

Section

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A.L. No. 15
(Auto-tone transmission seat ejection)

A.P.4347L, Vol. 2
Leaflet No. Q.1

Hunter G.A. Mk. 11 Aircraft—Radio, U.H.F. Installation, Facility for Auto-Tone Transmission on Seat Ejection Introduced

(MOD. NO. HUNTER/1085.)

(Class B/2.)

(AB/A/16660.—13.5.63.)

1. INTRODUCTION

This modification introduces a facility of auto-tone transmission, through the U.H.F. radio installation, on the ejection of the pilot's seat. The transmission is initiated by a trip lever on the seat (Martin Baker Mod. ES.2439 refers).

(1) This modification does not cancel, supersede or render unnecessary any work called for by approved modifications, Naval Service Modifications, S.T.I.s or S.I.s.

(2) This modification is the complementary modification to component Mod. No. Martin Baker ES.2439 (To make provision for Auto-Tone Transmission on 2 HA(N) Ejection Seat).

(3) This modification is essentially connected with Mod. No. Martin Baker ES.2439 (To make provision for Auto-Tone Transmission on 2 HA(N) Ejection Seat); if that work is not already embodied it must be effected concurrently.

2. EMBODIMENT

This modification is to be embodied in accordance with the procedure for Class 2 modifications laid down in N.A.M.M. (A.P.(N)140).

Effective Date.....

3. APPROXIMATE TIME REQUIRED FOR EMBODIMENT

The work will take approximately 20 man-hours.

4. DRAWINGS REQUIRED

The following drawings are required and are to be demanded from the Director General, Aircraft, Admiralty, London, S.W.1:—

<i>Drawing No.</i>	<i>Title</i>
D.251931	Radio, U.H.F. Installation, Facility for Auto-Tone Transmission on Seat Ejection Introduced.
B.251719	Routing Diagram for Auto-Tone Transmission on Seat Ejection.
B.251886	Switch Unit and Cable Assy.

5. PARTS AND SPECIAL TOOLS REQUIRED

(1) Parts and Materials

(a) The undermentioned items comprise a Set of Parts. Demands for Sets of Parts are to be forwarded to the Director of Stores, Admiralty, London, S.W.6:—

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<i>Ref. No.</i>	<i>Part No.</i>	<i>Nomenclature</i>	<i>Qty.</i>
26FX/—	C.251687	Cable Assy. F.159	1
26FX/—	C.254570/1	Wiring Diagram—Port Cockpit Shelf	1
26FX/—	B.251735	Mounting Bracket	1
26FX/—	A.251932	Switch Box Operating Unit	1
26FX/—	F.251688/1	Label for T.B.4	1
26FX/—	F.251689/1	Label for T.B.7	1
26FX/—	STD.2136/11/ B.251886	Sleeve	1
26FX/—	STD.2136/11/ Break to F.159.C	Sleeve	1
28D/9436920	A.25.1.C	Bolt	9
28D/12513	A.25.2.C	Bolt	2
285/3426	A.32.B.8	Screw	6
28P/7656	AS.164/405	Rivet	3
28M/10288	AGS.2001.C.1	Nut	6
28P/832	SP.4.Y.B.6	Pin	1
28P/12587	SP.9.C.4	Split Pin	1
28W/9419475	SP.15.C	Washer	12
28W/—	SP.47.B	Spring Washer	6
10H/0970059	Z.60668	Outlet Gasket	1
10H/0970096	Z.49037	Thrust Ring	1
10H/0970108	Z.62235	Union Gasket	1
10H/0970292	CZ.69733	Cable Clamp	1
10H/056470	CZ.49907	Plug, Free Coupler	1
	CZ.49153	Outlet Straight	1
5F/2281	HV.3341	Strapping, $\frac{1}{2}$ in. wide Hellermann	7ft.
5F/2302	NY.3342	Stud, Hellermann	40
	HC.106-B	Ring Terminal	1
		Sleeve, Helsyn 150, H.T. 20 x $\frac{1}{2}$ in.	7
		Sleeve, Helsyn 150, H.T. 50 x 1 in.	1
		Braid, Copper 16/4/0048	3in.

(b) Service Supply items:—

<i>Ref. No.</i>	<i>Part No.</i>	<i>Nomenclature</i>	<i>Qty.</i>
5CZ/6796	—	Flasher Unit, Type 'B'	1
10F/914/1841 5930-99-914-1941	—	Switch Unit (with cable attached)	1

(c) The undermentioned materials are also required, and, if not available, are to be demanded on the appropriate R.N. Store Depot:—

<i>Ref. No.</i>	<i>Part No.</i>	<i>Nomenclature</i>	<i>Qty.</i>
33H/108		Plastic, Pressurizing, Bostic No. 1751, DTD/900/4058	As reqd.
33B/9428808		Paint, blue, Specn. D.T.D.827	As reqd.

(2) Special Tools and Test Equipment

No special tools or test equipment are required for the embodiment of this modification.

6. MODIFICATION OF SPARES

No spares are affected by this modification.

RESTRICTED

7. CHANGE OF REFERENCE, PART AND ASSEMBLY NUMBERS

There are no changes of Reference, Part or Assembly Numbers as a result of this modification.

8. SEQUENCE OF OPERATIONS

The following is the sequence of operations:—

Note:—Before any electrical circuit is disturbed or disconnected, all electrical power supplies in, to or from the aircraft are to be disconnected. Power supplies are to be reconnected only when the person responsible for embodying or inspecting the modification is satisfied that all action has been taken to make the aircraft safe for reconnection.

Where nuclear safety may be affected, the prescribed routing of electric cables must be strictly followed.

(1) Render the aircraft electrically safe (A.P.4347L, Vol. 1, Sect. 5, Chap. 1, Group A.1 refers).

(2) Remove the pilot's seat, and seat rails (A.P.4347L, Vol. 5, Part 2 (Naval) refers).

(3) Locate the three existing mounting brackets situated on the starboard side on the front of frame 14, and fit mounting bracket, Part No. B.251735, together with flasher unit, Type 'B' (Ref. No. 5CZ/6797) as shown at "View on arrow B" on drawing No. D.251931.

