

# YANKEE DOODLE



LEFT Eglin-based Boeing B-17G Flying Fortress 44-85815 in flight with a JB-2 suspended beneath each wing in early 1948

ALL IMAGES: AFHWA VIA GEORGE CULLY, UNLESS NOTED OTHERWISE

Attacks from German V-1 flying bombs gained notoriety during World War Two. Less well known is that the US developed its own version of the missile, based on recovered remains of enemy weapons. **Bill Cahill** sheds light on the story

# BUG

**T**he German Fieseler Fi 103 V-1 flying bomb entered World War Two in June 1944 and undoubtedly changed the landscape of conflict. Here was a weapon – an early cruise missile that used a pulsejet engine for power – that could hit cities in Britain almost with impunity. It was the first of the so-called Vengeance Weapons – or V-weapons – an unmanned airborne menace that could reach London with ease.

Although inaccurate, the flying bomb enabled the Germans to strike Britain at long range and at no risk to their own airmen. Nicknamed 'doodlebug' or 'buzz bomb', the distinctive Fi 103 unsurprisingly caused consternation and concern among both the British and American militaries.

The United States Army Air Forces (USAAF) rapidly collected remains of crashed V-1s, and, once it had arrived at a better understanding of the weapon, it tasked Republic Aviation with drafting plans for a US production version of the missile. The result, the Jet Bomb 2 or JB-2, only had a few minor differences from its German equivalent. Republic went ahead with the project – it sub-contracted airframe production to Willeys-Overland, and engine manufacturing to the Ford Motor Company.

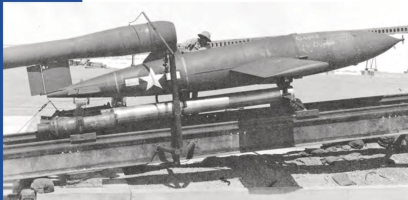
The USAAF ordered 1,000 JB-2s in August 1944, even before the design work was complete. This was followed by a second order of equal size that December. Those initial units were envisioned as test and training weapons.

In January 1945, USAAF planners hoped they'd be able to launch 100 missiles per day by September 1, increasing that number to 500 per day by January 1946. It was anticipated that an additional 75,000 JB-2s would be needed to support such an ambitious overall bombing campaign, but production was rapidly scaled back to 10,000 in February, then just 5,000 in May.

As the JB-2 neared operational status, a problematic difference with the Fi-103 became clear. The US did not have the capacity to make the hydrogen peroxide that the Germans used to launch the V-1 – the Americans instead turned to T-10 booster rockets. The setback meant that the American 'doodlebug' was not ready for action in wartime.

The end of World War Two resulted in the termination of production of JB-2s on September 15, 1945, with 1,391 of the initial order of 2,000 having been delivered to the USAAF. However, despite the war being over, the missiles didn't go to waste.

BELOW A JB-2 missile loaded onto a fixed launcher at Wendover Field, Utah, in 1946. A second launch rail is visible in the background



## Testing times

Wendover Field, located along the border of Nevada and Utah, was established in 1940 and used for research and development of guided missiles, pilotless aircraft, and remotely controlled bombs, as well as the training of heavy bomb groups. In early September 1944, a detachment from Air Material Command (AMC) arrived at Wendover with 13 JB-2s. A launch ramp was constructed for testing and, by the war's end, some 213 JB-2s had been launched.

Post-war, the USAAF continued the trials at Wendover, under the designation Project MX-544. AMC allotted 275 missiles for testing new developments in gyro and guidance systems, as well as training launch crews. After this was complete, AMC transferred Wendover Field to Strategic Air Command in March 1947, with missile test activity transitioning to Alamogordo Field in New Mexico.

Evaluation of the weapon continued at the new base in May 1948. A series of seven launches took place to test out a new 400ft ramp, and additional personnel were taught how to handle and launch the missiles. Those involved also took advantage of these flights to learn how to track missiles, following the JB-2's APW-1 beacon with a SCR-584 radar. Two more launches in August and September 1948 provided further instruction. During these trials, two Lockheed F-80 chase aircraft on loan from Williams Air Force Base (AFB) in Arizona were prepared to shoot down missiles, if they started to stray off the range.

