17th Part of Report No. A. & A.E.E./783

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AEROPLANE AND ARMAMENT EXPERIMENTAL ESTABLISHMENT

BOSCOMBE DOWN

This report deals with the aircraft (or equipment) as tested. Action to remedy defects or decisions to accept items not in strict compliance with the specification are matters for decision and action by the Ministry of Aircraft Production.

Kittyhawk I. A.L.229 & A.K.572. (Allison V-1710 F.3.R.)

Handling trials

A.& A.E.E.ref.- 4481/1 - A.S.76/3.
M.A.P.ref:- R.A.1871/D.A.N.A.I.
Period of Tests:-February to August, 1942.

Progress of issue of report

Report No.	Title
12th Part of A.& A.E.E./783.	A.K.572 & A.L.229 - Engine cooling trials.
13th do.	A.L.229 - Gun heating tests.
14th do.	A.L.229 - Level speed measurements with flame damping exhausts fitted.
15th do.	A.L.229 - Weights and loading data.
16th do.	A.K.751 - Handling and performance with a Hyduligum propeller.

1. Introduction.

This report deals with flying experience gained on a number of Kittyhawk I aeroplanes tested at this Establishment, but chiefly on A.K.572 and A.L.229. Unless otherwise stated the remarks made apply equally to all the aeroplanes tested. Our comments on some of the features have been given in letter ref:- AAEE/4484/1 - A.S.76/3 dated 18th September, 1942 and AAEE/4481/Gen - A.S.76 dated 16th May, 1942. Brief comments have also been given in 1st Part of Report No. A.& A.E.E./783a - Intensive flying trials. This report is being issued for record purposes only.

2. Condition of aeroplane relevant to tests made.

A full description of the external details of A.K.572 has been given in 8th Part of Report No. A.& A.E.E./783 and of A.L.229 in 10th Part of Report No. A.& A.E.E./783.

The details given therein apply to the handling tests, although changes were made during the tests e.g. A.L.229 was fitted with multi fishtail flame damping exhausts towards the end of the tests and was flown both with and without the under-fuselage fuel tank. Where these modifications affect the handling characteristics, comments are made.

3. Layout of Cockpit.

3.01. Ease of entry and comfort. Entry to the cockpit is made by climbing on to the root of the port wing and thence into the cockpit. The step on to the wing is rather high, but is facilitated by a hand-hold on the side of the fuselage. Once on the wing, entry is simple.

The pilot's seat is comfortable and there is adequate room for a large pilot in full flying kit. The seat can be adjusted for height by a lever on the right of the seat; there is sufficient range of adjustment. The control column is placed too far forward relative to the seat and as a result it is not easy for the pilot to get full forward movement of the control column. The Sutton harness is satisfactory. A release lever for the harness is provided on the left of the seat, to permit the pilot to lean forward.

Either warm air for heating the cockpit, or cold air for ventilation can be admitted to the cockpit, the selector lever being below the electrical switch panel on the starboard side. The control operates satisfactorily. No cockpit heating tests have been made, but from flying experience it can be said that the cockpit is not quite warm enough under cold outside air conditions.

The results of Carbon Monoxide contamination tests have been given in 1st Part of Report No. A.& A.E.E./783.

The aeroplane is not unduly noisy.

3.02. View. The view forward in normal flight is good for a single engined fighter, but, in common with other single-engined fighters, is obstructed by the nose when taxying and taking-off.

The view to the rear through the transparent side panels is good, but the rear view mirror mounted above the windscreen is of little use.

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No direct-vision panel is fitted. There is a gap between the windscreen and the bullet proof internal screen, through which hot air can be passed for windscreen de-icing. No icing up of the windscreen was experienced.

3.03. Controls. The aileron and elevator operate without undue friction on the ground. It is not possible to assess the friction in the rudder control, as the tail wheel is steerable from the rudder. Full movement of the rudder and aileron can be obtained by the pilot, but full forward movement of the control column requires considerable forward stretch. The control column is of the single vertical grip type and incorporates a gun firing button and a button for operating the electric hydraulic motor. The rudder pedals are of pendulum type and have an adequate range of fore and aft adjustment.

The controls can be locked by wires running from the rudder bar and control column to the seat, preventing the pilot from sitting in the seat with the controls locked.

Trimmer tabs are fitted for the elevator, rudder and aileron. The elevator trimmer wheel is on the left of the pilot and is fitted with a crank handle for rapid operation. The position and operation of the wheel is satisfactory and there is no tendency for it to slip. The rudder trimmer is mounted just above the elevator trimmer with the axis of the wheel vertical. The control is easy to operate, but the gearing of the wheel is too low. Dials behind the wheels give the position of the tabs.

