

Volume II Tome 1 - Appendix 5 Re-Typed Extracts –

(Extract re-typed)

5.2F

ROYAL AIRCRAFT ESTABLISHMENT

(RANGES DIVISION)

AIR TARGETS AT THE R.A.E. ABERPORTH RANGE

AVIA6/23916

Royal Aircraft Establishment

Ranges Division

Air Targets

(Issue 3)

November 1968

5.2f.1

3.3 Infra-red Aids

Towed targets can be fitted with either three, four or six type SR 549 flares. These have a burning time, which varies between 25 seconds at sea level and 45 seconds at 50,000 ft. The infra-red flares on a towed target burn simultaneously.

4. Miss-distance Photography

4.1 Standard Wing Pod Camera Packs – Two packs, each consisting of 2 AMPOR Mk. 3 cameras with W.R.E.T.A.R. 180° lenses are the standard fit for Jindivik 103A; these give complete spherical coverage from each wing tip. Camera running speed is approximately 100 frames/sec. and the camera running time with the standard (thin-base) film is 24 secs; this can be divided into two runs of 12 secs. each to cover two missile firings on one target sortie.

4.2 Non-standard Rearward-facing Cameras – Special lenses on the lower cameras, with special mirrors, give undistorted rearward view at an angle of depression of 17½° and an angular coverage of ±17½°. This system is associated normally with towed targets on tow lengths of 100 ft. or 200 ft.

5. Safety

5.1. Destruction of Target Aircraft – In the event of a target aircraft malfunction due to any cause, it may be necessary to destroy it in the interests of safety. This action can only be carried out by the operating crew at Llanbedr who send a “Command Destroy” signal. The result of transmitting this signal is to energise the “Destroy” elevator actuator; to apply full ‘down’ elevator; to select ‘Fuel Off’; and, after approximately 12 seconds delay, to demand a full left aileron to the target. The aircraft should then descend within a 45° cone from the point of ‘Destroy’, e.g. from 50,000 ft. altitude, the target aircraft should not go outside a circle of 50,000 ft. radius, centred at the point at which ‘Destroy’ was received by the aircraft.

5.2. **‘Signal Fail’ Orbit and Recovery** – ‘Signal Fail’ orbit is an automatic fail-safe condition of the aircraft in the event of a fault in the ground transmitter or both aircraft receivers such that two successive transmissions of Radio Hold pulses are missed. In this case, the aircraft will descend or climb to a holding condition of 30° port or starboard orbit in ‘Level Cruise’ between 4,000 ft. and 6,000 ft. altitude. (Direction of orbit can be selected prior to take-off or during controlled flight by the skipper). When the fault has been corrected and Radio Hold pulses are again transmitted, the aircraft may be restored to normal control, by transmitting a ‘Straight’ command.

5.3 Restriction on Jindivik Tracks – With the exception of the take-off and landing phases, a pilot-less target aircraft may not be flown over land. To assist those concerned with planning trials involving a Jindivik 103A, the following rules apply:-

(a) Trials in which the Jindivik has not been engaged by a missile

The Jindivik may not be flown closer to land than a distance complete spherical coverage from each wing tip. Camera running speed is approximately 100 frames/sec., the camera running time with standard (thin-base) film is 24 seconds; this can be divided into two runs of 12 seconds each, to cover two missile firings on one target sortie.

6. Safety

6.1 Destruction of Target Aircraft – In the event of a target malfunction due to any cause, it may be necessary to destroy it in the interests of safety. This action can only be carried out by the operating crew at Llanbedr, who send a “Command Destroy” signal. The result of transmitting this signal is to fire the Destroy elevator ram; to apply full ‘down’ elevator; to select “Fuel Off”; and to demand a full left aileron to the target. The aircraft should then descend within a 45° cone from the point of ‘Destroy’; e.g. from 30,000 ft. altitude, the target aircraft should not go outside a circle of 30,000 ft. radius, centred at the point at which ‘Destroy’ was received by the aircraft.

6.2 ‘Signal Fail’ Orbit and Recovery – ‘Signal Fail’ orbit is an automatic fail safe condition of the aircraft in the event of a fault in the ground transmitter or both aircraft receivers, such that two successive transmissions of Radio Hold pulses are missed. In this case, the aircraft will descend or climb to a holding condition of 30° port or starboard orbit in ‘Level Cruise’ between 4,000 ft. and 6,000 ft. altitude. (Direction of orbit can be selected prior to take-off). When the fault has been corrected and Radio Hold pulses are again transmitted, the aircraft may be restored to normal control by transmitting a ‘Straight’ Command.

