AIRCRAFT CIRCULARS

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

No. 52

THE BOEING MAIL AIRPLANE

Washington
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THE BOEING MAIL AIRPLANE.*

The Boeing mail airplane is designed for operation on an air line where it is desired to carry both mail (express) and passengers in one airplane. It is powered with the Pratt and Whitney "Wasp" radial air-cooled engine.

There are two compartments for mail: one just aft of the engine section, and the other just forward of the pilot. The front compartment has a capacity of 25 cubic feet, the rear one of 36 cubic feet. The passenger compartment with the seat removed, has a capacity of 34 cubic feet, in case it is desired to use this for additional cargo space. Both mail compartments are metal-lined and are provided with hinged metal covers secured by large straps. The passenger cabin has a fixed metal ceiling.

The passenger compartment provides space for two passengers. There is a door in each side, the doors being provided with sliding safety glass windows. The cabin is furnished with comfortable leather cushions. Provision is made for forced ventilation and heating of the passenger compartment.

The gasoline supply of 100 gallons is carried in two tanks: one of 60 gallons capacity in the body just aft of the front

*Prepared by the Boeing Airplane Company.

mail compartment, and one of 40 gallons in the upper wing. In the event of the failure of the engine pump, the gasoline feeds by gravity from the wing tank, and the pilot is provided with a hand pump with which he can pump from the main tank to the wing tank.

The engine is equipped with an electric inertia starter. This starter is operated from the pilot's cockpit. An engine-driven generator and storage battery (the latter located just behind the firewall in the front mail compartment) provide the electric current for starting and lighting. Complete night flying equipment is provided, including a dome light in the passenger compartment. A pressure fire extinguisher, covering both engine and gas tank compartments, is controlled by the pilot. Hand fire extinguishers are provided in the passenger's cabin and pilot's cockpit.

The general characteristics of the airplane are as follows:

Weight, with 100 gallons gas and 1600 lb. payload	5700 lb.
Wing area	545 sq.ft.
Span	44 ft. 2-1/4 in.
Length (overall)	33 ft. 3-3/16 in.
Height	11 ft. 7-1/2 in.
Chord of wings	6 ft. 7 in.

Engine, Pratt & Whitney "Wasp" 410 HP., at 1900 R.P.M.

Propeller, "Hamilton" - forged duralumin blades, adjustable on ground, diameter 10 ft.

Characteristics (Cont.)

Wing loading	10.3 lb./sq.ft.
Power "	13.7 lb./HP.
Normal payload per HP.	3.9 lb./HP.

Performance

High speed at ground	130 M.P.H.
Stalling speed at ground with full load	54 "
Rate of climb at ground	770 ft./min.
Climb to 10,000 ft.	19.5 min.
Service ceiling . . .	15,000 ft.

This airplane is constructed to meet the factors of safety required by the U. S. Department of Commerce.

The wings are of the simplest wood and wire construction, the spars being of solid spruce, routed for lightness wherever possible. The external bracing is streamline duralumin struts and streamline wire. The wings are covered with fabric.

The body is of steel tubing with welded joints, with steel tie rods for diagonal bracing.

The rudder, fin and elevator are of steel tubing with welded joints. The stabilizer is of simple wood construction. All are fabric covered. The stabilizer, braced with streamline steel struts and streamline wire, is adjustable in the air from the pilot's cockpit. The fin may be adjusted on the ground.

The split axle type of landing gear is of streamline steel tubing. The shock absorbing device is the well known Boeing oleo unit. The shock absorber is the familiar rubber cord. The 36 × 8 wheels are provided with brakes, mechanically controlled by hand from the pilot's cockpit. The brakes may be controlled individually (for steering on the ground) or together for braking in a straight run. The tail skid swivels and can be made steerable.

