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1st Part of Report No. AAEE/890/10

MINISTRY OF AVIATION

**AEROPLANE AND ARMAMENT
EXPERIMENTAL ESTABLISHMENT**

BOSCOMBE DOWN

HUNTER G.A. MK.11 WT. 810

CLEARANCE TRIALS OF 25 LB. PRACTICE BOMBING INSTALLATION

PRESENTED BY

ENG. LT. (A./O.) C. MOORE R.N.
ARMAMENT DIVISION

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AEROPLANE AND ARMAMENT EXPERIMENTAL ESTABLISHMENT
BOSCOMBE DOWN

23 MAY 1963

Hunter G.A. Mk.11 - T.810

Clearance Trials of 25 lb. Practice Bombing Installation

Presented by

Eng. Lt. (A./O) C. Moore R.N.
Armament Division

A. & A.E.E. Ref: ARM.N.14
M.O.A. Ref: AV/524/01 dated 18th June, 1962
Period of Trial: 4th October, 1962 to 23rd October, 1962

Summary

This Report gives details of the trials carried out to clear, for Service use, the 25 lb. Practice Bombing Installation fitted to Hunter G.A. Mk 11 aircraft.

It is recommended that this aircraft be cleared for carriage and release of 4 x 25 lb. Practice Bombs, with or without drop tanks on the outboard pylons, subject to the following:-

(a) Bomb Practice 25 lb. No.1 Mk.1

- (i) Carriage Speed not to exceed 500 knots I.A.S. (no restriction on I.M.N.)
- (ii) Release Speed not to exceed 500 knots I.A.S. Dive angle not to exceed 60°.

NOTE: From store considerations, flight time at 500 knots I.A.S. should not exceed 30 mins. per flight. After all flights, bombs not released must be carefully examined for presence of cracks and/or distortion of tail vanes before being cleared for further flights.

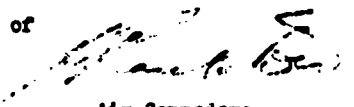
(b) Bomb Practice 25 lb. No.2 Mk.1

- (i) Carriage Speed not to exceed 600 knots I.A.S. (no restriction on I.M.N.)
- (ii) Release Speeds up to the following:-
 - With drop tanks on outboard pylons - 500 kts.I.A.S.
 - Without drop tanks on outboard pylons - 575 kts.I.A.S.
 - Dive Angle - not to exceed 60°.

(c) Current aircraft limitations.

- (d) The recommendations contained in A. & A.E.E. letter, ref. ARM 87/11 dated 2nd January, 1963, concerning Electromagnetic Compatibility. (APPENDIX I).

This Report is issued with the authority of


Air Commodore,

Commandant, A. & A.E.E.

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Electromagnetic Compatibility Trials Report
(A. & A.E.E. letter, ref. ARN 87/11 dated 2nd January, 1963).

Appendix

I

/1. Introduction ...

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1. Introduction

(a) In accordance with Ministry of Aviation Trials Proforma, Authority No. N.42, ref. AV/524/01 dated 18th June, 1962, trials to clear, for Service use, the 25 lb. Practice Bombing installation fitted to HUNTER G.A. Mk. 11 aircraft have been completed.

(b) The trial commenced on 4th October, 1962 and was completed on 23rd October, 1962.

(c) A clearance was recommended by A. & A.E.E. Signal No. AR. 178, dated 10th October, 1962, and an interim Report, reference ARM. M.14, was issued on 23rd October, 1962.

2. Object of Trial

The object of the trial was to clear the installation for carriage and release of 4 x 25 lb. Practice Bombs No.1 Mk.1 and No.2 Mk.1.

3. Description of the Installation

(a) The installation is similar to that fitted to Hunter T. Mk.8 aircraft, which is fully described in AP(N) 1023 (12).

(b) One 25 lb. Practice Bomb Carrier is fitted to each inboard pylon (Mod. 667) by means of a No.1 Mk.1 E.R.U.

4. Method of Trial

4.1 Ground Examination

The ground examination consisted of:-

- (a) Installation and removal of practice bomb carriers.
- (b) Loading and unloading drill stores.
- (c) Electromagnetic compatibility checks of the installation.

4.2 Flight Tests

Release flights were flown to check the functioning of the practice bomb release circuits.

5. Results of Trial

5.1 Ground Examination

(a) Installation and removal of practice bomb carriers presented no difficulties.

