

# **Short History of the B-1 Bomber**

## **Compiled**

### **By**

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### **Replacing the B-52**

In the aftermath of the Korean War, the United States decided on a strategy of Massive Retaliation to deter Communist aggression. Rather than building a large army to fight the massive Soviet military force, under the Massive Retaliation doctrine the United States would exploit its advantages in airpower and nuclear weapons. A Soviet invasion in Europe or Asia would be met with large-scale nuclear attacks on strategic targets in the Soviet Union and its satellites conducted by the Strategic Air Command (SAC) of the US Air Force (USAF).

At first, the primary bombers that SAC had to implement this strategy were the B-36 Peacemaker and the B-47 Stratojet. The B-36 had piston engines and propellers and was capable of intercontinental range. The smaller B-47 had jet engines which gave it high speed but had shorter range than the B-36. The bomber that would eventually replace both of these aircraft was the jet-propelled B-52 Stratofortress, which had both intercontinental range and high speed.

The B-52 first flew in 1952 and the first operational example was delivered to SAC in 1955, becoming operational in 1956. Aviation technology was advancing so fast in that era that in 1954, before SAC had taken delivery of its first B-52, the USAF was already considering what would replace the B-52. Weapon System (WS)-110A envisioned a nuclear-armed bomber with supersonic speed and intercontinental range. The rationale behind WS-110A was that the higher and faster a bomber flew, the less it was vulnerable to air defense.

### **B-70 Valkyrie**

WS-110A resulted in the developed of the B-70 Valkyrie, with North American Aviation as the prime contractor. The B-70 was an incredibly impressive aircraft, powered by six General Electric J93 afterburning turbojet engines. Weighing in at 600,000 pounds maximum gross weight, the exotic B-70 was capable of speeds in excess of Mach 3.

Only two XB-70A flight test aircraft were ever built. As impressive as it was, the B-70 suffered from several problems. Its performance pushed the limits of technology and the aircraft was plagued with structural and systems problems. A high-altitude Mach 3 bomber turned out to be ill-conceived. It turned out that the best way to penetrate Soviet air defenses was to fly very low, not high and fast. Ironically, the airplane that the B-70 was intended to replace, the B-52, could be modified for low altitude missions but the B-

70 could not. Finally, the B-70 coincided with the introduction of the Intercontinental Ballistic Missiles (ICBM). Being invulnerable to air defenses, it was unclear if there remained a role for the manned bomber.

### **Advanced Manned Strategic Aircraft**

Despite the advent of the ICBM, the USAF and in particular SAC retained a strong institutional interest in maintaining a strategic bomber force. By the early 1960s, the United States developed a strategic force structure concept called the Strategic Triad. Manned strategic bombers, ICBMs and Submarine-Launched Ballistic Missiles (SLBM) on nuclear submarines composed the three legs of the triad. Each leg of the triad had different strengths and weaknesses. Together the three legs gave the United States a highly robust strategic nuclear deterrent force.

With the role of the manned strategic bomber secured by the Strategic Triad force structure, the USAF again sought a bomber to replace the B-52. Multiple studies led to requirements which focused on a bomber that could fly for thousands of miles at very low altitude and high subsonic speed at night and in all weather, while also having the capability to dash at Mach 2 at high altitude. The bomber would have intercontinental range and a large load of nuclear bombs and missiles. In contrast to the B-70, which was singularly focused on performance, the new bomber was to be a balanced design with a strong emphasis on offensive and defense avionics, reliability, and maintainability.

The USAF found considerable support in Congress to fund these studies, but faced the determined opposition of Secretary of Defense Robert S. McNamara to moving from conceptual studies to a full scale development program for what came to be termed the Advanced Manned Strategic Aircraft (AMSA). McNamara was convinced that the ICBM and SLBM should be the centerpiece of the nuclear deterrent force, with only a small bomber force acting as a backup. Rather than developing AMSA to replace the B-52, McNamara's plan for the SAC bomber force was to retain the two most modern models of the B-52 (the B-52G and B-52H) in service while supplementing the remaining B-52s with the FB-111A, a strategic bomber version of the F-111 multi-service fighter. The FB-111A was too small and short-ranged to be a proper strategic bomber but it had the economic advantage of being a variant of an existing aircraft rather than a new development.

### **B-1A**

With the change of American presidential administration in 1969, the stance of the civilian leadership towards AMSA changed to support. The new plan cut short the FB-111A production run and went forward with AMSA to replace the B-52 in entirety. AMSA gained the military designation B-1, with the first version being the B-1A. In 1970, North American Rockwell (formerly North American Aviation) was selected as the prime contractor for the B-1 aircraft, with General Electric being chosen to build the F101 augmented turbofan engines for the B-1. Later Boeing won the contract for the

Offensive Avionics Systems (OAS). AIL would develop and build the Defensive Avionics System (DAS).

