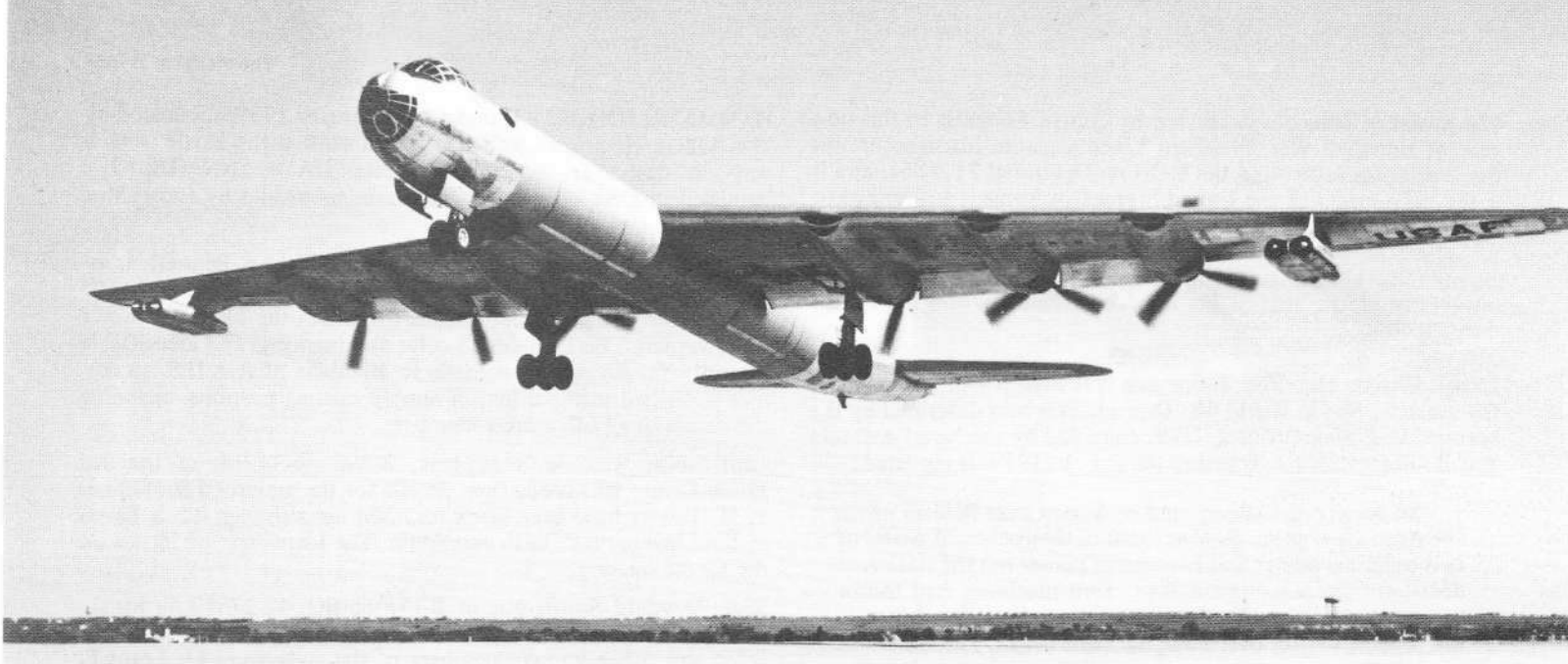




B-36 No. 54, the prototype of the Jet-Pod B-36D, with J-35 engines takes off 26 March 1949.

(General Dynamics Corp.)

The JET-POD B-36

A New Lease on Life

By MEYERS K. JACOBSEN

The decision by the Air Staff on June 24th, 1948, to continue the original B-36 contract for 100 airplanes settled the uncertainty of the contract completion for Convair. This conference, held in the office of Secretary of the Air Force Stuart W. Symington, was described in JOURNAL - AAHS, Fall, 1973, Page 173. In effect, the contract was readjusted to 95 airplanes because of the rising labor costs in the post-war period, plus the cost of the unsuccessful VDT engine installation. Beyond that, the problem of future use of the government-owned Fort Worth facility remained of concern to Convair as no new orders for B-36's were being considered in mid-1948. At another level though, the Air Force was considering using it for production of all — jet version of the Northrop Flying Wing, the B-49.