(b) Practice bombs can be loaded and unloaded without difficulty, using standard procedures.

(c) Results of the Electromagnetic Compatibility checks are contained in A. & A.E.E. letter, ref. ARM 87/11, dated 2nd January, 1963. (APPENDIX I).

(d) It was noted that the inboard pylons (Mod. 667) were labelled with a reference to "PRACTICE/NORMAL" switch positions. This switch has been deleted from the pylons; circuits are selected by operation of the "Fuse/Defuse" switch in the cockpit. This defect was reported on Form A.21 BD/RNC/214/O/62 dated 12th October, 1962.

/5.2 Flight ...

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5.2 Flight Tests

Three check release flights were flown. One flight was successful, one abortive due to fouling of the range and one partially successful due to a defective port practice bomb carrier.

6. Conclusions

It is concluded that the Hunter G.A. Mk.11 aircraft 25 lb. Practice Bombing installation can be cleared by analogy with the Hunter T. Mk.8 aircraft.

7. Recommendations

It is recommended that the Hunter G.A. Mk.11 aircraft be cleared for carriage and release of 4 x 25 lb. Practice Bombs, with or without drop tanks on the outboard pylons, subject to the following:-

(a) Bomb, Practice, 25 lb. No.1 Mk.1

- (i) Carriage Speed not to exceed 500 knots I.A.S. (no restriction on I.M.N.)
- (ii) Release Speed not to exceed 500 knots I.A.S. Dive angle not to exceed 60°.

NOTE: From store considerations flight time at 500 knots I.A.S. should not exceed 30 minutes per flight. After all flights, bombs not released must be carefully examined for presence of cracks and/or distortion of tail vanes before being cleared for further flights.

(b) Bomb, Practice, 25 lb. No.2 Mk.1

- (i) Carriage Speed not to exceed 600 knots I.A.S. (no restriction on I.M.N.).
- (ii) Release Speeds up to the following:-
 - With drop tanks on outboard pylons - 500 kts. I.A.S.
 - Without drop tanks on outboard pylons - 575 kts. I.A.S.
 - Dive Angle - not to exceed 60°.

(c) Current aircraft limitations.

(d) The recommendations contained in A. & A.E.E. letter, ref ARM 87/11, dated 2nd January, 1963, concerning Electromagnetic Compatibility. (APPENDIX I).

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Appendix I to 1st Part of
A. & A.E.E. Report No.
890/10

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Aeroplane and Armament
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Wilts.

Ref: Arm. 87/11

Armament Division

2nd January, 1963.

The Secretary,
Ministry of Aviation,
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St. Giles Court,
1-13 St. Giles High Street,
LONDON. W.C.2.

For the attention of Group Captain A. W. Eyre

Hunter G.A. Mk.11 - Electromagnetic Compatibility Trials Report

The report on the electromagnetic compatibility trials conducted on a
Hunter G.A. Mk.11 aircraft at A. & A.E.E. is forwarded herewith.

Signed (C. R. C. HOWLETT)
Group Captain
for Chief Superintendent,
for Commandant,
A. & A.E.E., Boscombe Down.

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Hunter G.A. Mk.11 - Electromagnetic Compatibility - Report on
Trials to determine the effect on the reliability and safety
of the Weapon Systems

Appendices

A	Trials Programme - E.R.U.
B	Trials Programme - 2" R.P.
C	Trials Programme - 3" R.P.
D	Airborne Radio Installations and Electrically operated services.
E	Modification state of the aircraft.
F	Results - E.R.U.
G	Results - 2" R.P.
H	Results - 3" R.P.

INTRODUCTION

1. A trial was conducted at A. & A.E.E., Boscombe Down, between the 5th and 10th October, 1962, to establish the electromagnetic compatibility of the weapon systems with the aircraft installed electrical and radio equipment in respect of the Hunter G.A. Mk.11 aircraft. No flying trials were conducted.
2. Authority for this trial is given in M.O.A. Armament Trials Proforma, number N40, dated 1st June, 1962.

TRIALS PROCEDURE

Object of Trial

3. The object of the trial was to investigate the electromagnetic compatibility of the weapon systems detailed in para. 5 with respect to the Hunter G.A. Mk.11 aircraft and to make recommendations to support a C.A. clearance.

