1 fleet from 60 to 67 aircraft. All the B-1s will get additional upgrades (as will the Air Force’s 21 B-2 bombers and 76 B-52 bombers, which have proved just as valuable in recent years).

The mission capable rate for the B-1B is 69 percent this year, a significant improvement from MC rates

that were typically around 60 percent in the 1990s. (See “The Long Reach of the Heavy Bombers,” November 2003, p. 24.)

Higher MC rates translate into additional B-1s ready to perform their primary mission at a given time. This became possible when the Air Force pledged to fully fund the operation and maintenance accounts for its Lancers by redirecting the maintenance money saved by retiring 33 aircraft. Prior to the full program funding, the B-1s ran annual deficits, and upgrade programs were languishing.

The B-1B proved itself to everyone’s satisfaction in Operation Enduring Freedom, the 2001 war in Afghanistan against al Qaeda and its Taliban supporters. Boeing noted in



USAF photo by SSgt. Joanna E. Hensley



USAF photo by A1C Michael B. Keller

More Bones. *USAF is bringing back some B-1Bs from the retired list. At top, airmen at Ellsworth AFB, S.D., load up a B-1B destined for Southwest Asia. Below, a pilot and crew chief conduct preflight checks.*

a fact sheet that the B-1, with only five percent of the OEF strike sorties, dropped 40 percent of the total weapons—including more than 70 percent of the near-precision Joint Direct Attack Munitions.

The B-1 further distinguished itself in Operation Iraqi Freedom, when the Bones set up round-the-clock orbits over Iraq, available to deliver huge payloads of satellite-guided weapons whenever needed.

The B-1’s Block E computer upgrade program, now coming on-line, will allow a Lancer to carry different weapons in each of its three weapon bays. The B-1 is further scheduled to have the Joint Air-to-Surface

Standoff Missile (JASSM) added to its arsenal in 2005, and the Small Diameter Bomb will become available in later years.

The recently passed 2005 defense money bill funds 67 B-1s, Air Combat Command officials noted. “One aircraft came out of retirement” and was recovered from the “boneyard” at Davis-Monthan AFB, Ariz., according to ACC. The other six never actually made it to the boneyard and required minimal rework.

In 2003, Congress nearly ordered the Air Force to return 23 B-1s to active service. With the eventual size of the fleet in flux, six decommissioned aircraft stayed on the ramps

at Dyess AFB, Tex., and Ellsworth AFB, S.D., Air Force officials noted.

Subsequent analysis (and negotiations with Congress) determined that 67 B-1s should meet requirements.

According to Parke, a B-1B fleet larger than 67 aircraft would likely face initial engine shortages.

The seven additional aircraft “will initially be utilized as backup inventory while the entire fleet is undergoing extensive upgrades and modernization,” ACC officials wrote in a response to questions.

Currently, there are 38 B-1Bs at Dyess and 29 at Ellsworth. One B-1B will eventually be sent to Edwards AFB, Calif., to serve as a test asset.

Better Health for Stealth

The B-2A stealth bomber has recently shown a dramatic rise in availability. After posting an MC rate of 32 percent in 2001, the B-2s are now up to a 45 percent MC rate.

Sixteen of the 21 B-2s are combat-coded. Typically, seven stealth bombers are ready to go to war at a given time. This has not caused problems in recent operations, which have required small numbers of B-2 sorties.

The B-2’s low MC rate is largely attributable to its intensive stealth maintenance requirements. If aircraft panels are opened after a mission, returning that B-2 to combat status can take up to two days. Large amounts of tape and caulk must be applied and given time to cure, so the bomber can maintain its low observable (LO) profile.

But the B-2 performed well in war.

The Pentagon's director of operational test and evaluation (DOT&E) explained in a report released earlier this year that B-2s deployed for Operation Enduring Freedom sustained high mission capable rates—85 percent, to be exact.

The high MC rate for deployed bombers "was sustained due to the availability of two deployable B-2 shelters at Diego Garcia and the exceptional performance of deployed maintenance personnel," the DOT&E report read.