The final two launches from New Mexico were undertaken in October 1948, to test beacons and radio control, with one having the JB-2 controlled from a circling Beechcraft C-45. Plans to replicate this airborne control method from a Lockheed T-33 jet did not come to fruition, and testing was wrapped up that November.

The JB-2 was the USAAF/USAF's first guided missile – its legacy inspired Project MX-771, the Martin XSSM-A-1 Matador. The missile guidance system, the MSQ-1A, used a modified SCR-584 radar and AN/APW-11 radar beacon for tracking, and was launched from a mobile trailer – the technology had been developed during the JB-2 trials. The initial cadre of personnel operating the Matador had also trained on the JB-2 in the sandy ranges of New Mexico. Although

RIGHT Wendover Field, Utah, 1947. This aerial photo captures the remote nature of the base, which was used for weapons testing and bomber crew training in the 1940s



RIGHT Mobile launch ramps enabled training for crews destined to work on new missile systems such as Martin's Matador. This 1948 image shows a JB-2 being serviced on the mobile ramp at Eglin Field



BELOW Loading a JB-2 onto the mobile launch rail at Wendover Field. Already on the launcher are the launch 'cart' with four attached T-10 booster rockets





the AMC was done with the JB-2, it turned out the Air Proving Ground in Florida was just getting started.

### Florida flyers

In the early 1930s, the Air Corps Tactical School at Maxwell Field, Alabama began surveys for a bombing and gunnery range to support their activities. In 1935, land was leased near Valparaiso, Florida, and, in August 1937, the range became known as Eglin Field. At the same time, the Air Corps was looking for a suitable proving ground for the evaluation of aircraft and armament, so on May 19, 1941, the Air Corps Proving Ground was established at Eglin Field.

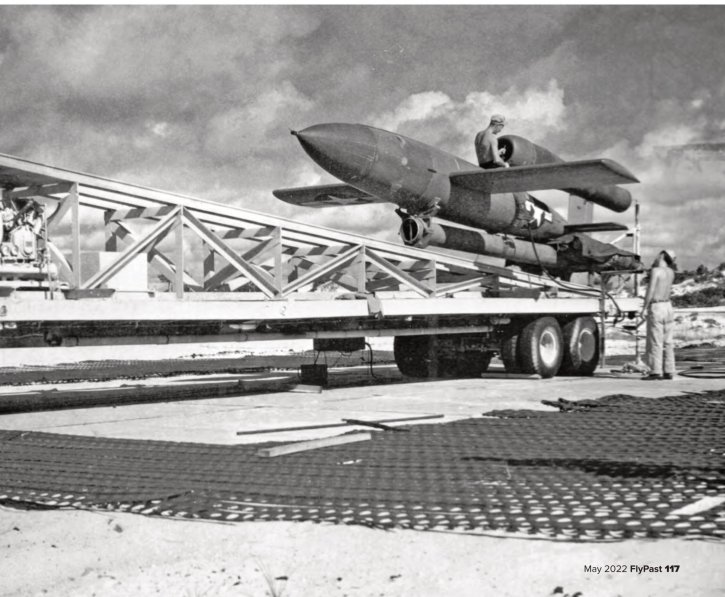
The 1st Proving Ground Command, working with AMC personnel, established JB-2 trials at the Florida base during the summer of 1944, and conducted the first launch on October 12 that year. Ground launches continued as testing expanded, with a Boeing B-17G Flying Fortress modified to carry two JB-2 missiles for air launch. The proving ground began to train a squadron to employ this new weapon, with

servicemen arriving at Manila, in the Philippines, to co-ordinate employment of the JB-2 with Far East Air Forces the week after the atomic bomb was dropped on Hiroshima.

Following post-war demobilisation, the 1st Experimental Guided Missiles Group was activated on February 1, 1946, at Eglin Field – its mission was to test guided missiles and develop tactics and training for operations. A launch site was set up on Santa Rosa Island, California, with both a fixed 400ft ramp and a mobile launch ramp on a 50ft trailer. In February and March 1947, a Cold Weather Detachment tested the JB-2 at Ladd Field AFB, Alaska. Three test flights proved that missiles with minor modifications could indeed be operated in cold temperatures.