The aileron trimmer tab is fitted on the port wing, and is actuated by an electric motor controlled by a switch on the electric control panel. This switch is not conveniently placed, but change of lateral trim during flight is so small, that it is not normally necessary to retrim. Operation of the trimmer is satisfactory with no tendency to slip. The provision of a trimmer seems an unnecessary complication, as a fixed trimmer which could be set on the ground would be sufficient.

The engine throttle, mixture and propeller controls are in a box on the left of the pilot. They are conveniently placed but the throttle lever tends to slip back. No adjustable friction damper is fitted. If adjustments are made on the ground to stop the throttle lever from slipping in the air, then the propeller control is almost immovable.

There are four positions marked on the mixture control quadrant, i.e. "full rich","auto-rich","auto-lean" and "idle cut out". A spring stop is provided to prevent the lever being accidentally moved to the "idle cut out" position. The lever can be set anywhere in the range from "auto-rich" to this stop, progressive weakening of the mixture being obtained, with automatic compensation for altitude.

The electric propeller control is that normally fitted for Curtiss electric propellers. A master safety switch, with ON and OFF positions is fitted on the electric control panel. This switch should be kept in the ON position excepting in an emergency. On the right of this switch is a three position selector switch, for selecting either manual or automatic operation of the propeller. When this switch is moved up to "auto", then the engine r.p.m. are controlled through a governor unit and a change of r.p.m. is obtained by moving the propeller control lever, which is fitted beside the throttle lever. When the switch is moved to either of two down positions, then "Manual" operation is obtained. When the switch is moved to the bottom left, then the propeller pitch is decreased and r.p.m. will increase, whilst if it is moved to the bottom right, then the pitch is increased and r.p.m. decreased. The circuits from the "auto" and "manual" positions are independent, and in the event of failure of the governor, the pitch of the propeller can be changed by the "manual" switch. The operation of the propeller was satisfactory.

The petrol cock is on the left of the pilot and is too far forward for convenience.

The flap selector lever is on the left of the pilot's seat, and is too far aft and too high up for comfortable operation. The lever is moved forward to select "flaps down" and aft to select "flaps up", whilst there is an intermediate neutral position. The flaps are operated by an electrically driven hydraulic motor, and when the desired direction of motion has been selected the flaps are set in motion by pressing the button under the handgrip on the control column. The operation of the flaps is satisfactory, and they can be stopped at any intermediate position. In the event of failure of the electric pump the flaps can be raised or lowered by the hand operated hydraulic pump on the right of the pilot. A combined undercarriage and flap indicator

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is fitted on the lower left hand corner of the instrument panel, and this gives a satisfactory indication of the position of the flaps.

The undercarriage selector lever is forward and slightly lower than the flap lever and can therefore more conveniently be reached. This has three positions :- "up", "down", and "neutral". Before the lever can be moved to the "up" position, the safety device consisting of a latch bolt on the control handle has to be moved forward. Operation of the undercarriage is obtained by moving the selector lever to the desired position and then pressing the button under the handgrip on the control column until the motion is completed. The lever should then be returned to neutral. The position of the undercarriage is given by the combined flap and undercarriage indicator. This does not give a positive indication when the wheels are locked in position, but if the wheels are down but not locked in position a light above the indicator shows red. Also the klaxon horn will sound if the engine is throttled back, with the locks not in place. The klaxon may be switched off, but is automatically re-engaged when the throttle is opened.

In the event of failure of the electrical system the undercarriage can be raised or lowered by selecting the required direction of motion and then using the handpump on the right of the pilot.

If the main hydraulic system fails, then the emergency system must be used. This consists of a further hydraulic pump situated beside the pump mentioned above, with two change-over cocks on the floor of the cabin. This emergency system operates through other pipe lines than those used in normal operation and it will therefore operate when the main hydraulic system has been punctured. This system can be used only for lowering the undercarriage and operates the main wheels only. The tail wheel is not lowered.

The radiator flap control is on the right of the pilot and is rather too low for convenience. It can only be opened fully at slow speeds.

3.04. <u>Brakes.</u> The brakes are operated hydraulically from the pedals on the rudder controls. The brakes are rather awkward to operate especially to British pilots who are unaccustomed to this system, and brakes which are operated from the control column are preferred.

When both pedals are depressed the brakes may be locked on, by engaging the parking brake lever forward of the throttle box and then releasing the pedals. The brakes are released by again depressing the pedals. It was found that the brakes tended to seize on after being left in the parked position.

3.05. <u>Instruments</u>. The layout of the instruments is in general satisfactory and there was no undue vibration. The compass is fitted in the centre of the panel and is clearly visible. The flying instruments are above and to the left, there being no standard blind flying panel. The directional gyro and the artificial horizon are on opposite sides of the optical gun sight mounting and this arrangement is unsatisfactory. The engine instruments are on the right and are conveniently grouped.