6.3 Restriction on Meteor Tracks – With the exception of the take-off and landing phases, a pilot-less target may not be flown over land. To assist those concerned with planning trails involving a Meteor 16, the following rules apply:-

(a) Trials in which the Meteor has not been engaged by a missile

The Meteor may not be flown closer to land than a distance equal to one nautical mile plus the altitude of the Meteor.

(b) Trials in which the Meteor is to be engaged by a missile

Each trial must be individually vetted, but the following may be used as a guide for planning purposes:-

The point of interception by the missile must be clear of land by 2½ nautical miles plus the Meteor’s altitude at interception, in the direction of the track of the Meteor; and by 1½ nautical miles plus each altitude in the direction at right angles to the track.

(Extract re-typed)

5.2h Hunting P56 Provost MK 51 Characteristics

Extract:

HUNTING

Hunting Aircraft Ltd.

Head Office and Works: Luton Airport, Luton, Bedfordshire.

Directors: P.L. Hunting (Chairman)

G.L. Hunting

C.P.M. Hunting, B.A., A.C.A.

W.A. Summers, C.B.E. (Managing)

R.R.S. Cook

L.C. Hunting, M.A.

K.D. Morgan (Secretary)

F.W. Buglass, M.I.P.E. (Works)

F.H. Pollicut, F.R.Ae.S. (Technical)

The Percival Aircraft Company was formed in 1932. It was re-organised as Percival Aircraft Ltd., in 1937 and the works were moved from Gravesend to Luton. In 1944, the company became part of the Hunting Group and a branch office was opened at Toronto, Canada, in 1946. The name was changed to Hunting Percival Aircraft Ltd., in 1954 and to Hunting Aircraft Ltd., in 1957.

In 1958 Hunting participated in the formation of a consortium with Fairey Aviation Ltd and de Havilland Holdings Ltd., to produce the D.H. 121 jet airliner which has been chosen by B.E.A. The new company is known as the Aircraft Manufacturing Co. Ltd., (Airco) (which see).

The current Hunting products are the Provost, the Jet Provost, the Pembroke and the President.

The Provost, a side-by-side two seat basic trainer, is at the time of writing in service at all the basic flying schools in the R.A.F. but was due to be replaced during 1958 by the Jet Provost Mk. 3, initial evaluation versions of which have been in service with the R.A.F. for the past three years.

In addition to the R.A.F. the Jet Provost is in service with the Ceylon Air Force, and its piston-engined predecessor – the Provost – is serving with the Air Forces of Rhodesia, Burma, Eire, Iraq and Sudan.

The Pembroke is in service in the Royal Air Force, the Royal Rhodesian Air Force, the Belgian Air Force, the Finish Air Force, the Swedish Air Force, the Royal Danish Air Force, the West German Air Force and the Sudan Air Force.

The civil version of the Pembroke is known as the President.

Extract re-typed)

5.2h Hunting P56 Provost MK 51 Characteristics

Extract:

The Hunting P.56 Provost

The P.56 trainer was designed to Specification T.16/48 to meet F.A.F. requirements. Three prototypes were built, two fitted initially with the Armstrong Siddeley Cheetah 18 engine and the other with the Alvis Leonides engine. The first (Cheetah-engined) prototype flew for the first time on February 23, 1950.

As the result of comprehensive trials the Leonides-engined P.56 was selected as the standard R.A.F. basic trainer under the designation Provost T. Mk. 1.

The armed version of the Provost for weapon training can be equipped with the following armament: 2 x .303 in. machine guns; 1 camera gun and 2 x 250- lb bombs or 8 x 25-lb.bombs and 4 x 60-lb. R.P. or 6 x 60-lb R.P.

The following are the designations of the Provosts which have been exported:-

- **Provost T. Mk. 51.** T. Mk. 1 (un-armed) supplied to Eire Air Corps
- **Provost T. Mk. 52.** Armed version supplied to the Royal Rhodesian Air Force
- **Provost T. Mk. 53.** Armed version supplied to the Eire Air Corps, the Burma Air Force, the Iraqi Air Force and the Sudan Air Force

The following description applies specifically to the Provost T. Mk. 1.