Description of Equipment Under Test

4. The trial was carried out on a representative service aircraft, Hunter G.A. Mk.11, WT.810. A list of the aircraft modifications, S.T.I.'s etc. is given at Appendix E.
5. Investigations were made into the following weapon systems:-
 - (a) E.R.U. (Jettison for 25 lb. bomb carrier, 2" rocket pod and overload fuel tank).
 - (b) 2 inch rocket weapon system.
 - (c) 3 inch rocket weapon system.

Description of Test Equipment

6. The instrumentation for the trial consisted of ferrite core detector type instruments to detect the surge and A.C. pick up, and diode voltmeter type instruments to measure the R.F. pick up.
7. The ferrite core detector type instrument and the box R.A.E. No.2 (diode voltmeter) were supplied by R.A.E., Farnborough, the latter being fully described in R.A.E. Report ARM 4611/A/GWH. The diode voltmeter BD/1 was built by A. & A.E.E., Boscombe Down.

Conduct of Trial

8. The aircraft was equipped in the three roles given in paragraph 5. An investigation was made in each role to ascertain the electromagnetic compatibility hazard from the aircraft installed electrical and radio equipments.

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9. A list of the aircraft electrical equipments and airborne radios which were operated during the trial is given at Appendix D.

10. The detailed test programmes for the trial are attached as Appendices A, B and C.

RESULTS OF THE TRIAL

Ejector Release Unit

11. The maximum surge or A.C. pick up was not more than 1.2 volts for less than 0.5 micro second. The full results are given at Appendix F.

12. The maximum R.F. pick up was 3.6 milliwatts. The complete results are shown at Appendix F.

2 inch Rocket Battery

13. There was no indication of any surge or A.C. pick up on the 2" rocket system. The results are given in Appendix G.

14. The maximum amount of R.F. pick up was 1.05 milliwatts. Detailed results are given in Appendix G.

3 inch Rocket Projectile System

15. There was one indication of surge on this system. The amount of energy picked up was between 2.5 and 15 microjoules. Detailed results are given in Appendix H.

SAFETY ASPECTS OF CONDUCTING COMPOSITION CAPS

16. The Ejector Release Unit is a No.1 Mk.1 and is fitted in the inboard (Mod. 667) pylons. The E.R.U. cartridge is initiated by an 18 volt graphite cap which has a high sensitivity and a resistance tolerance of between 12 and 180 ohms.

17. It has been considered necessary on other aircraft armament installations (utilising conducting composition caps) to introduce a safety device into the electrical firing circuit. Such a safety device has been considered necessary because of the sensitivity of conducting composition caps which can fire at 5 volts D.C.

18. The device consists of a relay built into the connector which is attached to the cartridge cap such that both terminals of the cartridge are connected to earth until the firing pulse energises the relay, removes the earth connection and allows the pulse to fire the cap.

19. Modifications are already being incorporated by:-

(a) Frasher Nash on the No.2 Mk.1 E.R.U. 11A/4520 - Modification Arm. 2869.

(b) M.L. Aviation on the No.3 Mk.2 E.R.U. 11A/5712.

20. It is considered that this form of protection to the E.R.U. firing circuit should be applied to the No.1 Mk.1 E.R.U. This will increase the confidence level that inadvertent operation due to induced R.F. and transient voltages will not occur, within the limitations of this method of attenuation.

/CONCLUSIONS ...

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CONCLUSIONS

21. It is concluded that:-

- (a) The E.R.U. could, due to the high sensitivity of the 18 volt graphite cap, be hazarded by:-
 - (i) Surge or A.C. pick up from internal aircraft sources.
 - (ii) R.F. pick up from aircraft radio equipment.
- (b) The 2" rocket battery and 3" rocket system picked up:-
 - (i) Surge from internal aircraft sources
 - (ii) R.F. from aircraft radio transmissionsat a level insufficient to constitute a hazard.

RECOMMENDATIONS

22. It is recommended that the Ejector Release Unit firing system fitted to the Hunter G.A. Mk.11 aircraft to the modification state listed in Appendix E and to the airborne radio installation state listed in Appendix D be given a clearance in respect of freedom from electromagnetic induction hazards to safety and reliability of functioning subject to the satisfactory incorporation of the attenuating device outlined in paragraphs 17 to 19.

23. It is recommended that the 2" and 3" rocket systems fitted to the Hunter G.A. Mk.11 aircraft to the modification state listed in Appendix E and to the airborne radio installation state listed in Appendix D be given a clearance in respect of freedom from electromagnetic induction hazards to safety and reliability of functioning.

