



Auth: DIR. A.T.S.C.  
 Initials: C.M.T.  
 Date: 22 FEB 1945

**CASE HISTORY**

of

**B-26 AIRPLANE PROJECT**

**ID: RP-2213.01**

A high performance, twin engine, single late tail, heavily armored bombardment airplane, the first plane purchased under the abbreviated "off the shelf procurement" procedure, modified during production by many engineering changes.

Documents in this case history were obtained from the files of Materiel Command, Wright Field, and Headquarters, Army Air Forces, Washington, D. C.

Classified documents are included herein and, therefore, compliance with pertinent sections of AR 380-5 is necessary.



Compiled by  
 Historical Office  
 Materiel Command  
 Wright Field

X-44187-3  
 Part I

SUMMARY OF THE B-26 AIRPLANE PROJECT

The B-26 was the first of a series of airplanes to be contracted for under the procedure called "off the shelf procurement." This expression may be explained by the statement that production contracts were let on the basis of "drawing board plans," rather than after long periods of experimentation.

\*(2)

- (1) The invitation for bids, issued on 11 March 1939, called for a quantity procurement of new and improved designs of twin-engine bombardment airplanes. Altogether eighty-six bids were invited by Circular Proposal No. 39-640 and seven bids were received. Of these seven, only four met the terms and conditions demanded in the Circular Proposal. The four manufacturers, listed according to their order of standing based upon the best acceptable design, were: The Glenn L. Martin Company, with 813.6 competitive points; the North American Aviation, Incorporated, with 673.6 points; the Douglas Aircraft Company, with 610.3 points; and Stearman Aircraft with 442.7 points. Consequently, it was recommended by General Arnold that the first three companies be declared the winners of the competition, in accordance with the provisions of the Act of 2 July 1926. This recommendation included, among others, a proposal to purchase a lot quantity of 201 airplanes, Martin Model 179, at \$78,885.00 each or at a total cost of \$15,815,685.00.

- (2) Authority was granted on 9 August 1939 to negotiate with the Martin Company. Besides the purchase of 201 airplanes, the authority provided for the procurement of a skeleton airplane and data, including option "B" (Mareng fuel tanks), and option "C" (Watertight Navigator's compartment) as well as the installation of two Pratt and Whitney R-2800-5 aeronautical engines to be furnished by the Government. These options increased the total cost of the 201 airplanes to \$16,029,750.00.

- (3) On 16 November 1939, a board of officers, under the presidency of Brigadier General Jacob E. Fichel, was appointed for the purpose of inspecting the mock-up of the B-26 airplane. This board, making its report on 22 November, set forth several recommendations for changes, such as a molded and plexiglass nose, a bomb door handle to include selective and salvo controls, waist guns, and a collapsible gunner's seat. This report was approved by the Materiel Command and steps were taken to obtain the approval of the Assistant Secretary of War for a change order covering the changes recommended.

(4) The first flight of the B-26 was made on 29 November 1940. The service ceiling of the airplane was 25,000 feet and its absolute ceiling was 26,200 feet. It had a high speed at 14,250 feet of 323 m.p.h. and a guaranteed operating speed of 266 m.p.h. at 15,000 feet. The fuel

\* The numbers placed in brackets in the margin refer to the documents found in the Document File attached.

[REDACTED]

- (11) required for the 3000 mile range at 15,000 feet was 1270 gallons. All told the B-26 appeared satisfactory "in all respects except aerodynamic overbalance of the rudder" and, as a result, the airplane was
- (12) accepted on 8 February 1941.

- (13) No sooner was the B-26 accepted than studies were conducted for the purpose of recommending revisions in the airplane. One study provided for high altitude flying with pressure cabins and increased armament. There were also proposals in regard to possible changes to effect satisfactory take-off characteristics and a new and enlarged wing. Other recommended revisions or changes applied to the bomb racks, a redesign of the sway bracing for the 2000 pound bomb, and to the lengthening of the braided leads to the shackles to permit interchangeability. At the same time, it was recommended that the area of the bombardier's window be increased in order to permit a greater field of vision through the bombsight, and that consideration be given to the possibility of installing a protective shade for the bombardier
- (14) against sun light and search light glare.

