The JET-POD B-36 by Meyers K. Jacobsen

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These decisions were affected by larger issues involving the entire aircraft procurement program then coming to a head in the fall of 1948. A drastic review was pending and the relative performance of the B-36 compared to other airplanes was only one factor in that review. It was overshadowed by the graver problem of curtailing total strength of the Air Force to fit President Truman's budget ceiling.

However, soon after the review of all aircraft procurement by the Air Staff at the end of 1948, the prototype B-36 with jetpods was authorized by AMC on Jan. 14, 1949. Ray O. Ryan, Fort Worth Division General Manager, was anxious to expedite the installation as soon as possible to demonstrate its potential to the Air Force.[4] A meeting was held shortly at Boeing-Seattle, to determine whether the Allison J-35 or the General Electric J-47 would be used on the production Boeing B-47, and AMC invited Convair representatives. A decision could thereby be made as to who would build the jetpods for the B-36. Col. Gerrity, who had served successively as project officer on the B-29, B-32, B-35 and B-36, chaired the meeting.[5] George Martin, Chief Project Engineer for the XB-47 was among Boeing representatives, and Ray Whitman, Executive Vice President of Bell Aircraft, who held the contract to build the production B-47 jetpods, was also present. To represent Convair Ryan sent Wes Magnuson, Les Moffat, and Al P. Higgins, with instructions to bring back the drawings.

Boeing showed detailed charts of performance with both the J-35 and J-47, with the final result being approval for the J-47, which had greater growth potential. Col. Gerrity then turned the discussion to the B-36 pods, and it was decided to use the J-47 engine for production but because the J-35 was then available, with drawings for its installation, this type would be used in the prototype. Col. Gerrity asked Higgins and Whitman to decide between them who would build the pods. They informed him later that Convair would do so. Since Bell was busy tooling up for B-47 jetpod production, and it might be several months before a set of pods could be built there for the prototype, Magnuson, Moffat and Higgins left Boeing with the drawings and flew back to Texas.

Almost immediately Lee Barnett, tool engineer at Fort Worth, left for Boeing's Wichita plant to obtain the loft-line data. These loft-line plates, had been reworked recently with new lines and there was confusion over the correct lines as well as the number system used to identify parts. Barnett brought the plates back with him and Wallace Innman, a Texas country boy in his twenties was the engineer responsible for deciphering the plates properly. His fast and efficient work in only a few days gave Convair the completed drawings from which the pods were laid out. Though Boeing had complete design for the pods, it was necessary to do some design work on the wing-attach fittings, the jet engine controls, instrumentation and the fuel system.

It became a race against time. Ryan checked on progress frequently, as did R.C. "Sparky" Sebold, Convair's Chief of Engineering. Many persons worked late into the night in an almost around the clock effort. Several persons attending the Boeing meeting had been skeptical as to whether Convair could produce the jetpods in only six weeks – Bell's estimate of three months was considered more likely, and possibly Ray Ryan's deadline was overly ambitious. However, to save the program the jet-assisted B-36 had to fly, and soon. In the "crash program," just six weeks after the Beoing meeting, the finished jetpods were installed on the B-36 prototype. Ryan had good reason to be proud of his people.

On March 26, 1949, B-36B No. 54 made its initial flight with the new jetpods, lifting off the runway at the 3,500 foot mark with 280,000 pounds gross load.[6] Beryl Erickson, Convair's Chief Test Pilot, was at the controls, with A.S. "Doc" Witchell as co-pilot and W.P. Easley as flight engineer. The main difficulty experienced was with control of ten engines, all from the flight engineer's panel. Easley found it difficult to monitor and adjust 10 engines at the same time; they were of two different types, each with its own characteristics.[7] Later the controls were moved to the bubble canopy over the pilot/co-pilot stations. The co-pilot could thus be responsible for the jet engine operation.

To test the effect of oscillation on the jetpods, Erickson performed some maneuvering, from which it was determined that the pods swayed too much from side to side. Streamlined tension wires were installed, but on a later test flight by Ray Fitzgerald, and his co-pilot R.T. Levine, the right pod tension wire broke loose from its fitting.[8] The oscillation increased so rapidly, and No. 54 was shaking so violently, that neither Fitzgerald nor Levine were able to reach the jet engine controls. A shout of "Slow it down!" was heard in the cockpit. The vibration frequencies of the jetpod and the wing were essentially the same, causing both structures to reinforce each other in harmonic vibration.

The second engineer, also being rocked violently, managed to stabilize himself long enough to reach the jet throttles. Steadying the airplane, Fitzgerald proceeded back to the Convair plant with the right jetpod tension wire flapping in the breeze.

The tension wires proved unsatisfactory as the pods bent inward toward the fuselage, so, reluctantly, the wires were replaced by metal struts. These were too small, and finally had to be doubled in size before the jetpods were securely fastened to the wing structure.

A new problem came to light, windmilling of the engines while shut down during flight. The J-47 ordinarily threw out a certain amount of oil continuously, and constant windmilling would drain the lubricant completely. Windmilling also added to the drag, but it was not desirable to have the engines fully stopped; the main shaft would suffer "brinelling" when the compressor bearings were motionless.

Paul Lynch, a Convair powerplant group design engineer, proposed a special "umbrella iris" design which would controllably close off the air to the engine. These were installed, and solved the problem. The openings in the nose cone would admit sufficient air to gently rotate the compressor at an acceptable six percent speed of rotation.

The jet assisted B-36 was now a success. The auxiliary engines increased maximum allowable takeoff weight from 328,000 to 370,000 pounds. Fuel expenditure over the target was mostly offset by the increased fuel at takeoff. A comparative performance between B and D models, with respective combat weights of 250,300 and 227,700 pounds, each carrying a 10,000 pound bomb load:

	B-36B	B-36D
Top Speed at 34,500 feet	381 mph	
Top Speed at 36,200 feet		406 mph
Service Ceiling – ft.	42,500	33,100
Rate of Climb	1510 ft./min.	
Range	7,935 mi.	7,505 mi.
Takeoff distance over 50 ft. obstacle	7,980 ft.	5,500 ft.

REFERENCES:

4. **Message, Col. T.P. Gerrity, Contracting Officer, HQ, AMC, WPAFB, to Chief, Ft. Worth Air Force Procurement Field Office, Government Plant No. 4, Ft. Worth, Texas, dated 14 Jan. 1949. Col. Gerrity later commanded the 11th Bomb Group, the second operational B-36 group, at Carswell and still later commanded AMC's successor, the Air Force Logistics Command at WPAFB.**
5. **Telephone interview by Author with Wes Magnuson and Al P. Higgins, 11 Nov. 1972.**
6. **"Convair Giant Gets Jet Boost," *Aviation Week*, April 4, 1949.**
7. **Interview, Author with W.P. Easley, 8 Oct. 1972.**
8. **Interview, Author with Ralph T. Levine, 4 Nov. 1972.**
9. **Letter, Herbert Hinckley to Author, 12 Nov. 1972.**

THIS CONCLUDES THE B-36 SERIES.