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ARMY AIR FORCES
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MEMORANDUM REPORT ON

Halifax British Bombardment Airplane

SLS/mac/47

Date 8 December 1943

SUBJECT: Pilot's Comments on Halifax British four-engined Bombardment Airplane.

SECTION Flight

SERIAL No. Eng-47-1658-G

Contract No.
Expenditure Order No.
Purchase Order No.

A. Purpose.

To submit pilot's comments on the Halifax British four-engined bombardment airplane.

B. Factual Data.

1. Introduction.

The Halifax II, JD-504, with Merlin XX engines and the Halifax III, HX-227, with Hercules engines were flown by two Flight Section pilots at the A & AEE, Boscombe Down. The Handley-Page Halifax is a standard four-engined night bomber now in tactical use.

2. Weight and Center of Gravity Information.

These airplanes were flown at approximately the same gross weight of 33,000 lbs. with normal c.g. location.

3. Flight Characteristics.

The flight characteristics on the two models were found very similar and are described jointly, the main point of difference being that the newer Mark III has more powerful engines and consequently, correspondingly improved performance.

a. Cockpit Layout.

This is a single pilot airplane just as the other RAF four-engined bombers are. A flight engineer's panel is installed behind the pilot. Duties seem to be very cleverly divided between the two in that the pilot is solely concerned with flying the airplane which is as it should be for night missions and details such as starting, stopping, fuel system operation, engine functioning, and coolant or cowl flap operation and emergency system operation have been left to the flight engineer. The blower shift controls have been simplified by using just two blower controls for the four engines, one control serving the inboard and the other the outboards. The throttles were found to be very stiff.

b. Taxiing and Ground Handling.

Taxiing and ground handling on grass were quite satisfactory. The airplane can be maneuvered well with just the outboard engines. No tail wheel lock is provided. The air brakes were adequate. Vision was good.

c. Take-off and Initial Climb.

Take-off run using the recommended 30 degrees of flaps was short but the initial climb was poor on both models. Vision for these conditions was good.

d. Climbs.

Indicated cooling in the climb at an IAS of 140 seemed sufficient. Rate of climb was poor. Vision was good.

e. Handling and Control at Various Speeds.

These items were checked over the speed range up to 250 IAS. At the lower speeds the elevator and rudder effectiveness are good and the forces moderate; the ailerons are effective but the control loads are heavy. In the high speed bracket, rudder and elevator loads increase but remain reasonable while the ailerons are still much too heavy.

f. Trim and Stability.

For this loading condition, the trimmer tabs were adequate. A rated power stability check was made and the airplane found to be statically and dynamically stable longitudinally, laterally, and directionally.

g. Stalls and Stall Warnings.

Power off stall in the clean condition was at 100 IAS. Stall with wheels and flaps down was at 80 IAS. Both stalls were of a similar nature, the elevator load increases greatly and the nose drops with a gently pitching motion. There is no tendency to fall off on a wing at the stall.

h. Maneuverability.

Maneuverability was considered only fair, the control loads being a limiting factor.

i. Control on Reduced Number of Engines.

With the two right engines windmilling, it was found that the airplane could be trimmed down to about 150 IAS. Below that speed, control loads were excessively heavy.

j. Changes in Trim When Operating Landing Gear, Flaps, etc.

Trim changes with operation of landing gear and flaps were normal and easily counteracted by trimmer controls.

k. Noise and Vibration.

Noise and Vibration were not excessive.

l. Comfort.

Pilot's comfort was satisfactory although an arm rest would be desireable.

m. Vision.

Vision was very good both in clear weather and in rain. The high windscreen and adequate vertical seat adjustment contribute toward this.

n. Approach and Landing.

The approach is normal with visibility remaining good. The landing is quite nice although the elevator controls become very heavy. Ground roll is relatively short.

4. General Functioning.

On both the Merlin installation and the Hercules installation, the power plants and associated equipment functioned properly at all times.

5. Performance.

Performance figures are available to authorized personnel at the Flight Test Branch. A four view picture of the Mark II Halifax accompanies this report.

It is of interest to note that recently several airplanes of this type have encountered severe rudder lock troubles while using side slip maneuvers for evasive action. Investigations at Farnborough reveal that other large aircraft are likely to get into trouble if similar maneuvers are resorted to.

C. Conclusions.

1. The Halifax has been a very useful night bomber although its mediocre performance limit it somewhat, high speed and operating altitude being on the low side.

2. At the high gross weights that these airplanes are now called upon to operate at, the additional power available in the Mark III amounts to a considerable improvement over the previous models.

D. Recommendations.

None

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