The B-1A was a highly complex and advanced aircraft. Unlike the B-70, it avoided the mistake of being reliant on immature technologies which were “not yet ready for prime time”. B-1A #1 first flew on 23 December 1974 and was followed by B-1A #2 and #3 in 1976. Testing was conducted at Edwards Air Force Base (AFB).

B-1A flight testing was generally successful with no major deficiencies uncovered during testing. In 1976, the US Air Force contracted with Rockwell International (as North American Rockwell had been renamed) to build pre-production aircraft B-1A #4 through #6. While the B-1A program was successful in terms of meeting its technical objectives, trends in the wider world would affect the program.

The B-1 was perhaps the most politically controversial weapon system program in American history, rivaled only by the Strategic Defense Initiative (often nicknamed “Star Wars”) a decade later. It was expensive and its timing could not have been worse. B-1 development coincided with a number of trends that were adverse to it. The Vietnam War had soured many Americans on national defense. Increased awareness of environmental degradation and poverty created a strong sentiment to reallocate priorities from defense to domestic social needs. Inflation and recession put great stresses on the American economy. To critics, the B-1 appeared to be an egregious example “overkill”; the immoral product of a runaway nuclear arms race and a military-industrial complex that was out of control.

Meanwhile, a competitor to the B-1 had developed. Advanced in turbofan engines, navigation systems, and light-weight nuclear weapons enabled the development of a new generation of cruise missiles. The B-52 could be modified to carry these cruise missiles, providing a less costly alternative to the B-1. President Jimmy Carter had run on a platform of opposition to the B-1. On 30 June 1977 he announced that B-1 production would be cancelled, with the completion of B-1A #4 and some B-1 flight testing continued. Part of the B-52 fleet would be armed with cruise missiles instead of deploying the B-1A.

### **B-1B Lancer**

The political environment changed dramatically in the years following the cancellation of the B-1A. Far from acting as if the nuclear arms race was dangerous and futile, the Soviet Union engaged in a massive strategic nuclear arms build-up. Americans became concerned that Soviet build-up threatened the American nuclear deterrent. In addition, Soviet aggression, either directly or by the use of client states, in Africa, Central America, and most of all Afghanistan revealed the failure of American diplomatic engagement with the Soviet Union. The stage was being set for an increase in American military spending and a hardened line toward the Soviet Union.

The urgency of the threat led to a search for a means of upgrading the airborne leg of the strategic deterrent beyond just arming the B-52 with the cruise missiles, as soon as possible. Reviving the B-1 was an obvious choice to meet this need. The Carter administration continued to oppose the B-1. With the election of Ronald Reagan as president of the United States in 1981, the B-1 now had support at the highest level of the American government.

On October 2, 1981, President Reagan announced his plan to massively modernize the American strategic force. Part of that plan was to build one hundred B-1B bombers, an improved version of the B-1A. Congress approved Reagan's plan and the B-1B program was off and running. The B-1B was named the Lancer.

Since the B-1B was positioned as a quick fix to American strategic vulnerability, the focus of the B-1B program was to achieve Initial Operational Capability (IOC) by 1986. To meet this date, the B-1B program used the strategy of concurrency, in which testing, production and operational introduction occurred in parallel rather than serially. The primary advantage of concurrency was that it allowed the B-1B to achieve IOC as soon as possible. The disadvantages of concurrency were that problems revealed in testing had to be fixed in aircraft that were already in production or operational service, and the B-1B would not be completely tested at IOC.

To accelerate B-1B testing, B-1A #2 and B-1A #4 were fitted with some B-1B systems to allow them to be tested before B-1B #1 had its first flight. The test program also compensated by the use of specialized ground facilities and other airborne testbeds which effectively acted as additional test aircraft. B-1B #1 first flew on 18 October 1984. The B-1B Combined Test Force (CTF) at Edwards AFB prioritized their testing to clear a limited flight envelope for the Strategic Air Command (SAC) to start training flight crews and also provide a set of capabilities for IOC.

### **Operational Deployment with SAC**

Starting with B-1B #2, aircraft were delivered to Dyess AFB, the first SAC main operating base for the B-1B. The first B-1B arrived at Dyess AFB on 29 June 1985. As planned, the B-1B achieved IOC on 1 October 1986, with the B-1B going on nuclear alert at Dyess AFB.

The 1980s were a period of intensive activity for the B-1B program. While the contractor and system program office developed the full set of B-1B capabilities, the CTF tested those capabilities. Those capabilities needed to be implemented in the aircraft that had already been delivered to SAC as well as aircraft in production. The 100th and last B-1B was completed and delivered to SAC in 1988. SAC deployed the B-1B at four bases: Dyess AFB, Ellsworth AFB, Grand Forks AFB, and McConnell AFB in that order.