3.06. <u>Illumination.</u> The instrument panel is illuminated by a fluorescent light, on a semi-flexible mounting below the panel. The flexible mounting is provided so that the light can be moved to illuminate the part of the instrument panel desired. It was found that the light would not stay in the position set, and was in this respect unsatisfactory. Floodlights are fitted on either side of the cockpit for general illumination. These do not give satisfactory lighting of the instrument panel.

3.07. <u>Emergency exit</u>. The cockpit hood slides back to provide an exit in the air. The hood is operated by a handle on the right of the cockpit and no difficulty was experienced in opening the hood at any speed. In an emergency for rapid exit, the winding handle can be disconnected by pushing the handle back, and the hood pushed back by hand. An emergency release is also fitted, by pulling which the whole hood may be jettisoned. Emergency exit through the resultant aperture should be satisfactory.

In the event of the aeroplane becoming inverted on the ground, a release handle frees a panel on the left hand side of the hood which can then be pushed out. A strong point is fitted behind the pilot to take the weight of the aeroplane when inverted. Escape from the cockpit when inverted on the ground is, however, likely to be difficult.

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4.0 Handling and flying qualities.

4.01. Weight and centre of gravity. The aircraft have been flown at the following loadings:-

(i) Weight 8480 lb. Centre of gravity 26.5 ins. aft of the datum.
(ii) Weight 8840 lb. Centre of gravity 26.2 ins. aft of the datum.

Loading (i) is with full fighter equipment and loading (ii) with full fighter equipment and the under-fuselage fuel tank with full fuel load.

The centre of gravity range due to dissipation of load is from 20.9" to 26.5" aft of the datum. (Throughout the report centre of gravity positions are quoted with the undercarriage down. Raising the undercarriage moves the centre of gravity aft by 1.4 inches at a weight of 8,480 lb).

The comments made in paras. 4.02. to 4.10. refer to tests made at loading (i) whilst the results of tests made at loading (ii) are given in para. 4.11.

4.02. Ground handling. The tail wheel is steerable over 30° on either side of central, rotating when the rudder bar is displaced. Beyond this range the tail wheel becomes fully castoring through the remainder of the 360°. Due to this arrangement the rudder bar loads are heavy when taxying. The steerable tail wheel is displaced by bumpy ground, causing quite heavy "kicking" on the rudder bar. Apart from this, taxying is satisfactory although the view forward is obscured by the nose. The brakes are effective, but are rather fierce in action and there seems to be some lag on release. There is no tendency for the tail to rise at this centre of gravity position, but no tests were made at the forward limit.

4.03. Take-off and initial climb. The technique to be employed on take-off has been given in 11th Part of Report No. A.& A.E.E./783. Immediately the aircraft has left the ground the undercarriage can be raised. The undercarriage takes about 25 seconds to come up and the actuating button on the control column has to be depressed until the motion is completed. Raising the undercarriage makes the aircraft slightly tail heavy, but the change of trim can be easily held on the control column whilst retrimming. When the flaps are raised, the aircraft becomes very slightly tail heavy and there is some sink. The aircraft can be trimmed to fly hands and feet off on the climb.

4.04. Controls. The ailerons are light and quick in response at all speeds up to maximum level speed. The ailerons are effective on climb, in level flight and on the glide. They become less effective at speeds near stalling speed, and on take-off and landing, but control remains satisfactory. Aileron control is good generally, being very effective for large movements of the control at normal speeds. The control becomes heavier with increase of speed, but is not excessively so at maximum level speed. At speeds over 400 m.p.h. A.S.I. the control heaviness increases rapidly, the ailerons becoming almost immovable at 460 m.p.h. A.S.I., the limiting diving speed.

At slow speeds there is a slight tendency for the ailerons to snatch. There is little change of lateral trim with speed, engine on or off, and the aileron trimmer is therefore little used.

With engine on the rudder control is heavy. Heaviness increases with increase of speed and in the dive the rudder becomes very heavy. On take-off it is moderately heavy. With engine off it is moderately heavy, but becomes light at landing speed, and speeds near the stall. The rudder is effective under all conditions of flight, and quick in response. Although the rudder control is in general heavy, this is offset by the good aileron control, and does not adversely affect the manoeuvreability of the aircraft. There is a fairly large change of directional trim between engine on and engine off. This is important in view of the heaviness of the rudder. The rudder trimmer is effective, but the gearing is too low and it is not possible to retrim rapidly for this change of trim.

In view of reports received from the U.S.A. that the rudder would lock over to the left when displaced with engine on, tests were made to see if this condition could be reproduced. The tests were made at loading (i) of para. 4.01.

