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ARMY AIR FORCES
MATERIEL ~~ENGINEER~~ COMMAND

MEMORANDUM REPORT ON
Grumman Fighter P4F-3, No. 25820

Date 26 August 1943

SUBJECT: Pilot's Comments

SECTION Flight

SERIAL No. Eng-19-1640-A

Contract No. _____
Expenditure Order No. 17503-25820
Purchase Order No. _____

A. Purpose

1. To obtain pilot's comments on the P4F-3 Grumman fighter No. 25820.

B. Factual Data

1. Cockpit Layout

The cockpit arrangement in general is good. The inclined electrical panel arrangement is good, however, the engine instrument panel could be positioned for better view. The grouping and type of controls is good but there is interference between the cowl flap and intercooler flap controls and the arm rest. The trim tab controls are difficult to reach because of interference due to their being positioned too low in the cockpit. The normal egress and exit as well as emergency exit are considered satisfactory.

2. Taxing and Take-off

The visibility in taxiing is excellent and the airplane is much easier to taxi than most swiveling tail wheel airplanes. The landing gear action on the ground is greatly improved over the P4F series. The brakes are entirely satisfactory and ground cooling is apparently adequate.

Take-off distance is short and the initial climb is steep with excellent visibility in the climb. Torque tendencies are moderate and are easily corrected. Retraction of the gear is smooth and fast and the change in trim is easily corrected. The cowl flaps cannot be stopped evenly in intermediate positions. No noticeable buffeting is caused by opening the cowl flaps.

3. Climb and Level Flight

The visibility in climb is good and in level flight is excellent. The indicated rate of climb at low altitude is approximately 3000 feet per minute at 2700 R.P.M. and 52 inches Hg. manifold pressure.

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Archives of M. Williams

Flight Test Branch
Memo Report Eng-19-1640-A
26 August 1943

The indicated speed at 2500 R.P.M. 39 inches Hg. manifold pressure (rated power) at 7500 feet pressure altitude in neutral blower was 200 knots with intercooler and oil cooler shutters wide open.

In neutral blower at 5500 feet, 2250 R.P.M. and 32 inches Hg. manifold pressure the indicated speed was 192 knots with intercooler and oil shutters closed. Opening the shutters causes a half inch Hg. manifold pressure loss and reduces airspeed to 180 knots and in addition creates a tail heavy condition.

There is excessive engine vibration throughout the operating range of R.P.M.'s. This is made noticeable by vibration of the rudder, stick and instrument panel.

Trimming the airplane for level flight requires several readjustments after setting each control. There is a slight directional hmt in smooth air which becomes pronounced in rough air.

4. Handling Throughout Speed Range

At stalling speed the controls are very light and the ailerons are ineffective with a large dead spot. At climbing speeds and cruising speeds the controls are effective and well coordinated and the control forces are satisfactory. At speeds above 200 knots the ailerons become heavy, above 250 knots they are very difficult to move, and above 300 knots they are almost impossible to move. Their effectiveness decreases markedly as the force increases.

5. Trim and Stability

The trim tabs are sufficiently powerful. Elevator trim is ample for all conditions and is very sensitive. Rudder trim is satisfactory in all conditions except climb at full power at 125 knots where it just suffices. Lateral trim is satisfactory.

At rated power the airplane is directionally and longitudinally stable although the dampening is very slow. Laterally, the airplane is neutrally stable.

Lowering of the gear and flaps make the airplane nose heavy but there is ample trim tab to counteract this condition.

6. Stalls and Stall Warning

In a clean condition stall there is very little stall warning with the stall occurring at 65 knots indicated power off, the airplane falling off slightly either way. Power on (2200 R.P.M. and 30 inches Hg. manifold pressure) the stall occurs at 60 knots indicated accompanied by a slight buffet warning.

With the wheels down alone there is no difference in the stall and the opening of cowl flaps also produces no stall differences.

With wheels and flaps down the airplane stalls at 52 knots indicated power off and with 2400 R.P.M. and 30 inches Hg. manifold pressure, the stall occurs at 45 knots indicated.

6. Instrument and Night Flight

The instrument flying qualities of the airplane are very good and the arrangement of the flight instruments is satisfactory. The visibility for night flying is good and there is no objectionable glare from cockpit lighting.