24. It is further recommended that no aircraft radio installations shall be operated during the loading or unloading of:-

- (a) E.R.U. cartridges.
- (b) 2" Rockets.
- (c) 3" Rockets.

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Appendix A to Arm. 87/11.
dated 2nd January, 1963

Hunter G.A. Mk.11

Tests to Ascertain Electromagnetic Compatibility
with Aircraft Weapon System

Jettison Facility - E.R.U.

1. Aircraft Circuit Checks

- (a) Ensure that all explosives have been removed from the aircraft and an entry made in F.700.
- (b) Connect and switch "ON" ground power supplies.
- (c) Fit Armament Safety Plug to the socket in the underside of the port mainplane.
- (d) Place the Butt Test switch to "ON".
- (e) Select the Fuzing Selector switch to DE-FUZE.
- (f) Fit modified E.R.U. cartridge housing with B.N.C. connector, to E.R.U. connector on top of mainplane.
- (g) Press "Clear Wing" push switch and check 28V at B.N.C. connector of modified E.R.U.
- (h) Remove fuse B.J.2 (No.25) from supply panel in underside of fuselage.
- (j) Press "Clear Wing" push switch and check NO VOLTS at B.N.C. connector of modified E.R.U.
- (k) Repeat items f-j on E.R.U. fitted to other mainplane. Return all switches to "OFF" position.

2. R.F. Checks

(a) State 1

- (i) Ensure fuse B.J.2 (No.25) is removed from supply panel.
- (ii) Connect Box R.A.E. No.2 to E.R.U. connector on top of mainplane.
- (iii) Disconnect aircraft supplies plocket on side of pylon.
- (iv) Operate transmitters at selected frequencies and record readings at each frequency. (Upper and Lower aeriels where applicable).

(b) State 2

- (i) Reconnect aircraft supplies plocket on side of pylon.
- (ii) Operate transmitters at selected frequencies and record readings at each frequency. (Upper and Lower aeriels where applicable).
- (iii) Repeat items 2(a) to 2(b) on pylon fitted to other mainplane.
- (iv) Switch off and disconnect ground power supplies.

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Appendix A Cont'd.

3. Surge (Engine Running)

- (a) Ensure fuse B.J.2 (No.25) is removed from supply panel.
- (b) Ensure aircraft supply plocket is fitted to E.R.U. plocket on side of pylon.
- (c) Connect box S.8A to B.N.C. connector on modified E.R.U. (which is connected to A/C supplies).
- (d) Start engine. Switch "ON" and "OFF" all equipment listed in Appendix D.
- (e) Read out and record.
- (f) Disconnect box S.8A and modified E.R.U.
- (g) Connect modified E.R.U. and box S.8A to pylon on other mainplane.
- (h) Switch "ON" and "OFF" all equipment listed in Appendix D.
- (j) Read out and record.
- (k) Switch off engine and replace fuse B.J.2 (No.25) at end of trial.

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Appendix B to Arm.87/11
dated 2nd January, 1963

Hunter G.A. Mk.11

Tests to Ascertain Electro-Magnetic Hazard
Compatibility with Aircraft Weapons System

2" Rocket Battery, Launcher No.3, Mk.1

1. Aircraft Circuit Checks

- (a) Ensure that all explosives have been removed from the aircraft and an entry made in F.700.
- (b) Connect and switch "ON" ground power supplies.
- (c) Fit Armament Safety Plug to the socket in the underside of the port mainplane.
- (d) Fit the modified 24 way firing bar to the rear of the rocket launcher.
- (e) Fit the modified ripple unit into the launcher.
- (f) Switch the "Butt Test" switch to "ON".
- (g) Select RIPPLE/NORMAL switch to RIPPLE.
- (h) Select BOMBS/R.P. switch to R.P.
- (j) Raise safety catch on top of control column and press R.P. firing button.
- (k) Check for 28V at B.N.C. connectors fitted to modified firing bar.
- (l) Trip circuit breaker No.2 on supply panel in underside of fuselage.
- (m) Raise safety catch on top of control column and press R.P. firing button.
- (n) Check NO VOLTS at B.N.C. connectors fitted to modified firing bar.
- (o) Repeat on launcher fitted to other mainplane.
- (p) Return all switches to "OFF" position.