These show that the rudder locking does occur when the rudder is displaced through more than 2/3rds of its range of movement to the left (i.e. through about 20°) with engine on. Abnormal conditions of control have to be applied before locking can be achieved, as under no conditions of normal flight

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or aerobatics is the rudder likely to be displaced to a sufficiently large angle for locking to occur, due to the excessive heaviness of the control for large movements. In order to obtain sufficient force and range of movement, the distance of the rudder pedals from the seat had to be shortened to the limit of adjustment, which gave a position extremely uncomfortable for normal flying.

Most of the tests were made by doing a quarter of a slow roll to the right and then applying top rudder. When the rudder has been moved over about 2/3rds of its range, the extreme heaviness of control is replaced by extreme lightness, although the rudder does not "flick" right over to the full position but can be moved between the 2/3rd and full rudder positions in either direction with very little foot load. Although full rudder was held for a considerable time there was no tendency for the aeroplane to spin, but it would go into a sideslip and finally the nose would drop.

Other methods of inducing rudder locking were tried, and it was found that the rudder will lock over whenever more than 2/3rds left rudder is applied with engine on, irrespective of the position of aileron and elevator, or of the attitude of the aeroplane. The rudder will not lock over when the engine is throttled right back, or when the rudder is moved to the right.

When rudder locking has occurred, the rudder can be moved back to the 2/3rd position quite easily, but to move it beyond this point with engine on, a very large foot load is required. With engine throttled right back, centralisation is easy. The force required varies with throttle opening being a maximum at full throttle, but even then was not more than could be achieved by a very heavy stamp on the rudder pedal. With the engine throttled back centralisation of the control is easy and recovery immediate.

Thus although rudder locking can occur, it is not likely to be encountered often, and is then not dangerous provided the method of recovery is known.

The elevator control is moderately light and effective throughout the speed range, becoming heavier with increase of speed. The elevators are quick in response, though the positive stability at the centre of gravity position tested makes movement in pitch seem a trifle heavy and sluggish. The elevator trimmer is effective and gives adequate trim for all conditions of flight at the centre of gravity positions tested.

4.05. Stability. At the loading tested the aeroplane is directionally and longitudinally stable under all flight conditions. The lateral stability near the stall is given in para. 4.07.

4.06. Stalling speeds.

Flaps and undercarriage UP - 90 m.p.h. A.S.I.
" " " DOWN - 80 m.p.h. A.S.I.

4.07. Control and stability at the stall. (A.D.M.293) All the following tests were made at a weight of 8,480 lb. with the centre of gravity at the aft limit (26.5 ins. aft of the datum).

1. Behaviour at the stall (Tests 1 & 3 of the A.D.M.)

Flaps and undercarriage UP	Flaps and undercarriage DOWN
At speeds between 1.2 times stalling speed and just above the stall, the aeroplane is longitudinally and laterally stable. There is little warning of the approach of the stall except for the high position of the nose and a tendency for the aeroplane to yaw to the right. At the stall, which occurs with the control column central, there is a shuddering of the aeroplane, followed by a drop of the nose. The force required to stall the aeroplane is light. When the control column is pulled further aft, the left wing drops sharply followed by the nose as for entry into a spin. Recovery is effected on moving the control column forward.	At 1.2 times stalling speed the aeroplane is longitudinally and laterally stable. As the control column is brought back there is a tendency for the right wing to drop at speeds below 83 m.p.h. A.S.I. but the aeroplane can be kept level by coarse use of ailerons at speeds down to 80 m.p.h. A.S.I. At the stall which occurs with the control column slightly forward of central, the right wing drops followed by the nose. The speed then increases and control is regained. The force required to stall the aeroplane is light. When the control column is pulled further aft, slight fore and aft pitching occurs and the aeroplane finally flicks over to the right as for a spin. Recovery is effected on moving the control column forward.

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Flaps & undercarriage UP	Flaps & undercarriage DOWN
2. Slow glide (Test 2 of the A.D.M.)	
At 1.1 times stalling speed, the aeroplane is stable about all axes, with the controls either fixed or free. If small disturbances are given to the controls, the aeroplane returns to steady flight at the trimmed speed.	At 1.1 times stalling speed the aeroplane is less stable than with flaps and undercarriage up. There is slight general buffeting of the aeroplane. The aeroplane can be kept straight and level by the use of either ailerons or rudder.
3. Slow speed turn (Test 4 of the A.D.M.)	
Sustained gliding turns with 30° bank can be made to the left at a minimum speed of 97 m.p.h. A.S.I., and to the right at 100 m.p.h. A.S.I. At these speeds the controls are satisfactory and no difficulty is experienced in holding a steady rate of turn at a constant speed. If turns are attempted at slower speeds, then the aeroplane stalls gently without warning.	Sustained gliding turns with 30° bank can be made to the left at 86 m.p.h. A.S.I. and to the right at 88 m.p.h. A.S.I. At these speeds the controls are satisfactory and no difficulty is experienced in holding a steady rate of turn at a constant speed. At slower speeds the turn becomes unsteady and a further decrease causes the aeroplane to stall.
4. Turn from a slow glide (Test 5 of the A.D.M.)	
Turns to the left can be made with 30° bank, at 1.1 times stalling speed and the control characteristics are satisfactory. If a turn to the right is attempted at this speed, the aeroplane stalls, and the rate of turn cannot be maintained. There is no tendency for the aeroplane to spin.	Turns can be made in either direction at 1.1 times stalling speed with 30° bank, and the control characteristics are satisfactory. There is no tendency to spin.

