20th September, 1943.

D.H. MOSQUITO MK.VI (Merlin 25) HJ.679.

Tests carried out at Hatfield to check the Maximum Level Speed obtained in previous tests

Owing to a discrepancy between the speeds obtained on the above aircraft at Boscombe Down and at Hatfield, it was decided that further speed tests should be carried out at Hatfield.

The aircraft was collected from Boscombe Down on September 11th, and the first speed tests (Test 1) were carried out on the same day with the aircraft as received.

The test flight readings (corrected for instrument error) are given in Table 1, and the corrected results in Figs. 1 and 2.

The pilot collecting the aircraft complained that the ailerons were very heavy, and on examination it was found that they were rigged with 1½ inch droop.

The following alterations, adjustments and modifications were carried out before the next series of speed tests:-

Alterations, Adjustments and Modifications carried out on Mosquito HJ.679 by the Experimental Department, Hatfield, 11th - 17th September.

(1) Modification No.333 (Dropping of external wing bombs)

(2) Ailerons.

1½ inch droop, starboard differential setting incorrect, starboard tab ⅜ inch out of line with aileron trailing edge with ailerons neutral, excessive play in starboard aileron tab.

Ailerons re-rigged to correct settings, i.e. ¼ inch drop, starboard differential 26°, tab trailing edge and aileron trailing edge in alignment with ailerons neutral, connecting rod bolt of starboard aileron tab replaced.

(3) Radiator Flaps.

Closed position mean gap 2.1 inch:- adjusted to standard Merlin 25 setting, 1⅞ inch mean gap (as delivered to A & A.E.E.)

Excessive slackness on Port Radiator Flap:- worn jack bracket replaced.

(4) Gun bay doors fitting badly:- wood packing under hinge removed and reduced.

(5) Cowling.

Dzus fastener spring anchors to panels badly out of shape:- re-fitted and adjusted to seat on panels.

Panels distorted and fitting badly:- panels adjusted to give better fitting and better surface.

(6) Multiple ejector exhaust pipes.

Starboard outer No.3 ejector was of Merlin 61 type:- replaced by Merlin 21 type.

The second check tests (Test 2) were carried out on 17th September. The flight test readings (corrected for instrument error) are given in Table 2, and the corrected results in Figs. 1 and 2.

The Position Error used in the corrections is that obtained in the original test in April 1943, and is shown in Fig.3.

All the tests were corrected by the method given in A & A.E.E./Res/170.

Conclusions:

Both check tests (Tests 1 and 2) are substantially in agreement with the original Hatfield Tests (April 1943) - in point of fact the speed obtained in Test 2 is about 3 m.p.h. faster in F.S. Gear and about the same as the original tests in M.S. Gear, when allowance is made for the fact that external fuel tanks were not fitted in the original tests (April 1943).

It will be seen that about 3 m.p.h. in maximum speed was picked up due to cleaning up the aircraft between Tests 1 and 2.

All these tests show the speed obtained at Hatfield to be about 15 m.p.h. above that obtained at Boscombe Down.

TABLE 1. Test 1. 11th September, 1943. Test Flight Readings Corrected for Instrument Error

Condition of aircraft: Straight-through intakes - no snowguards.
External wing tanks.
Multiple ejector exhaust pipes.
Initial all-up weight 19,100 lb.
Aileron droop 1½ inches.
Mean Radiator Gap (closed position) 2.1 inches.

	Altitude feet.	Boost lbs./sq.in.		R.P.M.		Corrected Air Temperature degrees C.	Deviation from I.C.A.N. Standard air temperature.	A.S.I. m.p.h.
		Port	Starboard	Port	Starboard			
F.S. Gear	21,050	8.6	8.9	3000	3000	-22	+4.5	259
	19,100	10.4	11.0	↓	↓	-16.5	+6.5	271
	15,550	13.8	14.2	↓	↓	-10	+5.5	289
M.S. Gear	12,000	10.6	10.9	3000	3000	-3	+6	293
	10,000	12.5	12.9	↓	↓	+0.5	+4.5	303
	8,000	14.4	14.9	↓	↓	+4	+5	313
	6,000	17.4	17.2	↓	↓	+8	+5	325