2. R.F. Checks

(a) State 1

- (i) Ensure circuit breaker No.2 is tripped.
- (ii) Remove modified ripple unit from launcher.
- (iii) Connect R.F. box B.D./1 to B.N.C. connectors on modified firing bar.
- (iv) Using upper and lower aerials where applicable, operate transmitters at selected frequencies and record at each frequency.

(b) State 2

- (i) Fit modified ripple unit into the launcher.
- (ii) Using upper and lower aerials where applicable, operate transmitters at selected frequencies and record at each frequency.

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Appendix B Cont'd.

- (iii) Repeat items 2(a) to 2(b) on launcher fitted to other mainplane.
- (iv) Switch "OFF" and disconnect ground power supplies.

3. Surge (Engine Running)

- (a) Ensure circuit breaker No.2 is tripped.
- (b) Ensure modified ripple unit is fitted to launcher.
- (c) Connect Boxes S.8B and S.8C to B.N.C. connectors on modified firing bar.
- (d) Start engine. Switch "ON" and "OFF" all equipment listed in Appendix D.
- (e) Read out and record.
- (f) Repeat on launcher fitted to other mainplane. Switch off engine and re-set circuit breaker No.2 at end of trial.

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Appendix C to Arm.87/11
dated 2nd January, 1963

Hunter G.A. Mk.11

Tests to Ascertain Electro-Magnetic Hazard
Compatibility with Aircraft Weapon Systems

3" Rockets

1. Aircraft Circuit Checks

- (a) Ensure that all explosives have been removed from the aircraft and an entry made in F.700.
- (b) Connect and switch "ON" ground power supplies.
- (c) Fit Armament Safety Plug to the socket in the underside of the port mainplane.
- (d) Select the Fuzing Selector switch to DE-FUZE.
- (e) Place the Butt Test switch to ON.
- (f) Select BOMBS/R.P. switch to R.P.
- (g) Switch the R.P. selector switch to No.8.
- (h) Select the RIPPLE/NORMAL switch to NORMAL.
- (j) Fit 3" rocket leads with B.N.C. connectors as follows:-
 - (i) ROCKET RAIL "A" in BOTTOM PLUG (No.1 Rocket)
 - (ii) ROCKET RAIL "B" in TOP PLUG (No.10 Rocket)
 - (iii) ROCKET RAIL "C" in BOTTOM PLUG (No.3 Rocket)
 - (iv) ROCKET RAIL "D" in TOP PLUG (No.12 Rocket)



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Appendix C Cont'd.

- (k) Press the R.P. reset button (in mains supply hatch) and ensure "Dolls Eye" shows up.
- (l) Raise safety catch on top of control column and press R.P. firing button.
- (m) Check 28V on B.N.C. connectors on flying; leads of TOP plugs.
- (n) Press R.P. firing button TWICE more and third press will give 28V on B.N.C. connectors on flying leads of BOTTOM plugs.
- (o) Trip circuit breaker No.2 and re-set "Dolls Eye" by pressing R.P. re-set button.
- (p) Raise safety catch on top of control column and press R.P. firing button.
- (q) Check NO VOLTS on B.N.C. connectors on flying leads of TOP plugs.
- (r) Press R.P. firing button twice more and check NO VOLTS on BOTTOM plugs.
- (s) Repeat on rocket rails of other mainplane.
- (t) Return all switches to "OFF" position.

2. R.F. Checks

- (a) Ensure circuit breaker No.2 is tripped.
- (b) Connect R.F./BD/1 as follows:-
 - (i) Channel 1 - Rocket rail 'A' (Bottom plug)
 - (ii) Channel 2 - Rocket rail 'B' (Top plug)
 - (iii) Channel 3 - Rocket rail 'C' (Bottom plug)
 - (iv) Channel 4 - Rocket rail 'D' (Top plug)
- (c) Using upper and lower aeriels where applicable, operate transmitters at selected frequencies and record at each frequency.
- (d) Repeat on rocket rails fitted to other mainplane.

3. Surge (Engine Running)

- (a) Ensure circuit breaker No.2 is tripped.
- (b) Connect S.8 boxes as follows:-
 - (i) S.8A - Rocket rail 'A' (Bottom plug)
 - (ii) S.8B - Rocket rail 'B' (Top plug)
 - (iii) S.8C - Rocket rail 'C' (Bottom plug)
 - (iv) S.8F - Rocket rail 'D' (Top plug).
- (c) Start Engine. Switch "ON" and "OFF" all equipment listed in Appendix D.
- (d) Read out and record.
- (e) Repeat on rocket rails fitted to other mainplane.
- (f) Switch off engine and reset circuit breaker No.2 at end of trial.