(4) Locate the longeron tie, Part No. B.182879, situated behind the pilot's seat, at the top of the cockpit, forward of frame 13, and modify the starboard side of the tie as shown on drawing No. D.251931.

(5) Fit switch box operating unit, Part No. A.251932, to longeron tie, starboard side as shown on drawing No. D.251931.

Note:—On fitment of the switch box, pressure seal the structure in accordance with A.P.4347L, Vol. 1, Sect. 3, Chap. 8.

(6) Make up switch unit cable assy., Part No. B.251886 as shown on drawing No. B.251886 and fit switch unit and cable assy. to the switch box operating unit, as shown on drawing No. D.251931.

(7) Strap cable assy. from switch unit to adjacent air conditioning pipes on front face of frame 14, ensuring that it is well clear of the hood jettison controls.

(8) Offer up cable assy. F.159, Part No. C.251687, and couple up the flasher unit socket and switch unit socket with their respective mating plugs on the flasher unit and switch unit cable.

(9) Connect the earthing lead from cable assy. F.159 to the main earth point on the starboard shelf wall.

(10) Strap and run cable assy. F.159 with existing electrical cables behind tunnel for flying controls between the invertors to the port side of the cockpit. Connect up to the MIC/TEL.T.B. situated on the port side of the flying controls casing at frame 12, and continue under the J.B. on the side of the controls tunnel and under bracket for the voltage regulators on the port side.

(11) Locate T.B.4 and T.B.7 situated on the cabin port side-wall underneath the cockpit port shelf, and connect up "end A" of cable assy. F.159 as shown on drawing No. B.251719. Replace the existing wiring labels for T.B.4, and T.B.7 with new labels, Part Nos. F.251688/1, and F.251689/1 respectively.

RESTRICTED

(12) Modify the wiring in the port cockpit shelf, rear portion, and replace existing wiring diagram with new wiring diagram, Part No. C.254570/1, as shown on drawing No. B.251719.

(13) Modify the ejection seat in accordance with A.P.4288, Vol. 2 and A.P.1182, Vol. 2 (Martin Baker Mod. ES.2439 refers).

(14) Replace the pilot's seat and seat rails. (A.P.4347L, Vol. 5, Part 2 (Naval) refers).

(15) Reinstate the electrical supply. (A.P.4347L, Vol. 1, Sect. 5, Chap. 1, Group A.1 refers).

(16) Record the embodiment of this modification on the front fuselage modification plate.

9. SPECIAL TESTS AFTER EMBODIMENT

When this modification has been embodied and inspected the following special tests are to be carried out:—

Test the electrical circuits affected by this modification for continuity and accuracy of function.

10. RECORDING ACTION

When this modification has been embodied and inspected in accordance with current authorised procedure, the relevant entries are to be made in the appropriate aircraft records.

11. DISPOSAL OF REDUNDANT PARTS

The undermentioned parts rendered redundant by the embodiment of this modification are to be disposed of locally as scrap in accordance with current authorised procedure:—

<i>Ref. No.</i>	<i>Part No.</i>	<i>Nomenclature</i>	<i>Qty.</i>
26FX/—	C.249173/1	Wiring Diagram, Port Cockpit Shelf, Rear	1
26FX/—	B.206462/1	Label for T.B.7	1
26FX/—	F.246572/1	Label for T.B.4	1

12. EFFECT ON WEIGHT AND MOMENT

This modification causes a change in weight of plus 3.0 lb. and a change in moment of minus 344 lb. in.

13. EFFECT ON AIRCRAFT OR EQUIPMENT OPERATION AND HANDLING

This modification does not affect the operation or handling of the aircraft or equipment.

RESTRICTED

M193
1
A.L. No. 22
(Interference filter)

A.P. 4347L, Vol. 2
Leaflet No. Q.2

Hunter G.A. Mk. II Aircraft-Radio, A.R.I. 23057, Interference
Filter (Ref. No. 5915-99-970-0362) introduced

(Mod. No. Hunter/1226)

(Class C/3, on fitment of type M.6 transmitter/receiver)

(AB/A/18995. - 11.11.64.)

1. INTRODUCTION

To prevent interference via the supply cables when transmitter/receiver type M.6 is fitted, an interference filter (Ref. No. 5915-99-970-0362) is introduced at the power supply connection on the transmitter/receiver.

(1) This modification does not supersede, partially supersede or satisfy the work called for by any other Mods, Naval Service Mods, S.T.Is. or S.Is.

(2) This modification is applicable only if Transmitter/Receiver type M.6 (Ref. No. 5821-99-945-6726) is fitted.

2. EMBODIMENT

This modification is to be embodied in accordance with the procedure for Class 3 modifications laid down in N.A.M.M. (A.P.(N) 140).

Effective Date: Date of Issue

3. APPROXIMATE TIME REQUIRED FOR EMBODIMENT

The work will take approximately 1 man hour.

4. DRAWINGS REQUIRED

No drawings are required for the embodiment of this modification.

5. PARTS AND SPECIAL TOOLS REQUIRED

(1) Parts and Materials

The undermentioned item is required, and, if not available, is to be demanded on the appropriate R.N. store Depot:-

Ref. No.	Nomenclature	Qty.
5915-99-970-0362	Filter Radio Interference	1

(2) Special Tools and/or Test Equipment

No special tools or test equipment are required for the embodiment of this modification.

6. MODIFICATION OF SPARES

No spares are affected by this modification.

RESTRICTED

7. CHANGE OF REFERENCE, PART AND ASSEMBLY NUMBERS

There are no changes of Reference, Part or Assembly Numbers as a result of this modification.

8. SEQUENCE OF OPERATIONS

The following is the sequence of operations:-

Note:- Before any electrical circuit is disturbed or disconnected, all electrical power supplies in, to or from the aircraft are to be disconnected. Power supplies are to be reconnected only when the person responsible for embodying or inspecting the modification is satisfied that action has been taken to make the aircraft safe for reconnection.

(1) Open the radio bay access doors.