The first post-war air launchings of a JB-2 took place on October 8, 1947. A specially adapted B-17G launched two of the flying bombs off the coast of Santa Rosa Island, with the missiles staying aloft until shot down by P-80s ten miles from shore. Eight additional air launches and 17 ground launches were completed by

**“A launch ramp was constructed for testing, and, by the war’s end, some 213 JB-2s had been launched”**





**“An adapted B-17G launched two of the flying bombs off the coast of Santa Rosa Island, with the missiles staying aloft until shot down by P-80s”**

the end of the year. The early air sorties out of Eglin were very well organised – the Flying Fortress loaded with two JB-2s was accompanied by a North American B-25 Mitchell performing photography and sea-rescue overwatch; a command and observation Boeing B-29 Superfortress, and two P-80s to shoot down any wayward missiles.

### Catalyst for change

Tests in early 1948 focused on finalising ground-launching tactics, as well as optimising launch aircraft procedures. Fifteen JB-2s were released from the ground in March 1948, with an additional 21 the following month – accomplishing the first objective. Ground-launch work diminished after the ramp was severely damaged by an exploding JB-2 in June 1948, but air launches continued at two to three per month for the remainder of the year. In May 1948, the 1st Experimental Air Service Squadron started work on in-flight control of the JB-2 via radio link, with three flight tests in June and September. Towards the end of the year, flight launch duties began to transition from the B-17 to the B-29.

Test launches continued into 1949 with a second set of cold weather trials in Alaska in January and

February, and a Superfortress conducted two JB-2 air launches. Results reaffirmed the viability of the JB-2 in cold weather, but there was no point carrying out additional testing until a satisfactory guidance system had been developed for the weapon.

In warmer climes, both air and ground launching of the JB-2 continued in Florida. The project at Eglin Field shifted to developing tactics for launching air-to-surface and surface-to-surface missiles. Surface releases from the mobile ramp helped the USAF prepare to operate the new Matador missile, though many JB-2 launches failed because of faults with the ageing T-10 booster rockets. However, there was greater success with air launches. Eighteen JB-2 flights were completed from B-29s in the first half of 1949 – these probably informed training methods for planned Bell GAM-63 RASCAL supersonic air-to-surface missile operations.

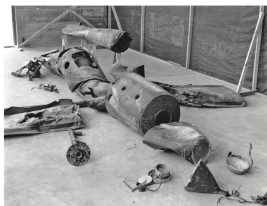
Training flights continued deep into the year, with the JB-2 used for target work. Towards the end of 1949, Air Proving Ground recommended that all remaining JB-2s be placed in storage, pending the introduction of a suitable guidance system, but there was still one final project left to accomplish. The missile now replaced the QB-17 drone as the air target for F-80





ABOVE Wingless JB-2s in storage at an Eglin AFB warehouse

RIGHT The JB-2 was based on recovered remains of German V-1s. Shown here on display in 1946 are some of the remains utilised in this reverse-engineering effort led by Republic Aviation



LEFT KLA JB-2 on a transport dolly positioned under the wing of a B-17 at Eglin AFB, 1948

TOP LEFT B-17G 44-85815 loaded with two JB-2s. This aircraft went on to be modified to DB-17 configuration for Operation Crossroads nuclear testing

pilots testing the new A-1C gunsight. Most work was completed by February 1950, supported by seven B-29 missions launching JB-2s. Through May and June of that year, the JB-2 was also used as a target for trials with the new Lockheed F-94 Starfire, a development of the T-33 Shooting Star.

The three B-29s assigned to the 1st Guided Missiles Squadron were called up for Korean War duties in August 1950 and flown to San Antonio for refurbishment. A trio of B-17s from the 3200th Drone Unit were issued as replacements. They were earmarked for modifications to enable them to use JB-2s in trials work with the LARK surface-to-air missile, but the conversions never took place. The Flying Fortresses were transferred to other units that November, and missile testing moved to Patrick AFB, Florida – this time without the JB-2.

By early 1951, the Ryan XQ-2 Firebee jet-powered target drone had made its first flight and would serve the USAF well in the role. That being the case, the JB-2's days had finally come to an end. Although it was never operational with the USAAF/USAF, it certainly helped pave the way for future Cold War missile operations, by training countless aircrew and refining new technologies. **FP**