

27. (C) Ltr. 3 Sept. 1942
Fr: Col. O.R. Cook
Chief, Prod. Eng. Sect.

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To: Douglas Aircraft Co., Inc.
Santa Monica, Cal.
(File: Contract Files)

The 689 Inspection Board for the A-26 airplane made recommendations for certain design changes to be incorporated in production A-26 airplanes. Changes were recommended in power plant, propeller, armament, electrical and miscellaneous installations, aircraft structure and radio, and photographic equipment.

September 3, 1942

Subject: Contract AD-21393
Model A-26 Airplanes
Design Changes

To: Douglas Aircraft Company, Inc.
Santa Monica, California

Through: AAF Resident Representative

1. In connection with the 689 Inspection of the A-26 airplane, certain design changes were recommended by the 689 Board for incorporating in the production A-26 airplanes. These changes were discussed with the Contractor's representatives and the following comments are forwarded in confirmation of the design changes discussed.

2. Power Plant Installation.

- a. The fuel tank filler necks on the A-26 airplane are so shaped and located as to restrict the filling rate. It is understood that these are to be revised on the production airplanes to eliminate the above restriction.
- b. The inspection doors in the fuel tanks should be made to line up with the inspection cover openings in the wings.
- c. The fuel lines to the Stewart Warner heaters in the cockpit should be self-sealing hose.
- d. The battery vent should not be combined with the oil tank filler neck over flow drain. A separate vent for the battery should be provided.
- e. It is understood that the Contractor will shortly submit a proposal for an air filter installation in accordance with latest A.A.F. requirements which shall provide for selective sources of cold rammed air and filtered unrammed air.
- f. On the engine controls stand the arrangement of pushing down to unlatch the cowl flaps controls and pushing up to unlatch the adjacent carburetor heating control is undesirable and

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it is requested that these controls be redesigned to provide for similar latching action. It is understood that the Contractor is preparing new design proposals for these controls.

- g. It is requested that the Contractor submit samples of the "Prentis" rod and bearings to the Material Center for tests before final approval for the use of these rod and bearings for engine controls is given.
- h. In accordance with the new winterization program, it is desired that the Contractor investigate the matter of providing for tight closing of the gap between cowl flaps and the cowl. It is requested that a proposal on this matter be submitted. In this connection, consideration will be given to temporary provisions for tight closing of this gap for extremely cold weather operations, in the event that it is impracticable to provide for tight closing of the gap in the regular flap design as a result of interference between the exhaust stacks and the cowl flaps.
- i. It appears that the vertical partition in the oil cooler duct for supplying cooling air to the generator under ram will be subject to icing. It is understood that the Contractor will conduct tests to determine if sufficient generator cooling can be obtained without this partition in the oil cooler duct and if so it should be eliminated.
- j. The Air Force type B-6 hydraulic pump should be used in lieu of the Pesco No. 349 hydraulic pump now installed in the XA-26 airplane.
- k. The installation of the cowling on the XA-26 airplane was considered to be difficult and to require two or more men to accomplish. In this connection, it is understood that the Contractor will investigate the matter of installing the cowl fastener hooks and the dowel pins on the upper half of the cowling and of providing means for fastening the upper half of the cowling to the engine in order that the entire cowling can be installed by one man. It is also understood that the Contractor will investigate the need for cowl rubbing strips on the cowling supporting rings. In the event that service on the XA-26 airplane indicates considerable

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wear and chaffing on the cowl support rings, the above mentioned wearing strips should be provided for production airplanes.

1. Autosyn instruments shall be eliminated and standard type instruments provided in lieu thereof.

3. Propeller Installation.

- a. The capacity of the alcohol tank for the propeller de-icing system should be 7 gallons, however, it is understood this 7 gallon capacity will be incorporated as part of the alcohol system on the subject airplanes for propeller, carburetor and windshield de-icing.