(2) Render the aircraft electrically safe, (A.P.4347, Vol. 1, Sect.5, Chap. 1. refers)

(3) Locate the standby transmitter/receiver type M.6 and disconnect the power supply cable.

(4) Connect up filter, radio interference (Ref. No. 5915-99-970-0382) with fixed plug for power supplies on the transmitter/receiver, ensuring that clip on filter slides on to the handle of the transmitter/receiver.

(5) Connect power supply cable to appropriate plug position on the filter to ensure adequate clearance of the cable socket.

Note:- Alternative positions for the connection of the cable socket are available on the filter, and after connection of power supply cable the redundant plug is to remain blanked off.

(6) Reinstate the electrical supply, (A.P.4347, Vol. 1, Sect. 5, Chap.1 refers)

(7) Close the radio bay access doors.

9. SPECIAL TESTS AFTER EMBODIMENT

No special tests are required after the embodiment of this modification.

10. RECORDING ACTION

When this modification has been embodied and inspected in accordance with current authorised procedure, the relevant entries are to be made in the appropriate aircraft records.

11. DISPOSAL OF REDUNDANT PARTS

No parts are rendered redundant by the embodiment of this modification.

12. EFFECT ON WEIGHT AND MOMENT

This modification causes a change in the Basic weight of plus 0.75 lb. and a change in moment of minus 62lb.in.

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13. EFFECT ON AIRCRAFT OR EQUIPMENT OPERATION AND HANDLING

This modification does not affect the operation or handling of the aircraft or equipment.

RESTRICTED

M193
1/88
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(a)

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AL No 68
(Intro ARI 23134/3)
(AL No 67 cancelled)

AP 101B-1309-2
Leaflet No Q3
(Alteration 3
incorporated)

Hunter GA Mk 11 and PR Mk 11 Aircraft Radio - To make provision
for and introduce ARI 23134/3 in lieu of ARI 5848

(Mod No Hunter 1319)

(Class B2)

(AB/A/23160.-26.2.73)

NOTE: This leaflet supersedes AP 101B-1309-2, Leaflet Q3, and
is the authority for cancelling AL No. 67.

1. INTRODUCTION

Following the requirement of NSR 2013 (NASR 848) which
calls for a Priority 1 installation of ARI 23134 in Hunter GA
Mk 11 aircraft, this modification introduces the SSR 1520 Radar
system (ARI 23134/3).

(1) This modification does not supersede, partially
supersede or satisfy the work called for by any
modification, Naval Service modification, STI, SI or NTI.

2. EMBODIMENT

This modification is to be embodied in accordance with the
procedure for Class 2 modifications laid down in NMM (AP(N) 140).

3. APPROXIMATE TIME REQUIRED FOR EMBODIMENT

The work will take approximately 109 man hours. (9 to
strip; 66 to embody; 12 to re-assemble; 22 to test).

4. DRAWINGS REQUIRED

(1) The following drawings are required and are to be
demanded for Naval Stores from the Ministry of Defence
(DGA/N) London, SW1.

<u>Drawing No</u>	<u>Title</u>
E 248206 *	GA of IFF Mk 10 Installation
E 290336	GA of SSR 1520 Installation (issue 3)
C 291575	Radio Installation to make provision for and introduce ARI 23134.

* For reference purposes

<u>Drawing No</u>	<u>Title</u>
C 292901	Mod to Stb'd shelf.
B 302197	Assy of IFF/SSR Failure Lamp Bracket.
A 290459 *	Mounting Plate for IFF/SSR Junction Box.
SK 41104	SSR 1520 Installation (Routing)
SK 41666	Mod to Fuel Access Door.
D 291551	SSR 6 Cable Assembly
C 313887	SSR 6 Cable Run
F 302198	1FF/SSR Failure Lamp Bracket

*For reference purposes.

5. PARTS AND SPECIAL TOOLS REQUIRED

(1) Parts and Materials

(a) The undermentioned items comprise a Set of Parts.
 Demands for Sets of Parts are to be forwarded to the
 Director of Stores/N, MOD, London.

<u>Ref No</u>	<u>Part No</u>	<u>Nomenclature</u>	<u>Qty</u>
	D 291551	SSR 1 Cable assy	1
	D 291552	SSR 2 Cable assy	1
	C 289891	Radio Mounting	1
	C 290019	SSR Junction Box	1
	C 290883/1	Wiring diagram stb'd cockpit shelf (Pre Mod H228)	1
	C 290884/1	Wiring diagram stb'd cockpit shelf (Post Mod H228)	1
	C 290885/1	Wiring diagram supply panel (Post Mod H228)	1
	C 290887/1	Wiring diagram supply panel (Pre Mod H228)	1
	C 291575/1	Link wire (Pre Mod 228)	1
	B 290338	SSR 5 Cable assy	1
	B 290339	SSR 7 Cable assy	1
	B 290340	SSR 6 Cable assy	1
	B 290346	Mounting	1
	B 291553	SSR 4 Cable assy	1
	B 291565	IFF/SSR Test/Warning panel	1
	B 293130	Mounting beam	2
	B 291426	SSR 3 Cable assy	1
	B 295711	Aerial assy	1
	B 296935	Reinforcing plate	1
	A 290831	Blanking plate (forward)	1
	A 290832	Blanking plate (aft)	1
	A 293155	Plug mounting bracket	1
	A 295709	Cover plate	1

