

7. (C) Rpt. 22 April 1941
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(File: Contract Files)

The mock-up of the XA-26 was inspected between 19 April 1941 and 22 April 1941. The pilot's cockpit, armament provisions, and bombardier-navigator compartment were found satisfactory except for the following comments and recommendations: (1) visibility to the right front was poor and it was recommended that a study be made to improve it, (2) since formation flying required the use of both hands, the Mock-up Committee suggested that the bomb and gun switches be incorporated on the left wheel grip, (3) it was also recommended that the standard crew of the XA-26 be composed of pilot, bombardier, navigator, radio operator, substitute gunner, and rear gunner.

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RECOMMENDATIONS MOCKUP BOARD XA-26 AIRPLANE

April 22, 1941

The mock-up of the XA-26 airplane was inspected between the dates of April 19, 1941 and April 22, 1941. On the later date the mock-up was not complete as to tail section, engine installation and landing gear; however, the work was far enough along on these items to obtain a limited inspection. These items partly mocked-up were apparently satisfactory.

Reports of Major L. C. Craigie and Major John S. Mills were studied and recommendations stated therein are concurred with, and the following recommendations and additions are submitted.

The following major installations of the XA-26 were inspected and were found satisfactory as mocked-up except as noted and explained in detailed comments.

Comments

- | | |
|--|--|
| 1. Pilot's Cockpit | |
| (a) New windshield arrangement - Pilot's vision. | Not satisfactory to right front. See detailed recommendations. (1) |
| (b) Control Columns - | |
| 1. Location | O.K. |
| 2. Gun Switch | Unsatisfactory. See detailed recommendations. (2) |
| 3. Microphone Switch | O.K. |
| (c) Rudder Pedals | O.K. |

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Comments1. Pilot's Cockpit - Cont'd

(d) Engine Control Pedestals

1. Control lock O.K.
2. Tab Controls O.K.
3. Engine Controls O.K.

(e) Instrument Board O.K. as mocked up.

(f) Radio Controls O.K.

(g) Gun Sight O.K.

(h) Co-pilot's Seat O.K.

(i) Pilot's Seat - Lateral Location Satisfactory except for note on right front visibility. ①

(j) Access Satisfactory

(k) Emergency Exit O.K.

(l) Oxygen Arrangement O.K.

(m) Map case O.K.

(n) Pilot's Switch Panel O.K.

(o) Pilot's Telltale Indicator O.K.

ARMAMENT

1. Bombs

- (a) Arrangement Satisfactory.
- (b) Hoisting Satisfactory.
- (c) Fusing Satisfactory.
- (d) Dropping Order Satisfactory.

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Recommendations Made on Board XA-26 Airplane

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Comments

Armament - Cont'd

- | | | |
|----|---|--|
| 2. | Bomb Arrangement vs. Fuel Tank Capacity | Excellent |
| 3. | One vs. two Torpedos | Dropping clearance for torpedos in either case considered small -- approximately 3 inches. (3) |
| 4. | Passage-way | Satisfactory with positive locking signal. |
| 5. | Camera Installation. | |
| | (a) Accessibility on Ground | O.K. |
| | (b) Accessibility in the Air | O.K. |
| | (c) Electrical Junction | O.K. |
| 6. | Upper Gun Turret | |
| | (a) Gun Service | Cannot be made ^{easier} more easy without radical change in design. Considered satisfactory. |
| | (b) Ammunition Loading | O.K. |
| | (c) Link Catcher | Satisfactory |
| 7. | Bomb Bay Doors and Operating | O.K. |
| 8. | Dome Light | Satisfactory |

BOMBARDIER, NAVIGATOR COMPARTMENT

- | | | |
|----|-----------------------------|--|
| 1. | Arrangement or Location of: | |
| | (a) Free Air Therm. Bulbs. | Study being made by Materiel Division on practicability of flush bulbs being mounted on nose of airplane.
of 2.1, |

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Comments

Bombardier, Navigator Compartment - Cont'd

1. Arrangement or Location of: (Cont'd)

- | | | |
|--|---|-----|
| (b) Instruments and Lighting of | Satisfactory. Recommend bracket for flash-light be installed on left side of compartment. Space available in mock-up. | (4) |
| (c) Switch Panel | O.K. | |
| (d) Interphone Box and Microphone | See detailed comments. | |
| (e) Camera Control - Right Hand | O.K. | |
| (f) Camera Control - Intervalometer, Left Hand | O.K. | |
| (g) Bomb Intervalometer | O.K. | |
| (h) Bomb Control Handle | O.K. | |
| (i) Vertical View Finder Stowage | O.K. | |
| (j) Hand Fire Extinguisher (Outside Accessibility) | O.K. | |
| (k) Sextant | O.K. | |
| (l) Bomb Sight and Glide Sight Attachments | O.K. | |

2. Entrance and Exit

- | | |
|---------------------------------------|--------------|
| (a) Bomb Sight Window and Cleaning of | Satisfactory |
|---------------------------------------|--------------|

3. Gun Installation

- | | |
|----------------------|--------------|
| (a) Removal Features | Satisfactory |
|----------------------|--------------|

4. Armor Plate

~~Additional armor for Radio Operator if one is carried. See detailed comments.~~

Satisfactory *m.g.h.*

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Comments

Bombardier, Navigator Compartment - Cont'd

- | | | |
|----|----------------------|-------------------|
| 5. | Dome Light | O.K. |
| 6. | Vision | O.K. |
| 7. | Heating | |
| | (a) Pilot | O.K. |
| | (b) Bomb Sight Glass | Very satisfactory |
| | (c) Guns | O.K. |

DETAILED COMMENTS

Pilot's Cockpit

Flight control satisfactory except wheel. Pilot's gun switch and bomb release should be on left side of wheel in a right hand throttle airplane. Formation flying requires the use of both hands, therefore it is recommended that bomb and gun switch buttons be incorporated on the left wheel grip to remedy this. Contractor is designing a standard wheel with switch buttons on both grips so wheel can be used for either right or left hand throttle airplanes.