7. Approach and Landing

The visibility in the approach is very good in a power glide at a recommended airspeed of from 80 - 85 knots indicated. Without power the glide is steep and the visibility excellent, the recommended speed being 85 - 90 knots. The flaps tend to make lateral control a little sluggish but still satisfactory.

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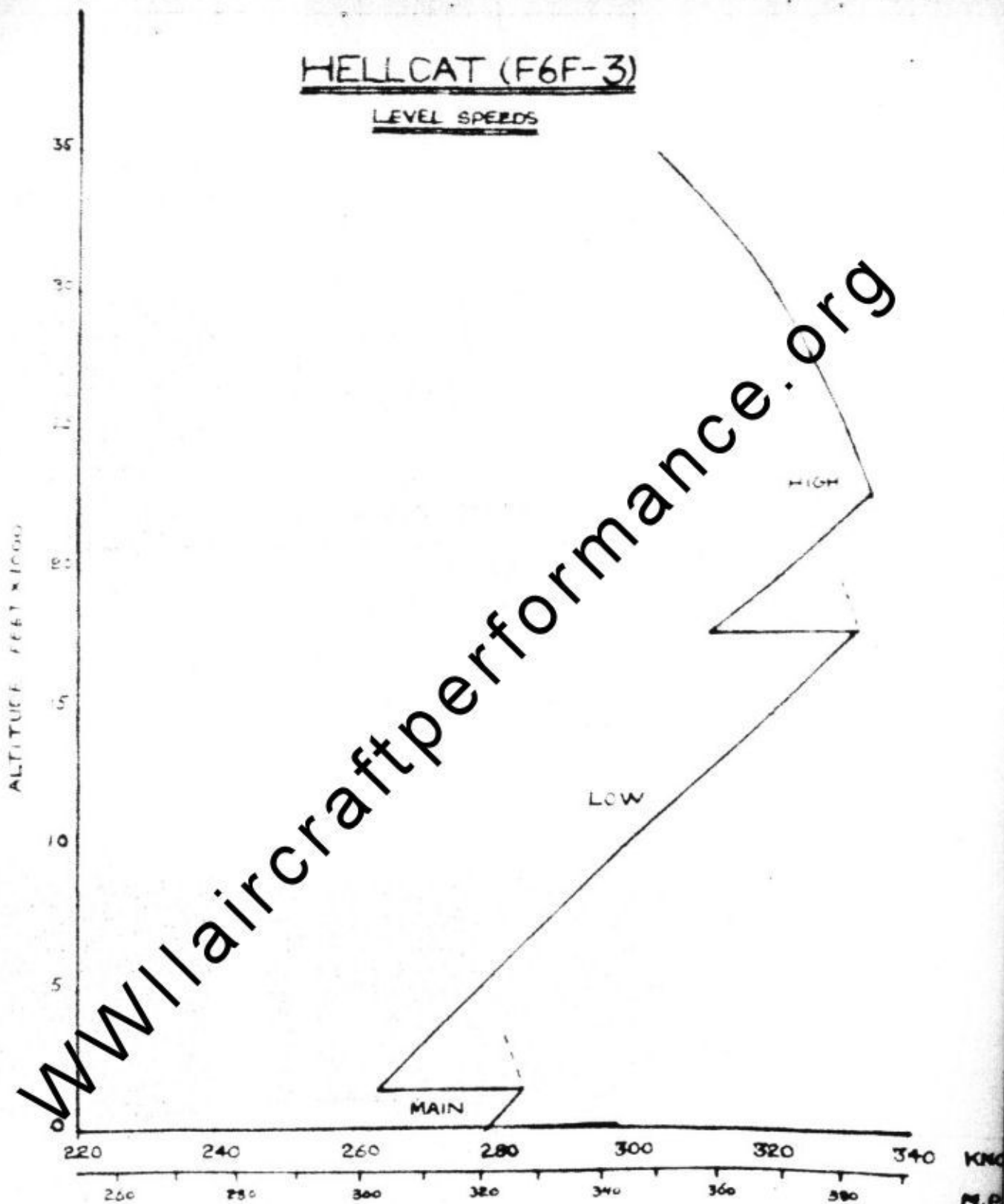
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HELLCAT (F6F-3)

LEVEL SPEEDS



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