<u>Ref No</u>	<u>Part No</u>	<u>Nomenclature</u>	<u>Qty</u>
	F 292866	Label	1
	STD 1299/3	Stud	1
	STD 1546/19/12	Packing	6
	STD 1606/44/A6	Screw	2
	STD 1606/44/B/12	Screw	2
	STD 2045/17/26	Clip	1
	STD 2045/21/22	Clip	2
	STD 2076/35/22	Clip	1
	A25.1.B	Bolt	10
	A25.1.B	Bolt	2
	A25.2.B	Bolt	6
	A25.6.B	Bolt	3
	A25.1.C	Bolt	2
	A25.1.C	Bolt	4
	A25.1.E	Bolt	8
	A25.8.E	Bolt	4
	A32.B.14	Screw	1
	A44.B.8	Screw	2
	AGS 2001.B.1	Nut	2
	AGS 2001.C.1	Nut	6
	AGS 2002.B.1	Nut	11
	AGS 2002.E.1	Nut	1
	AGS 2008.B.1	Nut	1
	AGS 2019.B.1	Nut	1
	AGS 2050/419	Pop rivet	10
	AS 156/304	Rivet	7
	AS 161/505	Rivet	2
	AS 161/508	Rivet	10
	AS 164/304	Rivet	19
	AS 164/404	Rivet	38
	AS 1242.1.C	Bolt	10
	AS 1242.2.C	Bolt	10
	AS 1248.1.B	Bolt	4
	AS 3360.B.3.B	Bonding wire	2
	SP 15.B	Washer	19
	SP 15.C	Washer	8
	SP 15.E	Washer	11
	SP 16.B	Washer	1
	PTJB-22-55FS	Jaw nut receptacle	1
5CW/7542		Switch SP Change over	1
		Centre/off	
5CI/2560		Circuit breaker 10 amp	
		Type A2	1
5CI/4520		Protective cap	1

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Ref No	Part No	Nomenclature	Qty
10H/21791		Dummy fuse	2

(b) Service Supply items:

Ref No	Nomenclature	Qty
5895-99-107-1521	Aerial switch unit	
	Type X.16941	1
5895-99-956-3378	Transponder Type X.16298	
	C/W Mounting tray Type X.16946	1
5895-99-956-3379	Control unit Type X.16929	1
SUB/4357513	Inverter, type 182 (Ekco)	1
SUB/4352384	Inverter, tray, M2228A (Ekco)	1
F 302198 *	1FF/SSR Failure Lamp Bracket	1

Ref No	Part No	Nomenclature	Qty
<u>ADD:</u>			
5X/7424	HC 269D	Ring Tongue Tag (HELLERMAN)	2
5CX/5990		Lamp (Page 1660/C/5 Amber)	1
5L/9959118		Filament	1
	A 33-B-16	Screw	2
	AGS2001-B-1	Stiff Nut	2
	SP 15-B	Washer	2
	STD2045/21/24	Clip	2
		PVC Tubing (Spec E & I 659)	
		1/2 in dia	6 in
		Cord (Spec F 35)	A/R

The following PR Mk 11 only

STD/606-44-B12	Screw	2
AGS2001-B-1	Stiff Nut	2
SP 15-B	Washer	2

*Make from local resources, material 18 GLA
Spec L 72 - 2.50 x 2.50 approx.

(c) The undermentioned materials are also required
and if not available, are to be demanded on the
appropriate RN Stores Depot:

Ref No	Part No	Nomenclature	Qty
5F/2301	NY18007	Strapping (Hellerman)	As reqd
5F/2307	NY3255	Stud (Hellerman)	As reqd
33B/1076		Paint, azure-blue	As reqd
		Specn DTD 827 or DEF 1052A	
		Colour code BS 318C 1948-104	
33B/1136		Paint-black	As reqd
33B/1156		Paint-white	As reqd
5CW/4405544	ZA2403/1	Safety cover	1

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AL No. 68

AP 101B-1309-2
Leaflet No Q3
(Alteration 3
incorporated)

(2) Special Tools and Test Equipment

No special tools or test equipment are required for the embodiment of this modification.

6. MODIFICATION OF SPARES

The following list shows the spares affected and the parts required to modify them:

<u>Ref No</u>	<u>Part No</u>	<u>Nomenclature</u>	<u>Qty</u>
26FX/2561	C 179791	Fuel access door	
Parts required:-			
	B 296935	Reinforcing plate	1
	A 295709	Cover Plate	1
	AS 161/505	Rivet	2
	AS 161/508	Rivet	10
	AS 164/404	Rivet	38
	AS 1242.1.C	Bolt	10

7. CHANGE OF REFERENCE, PART AND ASSEMBLY NUMBERS

The embodiment of this modification changes Reference, Part and Assembly Numbers as follows:-

<u>Ref No</u>	<u>Old Part/Assy No</u>	<u>Nomenclature</u>	<u>Ref No</u>	<u>New Part/Assy No</u>
26FX/2561	C 179791	Fuel access door	26FX/	C 296936
-	A 212354	Mounting plate	-	A 290459
-	A 226077	Aerial switch plate	-	A 296743
-	A 251667	Mounting angle (Top)	-	A 291568

8. SEQUENCE OF OPERATIONS

The following is the sequence of operations:-

NOTE: Before any electrical circuit is disturbed or disconnected, all electrical power supplies in, to or from the aircraft are to be disconnected. Power supplies are to be reconnected only when the person responsible for embodying or inspecting the modification is satisfied that all action has been taken to make the aircraft safe for reconnection.

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(1) Render the aircraft electrically safe. (AP 101B-1309-1B, Sect 5, Chap 1 refers).

(2) Remove the sliding hood (AP 101B-1309-1A, Sect 3, Chap 1 refers).

(3) Remove the pilot's seat. (AP 109A- 0002-1 refers)

(4) Remove the starboard cockpit shelf. (AP 101B-1309-1B, Sect 5, Chap 1 refers).

(5) Remove the radio bay access door.

(6) Remove the fuel access door. Remove and discard cooling pipes, Part Nos A191858 and A198927 with couplings, Ref No 10B/16395 (2 off).

(7) Remove the TACAN access door.

(8) In radio bay, starboard side, at lower radio bearer, disconnect cables from inverter, Type 200, Ref No 5U/5083. Remove and discard inverter. Disconnect earth cable E12A, Part No A 205398 from earth point and discard. Remove and discard modified inverter tray, Part No B 243559 together with equiflex mountings, Ref Nos 10AJ/157 (3 off) and 10AJ/162 (1 off) and spacers, Part No F 192842 (8 off). Drawing No E 248206 'Detail A' refers.