4.08. Aerobatics. All aerobatics can be satisfactorily performed. The aeroplane has a Bendix Stromberg carburettor and as a result there is no tendency for the engine to cut or falter during any evolution.

Smooth loops can be made at initial speeds down to 200 m.p.h. A.S.I., there being very little tendency to roll out of the loop at the top, unless the control column is pulled back unduly. The aeroplane can be rolled in either direction off the top of a loop, but the initial speed should be increased to 250 m.p.h. A.S.I.

All types of roll are very easy at any speed, the ailerons being particularly effective for large movements of the control.

4.09. Dives. The aeroplane was dived at loading (i) of para. 4.01 and the following results obtained. The limiting diving speed is 460 m.p.h. A.S.I., and the maximum permitted engine speed in the dive 3120 r.p.m.

Dive No.	Throttle Position	Height 'IN' (ft)	Maximum r.p.m.	Maximum A.S.I.	Height 'OUT' (ft)	Aeroplane trimmed for
1	Fully open	18,000	2600	450	9,000	Full throttle Level flight.
2	1/3 open	15,000	2600	430	7,000	Full throttle Level flight
3	Fully open	15,000	2600	460	5,000	Trimmed to reduce elevator & rudder loads in the dive.

In dives 1 and 2 when trimmed for full throttle level flight, the aeroplane tends to yaw strongly to the right and to come out of the dive with increase of speed. At speeds above 400 m.p.h. A.S.I. the elevator and rudder forces required to hold the aeroplane in the dive are very heavy, and at about 440 - 450 m.p.h. A.S.I. the aeroplane comes out of the dive and yaws to the right against any force that can be normally applied by the pilot. The aeroplane is steady in the dive, and can be held onto a target until the control forces become too great.

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Owing to the heavy forces required to hold the aircraft in the dive, it was not possible to use the controls at the maximum speeds reached, but the dive was continued into bumpy air with no instability or control surface vibration occurring. Recovery is effected on decreasing the forward pressure on the control column. Some forward pressure has to be maintained, to prevent recovery becoming too rapid.

In the third dive the elevator and rudder trimmer were used to reduce the force needed on elevator and rudder as the limiting speed was approached. A small adjustment of the elevator trimmer was sufficient to reduce the force required on the control column to a reasonable value, but the rudder had to be trimmed 4 divisions left of the available 6½ divisions at the limiting speed of 460 m.p.h. A.S.I., and even so a large foot load was required to hold the aeroplane straight in the dive. The aeroplane was steady inthe dive. The controls were used at the limiting speed, without any instability or control surface vibration occurring. Recovery is effected by releasing the forward pressure on the control column. Recovery is satisfactory, with less tendency for recovery to become too rapid.

4.10 Approach and Landing. The best approach speed at loading (i) with flaps and undercarriage up, is 120 m.p.h. A.S.I. When the undercarriage is lowered there is a very slight change of trim to nose heavy. Lowering the flaps produces a slight and fairly slow change of trim to nose heavy which can easily be held on the control column, until the aeroplane has been retrimmed at 100 m.p.h. A.S.I., the best gliding speed with flaps and undercarriage down. The aeroplane can be sideslipped, but it is difficult to maintain a steady rate of slip, as the nose tends to drop and the speed to increase. The landing is straightforward, touch-down being made at about 75 m.p.h. A.S.I. The undercarriage is rather harsh, but is otherwise satisfactory. Comments on the braking have been given in para. 4.02.

If the engine throttle is opened after a baulked landing, with trimmers and flaps set for landing, the aircraft becomes tail heavy. The force on the control column can be held whilst retrimming, and the aeroplane will climb away with flaps down. The undercarriage can be raised immediately, but care should be exercised. when raising the flaps as there is some sink.

4.11. Tests with the overload tank fitted and filled (Loading 2). There is little difference in handling characteristics compared with those at Loading 1. On take-off there is slightly more bucketing on rough ground, and on the climb there is a slight tendency to wander in yaw, although a test showed that the aeroplane is still directionally stable.

The stalling speeds with the tank fitted are slightly higher than before, being 92 m.p.h. A.S.I. with flaps and undercarriage up, and 82 m.p.h. A.S.I. with flaps and undercarriage down. The stalling characteristics are the same as at the lighter load.