The B-1B had many problems and limitations when it was being deployed, most of which were eventually resolved. SAC experienced a variety of in-flight emergencies and lost several aircraft in mishaps. By 1991, the major problems with the B-1B had been

largely resolved. However, the end of the Cold War led to the removal of all nuclear-armed bombers from alert, including the B-1B.

### **After the Cold War**

The Cold War had defined the mission and organization of the United States Air Force and its termination caused great organizational disruption. Amongst other changes SAC was disestablished and its bombers were reassigned to the new Air Combat Command. At first it was unclear if the B-1B even had a role in the post-Cold War era.

Unfortunately, the post-Cold War era was not as peaceful as had been hoped, and new threats to American security and global order emerged, such as Saddam Hussein's Iraq and the violent dissolution of Yugoslavia. The speed, range, payload, and avionics capabilities of the B-1B made it potentially useful in the new environment, if it could be transformed from a nuclear to a conventional strike platform.

From the start, the B-1B had been designed to have some conventional bombing capability, although the development of that capability was a low priority. The 1991 Gulf War with Saddam Hussein's Iraq had proven the efficacy of precision-guided munitions. The Conventional Mission Upgrade Program (CMUP) was initiated with the intent of giving the B-1B a robust conventional capabilities including precision-guided munitions.

In the 1990s under ACC, the B-1B force underwent many changes. The active-duty bombers were consolidated at two bases, Dyess AFB and Ellsworth AFB. For the first time, the B-1B was assigned to the Air National Guard, with units in Georgia and Kansas. The CMUP program was executed in "blocks", with each block building on its predecessors. The most important block was CMUP Block D which equipped the B-1B with GPS navigation and the Joint Direct Attack Munition (JDAM) GPS-guided bomb. The B-1B lost its nuclear mission in 1997 and CMUP Block D first reached the operational force in 1999.

Other important B-1B developments in the 1990s included the inclusion of the B-1B in the USAF Weapons School and the development of the B-1B weapons instructor course, the 1995 Coronet Bat non-stop around-the-world flight by two aircraft, and the 1994 Dakota Challenge operational readiness assessment which proved the ability of a B-1B force to generate sufficient sorties for a high-intensity conventional war if adequately supported with manpower and spare parts.

The B-1B first dropped bombs in anger on 16 December 1998. Operation Desert Fox was an American and British response to interference with United Nations weapon inspectors' operation in Saddam Hussein's Iraq. Two B-1B aircraft attacked on 16 December 1998 and two more on 18 December 1998.

The following year, NATO launched Operation Allied Force to prevent Serbian attacks and atrocities in Kosovo. Again, the B-1B flew combat sorties, attacking Serbian targets during over 100 sorties.

## **The Global War on Terror**

By 2001, a large number of the B-1B aircraft were modernized to the CMUP Block D configuration and stocks of JDAMs were available. After the al-Qaeda terrorist attacks on the United States of 11 September 2001, the modernized B-1B had an ideal set of capabilities in the fight against al-Qaeda and its Taliban hosts in Afghanistan. Operation Enduring Freedom began on 7 October 2001 with attacks against fixed targets. Soon afterwards, the B-1B began teaming with American special operations units, who spotted targets to be attacked by the B-1B bombers. The B-1B was a mainstay of the Operation Enduring Freedom.

Starting in 2003, the B-1B also participated in Operation Iraqi Freedom. Again, the B-1B bombers used primarily JDAMs against fixed targets and also provided close air support to American and allied ground forces. One of the most notable sorties in Operation Iraqi Freedom occurred on 7 April 2003, when a B-1B attacked a building from which Saddam Hussein had exited just moments before, just missing him. As the wars in both Afghanistan and Iraq turned into grinding counterinsurgency campaigns, the B-1B provided close air support to ground forces.

American military involvement in the greater Middle East expanded during the two decades after the 11 September 2001 attacks. As well as fighting insurgencies in Afghanistan and Iraq, the B-1B was engaged in Libya (Operation Odyssey Dawn) and against the ISIS terrorist group in Iraq and Syria (Operation Inherent Resolve). The modernization of the B-1B continued, with new computers, new cockpit displays, and new weapons being integrated into the aircraft. These advanced greatly increased the capability of the B-1B.

While conducting combat operations in the Middle East, B-1B squadrons also frequently deployed to Europe and the Indo-Pacific regions to reassure allies and deter potential adversaries.

## **Twilight**

Two decades of intense combat operations put a great amount of fatigue on the structures of the B-1B fleet. In 2020, the most damaged aircraft were retired, reducing the operational fleet to 45 aircraft. As of 2022, the B-1B remains a highly capable front-line weapon system, but it is expected to be replaced next decade by the stealthy B-21 Raider.