- (17) As for the wing, some believed that the wing area was not sufficient  
(24) for the gross weight of the airplane and therefore it was recommended that the wing area be increased to 715 square feet. Accordingly, on 5 September 1941, Martin was told to put a 71-foot wing on the B-26. This larger wing was incorporated on the first airplane, the B-26C, made by Martin-Nebraska, and on the first B-26B-1 at Baltimore (this was the 982nd airplane delivered from that plant).
- (119)

- (16) Meanwhile, several parts of the airplane experienced failures. As early as 21 April 1941 all B-26 airplanes were grounded because of landing gear failures. An examination of the failed parts indicated that improper heat treatment was used on the nose struts and that there existed the possibility of imbrittlement due to chrome plating. It was believed, however, that these failures could be corrected by proper manufacturing processes. Later, in September of the same year, the landing gear again failed, due this time, however, to the malfunctioning of the hydraulic system. An inspection of the fluid level in the reservoir disclosed that the system lacked oil. It was determined that the cause of the lack of fluid was due to two factors: first, the excessive amount of leakage which was common on all subject airplanes; and second, the improper bleeding of the system after the use of the emergency bomb-bay door air system.
- (26)

- (40) Hydraulic failure continued and on 5 March 1942 several instances of such failures were reported by the Ferrying Command. Investigation showed, however, that the trouble was very likely caused by failure of personnel to become familiar with the operating characteristics and requirements of the system before the take-off. In order to minimize this type of trouble, the contractor prepared placards, which were
- (41) placed in the cockpit of each airplane, to instruct the operating personnel. Finally, starting with the first of the B-26B series, the hy-



(46) hydraulic system was improved by increasing the hydraulic fluid capacity, by improving details of the manufacture of sequence valves, and by eliminating the possibility of air getting into the system.

(29) In January 1942, there were other failures which included that of the propeller, of the engine, due to moisture collecting in the distributor block, and of the motors and transfer pumps. This latter failure was due to the lack of a sight or capacity gauge in the bomb-bay reserve tank, thus making it impossible to tell when all the gas had been transferred from the tank. Consequently, when all the gas had been transferred and the load removed from the pump and motor, the motor oversped and subsequently burned out.

(37) A few months later, there was defective feathering switch trouble which, on at least four occasions, caused the propellers to move automatically into full feathering position. A report to the Commanding General, Army Air Forces, dated 18 March 1942, stated that, as "the B-26 was a highly developed, probably over engineered airplane, utilizing many electrical features," external battery carts should be procured and used at all times to start engines and test other electrical equipment.

(48) In the meantime, on 31 March 1942, a board of officers was appointed under the presidency of Major General Carl Spaatz to make a thorough study of the B-26 airplane. The following points were to be investigated and reported upon by the board: (1) the extent the B-26 series could be considered tactically operational; (2) the modifications required to render the series operational; (3) provisions for correcting difficulties already experienced; (4) the level of flying experience required of B-26 pilots; (5) the type of airplane needed in transitioning pilots from the AT-6 to the B-26; (6) the extent the B-26 series was considered suitable for tactical operation beyond the continental limits of the United States; and (7) recommendations as to continuing production of the B-26 series.

(43) The board met at Wright Field on 2 April and remained in session for four days. The changes recommended by the board were divided into three categories: (1) the "must" changes for safety of operation; (2) the "must" changes to insure reasonably effective tactical operations; and (3) other changes which were essential for effective maintenance and for improved effectiveness in combat or training. Continuing the board stated that the B-26 series could not be considered operationally satisfactory, that the modifications recommended in the report were required to render the airplane operational, and that the B-26 series should be continued in production.

(44) In September 1942 further recommendations were made for the improvement of the B-26 series airplane. These changes and modifications were in the nature of weight elimination and redistribution. It was believed

- (71) that a reduction of approximately 2000 pounds should be made in the maximum gross weight of the airplane, thereby approaching the designed weight of 31,500 pounds. The following month, Brigadier General A.W. Vanaman made a similar suggestion to Major General O.P. Echols. General Vanaman pointed out that the B-26 started out to have a normal weight of approximately 26,000 pounds, with a contemplated overload of approximately 29,000 pounds. After being equipped with leakproof tanks, armor plate, additional guns, ammunition, and radio, the normal weight increased to approximately 29,000 pounds, with a contemplated overload of 31,000 pounds. The weight continued to increase and by 19 June 1943 the maximum alternate weight specified for the large wing airplane was 38,200 pounds. Meanwhile, on 25 February 1943, the Director of Military Requirements directed that the following items be deleted from all B-26 series aircraft: the astro dome, astro graphs, astro compass, outlets for electrically heated clothing, and the camera mount K-3B.
- (80)
- (119)
- 24, 105)