The Air Force hopes the Alternate High Frequency Material (AHFM) program will give major LO maintainability improvements. AHFM will eliminate 3,000 feet of tape and allow maintainers to "spray on" stealth coating, reducing maintenance times from days to hours.

According to Capt. Jason Lindsey, a requirements officer with ACC at Langley AFB, Va., an Air Force study projects that AHFM will increase B-2 MC rates by 15 percent. "Subsequent analysis supports this projection," he explained, but it will be years before the full impact of the program is known.

B-2s are receiving the upgrade to AHFM as they go through programmed depot maintenance at Northrop Grumman's Palmdale, Calif., facility. The first AHFM aircraft was delivered to the bomber's operating base just this August. With three B-2s going through PDM a year, it will be seven years before the entire fleet gets the upgrade.

Lindsey noted that AHFM is not designed to make the B-2 more stealthy, but will "make it easier to sustain the B-2 in its intended 'stealth' configuration."

The B-2 will also be receiving an extremely high frequency satellite communications system, Link 16 data link, and additional weapons.

Duke Dufresne, B-2 program manager for Northrop Grumman, told *Air Force Magazine* that integration of a new smart bomb rack this year will allow the bomber to deliver 80 independently targetable JDAMs. That will allow the bomber to hit five times as many targets as it can today, with 2,000-pound JDAMs offering 16 aim points.

Should the Air Force wish to equip it, the B-2 could also deliver 240 or more Small Diameter Bombs. However, there is currently no requirement for it to carry the SDB.



USAF photo by SSgt. Jocelyn Rich

The Old Bull. The B-52 bomber is old but remains highly versatile, carrying a wide array of weapons. At issue is whether it is economically feasible to re-engine the big bomber.

The bomber's radar modernization program will move improved B-2 radars to a new frequency. This upgrade is necessary "to avoid interference with primary authorized users" of the frequency, the DOT&E report noted. Dufresne said the B-2 is a secondary user of this particular frequency, and at least six B-2s will have new radars operational by the end of 2008.

Workhorse BUFFs

The venerable B-52H remains the Air Force's most cost-effective and versatile bomber. Mission capable rates of about 75 percent are the highest of the three bombers, and the B-52 can carry the widest variety of weapons.

Boeing noted that the B-52s flew four percent of the combat sorties over Afghanistan and three percent of the sorties over Iraq, yet the bombers delivered 28 percent and 29 percent of the bomb tonnage, respectively, for those two conflicts.

New capabilities are coming online continually. These include the much-publicized ability to perform close air support strikes from high altitude, by using JDAMs to strike coordinates called in by ground units in close contact with enemy forces.

The B-52 is also the only bomber capable of launching the Conventional Air Launched Cruise Missile and should further enhance its weapons arsenal later this year, when the JASSM cruise missile is added to the B-52's operational repertoire.

One possible major change to the B-52 fleet that has not been approved is re-engining. A recent Defense Science Board task force, led by retired Air Force Gen. Michael P.C. Carns, determined that the "economic and operational benefits [of re-engining] far outweigh the program cost."

The task force recommended in June that the Air Force put a B-52 re-engining program on a "fast acquisition track," to be completed not later than 2010.

The Air Force has rejected this idea in the past. The DSB report noted that three Air Force-led studies since 1996 each determined that re-engining was not economically justifiable. The DSB task force believed the economic assumptions used in previous studies are obsolete.

For example, the cost of fuel is 17 times greater than the cost USAF applied, the task force asserted. And expected maintenance costs for the B-52's engines have more than tripled.

The DSB believed new engines make both financial and combat sense. A re-engining program offers "greater operational flexibility and range, reduces fuel burn and tanker demand, and produces significant depot and field maintenance cost and manpower savings," the report read.

In sum, the Air Force is preparing for major changes in long-range strike capabilities—a mission area that not too many years ago seemed to be of secondary importance. Nobody is making that case today. ■