Meanwhile a brilliant engineering idea was taking shape at Convair which would greatly change the Air Force production plans and eventually increase the performance and effectiveness of the B-36, thereby prolonging its useful operational life. At that time, criticism of the speed of the B-36 was uppermost, though expressed in very general terms for lack of specific data.

Through the presentation of the "VR Diagrams" in Secretary Symington's office that June 24th it was determined that broad comments such as "the airplane is too slow" were meaningless, and the VR Diagrams became vitally important by comparing, graphically, the relationship of four factors — speed, range, flight path and bomb load. What counted was the speed over a given range and at various altitudes. The VR Diagrams made it possible to analyze a number of performance data simultaneously and at the proper power relationship to each other. The speed of the B-36 at its maximum range could simply not be compared with any other airplane because of that tremendous range, thus there was but one aspect for major concern — maximum speed over the target.

To penetrate and return from a heavily defended target area, a bomber must be capable of protection of itself against attacking

fighters. Taking advantage of altitude, darkness and cloud cover is one form of protection, defensive firepower is another; high speed is a third. In mid-1948 the state of the art of fighter aircraft design was reaching just above 40,000 feet altitude, and to locate, intercept and shoot down a bomber flying at 40,000 feet was extremely difficult, even if the bomber was flying no faster than the B-36 with 3,500 hp engines. If the bomber could put on a burst of speed over the target or while under attack, its chances of survival became greater. To accomplish this burst of speed was precisely the function of a modification to the B-36 known as "jet assist."

Convair submitted a proposal to the Air Material Command for mounting four General Electric turbojet engines, in pairs under each wing, in October 1948.¹ The installation would be self-contained, each pair of engines enclosed in a separate nacelle or "pod." Only minor modification of the airplane would be required to mount the nacelle on the wing, unlike the substantial changes required to incorporate the VDT engine. (See JOURNAL — AAHS, Fall, 1973, P. 170.) Convair proposed to include other modifications along with the turbojet installation, metal-covered control surfaces, bladder-type outer panel fuel cells and hydraulic, quick-acting split bomb-bay doors. To evaluate the installation as soon as possible, it was recommended that a B-36 be chosen from the production line as the prototype, and that two pairs of the same jet engines as used in the XB-47, plus metal-covered control surfaces, be installed. The estimated cost was \$240,000 including flight testing of 20 hours. Convair hoped to have the prototype ready to fly in four months.

Based upon preliminary estimates the jetpods were to increase the maximum speed over the target from 376 to 435 mph, and to improve takeoff distance, rate of climb, and altitude. Production of the balance of the 95 B-36 airplanes was too far advanced to incorporate the change on the assembly line unless a contract for additional airplanes was granted. To minimize costs of

retrofitting, Convair recommended an early decision on the prototype.

The proposal looked promising to AMC, and was so described in a message to Headquarters USAF in Nov. 16, 1948, in which a prompt decision on the prototype was recommended.² But while this proposal was still under study, the Air Force Reconnaissance Conference met on November 12, 1948. The recommendations of this conference were far-reaching. In part it recommended against piecemeal decisions on each single airplane type or modification, and that the entire Air Force procurement program should be reviewed at its forthcoming conference of the Board of Senior Officers, scheduled to meet December 9th to January 6, 1949. There were specific parts to its recommendations which affected the B-36 as well as the Northrop Flying Wing, the Boeing B-54, and the B-47.

A major aspect of the U.S. military posture at the end of the decade of World War II was its total authority, or so it seemed, over the atomic bomb. The U.S. had the only air weapon capable of striking anywhere in the world with an atomic bomb, the B-36 airplane. But to use that weapon the Air Force needed to know target intelligence data, weather information, photographic data, and electronic counter measures, thus strategic, long-range reconnaissance was, and still is, a vital part of the Air Force mission. Targets had to be located before they could be hit effectively, and reconnaissance could not wait for the availability of overseas bases, near the potential target, as in WWII.