(2)

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Recommendations Made up Board KA-26 Airplane 4-22-41

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Detailed Comments - Cont'd

Pilot's Cockpit - Cont'd

It is recommended that the landing gear operating lever be placed on the rear control pedestal to the right of the flap handle. It should be separated from the flap handle by the width of the pedestal. As mocked up, pilot has to reach too far to operate gear control. Contractor has agreed to install a metal safety lock to be painted red which will prevent moving landing gear operating lever when airplane is on ground. (5)

It is recommended that a study be made with a view to shallowing the instrument cowl. Cowl as mocked-up restricts pilot's vision to right front. This visibility is very important when flying formation No. 3 position in airplanes having left side controls. Contractor has agreed to modify cowl consistent with requirements of obviating instrument light reflection on the windshield. (6)

Bombardier Navigator Compartment

A further study was made on the feasibility of installing a seat for the bombardier. No conclusion could be reached due to the lack of room. It is recommended that a combination arm rest and writing table be installed on the right side of the compartment. Such a unit was installed and tested in the mockup by putting hinges on a panel covering the forward gun barrels.

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Recommendations Made on Board XA-26 Airplane

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Detailed Comments - Cont'd

Bombardier Navigator Compartment - Cont'd

The installation did not interfere with the forward blast tubes or other accessories of the nose compartment. The rest was far enough forward so that it enabled the bombardier, when operating the sight, to carry part of his weight on his right forearm, thereby relieving pressure on his knees. It is believed this installation will remedy, partly, the bombardier's cramped position when operating the sight. The Douglas Company will submit ^{Photographs} ~~drawings~~ of subject arm rest. Arm rest may also be used as a table for writing materials.

It is recommended that microphone be mounted on the left side of the compartment near the oxygen regulator in order that bombardier can report "bomb away" to the pilot without reaching or changing his position at the sight. Suitable toe holds will be installed on the floor of the bombardier's compartment to aid in steadying kneeling position. (7)

Armament

The four .50 caliber guns in the upper and lower power turrets considered sufficient defensive armament. A small blind spot to the rear of the vertical fin is considered insufficient reason to install tail gun. A Telltale instrument is expected to remedy the vulnerability of this blind spot.

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Recommendations M

Board XA-20 Airplane

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Detailed Comments - Cont'd

Armament - Cont'd

It is believed turret gunner can be trained to take drift readings with rear gun sight and communicate information to navigator satisfactorily.

Scanning windows at sight installation considered satisfactory as mocked up.

It is recommended that a deviation be allowed to enable the Douglas Company to design the forward gun mounts to be interchangeable for .50 caliber or .30 caliber guns. If the airplane is to be used as an attack bomber using forward firing machine guns against light materiel and personnel, .30 caliber guns would be more desirable against personnel. Approximately 1,000 rounds for each .30 caliber gun can be carried in forward ammunition boxes. It is believed .50 caliber guns are more effective against personnel in unorganized defenses. (8)

Armor plate for rear gunner and bombardier satisfactory as mocked up.

Airplane - General

A study is being made by the Contractor to install two fuel tanks of approximately ¹²⁵~~150~~ gallons each in the wings inboard of the engine nacelles. This additional fuel will allow an alternate load of ²⁵⁰~~300~~ gallons that further increases the flexibility of the fuel-bomb load of this airplane. It is

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Detailed Comments - Cont'dAirplane - General - Cont'd

believed that this is highly desirable in a light bombardment airplane. It is recommended that the above study be conducted and tanks installed. Full fuel load would then be 1100 gallons including 250 gallons carried in the bomb bay tank. Contractor claims the XA-26 airplane will then carry at least 2400 pounds of bombs and not be dangerously overloaded. However, this is considered an extreme loading and is maximum performance.

Calculated Load Figures for Above Condition

1100 gallons of fuel	Wing loading 59 #/sq.ft.
2400 pounds of bombs	Gross Weight 31,750 lbs.
475 miles tactical radius	Overload 5,750 lbs.
Takeoff (no obstacle) 2750 ft.	Load Factor (approx.) 5.5
Takeoff (50 ft. obstacle) 3300 ft.	Speed 300 mph.

The above figures are purely theoretical and are based on assumed conditions of tactical operation.

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Detailed Comments - Cont'd

Composition of Crew for XA-26 Airplane

It is believed the tactical radius of this airplane is great enough to require a navigator and a radio operator. It is recommended that a liaison set be installed just forward of the bomb bay and be protected by armor plate which would protect the operator as well. The radio operator can be trained as a substitute gunner if rear gunner becomes a casualty. It is recommended that the following personnel for the crew of this airplane be made standard: Pilot, Bombardier Navigator, Radio Operator Substitute Gunner, and Rear Gunner.

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