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B-1 evolves to meet new mission

by Col. Mike Miller, B-1 System Program Office Director

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The B-1 nuclear bomber flown by the men of Strategic Air Command from 1986 to 1991 has changed with the times and is now the B-1 conventional bomber flown by the men and women of Air Combat Command.

The earliest version was designed for nuclear deterrence and a 15-year life. Today's B-1 is the fastest bomber in the Air Force inventory, carries more weapons on each mission than any aircraft in the Air Force, and may be in use for another 35 years. It's now flying missions over Afghanistan delivering an assortment of conventional weapons including precision-guided munitions, a capability not envisioned when the aircraft was initially designed.

Rockwell International (now Boeing) began development of the B-1 in the 1970s for a dual nuclear-conventional role. President Carter canceled the B-1A program in 1977, and President Reagan revived it in 1981. B-1B initial operational capability was achieved Oct. 1, 1986, and the 100th aircraft was delivered in April 1988. Today, 93 B-1Bs are in service — six were lost to mishaps and a seventh was eliminated under the START II treaty. Although serving as a nuclear bomber, the B-1 had the capability to carry and employ 84 500-pound bombs, the largest conventional payload of any U.S. aircraft.

Following the breakup of the Soviet Union, the Air Force reassessed the nation's bomber force and decided the B-1 would take on a conventional war-fighting role. The plan called for a series of upgrades to increase lethality, survivability, and sustainability. The resulting B-1 force would provide the nation with a massive,

penetrating, long-range, precision attack capability while ensuring the survival of the B-1 and its crew in a modern threat environment. These upgrades were initiated in fiscal 1993 and are collectively known as the Conventional Mission Upgrade Program, or CMUP. For greater economy and efficiency, the B-1 program pursues CMUP upgrades in integrated blocks. The first of these blocks, Block C, achieved full operational capability in September 1997, and provided the B-1 with the capability to carry 30 1,000-pound cluster bomb units, 10 in each of its three internal weapons bays.

The second upgrade, Block D, is nearly complete, with 87 aircraft modified to date. It provides the B-1 with the capability to perform near precision attacks against targets deep in enemy airspace by employing up to 24 joint direct attack munitions, 8 in each bay. The modification includes installation of a MIL-STD-1760 weapons interface, global positioning system capability (for both aircraft and weapon navigation), and an upgraded aircraft communications package. Finally, to enhance near-term survivability, the Navy's ALE-50 towed decoy system is installed in parallel with the Block D modification. In 1999, four Block D-configured B-1s equipped with the ALE-50 successfully flew 100 percent of their assigned combat missions while deployed in support of Operation ALLIED FORCE. Suffering no losses, they delivered over 5000 Mk-82 bombs, over 20% of all the weapons delivered by all participating allied aircraft.

The key to future B-1 upgrades is Block E, currently in development. Block E will replace six existing 1970's vintage computers with four new computers that provide over 300 times the current processing speed and memory, and drastically improved reliability and maintainability. The computer upgrade also adds three new standoff and precision weapons to the B-1's arsenal: the wind-corrected munitions dispenser, joint standoff weapon and the joint air-to-surface standoff missile. More importantly, the B-1 will have the flexibility to carry and deliver three different types of weapons (one type in each weapons bay) on the same sortie while employing a single software load.

The final block upgrade currently planned is Block F, or the Defensive Systems Upgrade Program. As the ground-to-air threat continues to grow and become more lethal, the B-1's defensive capability must be improved to enhance survivability. This program replaces the existing defensive system with an upgraded radar-warning

receiver and the RF countermeasure portion of the Navy's Integrated Defensive Electronic Counter Measures Program, which includes a fiber optic towed decoy. These new systems will significantly improve aircrew situational awareness and survivability against the emerging threat. In addition, the new systems will substantially reduce defensive system operating costs while improving reliability and maintainability.

The political-military environment of the world has changed drastically since the breakup of the Soviet Union in the early 1990s, and the role and capabilities of the B-1 bomber has changed to match the environment and its new mission.

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