Throughout 1948 the reconnaissance problem was given a great deal of thought by the Air Staff. The Director of Intelligence had a vital interest. The operating people in the Air Staff and in the field were equally concerned. They found a potent spokesman in Lt. Gen. Curtis E. LeMay when he returned from abroad in October 1948 to take the place of Gen. Kenney as Commanding General, Strategic Air Command. One of the Most experienced and successful bomber commanders during the War, he had displayed unusual originality and daring in the assaults on Germany and Japan. One of his first acts upon taking over SAC was to insist on immediate action to improve strategic air reconnaissance.

Late in October Gen. Cabell, Director of Intelligence, suggested a conference to review the requirements for SR aircraft. A board of officers composed of representatives from the Air Staff, the Strategic Air Command, Air Proving Ground and Air Material Command, assembled on November 12, 1948 in response.

The discussion centered chiefly around two airplanes, the Northrop YB-49 and the Convair B-36 with the jetpod proposal incorporation. Only six months prior to this conference the YB-49 had appeared to be the most promising of the aircraft available for strategic reconnaissance. This was at that period when confidence in the B-36 was seriously questioned, and there had not been given thought to its use as a strategic reconnaissance airplane.

A brief report of the meeting of the Reconnaissance Board, with its list of recommendations, was sent to General Howard Craig, Deputy Chief of Staff, Materiel on November 15th. He was asked to advise the Air Materiel Command of the board's recommendations and to initiate a proposal for the amendment of present aircraft schedules. The results of the board meeting, and the AMC comments, were then to be presented to Gen. Fairchild, the Vice Chief of Staff. By the early spring of 1949, the jet-assisted B-36 would emerge as the first choice for strategic reconnaissance and would substantially contribute to the cancellation of the YB-49 program.

Chronologically, the development of the Northrop Flying Wing began with the twin-engined experimental N1M, which was first flown in July 1940. Thereafter it paralleled the development of the B-36. Northrop submitted its proposal for a four-engine long range bomber of flying wing design to the Army Air Force in

September 1941, and a contract was awarded for two prototype XB-35's, followed later by one for thirteen airplanes for service test. The first XB-35 flew in June 25, 1946, a month and a half before the XB-36. It used the same basic powerplants, the R-4360-17 and -21 Wasp Major engines (two each), developing 3,000 horsepower, with double turbosuperchargers and counter-rotating four-bladed propellers. A nine-man crew was housed in the pressurized cabin section, with accommodations for a six-man relief crew. Its range was approximately 8100 miles, carrying 16,000 pounds of bombs but it could carry up to 51,070 pounds at reduced range. The top speed was 391 mph at 35,000 feet; cruising speed 183 mph, and service ceiling 39,700 feet. These compared to the XB-36 at 346 mph, 216 mph and 36,000 feet respectively.

By 1948 most of the difficulties encountered in the XB-35 had been with the engines and propellers, thus it was hoped to develop the design into a successful platform using the all-jet engines. A contract for conversion of two B-35's had been issued in June 1945, and the resulting YB-49 took to the air for the first time on October 21, 1947.