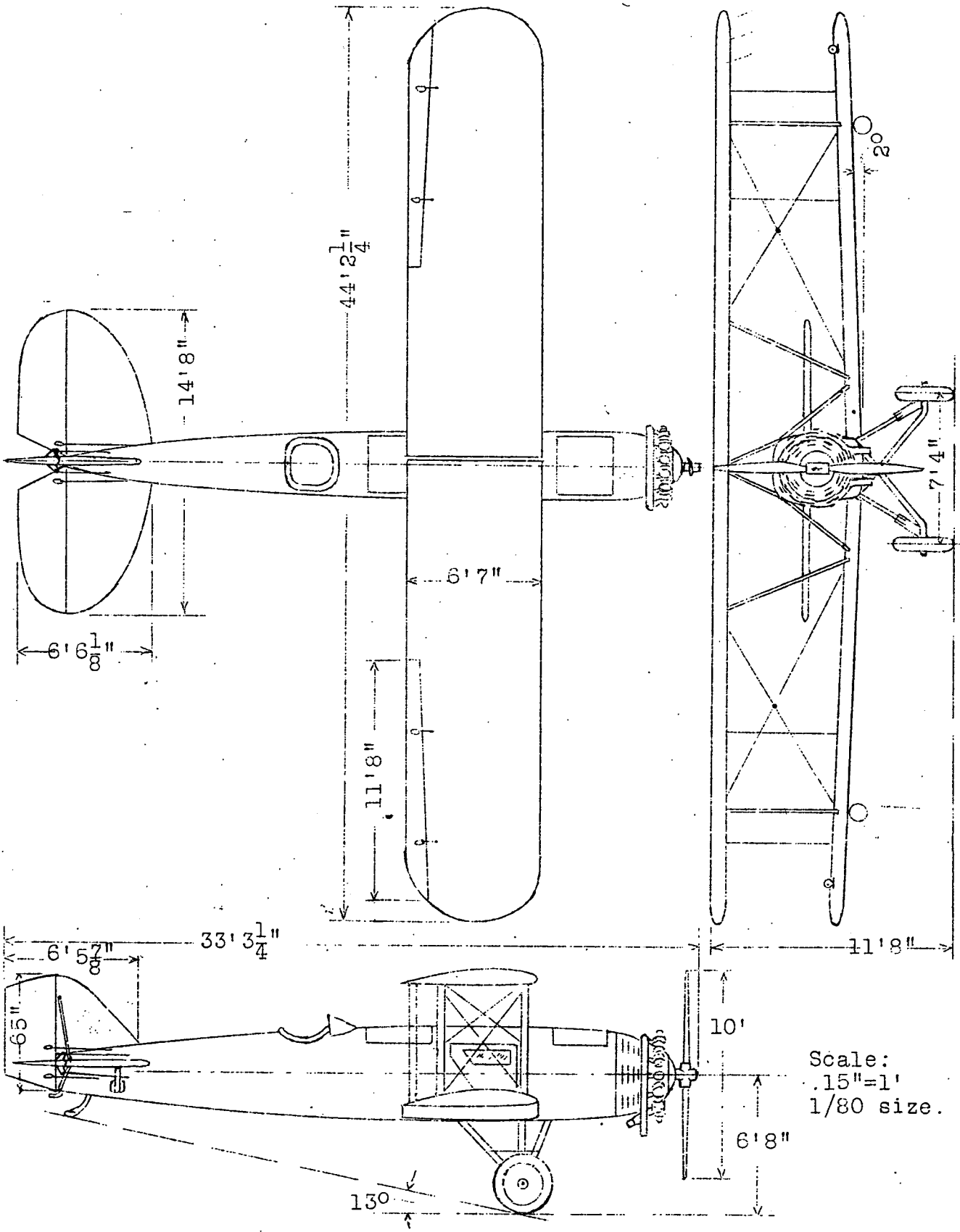

Fig.1 The Boeing Mail airplame

Fig.4 Unloading cargo from front compartment of Boeing Mail airplane

Fig.2 Side view of Boeing Mail airplane

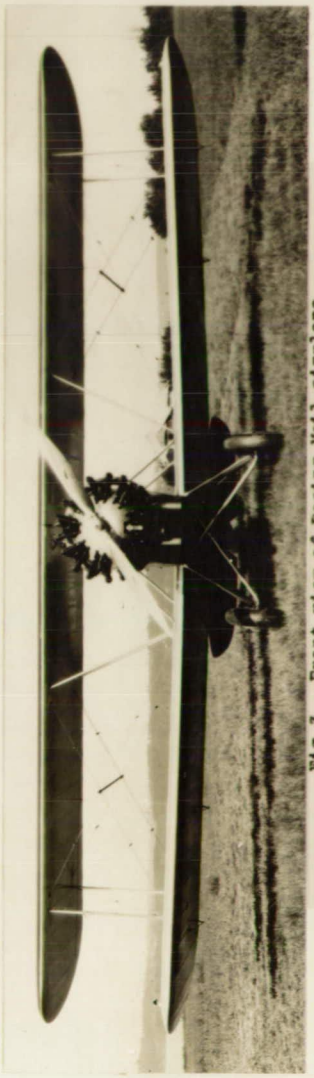