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Appendix D to Arm.87/11
dated 2nd January, 1963

Hunter G.A. Mk.11

Airborne Radio Installations and Electrically
Operated Services

1. Airborne Radio Installations

- (a) A.R.I. 18124 - U.H.F.
- (b) A.R.I. 5848 - I.F.F. Mk.10.

2. Electrically Operated Services

- (a) Fire Warning (Test push only).
- (b) Engine Anti-Icing.
- (c) Emergency fuel pump.
- (d) Tailplane, rudder and aileron trim control.
- (e) Elevator and aileron power control.
- (f) Tailplane control and "standby" control.
- (g) Flap control.
- (h) Hood control.
- (j) Cabin pressurisation and temperature control and test switch.
- (k) Airbrake test switch.
- (l) Cabin and navigation lights.
- (m) Pitot head heater.
- (n) G.G.S. retractable mounting.

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Appendix E to Arm. 87/11
dated 2nd January, 1963

Hunter G.A. Mk.11 WT.810

Modification State

Modifications:

7, 13, 15, 17, 18, 22, 23, 24, 25, 27, 28, 29, 30, 31, 32, 33, 35, 36, 37, 38, 40, 41, 43, 44, 45, 46, 47, 48, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 63, 65, 66, 67, 68, 69, 70, 72, 75, 76, 77, 78, 79, 80, 82, 83, 84, 85, 86, 87, 89, 90, 94, 98, 99, 101, 102, 103, 104, 106, 107, 108, 109, 110, 111, 113, 114, 115, 116, 117, 123, 125, 126, 130, 131, 132, 133, 135, 136, 138 B, 139, 141, 142, 143, 147, 150, 151, 152, 153, 158, 159, 160, 168, 169, 173, 175, 179, 180, 182, 183, 185, 187, 188, 192, 193, 194, 195, 196, 201, 203, 205, 208, 209, 210, 213, 216, 221, 223, 225, 227, 228, 229, 233, 248, 249, 251, 252 Part, 256, 258, 262, 265, 266, 268, 273, 274, 278, 283, 290, 291, 294, 295, 297, 303 Part, 305, 306, 307, 312, 314, 317 B, 318, 319, 321, 322, 324, 325, 327, 328, 329, 330, 331, 332, 344, 345, 346, 347, 349, 352, 354, 356, 357, 360, 363, 365, 369, 374 B, 377, 386 A, 390, 392, 396, 398, 402, 403, 404, 406, 413, 416, 427, 428, 436, 437, 444, 446, 449, 450, 451, 452, 453, 457, 462, 465, 467, 468, 473, 478 B, 481, 486, 487, 488, 490, 497, 498, 499, 502, 510, 518, 522, 533, 536, 543, 546, 549, 550, 554 B, 557, 564, 566, 567, 568, 569, 572 B, C & E, 578, 580, 581, 586, 591, 597, 602, 604, 605, 615, 616 Part, 617, 621, 629, 644, 656, 657, 677, 678, 682, 690 A & C, 692, 696, 697, 705, 723, 725 A, 753, 766, 768, 775, 776, 777, 781, 811, 812, 827, 834, 841, 846, 895, 903, 907, 912, 919, 922, 932, 933, 937, 943, 948, 950, 956, 961, 964, 967, 988, 990, 991, 996, 1000, 1001, 1004, 1007, 1014, 1025, 1040, 1045, 1056, 1065, 1076, 1082, 1083, 1084, 1088, 1091, 1112 Trial Installation, 1123.

Ejection Seat:

Main Gun Ser. No. 2569 Mods. 843, 219.

Seat Comp. Ser. No. 2 Mods. 2378, 2377.

Drogue Gun Ser. No. 6734 Mods. 226, 227, 244, 384, 465, 513, 831.