(9) At front face of frame 19, starboard tank door, from suppressor Type G 2, Ref No 5CY/4316, disconnect and discard IF 9 Cable assy, Part No B 222171 and IF 8 cable assy, Part No B 222170. Remove and discard the suppressor together with fuseholder screen, Part No A 210733, including fuse 2.5 amp, Ref No 10H/21797. 'Detail B' of Drawing No E 248206 refers.

(10) Remove the suppressor mounting plate, Part No A 212354 and retain for modification and refitment.

(11) From Trans/receiver Type RT 82/APX6, disconnect cables, remove and discard the set together with check washers, Ref No 10A/17930 (4 off) and adaptor angle, Type U6-212/U, together with radio mounting, Part No C 208558.

(12) From supply panel disconnect and discard IF 6 cable assy, Part No B 233432.

AL No. 68

AP 101B-1309-2
 Leaflet No Q3
 (Alteration 3
 incorporated)

(13) From supply panel and IFF circuit breaker disconnect IF 13 cable assy, Part No B 222173. Disconnect the cable from the aerial switch at base of frame 19 starboard side and from the altitude switch situated at top of frame 19. Remove and discard the cable.

(14) Remove and discard the altitude switch, Ref No 5CW/6167.

(15) From the supply panel and aerial switch disconnect, remove and discard IF 7 Cable assy, Part No C 227883.

(16) From the coder, Part No R 16-AN-KY81/AP A89 disconnect cables IF 18 and IF 19. Remove and discard the coder together with mounting X 6475, Ref No 10AJ/646, check washers, Ref No 10A/19429 (4 off) and carrier, Part No C 225189. Discard IF 19 cable assy, Part No B225674.

(17) Disconnect IF 18 cable assy, Part No B 225673 from bulkhead connector at frame 14 and discard.

(18) From aerial switch at base of frame 19, disconnect IF 11 cable assy, Part No B 222172. Remove and discard aerial test switch Ref No 5CY/6431. Disconnect cable from aerial switch unit situated on aft face of top diaphragm of frame 16, port side, and discard.

(19) From the aerial switch unit Type 6850, Ref No 10F/19511 disconnect and discard IF 10 cable assy, Part No B 222176. Disconnect IF 12 and IF 14 cable assys, Part Nos B 248705 and B 222178 respectively. Remove and discard the aerial switch unit.

(20) Remove and discard IF 14 cable assy, Part No B22178.

(21) Lower the TACAN panel (AP 101B-1309-1B, Sect 6, Chap 2, App 1 refers).

(22) Gaining access through the nose wheel bay, disconnect IF 12 cable assy, Part No B 248705 from aerial situated at top of bay aft of frame 4. Withdraw cable into the bay, remove and discard.

(23) At frame 14, starboard side, at position from which IF 17 cable assy was removed, temporarily disconnect other cables. Remove and discard blanking plate, Part No A 197115 from front face of frame and steady, Part No A 209279 from rear face. Fit new blanking plates, Part Nos A 290831 on forward face and A 290832 at aft face as shown at 'View on forward face frame 14' of Drawing No C 291575. Drill redundant 2 holes with rivets. Part No AS 164/304. Re-connect cables.

(24) In radio bay at circuit breaker mountings below the supply panel, starboard side, remove and discard IFF circuit breaker, Ref No 5CY/2564 and protective cap, Ref No 5CY/4520. Add lettering "SSR" to existing lettering "IFF" at top mounting and re-part number the mounting as A 291568 as shown at 'Detail B' of Drawing No C 291575.

(25) Fit circuit breaker, Ref No 5CY/2560 with protective cap Ref No 5CY/4520 as shown at 'Detail A' of Drawing No C 291575.

(26) Modify wiring of supply panel as indicated at 'Mod to supply panel' of Drawing No C 291575, using dummy fuse, Ref No 10H/21791, for Post Mod 228 aircraft and link wire, Part No C 291575/1 for Pre Mod 228 aircraft. Connect in end 'B' of SSR 4 cable assy, Part No B 290338. Remove existing wiring diagrams and fit new diagrams, Part No C 290887/1 (Pre Mod 228 aircraft) C 290885/1 (Post Mod 228 aircraft).

(27) At aerial switch plate at base of frame 19, forward face, obliterate existing lettering and re-letter as shown at 'Assy of aerial switch' of Drawing No C 291575. Re-part number the switch plate as A 296743.

(28) To modified aerial switch plate fit switch, Ref No 5CW/7542 as shown at 'View on frame 19 looking aft' of Drawing No E 290336.

(29) Remove the third starboard tank access door fixing and replace with stud, Part No STD 1299-3. Paint structure a 2 ins dia circle around the stud with azure-blue paint as shown at 'View on frame 19 showing fuel tank access door fixings' of Drawing No C 291575.

(30) At top of frame 19, picking up on existing mounting bracket (Part No A 196301) fit plug mounting angle, Part No A 293155, as shown at 'View on frame 19 looking aft' of Drawing No E 290336 (issue 3).

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incorporated)

(31) At upper radio mountings, forward and aft, Part No B 225022, mark off and drill 1 hole morse No 25 (3.80 m/m), as shown at 'Detail J' of Drawing No E 290336 (issue 3).

(32) Fit mounting beams, Part No B 293130 (2 off) and radio mounting, Part No C 289891 to existing upper radio mounting and fit bonding flex, Part No AS 3360.B.3.B, as shown at 'Detail J' of Drawing No E 290336 (issue 3).

(33) To radio mounting, Part No C 289891 fitted at sub-para (32), fit mounting tray 16946 and transponder SSR 1520 Type X 16928, Ref No 5895-99-956-3378 as shown at side elevation and 'Detail J' of Drawing No E 290336 (issue 3).

(34) Forward of the transponder, fit inverter tray M 2228A, Ref No 5UB/4352384 and inverter Type 182, Ref No 5UB/4357513 as shown in side elevation of Drawing No E 290336 (issue 3).

(35) At top of frame 16, aft face, port side, picking up on holes left vacant by removal of aerial switch unit at sub-para (19), fit new aerial switch unit Type 16941, Ref No 5895-99-107-1521, as shown at 'Detail C' of Drawing No E 290336 (issue 3).