Fig.3 Front view of Boeing Mail airplane

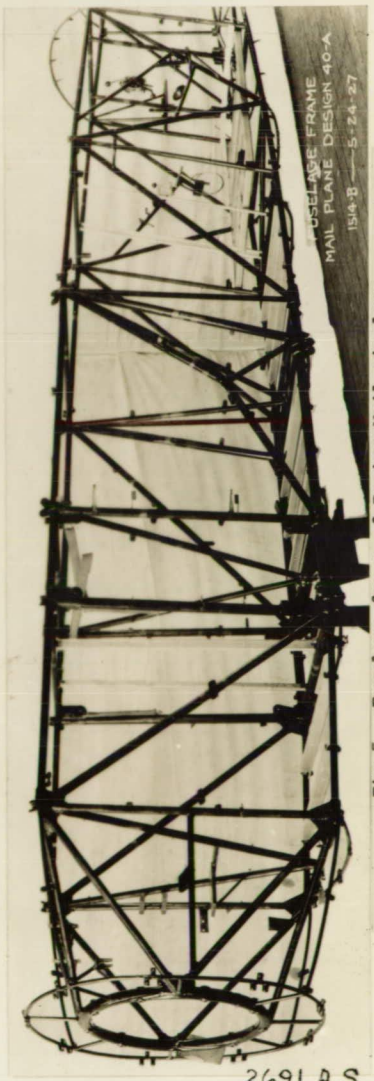

Fig.5 Fuselage frame of Boeing Mail airplane

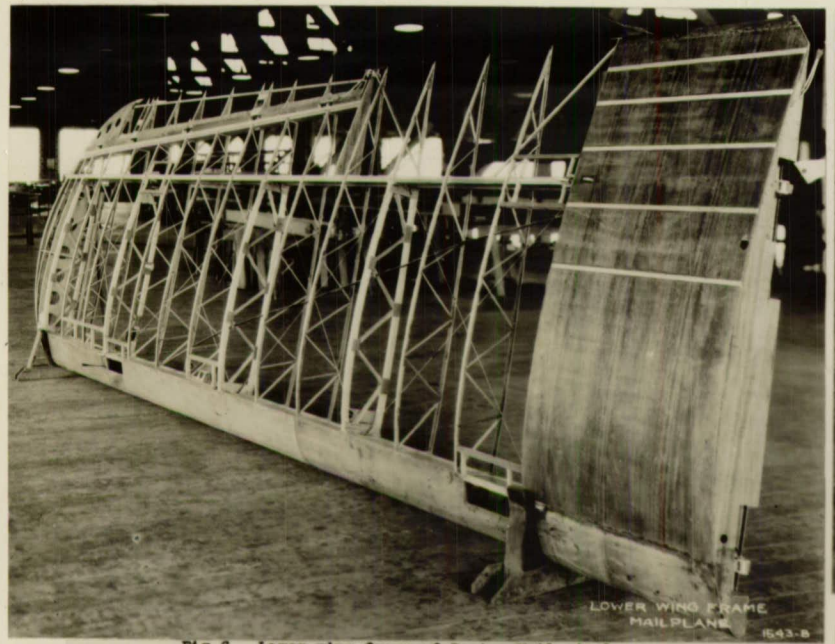

Fig.6 Lower wing frame of Boeing Mail airplane

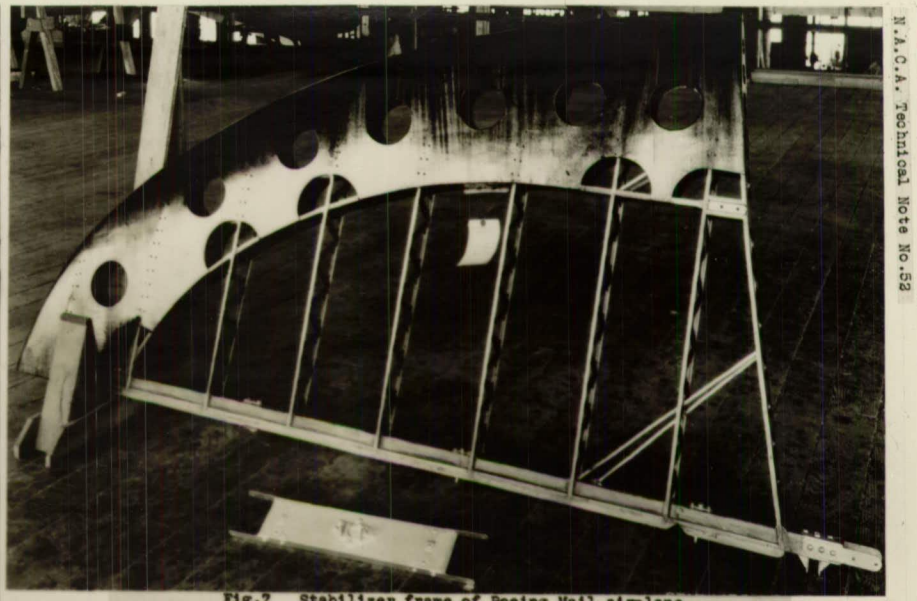

