



## JULY IN AVIATION HISTORY

### 55 YEARS IN THE MAKING: THE NORTHROP B-2 SPIRIT

“Slow burn” is a term used to describe something that takes a long time to come to fruition. It certainly describes the history of the most expensive aircraft in existence per unit, the B-2 *Spirit*. It is perhaps one of the most unique aircraft by design, and is arguably the stealthiest to exist yet. Making its first public appearance on 17 JUL 1989 in Palmdale, California, the B-2 has seen its share of production hassles and tragedies, but its history spans over half a century before its production began.

The concept of a tailless aircraft was not new when a young Jack Northrop constructed his N-1M aircraft in 1935. It was John William Dunne who was enlisted with the British Army in 1913 who conceived the concept. Dunne drafted the idea after observing the behavior of birds while he was on leave during his service.<sup>1</sup>

Jack Northrop’s designs were organic, however, and not necessarily inspired by Dunne’s work. Northrop was a career engineer. His N-1M and subsequent N-9M were the first two flying wing designs, with the former first flying in 1940. This design caught the attention of the War Department for use as a potential replacement for aging B-17’s and B-24’s. The result was a scaled down version of his proposed bomber design with the N-9M in 1942. Northrop’s proposed YB-35 fell short of the U.S. Army Air Force’s demands, but not-so-far as to be removed from the drawing board with jet engines. The result was the YB-49, which was initially ordered before it was cancelled due to being overshadowed by the Convair B-36 *Peacemaker*.<sup>2</sup>

In 1953, Northrop was forced to shelve his flying wing altogether after the last YRB-49 prototype was grounded and finally scrapped. She sat idle for two years in a

dilapidated state. Subsequently the larger and heavier B-52 and rapid-responding B-58 had appeared on scene which seemed to have ended the need for another slow-flying and limited payload bomber.

The era surrounding the Vietnam War was a brutal one for the Air Force. Notwithstanding GEN Curtis Lemay’s emphasis on bombing campaigns in Southeast Asia, the infighting within the Department of Defense had left the American military in an even weaker position at home in the face of anti-war sentiment. Vulnerabilities in American bombing missions became apparent, and the need to stay ahead of the Soviets became a priority once again. This led to the development of the B-1A, but this program was quickly swatted down in the late 1970s by the Carter administration. This hadn’t eliminated the need, however, and the cancellation became a hot-button issue in the 1980 presidential election.

However, much more guarded was the Advanced Technology Bomber (ATB) that Carter had approved. Among the contenders for the program was Lockheed with its *Senior Peg* concept and Northrop’s *Senior Ice*. By the time Regan took office in 1981, the Air Force had chosen Northrop’s *Senior Ice* concept as the winner of the ATB contest and subsequently awarded Northrop the defense contract for the program; described only as *AURORA*.<sup>3</sup>

Northrop himself, however, had been ailing significantly having lost most of his fortune and disparaging over numerous setbacks. Prior to his company winning the contract bid, he had fallen ill and was left bound to a wheelchair. He was unable to speak and required a constant attendant. Jack Northrop himself was thus not able to

engage in the program personally. However, it was Northrop himself that won the contract.

*Senior Ice* was a 172-foot wide, wingtip-to-wingtip, aircraft that had no tail and no fuselage. The YRB-49’s wingspan also was 172-feet. We know *Senior Ice* by her more elegant and emboldened name today: *SPIRIT*. Modifications were made to the engine cluster to nestle two GE F-118-GE turbofan engines on each side of the aircraft with heat-defeating troughs at the rear. Special paint and design reduced the radar cross signature to allow for tactical penetration of airspace. The aircraft has a range of over 6,000 miles, making it one of the longest enduring aircraft in the USAF. With a payload of up to 50,000 lbs, it can carry approximately 70 percent of the B-52’s loadout.

In 1981, Jack Northrop was cleared to see plans for the aircraft and hold a scale model of the proposed design. John Cashen, the lead project designer lamented in the 1991 documentary *The Wing Will Fly*: “As he held this model in his shaking hands, it was as if you could see his entire history with the flying wing passing through his mind.” Reportedly, Northrop, unable to speak, scribbled “now I know why God has kept me alive for 25 years” on a piece of paper.<sup>4</sup> Northrop died ten months later. The first B-2 flew six years later.

1. *The London Gazette*. Issue 27425. London, Britain. 15 April 1902. p. 2505.
2. "Fact Sheet: Northrop YRB-49." *National Museum of the United States Air Force*. NMOUSAF, Dayton, Ohio. Accessed 16 JUN 2022.
3. Rich, Ben R.; Janos, Leo. *Skunk Works: A Personal Memoir of My Years of Lockheed*. Boston, MA, Little, Brown & Company. 1996.
4. *The Wing Will Fly: From the Flying Wing to Stealth Bomber*. United Kingdom. 1991.

**1937** Amelia Earhart takes off from New Guinea on her fated flight for Howland Island.

**1945** The Eighth Air Force's bomber groups begin redeploying from Europe to the Pacific.

**1963** NASA test pilot Joseph A. Walker becomes the first civilian to fly in space.

**1969** "One small step for man, one giant leap for mankind." Apollo 11 lands on the moon.

**1989** The Northrop B-2 bomber makes its first public flight.



IAW Pub 110-41-100