- **Type** Two-seat Basic Trainer.
- **Wings** Cantilever low-wing monoplane. Wing section NACA 23015 (mod.) at root. NACA 4412 (mod.) at tip. Aspect ratio 5.78. Dihedral 6°. Incidence 3°. All-metal stressed skin construction. Metal covered ailerons and trim-tabs. Pneumatically operated slotted flaps. Total flap area 18.94 sq. ft. (1.74m²). Gross wing area 214 sq. ft. (20 m²).
- **Fuselage** All-metal monocoque structure.
- **Tail Unit** Cantilever monoplane type. All-metal one-piece tailplane, interchangeable elevators, fin and rudder, the fixed surfaces covered with smooth and movable surfaces with fluted alloy skin. Trim and balance tabs in elevators, combined trim and balance tab in rudder. Span of tailplane 13 ft. 6 in. (4.1 m). Total horizontal area 48.6 sq. ft. (4.51 m²). Total vertical area 35.09 sq. ft. (3.26 m²).

- **Landing Gear** Fixed tail-wheel type. British Messier oleo-pneumatic shock absorbers. Differential pneumatic brakes. Dowty liquid-spring tail-wheel strut. Track 11 ft. 1½ in. (3.38 m).
- **Power Plant** One 550 h.p. Alvis Leonides 25 nine-cylinder air-cooled geared and supercharged radial engine. Three-blade metal constant-speed airscrew, 9 ft. (2.74 m) diameter. Fuel capacity 66 Imp. Gallons (300 litres).
- **Accommodation** Crew of two in enclosed cockpit. Instructor (on starboard) and pupil sit side-by-side, with full dual controls and dual instrument panels. Sliding canopy is mechanically operated and jettisonable.
- **Dimensions**
 - Span 35 ft. 2 in. (10.9 m)
 - Length 29 ft. (8.85 m)
 - Overall height (tail up) 12 ft. (3.66 m)
- **Weights and Loadings**
 - Weight Empty (equipped) 3,350 lb (1,521 kg.)
 - Crew (2) 400 lb (182 kg.)
 - Fuel and Oil 529 lb (240 kg.)
 - Weight Loaded 4,400 lb (2,000 kg.)
 - Wing Loading 20.6 lb. Sq. ft. (100.5 kg./m²)
 - Power Loading 8.0 lb h.p. (3.63 kg./h.p.)
- **Performance**
 - Max Speed 195 m.p.h. (312 km.h.) at sea level and 200 m.p.h. (322 km.h.) at 2,300 ft (700 m)
 - Max Continuous cruising speed 194 m.p.h.(310 km.h.) at 7,900 ft. (2,410 m)
 - Max Economical cruising speed 177 m.p.h. (283 km.h.) at 11,500 ft. (3,310 m)
 - Stalling Speed, flaps down 67 m.p.h. (108 km.h.)
 - Initial Rate of Climb 2,200 ft. min. (11.2 m/sec.)

- Rate of Climb at 5,000 ft (1,525 m) 1,870 ft. min. (9.5 m./sec.)
- Climb to 5,000 ft. (1,525 m) 3.3 minutes
- Climb to 10,000 ft. (3050 m) 7.0 minutes
- Rate of Roll (per second) 90 degrees
- Service Ceiling 22,500 ft. (6,860 m)
- Take-off to 50 ft. (15.2 m) grass surface 283 yds. (260 m)
- Landing run 265 yds. (242 m)
- Duration (at economical weak cruise) 4 hrs

The Hunting P.66 Pembroke

The Pembroke is an eight- seat communications and light transport aircraft, which is in service with the Royal Air Force. It is adaptable for freighting, long-range ferrying, casualty evacuation and photographic survey duties.

Fixed fittings in the cabin are provided for eight 15G rearward-facing seats, for stretchers or for lashing down cargo. The main cabin door is removable for parachuting freight and equipment.

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(Extract re-typed)

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A Paris, le 9 novembre 2000

EXP'AIR SARL

36, rue Alphonse Pallu

78110 LE VESINET

Monsieur

En réponse à votre fax du 7 novembre, je vous informe que, le Dimanche 24 mars 1968 (pour un lieu de latitude 52°1' nord et de longitude 7°52' ouest), la hauteur et l'azimut du Soleil étaient:

	Hauteur	azimut
- 10h 40m (TU):	33°32' au-dessus de l'horizon	36°16' est compté à partir du sud
- 10h 45m (TU):	34°19' au-dessus de l'horizon	34°51' est compté à partir du sud

Souhaitant avoir répondu à vorte attente, je vous pric d'agr er, Monsieur, l'expression de mes tr s sinc res salutations.

SIGNATURE

Michel Heurtier

(Extract ended)