Fig.7 Stabilizer frame of Boeing Mail airplane

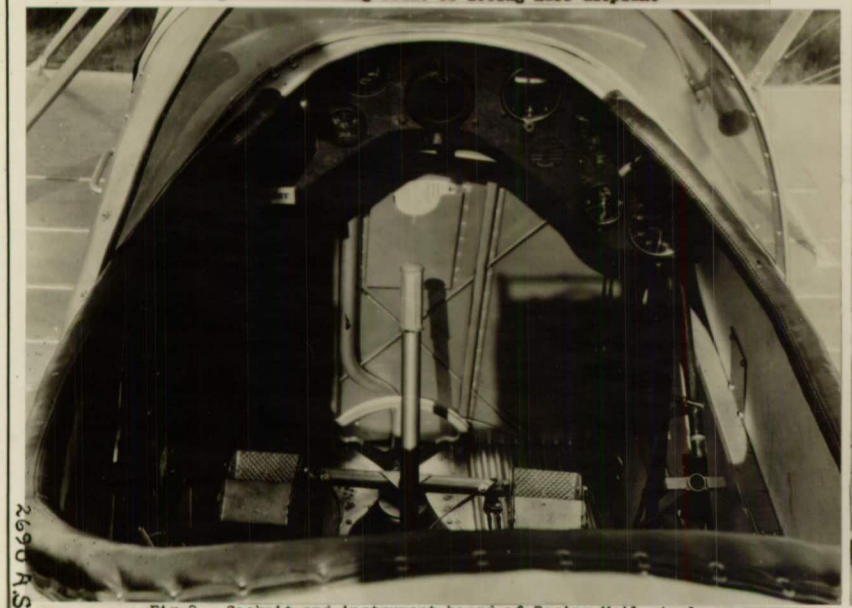

Fig.8 Cockpit and instrument board of Boeing Mail airplane

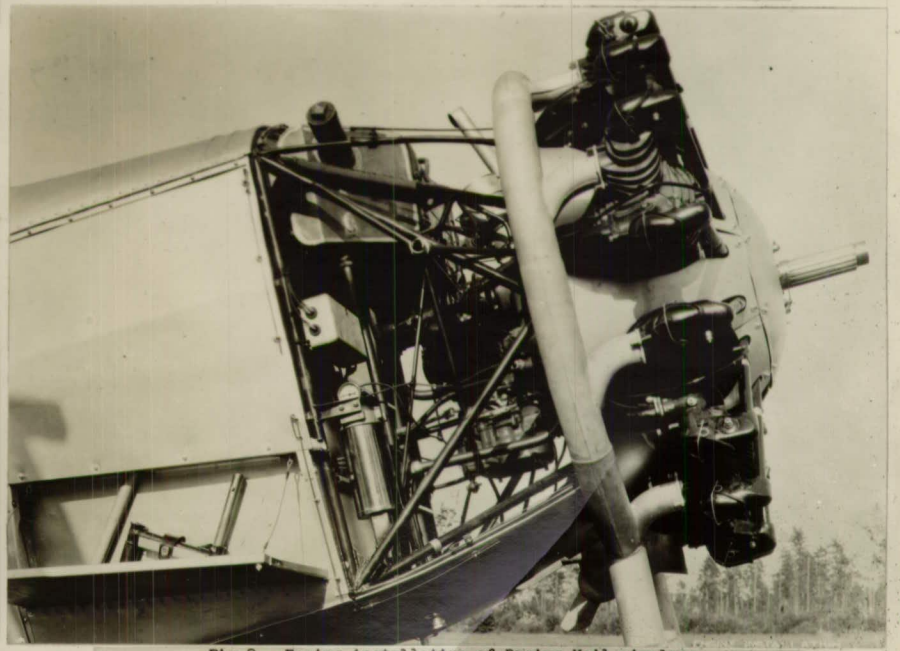

Fig.9 Engine installation of Boeing Mail airplane