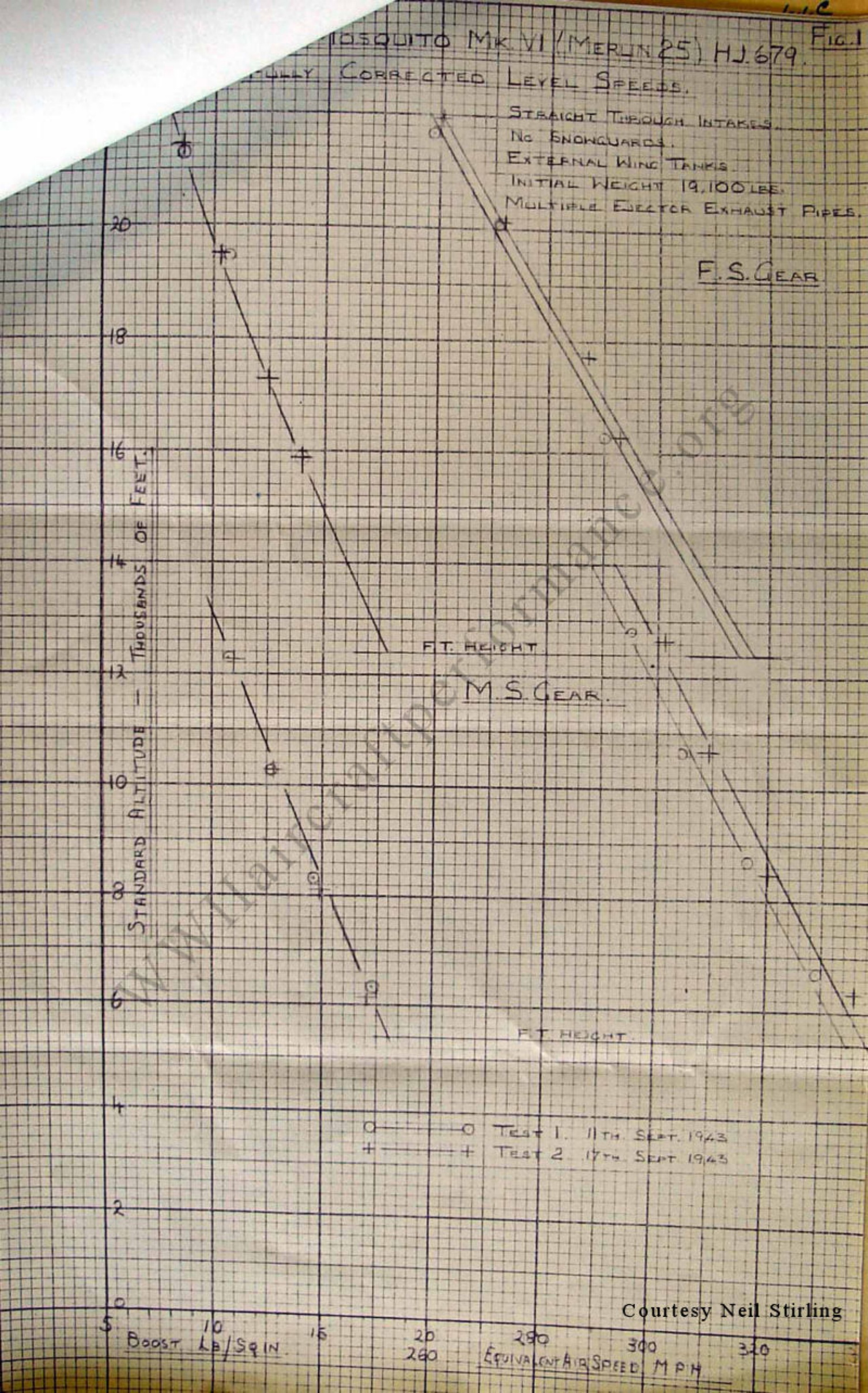
TABLE 2. Test 2. 17th September, 1943. Test Flight Readings Corrected for Instrument Error