(36) Modify the mounting plate, Part No A 212354 removed and retained at sub-para (10) with additional anchor nuts, Part Nos AGS 2008.B.1 and AGS 2019.B.1 and removal of label, Part No F 216184 as shown at 'frame 19 looking aft showing mounting for IFF/SSR JB' of Drawing No C 291575 (Refer also to Drawing No A 290459). Re-part number the modified mounting plate as A 290459 and fit to starboard tank access door as shown.

(37) To mounting plate fitted at sub-para (36), fit SSR junction box, Part No C 290019 as shown at 'Detail E' of Drawing No E 290336 (issue 3).

(38) Connect in ends 'A' and 'C' of SSR 4 cable assy, fitted to supply panel at sub-para (26), to the IFF/SSR junction box and inverter respectively.

(39) At aerial switch unit connect in end 'B' of SSR 3 cable assy, Part No B 291426, run down face of frame taking end 'A' across to and connecting into the IFF/SSR junction box. Continue end 'C' to aerial test switch at base of frame and connect into switch. Fit safety cover, Part No ZA2403/1 (5CW/4405544).

(40) Connect in SSR 5 cable assy, Part No B 290338 between aerial switch unit and transponder.

(41) At aerial switch unit connect in SSR 7 cable assy, Part No B 290339, run down aft face of frame 16 across radio bearers and down front face of frame 19. Run aft to lower aerial position at frame 24.

(42) Fit SSR 2 cable assy, Part No D 291552 connecting end 'B' to transponder, end 'D' to the inverter, end 'C' to the IFF/SSR junction box and stow ends 'E' and 'F' at plug mounting angle fitted to the top of frame 19 at sub-para (30). Carry end 'A' forward to frame 14.

(43) Strap cables and clip ends 'E' and 'F' of SSR 2 cable into position as instructed on Drawing No E 290336 (issue 3).

(44) "Gaining access through nose wheel bay to the existing aerial in top skin, connect in SSR 6, cable assembly Part No B290340. Refer to drawing C313887 for run of cable, place PVC tubing and tie with cord, drill two holes morse No 25 for the attachment of clips Part No STD 2045/21/24 positioned and dimensioned on drawing with clips on cable, attach and secure in position".

(45) Close the TACAN panel (AP 101B-1309-1B, Sect 2, Chap 6, App 1 refers) and replace the TACAN access door.

(46) In cockpit on starboard side, aft of frame 9, locate Engine anti-ice switch plate, Part No B202197. Mark off and drill 2 holes morse No 25 (3.80 m/m) to match IFF/SSR Failure Lamp Bracket, Part No F 302198 (to be manufactured from local resources). Fit bracket as shown on Drawing No B 302197. Remove ring tongue tag from lamp (Ref No 5CX/5990) (Page A1660/C/5 Amber) (Service Supply) and crimp to cable SSR 1 Part No D291551 as shown. Fit lamp (Ref No 5CX/5990) and Filament (Ref No 5L/9959118) as shown on Drawing B 302197.

(47) From starboard cockpit shelf removed at sub-para (4) remove and discard 5 amp fuse, Ref No 10H/21798 from position 3 and fit dummyfuse, Ref No 10H/21791 as indicated on Drawing No C 292901.

(48) Remove and discard control unit, Part No C544/APX 6, Coder control unit, Part No R 16. AN.C.1272/APA 89 together with IF 15 cable assy, Part No B 251115 and IF 17 cable assy Part No B 225672. Remove and discard IFF switch, Ref No 5CW/7541 together with IF 16 cable assy, Part No A 224558 and label, Part No F 253236. Remove and retain the TACAN controller. Remove and discard bearer, part No B 251114. Drawing No C 292901 refers.

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incorporated)

(49) Fit new label, Part No F 292866 and mounting Part No B 290346. To mounting, fit the TACAN controller removed at sub-para (48), Control unit Type X 16929, Ref No 5895-99-956-3379, and IFF/SSR Test/warning panel, Part No B 291565 as shown on Drawing No C 292901.

(50) Connect SSR 8 cable assy (part of IFF/SSR warning panel) to terminals 1 and 48. Drawing No SK 41104 refers.

(51) At frame 14 connect in SSR 1 cable assy Part No D 291551 to SSR 2 cable assy fitted at sub-para (42), run forward beneath starboard cockpit shelf, connecting end 'D' to indicator, Part No F 232534 fitted at sub-para (46). Strap and clip cable into position as shown in side elevation of Drawing No E 290336 (issue 3).

(52) Re-place the modified starboard cockpit shelf (AP 101B-1309-1B, Sect 5, Chap 1 refers excepting that IFF coder has been removed). Connect in SSR 1 cable assy end 'A' to the SSR control unit and end 'C' into SSR 8 cable - part of IFF/SSR warning panel (SK 41104 refers). Remove existing wiring diagram and fit new diagram Part No C 290883/1 (Pre Mod 228 aircraft) C 290884/1 (Post Mod 228 aircraft).

(53) From fuel access door removed at sub-para (6), remove and discard aerial assy Part No B 226056. Blank off hole using cover plate, Part No A 295709, as shown on Drawing No SK No 41666.

(54) Drill out rivets, remove and retain stiffener. Pin reinforcing plate, part No B 296935 and scribe door skin for aperture. Remove the reinforcing plate, cut, file and deburr the aperture. Pin reinforcing plate and stiffener into position, mark off stiffener to suit aperture and remove both stiffener and reinforcing plate. Cut stiffener into portions, mark off and chamfer. Fit and rivet the reinforcing plate and two portions of stiffener and rivet up as shown on Drawing No SK No 41666. Re part number door as C 296936.

(55) Ensuring clean surfaces, fit aerial assembly, Part No B 295711 bolting into position as shown at side elevation of Drawing No E 290336 (issue 3).

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(56) Replace the modified fuel access door connecting in SSR 7 cable assy to the aerial.

(57) Replace the radio bay access door.

(58) Replace the pilot's seat (AP 109A-0002-1 refers).

(59) Replace the sliding hood (AP 101B-1309-1A, Sect 3, Chap 1 refers).

(60) Reinstate the electrical supply.

