

HEADQUARTERS
AFR [REDACTED] COMMAND
WRIGHT FIELD, DAYTON, OHIO

TSFTE/RM/cja/2-6275

MEMORANDUM REPORT ON
The HE-162, AAF No. 489.

Date 25 September 1946

SUBJECT: Pilot's Comments and Handling Characteristics
of HE-162.

OFFICE TSFTE

Contractor Order No. by authority of CG, RM

SERIAL No. TSFTE-2024

Expenditure Order No.

UNCLASSIFIED
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Capt USAF*

A. Purpose

To forward pilot's comments on handling characteristics of the HE-162.

B. Factual Data

1. Introduction:

The German HE-162 is a single-place shoulder wing monoplane. The power plant consists of one turbo-jet, type BMW 109-003-S-2, which should produce a sea-level static thrust of 1,760 lbs. at 9,500 rpm. However, the turbo-jet used would only produce 1,600 lbs. of thrust during the ground block test at sea-level.

Two flights, totaling fifty-five minutes, were made by the flight test pilot, to determine its handling characteristics and obtain pilot's comments.

2. Weight and CG Information:

Flights were made with a take-off weight of 5,940 lbs. and a CG location of 21.98% M.A.C.

3. Flight Characteristics:

a. Cockpit Layout: The cockpit of the HE-162 has ample space to accommodate the pilot. Entry to the cockpit is made by the use of a slot step on the left side of the fuselage.

The pilot's seat is of the ejection type and is not adjustable.

All engine and flight instruments are located on a panel in front of the pilot slightly below eye level. The landing gear up lever, stop-cock and throttle are all located on the throttle quadrant on the left side of the seat. The down release for the landing gear is located just above and in

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front of the throttle. The location of the flap handle is on the left lower section of the front instrument panel; the command radio, starter motor switch, adjustable tail cone selector and electrical circuit breakers are all on a control panel at the pilot's right side.

b. Taxing and Ground Handling: Taxing and ground handling of the airplane is somewhat difficult due to very poor directional control and slow acceleration. Excessive use of the brakes, which are very weak, is necessary because of the narrow wheel tread. Visibility for taxiing is excellent.

c. Take-off and Initial Climb: The take-off characteristics are very poor due mainly to the slow acceleration of the airplane. The take-off run on both flights required approximately two and one half miles of ground roll. The normal take-off procedure, German scientists advised, was with jet assistance. Directional control is not difficult to maintain, however, lateral control is very poor below 140 mph. This results in the dropping of a wing after which full opposite aileron can be applied with little effect. The initial climb is very poor, less than 1,000 ft/min. The gear and flaps, which retract quite rapidly, change the longitudinal trim very little after take-off.

d. Climb: The HE-162 has a very slow rate of climb. However, it has no adverse effect on control or vision.

e. Handling and Control at Various Speeds: The controls are fairly effective at most speeds, except during take-off before 105 mph has been attained. However, aileron control does not become effective until approximately 140 mph.

f. Trim and Stability: Trim changes are easy to accomplish with the exception of the ailerons which could only be adjusted on the ground. Ample trim control is provided by rudder and stabilizer trim devices located on the panel to the pilot's left and on the left wall of the fuselage above the panel.

The HE-162, as near as could be determined by pilot observations, was found to be longitudinally and directionally unstable at speeds above 300 mph, however, due to trim discrepancies of the ailerons it was impossible to determine the actual stability of the airplane.

g. Stalls and Stall Warning: The airplane has an abrupt stall characterized by relatively little warning before the stall and by an abrupt pitching moment following the stall; recovery from stalls in any configuration is very slow. Approximately 10,000 ft. was required to recover from a climbing stall.

h. Maneuverability and Aerobatics: In general, the HE-162 was found to be quite maneuverable. No aerobatics were attempted, however, it was evident that the airplane had a good rate of roll and a relatively short turning radius.

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i. Changes in Trim When Operating Landing Gear, Flaps, etc.: The trim changes resulting from the operation of landing gear and flaps or changes in power are not excessive; the rudder and stabilizer trim controls provided are adequate to restore the airplane to a fairly stable trim condition.

j. Noise and Vibration: The noise level of this airplane is comparable to other single jet planes.

An excessive amount of vibration was noticed in both the rudders and wing tips at speeds above 350 mph.

k. Comfort: In general, the pilot experienced no discomfort in operating the airplane. Ample shoulder, head and leg room is provided.

l. Vision: Vision is reasonably good in all directions.

m. Approach and Landings: This airplane displays poor power off approach characteristics in that its angle of descent with power off is so great that a complete flare cannot be accomplished at normal approach speeds. It was found that by using seventy-five percent rpm throughout the approach and a very shallow flare just before touching down, good landings could be made.

After landing the pilot has very little control, but the airplane has no tendency to change its directional heading, although it will drop one wing and then the other which is believed due to faulty landing gear struts.

4. General Functioning:

a. Power Plant and Associated Equipment: The BMW 109-003-E-2 engine functioned well throughout both flights, however, some difficulty was encountered in starting the engine for the second flight.

The adjustable tail cone was operated without an appreciable change of airspeed.

It was noted that the operation of the engine governor was very satisfactory in that once a power setting was established it would maintain that rpm with increase in altitude without changing the throttle setting as is normal for other jet engines.

b. Hydraulic, Pneumatic and Electric Systems: Operation of the hydraulic landing gear system was very satisfactory, however, the hydraulic brake system was unsatisfactory.

All electric systems functioned properly.

c. Emergency Systems: An emergency handle is provided to jettison the canopy and a release handle on the ejection seat. The seat was not chared during these flights.

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5. Performance:

None obtained.

C. Conclusion:

1. The HE-162 does not meet the performance indicated in captured German reports possibly due to age and maintenance condition of the article tested.

D. Recommendation:

1. In view of information obtained and the relatively unsatisfactory performance of this airplane no further tests are recommended.

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