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INTER-OFFICE MEMORANDUM

WAR DEPARTMENT, AIR CORPS
Office, Assistant Chief
Materiel Division

WHT/irz/70-3
Wright Field, Dayton, Ohio
Date October 3, 1942

TO: Chief, Experimental Engineering Section
Wright Field
Attention: Aircraft Laboratory
Mr. Abzug

SUBJECT: P-51 and Mustang Airplanes
Aileron Effectiveness

1. For your reference in connection with the forthcoming tests of ailerons on the XP-51 airplanes, we quote below a portion of the British seventh part of Report No. A. & A.E.E./781, dated August 13, 1942, and titled "Aeroplane and Armament Experimental Establishment, Boscombe Down, Mustang A. G. 351 and A. G. 383, Allison V1710 F-3-R, Handling Trials."

- a. "Special attention was paid to the effectiveness of the ailerons and rate of roll tests were carried out at 200, 300 and 400 m.p.h. A.S.I. No stick force indicator was fitted but the force on the control column is light enough for full aileron to be applied without undue effort. At 200 m.p.h. A.S.I., the aileron control was very light but the time to roll through 90° did not appear unduly fast, due to the aircraft lagging considerably behind after applying full aileron as rapidly as possible. Times for a 90° roll were consistently between 1.8 and 2 seconds. At 300 m.p.h. A.S.I., the force on the control column still remained very light and the times to roll through 90° were identical. At 400 m.p.h. A.S.I. the force on the control column increased appreciably, though it was still possible to apply full aileron fairly rapidly without excessive force. Times for a 90° bank averaged 2.3 seconds.
- b. "All rate of roll tests were done at the normal load and were timed from 45° to port to 45° to starboard, using the left hand to push the control column. It is estimated that full aileron can be applied at 400 m.p.h. with a force of the order of 20 lb.

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- c. "The ailerons increase in heaviness as the speed increases, but they are still light at speeds up to 400 m.p.h. A.S.I. The rate of roll for full aileron is definitely much faster than on any other present day fighter so far tested at this Establishment."

W. H. Towner, Maj. a.c.
for O. R. COOK
Colonel, Air Corps
Chief, Production
Engineering Section

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