(61) Record the embodiment of this modification on the front fuselage modification plate.

9. SPECIAL TESTS AFTER EMBODIMENT

When this modification has been embodied and inspected, the following special tests are to be carried out.

(1) Test the complete installation in accordance with AP 114J-0101-16.

(2) Carry out functional tests of all systems which have been disturbed for the purpose of embodying this modification in accordance with current testing instructions.

(3) As the embodiment of this modification involves disturbance of the Escape System, an independent check of this system is to be carried out in accordance with Namm article 3705.

10. RECORDING ACTION

When this modification has been embodied and inspected in accordance with current authorised procedure, the relevant entries are to be made in the appropriate aircraft records.

11. DISPOSAL OF REDUNDANT PARTS

(1) The undermentioned parts rendered redundant by the embodiment of this modification are to be returned to D of S.

<u>Ref No</u>	<u>Part No</u>	<u>Nomenclature</u>	<u>Qty</u>
5CW/6167		Altitude switch	1
5CW/6431		Switch	1
5CW/7541		Switch	1
5CY/2564		Circuit breaker	1
5CY/4316		Suppressor Type G2	1
5CY/4520		Protective cap	1
5U/5083		Inverter Type 200	1

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<u>Ref No</u>	<u>Part No</u>	<u>Nomenclature</u>	<u>Qty</u>
10A/17930		Check washer	4
10A/19429		Check washer	4
10AJ/157		Equiflex mounting Type 966	3
10AJ/162		Equiflex mounting Type 971	1
10AJ/646		Mounting X 6475	1
10B/16395		Coupling (RH)	2
10F/19511		Aerial switch unit Type 6850	1
10H/21797		Fuse 2.5 amp	1
10H/21798		Fuse 5 amp	1
5935-99-911-6831	CZ62275	Bulkhead Plug/Socket	1
		Trans-receiver Type RT 82/APX6	1
		with adaptor angle Type U6-212/U	
		Control unit	1
		R16-AN-C1272/AP.A89	
		Coder R16-AN-KY81/AP.A89	1
		Control unit Type C544/APX6	1
		(Mod 4855)	

(2) The undermentioned parts rendered redundant by the embodiment of this modification are to be disposed of in accordance with current instructions.

<u>Ref No</u>	<u>Part No</u>	<u>Nomenclature</u>	<u>Qty</u>
	C 208558	Radio Mounting	1
	C 225189	Carrier	1
	C 227883	IF 7 cable assy	1
	B 222170	IF 8 cable assy	1
	B 222171	IF 9 cable assy	1
	B 222172	IF 11 cable assy	1
	B 222173	IF 13 cable assy	1
	B 222176	IF 10 cable assy	1
	B 222178	IF 14 cable assy	1
	B 225672	IF 17 cable assy	1
	B 225673	IF 18 cable assy	1
	B 225674	IF 19 cable assy	1
	B 226056	Aerial assy	1
	B 233432	IF 6 cable assy	1
	B 243559	Adaptor plate	1
10HB/1384	B 248705	IF 12 cable assy	1
	B 251114	Mounting	1
	B 251115	IF 15 cable assy	1
	A 191858	Pipe	1
	A 197115	Blanking plate	1
	A 198927	Pipe	1
	A 205398	E12A cable assy	1

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<u>Ref No</u>	<u>Part No</u>	<u>Nomenclature</u>	<u>Qty</u>
	A 209279	Steady	1
	A 210733	Fuse holder screen	1
	A 224558	IF 16 cable assy	1
	F 192842	Spacer	10
	F 212534	Safety cover	1
	F 216184	Label	1
26FX/20344	F 253236	Label	1
(S/S 20153)		Wiring diagram supply panel	1
		Wiring diagram starboard	1
		cockpit shelf	

12. EFFECT ON WEIGHT AND MOMENT

The modification causes a change in the Basic Weight of minus 25.8 lb with a change in the moment of plus 1921 lb ins about the CG datum.

13. EFFECT ON AIRCRAFT OR EQUIPMENT OPERATION AND HANDLING

This modification has the following effect on operation and handling.

The replacement of the IFF Mk 10 radar system by the ARI 23134/3 (SSR 1520) system gives the added facility of using civil as well as military channels for identification. The presentation of the starboard cockpit shelf is altered in that the 'ON-OFF' switch for IFF is deleted. The 'ON-OFF' switch for the SRR 1520 being incorporated into the control unit which occupies the position previously used by the IFF control unit. The position previously occupied by the IFF coder control unit is now used to house the IFF/SSR Test/Warning panel. A warning lamp is provided on the starboard side of the cockpit adjacent to the anti-icing switches.

14. EFFECT ON SERVICING AND ON GROUND SUPPORT EQUIPMENT

Since the IFF radar system ARI 5848 is replaced by the SSR radar system ARI 23134/3, the ground test equipment now required will be as laid down in RIM 160 Part 5 and the performance test will now require Test set CRM 554.

There is no effect on Ground support equipment.

Printed for Her Majesty's Stationery Office by
J. Oade & Sons Ltd., Harrogate. 940012 150 2/73 1735/1

N193
TL
(Intro AD120(ARI23288/17))

AP101B-1309-2
Leaflet No Q4

HUNTER Mks. G.A. 11 AND P.R.11 AIRCRAFT

Mod No Hunter 1429 (Class B/2)

File Ref D/SM25/10/20/1512

ADP No HU 142900

RADIO: to make provision for and introduce VHF Communication System AD120 (ARI 23288/17 in lieu of TR 1936B (ARI 5849/1)

Part A - G A Mk 11

Part B - PR Mk 11

Amendment Instructions: Remove and destroy Pages 1 to 2 of Leaflet No Q4 issued as Amdt 85 and substitute these revised Pages 1 to 2 (1 leaf). Record the incorporation on the Amendment Record Sheet.

Note:- This leaflet is issued for Informatory Purposes only.

1. INTRODUCTION

This modification fits the Marconi AD 120 VHF system to the aircraft. This has necessitate a redesign of the Stbd. shelf to accommodate the new controller, and a repositioning of the existing components. The oxygen flow dolls eye is fitted to the centre instrument panel. The new transceiver replaces the old and the amplifier is fitted adjacent on the under fuselage door.