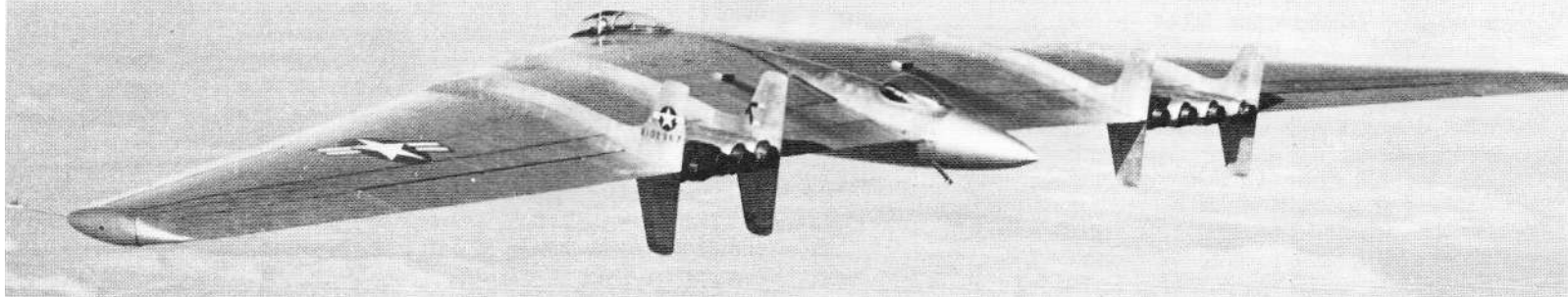
In June 1948 Gen. McNarney, the C.G., Air Material Command, recommended that funds be made available from FY 1948 supplemental appropriations to tool up for production of 15 YB-49 airplanes per month. At that time the YB-49 showed promise in speed and altitude, but the range was inadequate. There appeared the possibility of improving the range through stages of development, but it was anticipated it would remain in the medium bomber class until 1952 or 1953. In a conference of senior staff officers of the AMC on April 12th, 1948 the immediate procurement of the B-49 for strategic reconnaissance was recommended. The YRB-49A, a six-jet reconnaissance version, using J-35-A-19's developing 5,000 pounds thrust, first flew on May 5, 1950. Ultimately however, it was to be the only YRB-49A.

It is well to recall the climate in which these decisions were made. The international relations between East and West were deteriorating under the tensions of the "cold war," and it appeared advisable to consider airplanes currently available rather than await future technological advances. Tooling up for B-49 production was one of the avenues open.

The facilities of the Northrop plant at Hawthorne, California were inadequate for quantity production of the B-49. Northrop had planned to build three per month there, but when the Air Force indicated it was thinking of 15 per month, it was obvious that other facilities would be required. The government-owned Fort Worth factory was completely equipped to build large airplanes, and would be idle after the 95 B-36's were completed. In identical letters to both Northrop and Convair, Gen. McNarney began preliminary arrangements for B-49 production at Fort Worth. He requested them to confer on plans to carry this out.

In response, Northrop and Convair officials met on July 9th, and later and President John K. Northrop followed a company letter to Gen. McNarney with a verbal request for a round table discussion of all concerned. In response, Gen. McNarney and Gen. K. B. Wolfe went to Los Angeles on July 15th to meet with (from Convair) Floyd B. Odium, Chairman of the Board and LaMotte T. Cohu, newly elected President, and (from Northrop) John Northrop, President, Richard Millar, Board Chairman, and Claude Monson, General Manager. The main problem appeared to be how to retain the engineering skill of the Northrop organization while making full use of Convair's greater experience in production of large airplanes.

In the same week of this conference, Secretary of the Air Force Symington was on the West Coast to fulfill a speaking engagement, and was the guest of John McCone, Special Assistant to Secretary of Defense Forrestal on procurement. The conference group was invited to McCone's home for a general



The first YB-49, 42-102367 over Muroc, c. 1949.

A brilliant design, its short range compared to the B-36 at the critical period of discussion mitigated against its selection as the long-range strategic reconnaissance airplane for the Air Force. (Courtesy of Author)

discussion. In the course of the conversation Odium suggested a merger of Northrop with Convair. While the suggestion seemed reasonable to the Air Force representatives, John Northrop was not in favor, preferring as an interim solution, subcontracting the production work to Convair.

The latter solution was finally agreed upon, but both manufacturers agreed to keep an open mind on the idea of merger at a later date. Convair and Northrop negotiated the distribution of profit on the RB-49 contract between them. In the month following the Los Angeles conference, AMC worked out a detailed plan for both firms for the Fort Worth production. A small part of the production would be retained at Hawthorne; the remaining production work as well as assembly would be subcontracted to Fort Worth. Northrop would be given overall responsibility as the prime contractor, and Convair would be responsible for production and scheduling. For the time being, this appeared to solve the problem of keeping the Fort Worth plant in operation.³

Northrop soon established an office in the Fort Worth plant to study facilities and plan production. 19 of Convair's engineering staff went to Hawthorne to become familiar with the RB-49. A letter of intent was jointly announced by Convair and Northrop on October 13th, 1948.