4. Electrical Equipment Installation.

- a. The Contractor shall make a study in regard to isolating the generator voltage regulators and certain of the turret electrical units now located in the bomb bay in order to eliminate the fire hazard which would be present when fuel tanks are carried in the bomb bay.
- b. The Contractor shall provide 2 Type 1-9A switches for the position lights, one for the wing tip lights and the other for the tail light, in order to permit the tail light to be used as a resin light.
- c. The cockpit lamp should be installed above the radio controls instead of below them in order to improve the illumination of the radio dials.
- d. The cockpit lamp mounted on the center control pedestal should be relocated in order to avoid damage from personnel stepping on it.
- e. The emergency alarm bell shall not be actuated through the ignition switch in order to permit ringing the bell in the event the master ignition switch is turned off.
- f. Manual cranking of the engine starters shall be provided in order to permit personnel to engage the starter when hand cranking the engines.

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- g. A handle on the bottom of the battery supports shall be provided to facilitate pulling the batteries down on the tubular supports for servicing.
- h. The solenoid switches in the engine nacelles shall be installed with the large terminals in the up position in order to prevent the switches from closing in case the springs should fail.
- i. It is desired to eliminate the bomb formation signal lamp rheostat and to provide a Type B-3A switch with a fixed resistor. This is to conform to latest A.A.F. requirements.
- j. It is desired that the landing gear warning horn release relay be connected so as to permit the pilot to silence the horn with either or both throttle levers in the closed position.
- k. It is desired that two landing lamps be provided instead of the one now specified. This desired in conformity with latest A.A.F. requirements.
- l. An insulating material which will be satisfactory at low temperatures shall be provided over the aluminum bus bars and electrical terminals.
- m. Approved type circuit breaker switches in lieu of the present switches and fuses in the electrical system shall be provided where possible. Refer to Specification 32300 for these requirements.
- n. A starter hand crank and extension shaft to be carried in the airplane shall be provided.
- o. A dome lamp shall be provided in the pilot's compartment for general illumination.
- p. It is understood the Contractor will investigate a means for reducing the glare from the signal lamps in the pilot's cockpit for night flying.

5. Miscellaneous Equipment Installation.

- a. In regard to the disposable card board containers for crew relief, it is understood that the Contractor will provide plastic containers which cannot be readily removed from
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the airplane and that these plastic containers will be suitable for installation of disposable cardboard containers.

- b. It is desired that the Contractor furnish covers for the engines, propellers, windshields and windows for the subject airplanes. The engine covers should be in accordance with Specification 98-26751-E. This specification provides for covers with two 4 inch diameter sleeves for attaching to the hot air duct from standard ground heating units. One sleeve is for the engine proper and the other for the accessory compartment. In this connection, the Contractor should provide a 4-1/4 inch diameter opening in the engine accessory cowling to admit heat from a ground heating unit. This type of engine cover is desired in connection with winterization requirements.
- c. A container to hold a standard Army Medical Corps first aid kit shall be provided accessible to the crew.
- d. The hydraulic supply tank is difficult to service in its present location. It is understood that the Contractor will investigate possible relocation of this tank.
- e. It appears that the fuel tank filler cap covers may be susceptible to freezing in cold weather and thereby be difficult to remove. It is understood that the Contractor will investigate this matter and either redesign the method of attaching these covers or offer substantiating evidence that they will operate satisfactorily under all weather conditions.
- f. The retaining straps for the gunner's seat in the pilot's compartment should be replaced by a more substantial hatch.
- g. It appears that the two rear heater exhaust ports are so located that are liable to smudge the AAF insignia on the right hand side of the fuselage. It is understood that the Contractor will investigate this condition in flight and make such revisions as may be necessary.
- h. Flexible hot air ducts shall be provided for spot defrosting the inside of the pilot's windshield, side windows and the gunner's windows.

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1. Provisions shall be made to heat the gunner's compartment in the gun turrets from a ground heating unit.
1. The alcohol supply filler tank opening is so located and constructed that dirt can fall into the tank when the filler cap is removed. In the event that the present tank is retained in the production airplane this condition should be corrected. However, in connection with winterization requirements for these airplanes, it is understood that a larger alcohol tank will be provided which will be located in the compartment aft of the rear gunner's compartment. This item will be discussed in a separate letter.