S.T.I.'s

Hunter - 5, 6, 7, 9, 10, 15, 17, 18, 19, 21, 25, 30, 31 A, 32, 34, 35, 38, 39, 41, 42, 43, 48, 51 A, 54, 57, 60, 61, 64 A, 67, 69, 71, 74, 75, 81, 82, 85, 91 A, 93 B, 94, 97, 98, 100, 103, 105, 107, 109, 115, 117 A, 118, 119, 120, 126, 127, 128, 132, 136, 138, 140 A, 142, 143, 148, 153, 166, 168, 173, 175, 181, 182 A, 186, 196, 199, 202, 203, 207 A, 214, 215, 225, 227, 228, 237, 241, 238, 242 B Part 1, 246, 248, 250, 235 B.

Electrical - 101, 102, 103, 106 A, 103 A, 112, 113, 115 A, 117 B, 119 C, 126 A, 131 A, 135, 180 A, 198, 199, 200, 181, 186.

Instruments - 60 A, 71, 76, 78 A, 83 B, 85 A, 94, 95, 80, 116.

Misc. - 227, 230, 235 B, 238, 257.

/Radio ...

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Appendix E Cont'd.

Radio, Airborne - 162, 166.

Safety Equip. - 73.

S.T.N.'s

Electrical - 47, 73, 83, 86.

Instruments - 72, 86.

Hunter - 46.

S.I.'s

Hunter - 11 A, 15, 28 A, 48 A, 64 A, 72 B, 63, 78, 7, 68 A.

Inst. - 19, 15, 20 A, 13, 11, 12 A, 14 A.

Electrical - 30 C.

Safety Equip. - 4.

N.A.M.O.'s

Gen/1056, Gen/X126, Gen/P98.

Modifications

Basic Engine - 259, 264, 270, 287, 295, 298, 355, 376, 406 Pt. 2, 407, 448, 470, 506, 511 Pt. 1 and 2, 525, 528 Pt. 2, 541, 591, 593, 596, 610, 612, 614, 640, 648, 683 Pt. 3, 763, 765, 776 Pt. 2, 796, 814 Pt. 3 & 4, 826, 827 Pt. 2, 828, 830 Pt. 6, 836, 838, 839, 844, 869 Pt. 2, 882, 896, 905 Pt. 1, 908, 909, 921, 923, 924, 926, 1009, 1013, 1025, 1026, 1038, 1091, 1094, 1096, 1106, 1134 Pt. 2, 1188, 1198, 1206, 5013, 5016 Pt. 2, 5017 Pt. 2, 5018, 5026 Pt. 2, 5027, 5030 Pt. 2, 5032, 5033, 5034, 5044, 5052 Pt. 2, 5054 Pt. 3, 5059 Pt. 2, 5063, 5066 Pt. 2, 5067, 5077 Pt. 2, 5107 Pt. 2, 5109, 5113, 5127, 5130, 5131, 5138 Pt. 2, 5153, 5155, 5157, 5160 Pt. 2, 5175, 5180, 5184, 5190 Pt. 2, 5209 Pt. 1, 5213, 5233, 5255, 5265, 5274, 5276, 5277, 5279, 5287 Pt. 1, 2, 3 & 4, 5291, 5300, 5301, 5302, 5303 Pt. 2, 5305, 5310, 5315, 5318, 5319, 5320 Pt. 2, 5326, 5327, 5333, 5336 - Pawl Racket 1 Off, 5348, 5349, 5357, 5367, 5374, 5380 Pt. 1 & 3. Installation Fittings - 486, 781.

S.T.I.'s

Avon - 16A, 31.

S.T.N.'s

Misc. 102.

S.I.'s

Avon 17 A.

Hunter - 14 A, 15, 28 A, 30 C, 32 A, 41, 46, 47, 48 A, 60, 61, 62, 63, 64, 65 A, 68, 70 B, 72 B, 73.

Electrical - 13, 12 B, 30.

Modifications

Drop Tanks, Bristol - 1, 2, 3, 4, 5, 11, 33.

Hunter - 555, 883, 976.

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Appendix F to Arm. 87/11
dated 2nd January, 1963

RESULTS

R.F. and Surge

E.R.U. Jettison - Hunter G.A. Mk.11 WT.810

Date of Trial: 9th October, 1962

R.F.