Between June of 1948 and the Reconnaissance Conference in November, a number of developments occurred which made the B-49 look less promising. The Air Staff felt less confident of its early availability as a bomber. Its aerodynamic design caused it to be unstable as a bombing platform. And on June 5th, the second of the prototypes to crash during tests, did so, killing Capt. Glen Edwards (for whom Edwards AFB was later named). These and other minor problems which undoubtedly could have been overcome, coupled with the high cost of procurement, were sufficient to cause AMC to recommend delay in development until further flight tests could be performed.

In the deliberations of the Reconnaissance Conference of November 1948, the various aspects of the B-49/RB-49 program were discussed, with the result that the conference board recommended elimination of the reconnaissance version, and turned to evaluation of the Boeing B-54, the only other possible candidate in the picture beside the B-36. The latter was less than satisfactory in range and altitude characteristics, and had other shortcomings. The board likewise recommended that the reconnaissance part of the B-54 program be reevaluated to reduce or eliminate it.

Summing up its preference among airplanes available for strategic reconnaissance the board of officers named as its first choice the B-36 with jetpods, the B-47 as second, and the B-54 as third. The YB-49 was not listed among possible choices. The contract for the RB-49 was subsequently cancelled in April 1949.

The story of the installation of jet engines on the B-36 will come in the next Part of this series by Meyers K. Jacobsen.

ACKNOWLEDGEMENTS

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REFERENCES:

1. Letter, CVAC to Co Gen, AMC, WPAFB, dated 5 Oct. 1948, Subject: "Proposal for Turbojet Assist B-36 Airplane."
2. Message, Director, Procurement & Industrial Planning, Maj. Gen. K.B. Wolfe, HQ, AMC, WPAFB, to DCS/Materiel, Gen. Howard Craig dated 16 Nov. 1948, Subject: "B-36 Airplanes, CVAC Proposal to Install Four J-47 Turbojet Engines on B-36 Aircraft."
3. "Industrial Leaders Tell Merger Plan Details." *Aviation Week*, August 29, 1949.

Editor's note: The author, Meyers K. Jacobsen, has persistently followed the attempt to preserve the B-36 airplane at the Greater Southwest Airport, carrying on a campaign reaching to the highest, level of government, and of publicity for the efforts of Peacemaker Foundation. Although failing to get approval to fly the airplane to some new site to ensure its future preservation, he has now joined a new group with the same purpose of preservation, the Museum of Aviation Group (MAG). The U.S. Air Force has approved plans to transport the huge B-36J, in sections, to a new site on the new Dallas/Fort Worth Airport.

Volunteer workers, and acquisition of support equipment to take the airplane apart at its major mating points, has nearly been completed. Disassembly will be accomplished on weekends and the relocation should be finished by late Summer. Its preservation, intact for the education of future generations seems assured, but additional help is still needed. Details may be obtained from:

Museum of Aviation Group
P.O. Box 12984
Fort Worth, TX 76116

BOOK REVIEW CONT'D - *North American* - from Page 70.

confusing. The main text deals with types in the order of NAA model numbers, and when more than one model number applied to a single basic type, they are dealt with in a group. Basic development and technical data are provided, in some cases not entirely correct, viz., production figures for the Noorduyn-built Harvards.

A useful summary is a 9-page table of all model numbers in numerical order, with originating dates, names or military designations, customers, the works where built, a general description, quantity built, and construction numbers. The final part of this table has numerous gaps, due to company or national security restrictions, although some data has appeared elsewhere in print, such as the NR-338 for 18 German OV-10B Bronco target tugs. But despite these minor shortcomings, this Album is a welcome addition to Ian Allan's range of aircraft albums, and well worth the price.

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