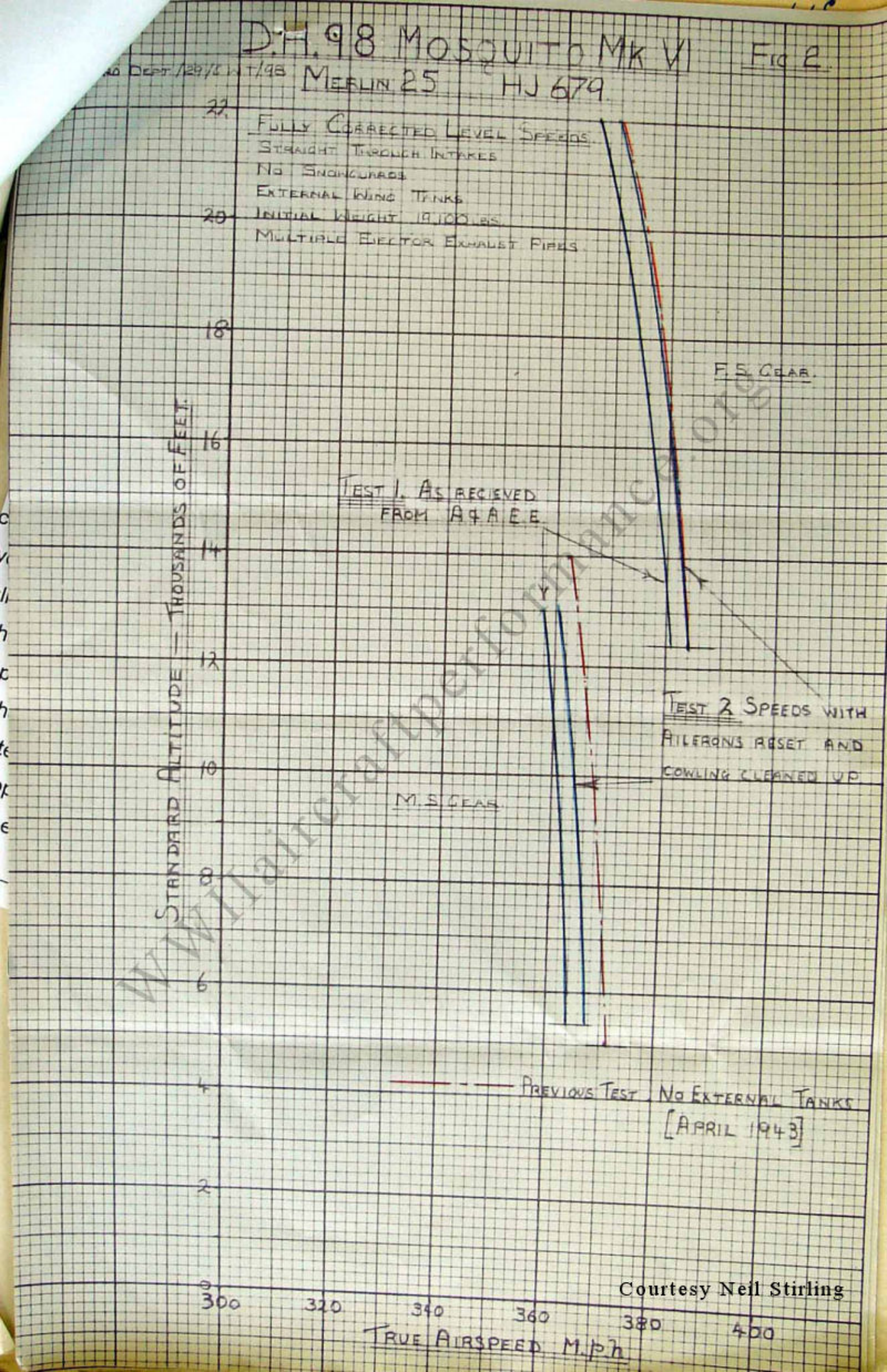
Condition of aircraft: As in Test 1 except for standard aileron and radiator flap setting. Cowlings etc. cleaned up.

F.S. Gear	21,030	8.6	8.7	3000	3000	-20	+6.5	261
	19,030	10.3	10.5	↓	↓	-15.5	+7.5	272
	17,000	12.3	12.7	↓	↓	-13	+5.5	286.5
	15,500	13.8	14.2	↓	↓	-10	+5.5	292
M.S. Gear	12,000	10.9	11.1	3000	3000	-4.5	+4.5	299
	10,000	12.7	13.0	↓	↓	-0.5	+4.5	307
	7,940	14.8	15.1	↓	↓	+2.5	+3.5	317
	5,900	16.8	17.3	↓	↓	+6	+3	332

Note: The air temperature has been corrected for compressibility by the relation $\Delta T = -0.75 \times \left(\frac{V}{100}\right)^2$ where V is in m.p.h. True speed.

This correction has been determined by extensive tests for the position used. (i.e. at right angles to the fuselage, just forward of the cabin door).





D.H. Aero. Dept./29/G.W.T./98.

Fig. 3.

D.H. 98 Mosquito F. Mk VI. Merlin 25 – HJ 679

Position Error Determination by the Aneroid Method.

Static Hole in the Standard Fighter Position

Date of Test – 18.4.45