Equipment	Frequency	Channel					
		2	2	2	2		
U.H.F.	225 250 275 300 305.5 310 311 312 313 314 315 316 317 318 319 320 325 350 375 399.9	State	2(a)		2(b)		milliwatts " " " " " " " " " " " " " " "
		Station	St	Pt	St	Pt	
			NI	NI	NI	NI	
			NI	NI	.8	.06	
			NI	.8	.8	.08	
			.8	.06	.46	.25	
			.54	NI	.25	NI	
			2.4	NI	3.2	NI	
			No Test		3.6	NI	
			No Test		3.6	"	
			No Test		3.6	"	
			No Test		3.6	"	
			3.2	NT	3.2	"	
			No Test		3	"	
			No Test		2.5	"	
			No Test		2.2	"	
	No Test		1.7	"			
	1.4	NT	1.2	"			
	.54	NI	.46	.14			
	.12	NI	.08	NI			
	NI	NI	NI	NI			
	NI	NI	NI	.06			
E.H.F. Standby	243.8		NI	NI	NI	NI	"
I.F.F. Mk. 10	All Modes		NI	NI	NI	NI	"

SURGE

Channel	A/C Test	Port	Stbd.	} for less than .5 μ second
Neg.	3	.8 volts	.8 volts	
Pos.	"	1.2 volts	.8 volts	
Energy	"	0	0	

SECRET

SECRET

Appendix G to Arm. 87/11
dated 2nd January, 1963

RESULTS

R.F. and Surge

2" R.P. - Hunter G.A. Mk.11 WT.810

Date of Trial: 10th October, 1962

R.F.

Equipment	Frequency	A/C Test		Channel				
				1	2	1	2	
U.H.F.	225 250 275 300 325 350 375 399.9	2(a) " " " " " " "	Rocket Station	Stb.		Port		milliwatts " " " " " " "
			Rocket Post	Centre	Lower L/H	Centre	Lower I/H	
				1.05	.59	.75	.1	
				.4	.58	.3	.5	
				.21	.9	.21	.1	
				.15	.1	.15	NI	
				NI	.1	NI	NI	
				NI	NI	NI	NI	
				NI	NI	NI	NI	
				.08	NI	.08	NI	
U.H.F. St by	243.8	"		NI	NI	NI	NI	"
I.F.F. Mk.10	All Modes	"		NI	NI	NI	NI	"
U.H.F.	225 250 275 300 325 350 375 399.9	2(b) " " " " " " "		.3	.5	.75	NI	"
				NI	.4	.39	.5	"
				.22	.1	NI	NI	"
				.22	.1	.08	NI	"
				NI	NI	.08	.1	"
				NI	NI	NI	NI	"
				NI	NI	NI	NI	"
				NI	NI	NI	NI	"
U.H.F. St By	243.8	"		NI	NI	NI	NI	"
I.F.F. Mk.10	All Modes	"		NI	NI	NI	NI	"

SURGE

Channel	A/C Test	Stb.		Port		
		Centre	Lower	Centre	Lower	
Energy	3	0	0	0	0	microjoules

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Appendix H to Arm. 87/11
dated 2nd January, 1963

RESULTS

R.F. and Surge

3" R.P. - Hunter G.A. Mk.11 WT.810

Date of Trial: 9th October, 1962

R.F.

Equipment	Frequency	A/C Test	Channel										
			1	2	3	4	1	2	3	4			
U.H.F.	225	2	Main Plane										(b=bottom t=top)
	250	"	Rail No.	A/b	B/t	C/b	D/t	A/b	B/t	C/b	D/t		
	270	"		.1	.05	.08	.09	.05	.05	NI	.04		
	275	"		.05	NI	.13	.18	.1	NI	NI	.04		
	280	"		NI	NI	.13	.55		No Test				
	285	"		.05	.1	.13	1.35	.15	NI	NI	.09		
	290	"		No Test		.1	.9		No Test				
	295	"		No Test		.1	.35		No Test				
	300	"		No Test		.1	.1		No Test				
	305	"				.13	.13						
	325	"		.05	.25	.13	.25	.15	.14	.07	.09		
	350	"		No Test		.13	.13		No Test				
	375	"		NI	NI	NI	NI	.05	.05	NI	NI		
	399.9	"		NI	NI	NI	NI	NI	NI	NI	NI		
U.H.F. St by	243.8	"				No Indication					"		
I.F.F. Mk.10	All Modes	"				No Indication					"		

SURGE

A/C Test		Stbd.				Port				
	Channel	A/b	B/t	C/b	D/t	A/b	B/t	C/b	D/t	
3	Energy μ J	0	2.5 ¹⁵	0	0	0	0	0	0	microjoules

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Former reference (Department), 890/10 Pt 1
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