6. Aircraft Structure.

- a. A cover shall be provided over the control pulleys aft of the pilot's seat to eliminate the possibility of articles dropping into and fouling the controls.
- b. The pilot's seat shall be made lockable in all positions.
- c. A placard shall be provided for the operation of the landing gear and wing flaps.
- d. The cockpit sliding window locks shall be revised to increase their serviceability.
- e. A spring loaded catch for retaining access door into bomb bay in the up position shall be provided in lieu of straps with glove fasteners.
- f. It is desired that the method of attaching the safety belt on the gunner's seat be improved to eliminate the necessity for the belt to be in a special position before the seat can be raised.
- g. The use of the rubber bungee in the nose wheel retracting system should be eliminated.
- h. It is desired that rods instead of spring loaded cable actuated plungers for the actuation of the emergency escape hatches. Means for the external operation of the escape hatches shall also be provided.
- i. It is understood the Contractor will relocate the electrical switch panel above the pilot's head to provide as much clearance as possible.

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- j. It is understood that the Contractor will submit a proposal for a ring to be installed on the shock struts to provide for both forward and backward towing of the airplane.
- k. The Contractor is requested to submit a mooring diagram.
- l. More rigid attachment fittings for the wing flap hinge covers shall be provided.
- m. Leveling brackets on the fuselage shall be provided.
- n. The clearance between the main landing gear shock struts and the center enclosure door hinges should be increased.
- o. Adequate protection for the control pedestal shall be provided against dirt and mud thrown up by the nose wheel.

7. Radio Installation.

- a. Provisions shall be made for the installation of the SCR-595 radio in lieu of the SCR-535.
- b. The mast for the SCR-595 radio shall be located on the bottom of the horizontal stabilizer.
- c. The indicator lights for the SCR-595 radio shall be located in the vicinity of the receiver unit.
- d. An "On-Off" switch for the SCR-595 set for use of the pilot shall be provided.
- e. An emergency switch for the SCR-595 radio adjacent to the "On-Off" switch position for use of the pilot shall be provided.
- f. A short mast in a further forward position shall be provided for the SCR-515 radio in place of the present 18 inch mast.
- g. A third transmitter, BC-696, for the SCR-274 radio shall be installed underneath the present transmitters.
- h. A FL-8 filter in place of the FL-5 filter and BC-345 switch box shall be provided.

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1. The BC-366 jack box at the pilot's position shall be relocated to provide for removal of the attached plugs.
1. The SW-181 button for the SCR-515 radio shall be relocated in the vicinity of the control box.

8. Photographic Equipment Installation.

- a. In view of the change from the bomber version to the attack and destroyer version in the airplane on the subject contract the camera installation in the bomb bay is not desired, however, it is desired that the hole in the bomb bay doors for the cameras be retained in the event that it should later be desired to install photographic equipment in the bomb bay.
- b. The Contractor is requested to provide an orientation camera installation immediately aft of the rear turret access door with means for adjusting from rear oblique to vertical on the ground only. Provisions for the installation of the K-24, F-4 and E-21 cameras should be made. In this connection, representatives from the photographic laboratory at Materiel Center will be assigned to work with the Contractor on the details of the photographic installation, in view of the special nature of this installation. Certain of the detailed requirements were specified in the report of the photographic installation for the A-26 airplane, copy which was furnished the Contractor.

9. Armament Installation.

- a. It is understood that the Contractor will provide a de-icing system for the periscope windows for the gun sighting station.
10. The Contractor is requested to inform the Materiel Center of the action taken on the above comments.

For the Chief of Production Division:

O. R. Cook

O. R. COOK,
Colonel, Air Corps,
Chief, Production
Engineering Section.

cc - AAF Representative
AAF West. Dist. Suprv.
Contract Sec.
Exp. Engr. Sec.