Loops, slow rolls, climbing rolls and rolls off the top of loops in each direction were performed, the behaviour being similar to that at the lighter load.

The aeroplane was dived to the limiting speed, with tank on, of 280 m.p.h. A.S.I., with the aeroplane trimmed for full throttle level flight. The behaviour in the dive and on recovery was similar to that at lighter load at the same speed.

The best approach speed, with flaps and undercarriage down, is 10 m.p.h. A.S.I. faster than at the lighter load, being 110 m.p.h. A.S.I. If the approach is made at a slower speed than this, the rate of sink is too rapid. Apart from this the landing characteristics are similar to those at lighter load.

CIRCULATION LIST

C.R.D.		T.F.2.	
D.C.R.D.		C.I.Accidents	
D.G.A.P.		Chief Overseer	
D.T.D.		D.P.C.A.	
D.D.T.D.		A.I.2.(g)	
D.O.R.		A.I.3.	
D.D.R.D.A.		R.D.T.2.(b)	
D.D.R.D.T.		R.D.T.5.	6 copies
A.D.R.D.T.1.		R.T.P.2.	15 + 1 copies
D.R.A.E.	4 copies	R.T.O. Air Service Training	3 copies
R.D.T.3.			
A.D.D.A.(N.A.)	2 copies (1 for Action)		
Asst. to D.G.N.D.P.			
D.D.R.D.Q.			

8TH PART OF REPORT No. A&AEE/783 | CURVE No. 4008. | TRACED: | DATE OF TEST: 14&25/2/42 | CHECKED: | APPROVED:

FIG 1

KITTYHAWK AK572

(ALLISON V-1710 F-3-R)

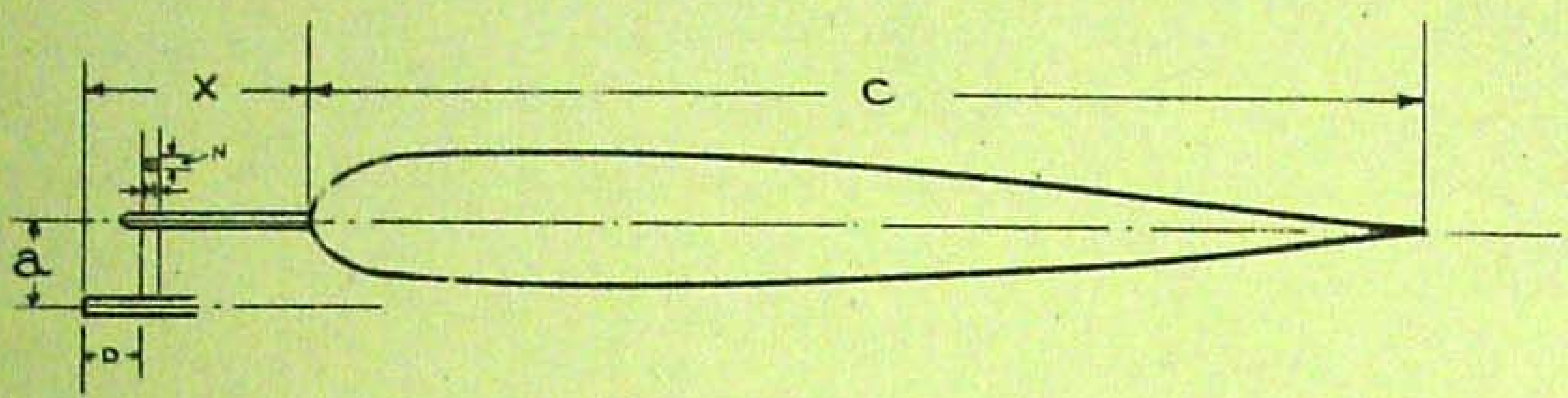
PERFORMANCE ON CLIMB

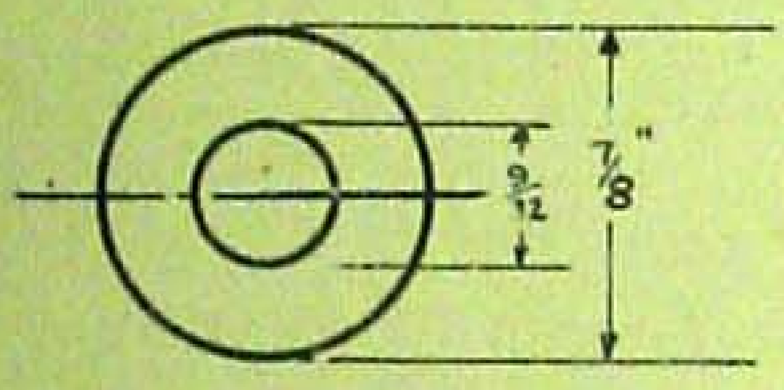
WEIGHT ~ 8480lb.