Returning to the early months of 1941 it is found that the Martin Company was directed to take all action possible for obtaining subcontractors. Originally, Martin planned to subcontract parts of the B-26 to the Chrysler Corporation and the Goodyear Aviation Corporation. Later, the Hudson Motor Car Company was introduced as a manufacturer of parts. About the same time the Martin Company established a plant in Omaha, Nebraska, as a modification center, and later this facility secured the J.I. Case Company to produce B-26 wings.

(14)

(36)

85, 89)

But Martin-Omaha was not producing according to schedule and on 10 May 1942, Major Walter T. Clark was assigned to that facility on temporary duty as a production expediter. He was instructed "To take the necessary action to accelerate production" and "to build up production personnel of the subcontractors to the Martin Company." In particular, Major Clark was instructed to give "encouragement and every assistance possible" to the Chrysler, Hudson, and Goodyear Companies. In August 1942, a Production Committee was established to coordinate the production activities of the prime contractor, Martin-Nebraska, with the above-named subcontractors. The Committee reported that the main problems affecting B-26 production were a lack of sufficient assemblies, primarily wings from Goodyear. Continuing, the report stated that there should be better control of engineering changes and shortages on Hudson and Chrysler assemblies and better quality control of all subcontractor assemblies. But production at Martin-Nebraska continued to lag and in January 1943 the Committee gave as Martin's principal excuse for the "greatly decreased schedule" a lack of materials.

(51)

(57)

57, 69)

(68)

(102)

Previous to the issuing of this report by the Committee, on 7 October 1942, the question was raised of discontinuing production of the B-26 series. In a memorandum for Major General O.P. Echols, General Fairchild stated that Mr. Lovett had interested himself in this question. General Fairchild pointed out that instead of having heavy, medium, light level, and dive bombers, all bombardment airplanes should be classified as high level, low level, and dive bombers. In this classification there

(81)

[REDACTED]

[REDACTED] 167

would be no place for the medium bomber types. Later, in May 1943, Major General J.H. Doolittle, in a letter to General Arnold, stated that the B-25 and B-26 airplanes had done "an excellent job" in the North African theater but that the accuracy of their bombing had been less and their losses per sortie greater than with the heavy bombardment airplanes. General Doolittle further stated that he envisaged the strategic bomber force of the near future as being composed of heavy bombers of the type similar to the B-29, medium bombers of the type of the B-17 and B-24, and light bombers of the A-26 type and "plenty of escort fighters."

(113)

On 22 June 1943 General Arnold voiced General Doolittle's belief and expressed the wish that a committee be called to consider eliminating from production the B-26 type airplane. Accordingly a conference was held on 29 June and the following recommendations made: (1) to reduce Martin-Baltimore production of the B-26 series so as not to exceed 150 airplanes a month and to close out that production as rapidly as the B-35 could be put into production at that plant; and (2) to close out B-26 production at Martin-Nebraska as rapidly as that plant could get into production of the B-29. These recommendations were accepted by higher authority and suitable action was taken.

(120)

(122)

(129, 136, 139)

However, on 11 December 1943, General Chidlaw wrote to General Perrin requesting that a review be made of the directive by General Giles ordering 500 additional B-26 airplanes. On 3 January 1944 Colonel T.A. Sims notified the Production Division, Materiel Command, that General Arnold had authorized an additional 450 such airplanes. This decision was based upon a desire for insuring continuity at the Martin-Baltimore facility throughout the year 1944.

(164)

In conclusion it may be pointed out that as of 30 April 1944, a total of 3725 B-26 airplanes have been delivered by the two Martin plants. Breaking these figures down according to years, it is found that 188 airplanes were delivered in 1941, that 836 were delivered in 1942, that 1923 were delivered in 1943, and that 778 were delivered in the first four months of 1944.

(167)

**ID: RP-2213.06**

[REDACTED]

5