FIG 2

KITTYHAWK AK572

PRESSURE HEAD POSITION





DETAIL OF APERTURE.

	Type of pressure Head	ELEC. HEATED TYPE 1079-5-940J PIONEER INST CORPN. N.J.
	Ratio of Aperture of Tube to External Dia of Static Tube	32%
	Incidence of Main Plane (adjacent to Pressure Head)	2° 25'
a	Angle of Static Tube to Chord of Main Plane	-2° 11'
D	Nose of Static to Supporting Strut	4 11/16
Z	" " " Chord Line	3/4"
X	" " " M.P. Leading Edge (parallel to Chord)	1'- 6 3/16
C	Length of Chord at Section	4'- 1 3/4
M	Major axis of Strut	1 5/16"
N	Minor " "	9/16"
Y	Distance from Plane of Symmetry	16' 11"
	Position	LEADING EDGE PORT WING
	Semi-span	18'- 7½"
	Wing Section	
	Ratio of thickness to Chord of Aerofoil Section, adjacent to Pressure Head	9%

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FIG 3

KITTYHAWK AK 572

(ALLISON V-1710 F·3·R)

POSITION ERROR CORRECTION

WEIGHT ~ 8480 lb

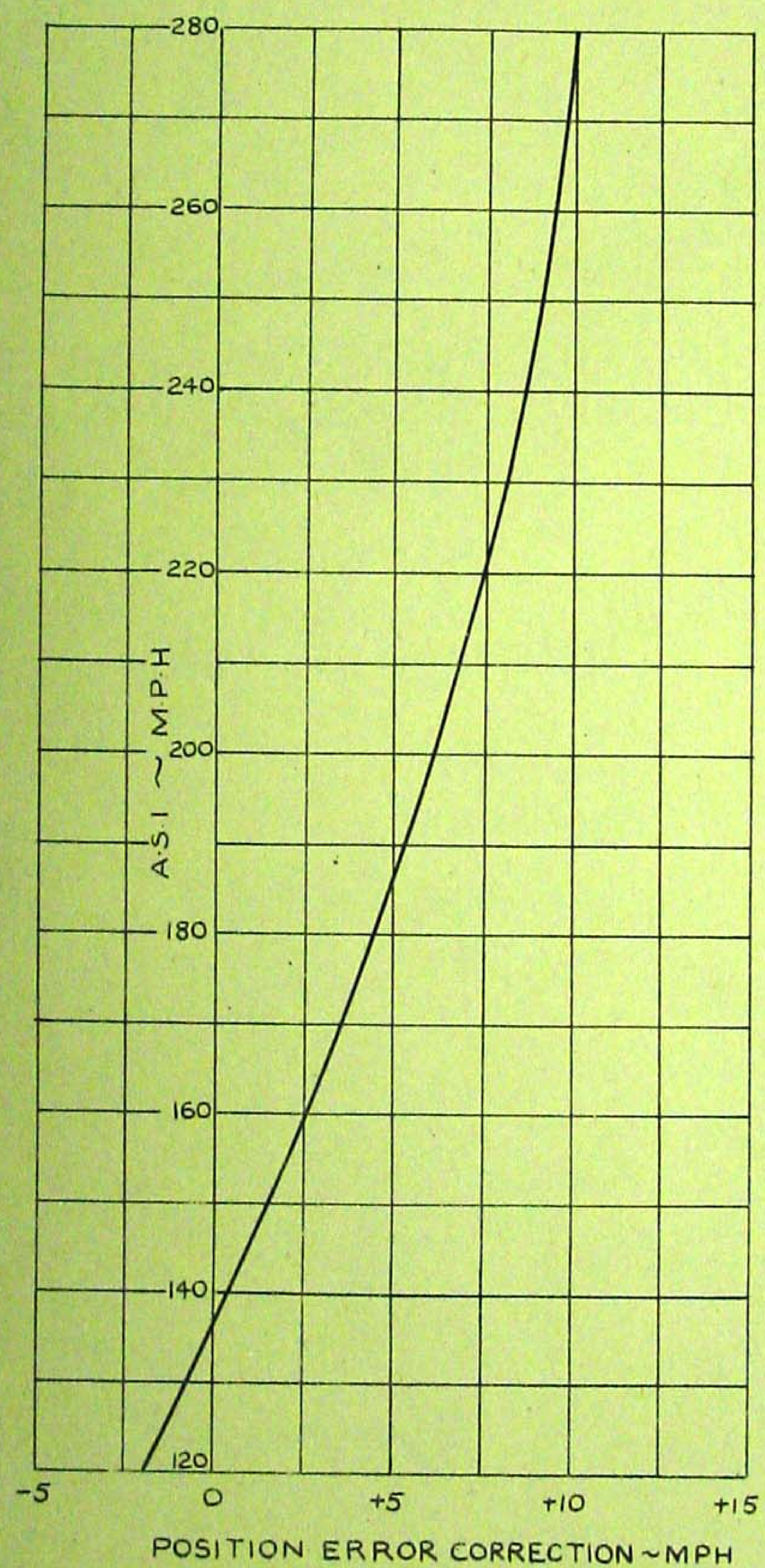

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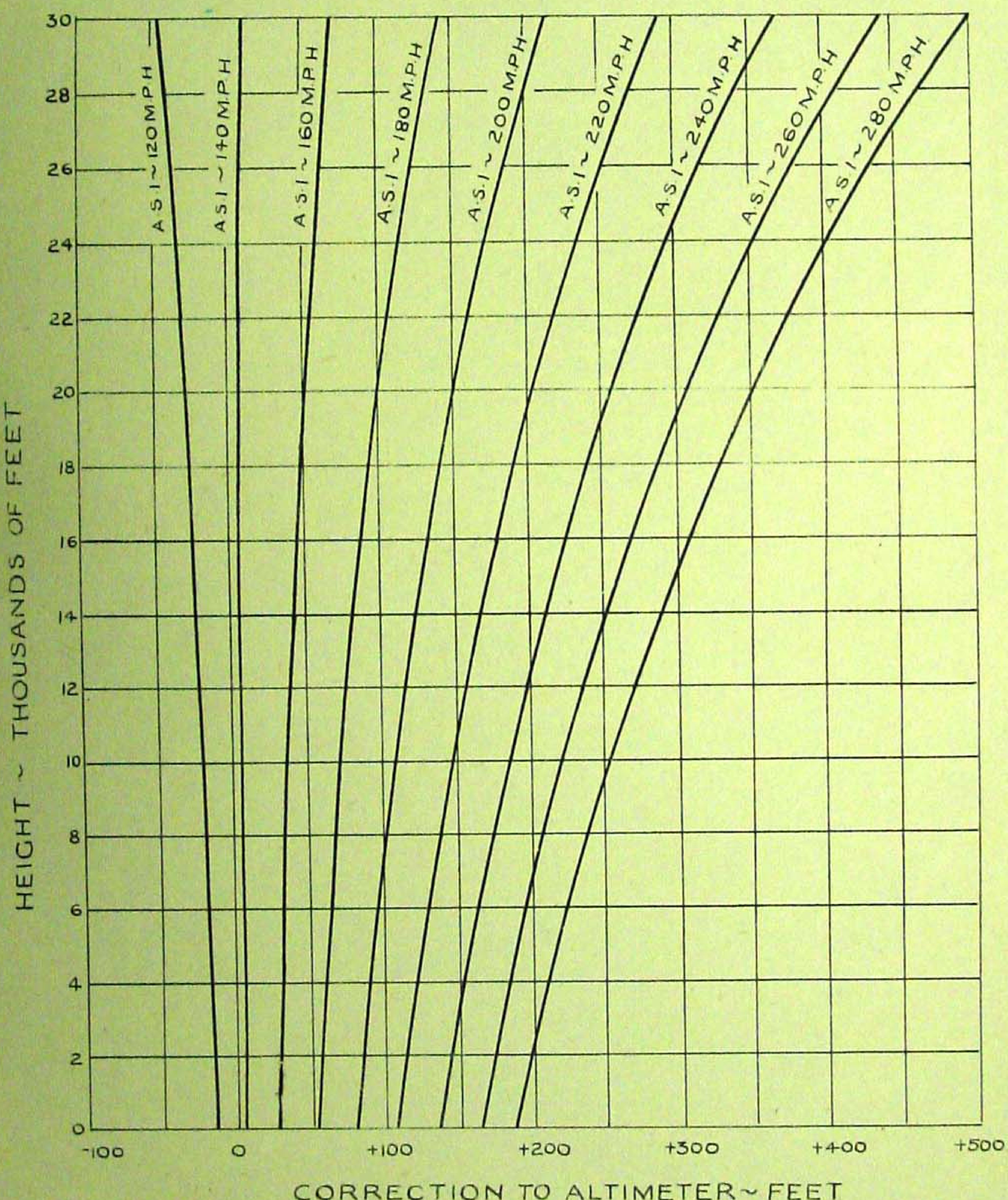
FIG 4

KITTYHAWK AK 572

CORRECTION TO ALTIMETER WHEN CONNECTED TO STATIC OF AIR SPEED INDICATOR



8TH PART OF REPORT No. A&AEE/783. | CURVE No. 4010 | TRACED: | DATE OF TEST: | CHECKED | APPROVED | D.O