A TRIAL INSTALLATION WAS SUCCESSFULLY COMPLETED ON HUNTER AIRCRAFT MK PR 11 WT 723 AT BAe. BITTISWELL

Note: This Hunter PR 11 is the only aircraft affected by Part B of this modification, therefore further references to Part B of this modification in this leaflet are for record purposes only.

(1) This modification does not supersede, partially supersede or satisfy the work called for by any modification, Naval Service Modification, Service Engineered Modification, SRIM or Special Instruction (Technical)

(2) This modification is essentially connected with Mod No 1390: (RADIO: To make provision for and introduce VHF TR 1936B (ARI 5489/1)) and NSM 3045 (Introduction of VHF (Pre Mod 228) with GG Sight removed).

If that work is not already embodied it must be effected concurrently.

Jan 87(Amdt 87)

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2. EMBODIMENT

This modification will be embodied in Naval Aircraft to the DML and any subsequent updates; by RAF Abingdon or the Contractor to a programme controlled by the Flag Officer Naval Air Command.

3. PARTS AND SPECIAL TOOLS REQUIRED.

This modification introduces the following RNSD Copenacre, Service Supply items of main equipment.

<u>Ref No</u>	<u>Part No</u>	<u>Nomenclature</u>	<u>Qty</u>	<u>Class of Equipment</u>
0624/5821-99- 639-5428	AA1201-2	Transmitter/Receiver (Marconi)	1	
0624/5821-99- 639-2496	AA1202-2	Control Unit (Marconi)	1	
0624/5821-99- 639-2482	AA1205-1	Mounting (Marconi)	1	
► 0624/5821-99- 746-9230	AA15208-3	(Amplifier)	1	

4. CHANGE OF REFERENCE, PART AND ASSEMBLY NUMBERS.

The embodiment of this modification changes Reference, Part and Assembly Numbers as follows:-

<u>Ref No</u>	<u>Old</u> <u>Part/Assy No</u>	<u>Nomenclature</u>	<u>New</u> <u>Ref No</u>	<u>Part/Assy</u> <u>No</u>
	E250634	Stbd Shelf Assy		E332336
26FX/13370	D294956	Box Radio Supply		D332316
	C206723	Cable Form C		C332436
	672 Sht 38	UHF/VHF Relay Box		B332318
	B294955	Assy of Relay and) Tag Mounting)		B332339
	A236127	Tag Board		A332338

5. SPECIAL TESTS AFTER EMBODIMENT

- (1) When this modification has been embodied and inspected, carry out functional test of all systems which have been disturbed for the purpose of embodying this modification in accordance with current testing instructions.
- (2) As the embodiment of this modification involves disturbance of the assisted escape system an independent check of the assisted escape system is to be made in accordance with Namm AP100 N . 0140, Chapt 37.
- (3) As the embodiment of this modification involves disturbance of the pitot-static system, a check of the pitot-static system is to be made in accordance with Namm AP10N-140, Chapt 38.
- (4) When this modification has been embodied and inspected carry out the following tests.

Main and Standby U.H.F. (ARC-52 and M4/ 6/TR10056)

- (a) Ensure VIF control unit switched 'OFF'.
- (b) Ensure Normal/Standby selector switch at 'ARC52'.
- (c) Function ARC 52 in accordance with relevant AP's to ensure correct operation including PTT, modulation level, correct operation of volume control Tone Switch (ARC-52 transmits MCW when switch is operated).
- (d) Select Normal/Standby switch to 'STDBY' noting that the ARC 52 continues to run but that no signals are heard from it.
- (e) Functionally test standby T/R by selecting Guard (G) then alternative (A) channels in turn and carry out transmission and reception checks noting that both main and emergency. PTT switches are operative. Select standby UHF battery switch to EMERGENCY and check the emergency. PTT switch operates. Return battery switch to normal as soon as possible to avoid discharging the emergency battery. Return Normal/Standby switch to 'ARC 52'.
- (f) Select an active channel on ARC 52 control unit and set volume control to comfortable level.

VHF T/R AD120 and Audio- Mic Amplifier

- (a) Switch VHF T/R on and select un-used channel. Press TEST button and confirm that squelch circuit is

disabled i.e. excessive signal noise/hiss apparent in headset. Release button, turn ARC 52 volume fully up and check for cross-talk (breakthrough) of audio signals from ARC 52: any signals present should be at least 60 dB down on VHF signals being received at the same time i.e., the spurious signal is only just audible but not necessarily legible.

(b) Switch ARC 52 OFF. Function VHF T/R in accordance with relevant publications, checking for correct operation of PTT, modulation level, and squelch threshold level.

Testing of complete combined UHF/VHF Systems

(a) Carry out R/T checks between aircraft and suitable ground station to confirm that quality of speech modulation is acceptable, particularly on VHF where an additional E.M.-to-carbon microphone adaptor/audio amplifier is now in circuit.

(b) Activate hydraulic warning circuit and check that warning note is heard in headset. NOTE:- this signal does not modulate the transmitter during PTT operation.

(c) Activate the auto-tone-on-eject circuit and confirm that the audio tone is satisfactory on each selected T/R.

Interference

(a) During functioning of VHF-UHF installation check that there is no significant increase in received or transmitted interference levels when the flight instrument inverters are operating (ie battery and engine master switches 'ON'). and when other radio - radar equipments are functioning: in particular check that radiated interference picked up from TACAN and SSR is negligible ie below S_2^1 .

6. DISPOSAL OF REDUNDANT PARTS

The undermentioned parts of main equipment are rendered redundant by the embodiment of this modification:-

<u>Ref No</u>	<u>Part No</u>	<u>Nomenclature</u>	<u>Qty</u>	<u>Class of Equipment</u>
10L/5820-99-105-1075		Control Unit Type 382	1	Hi-Value
0624/5821-99-430-7068		Transmitter/Receiver TR1936B (complete with Mtg Rack)	1	P

<u>Ref No</u>	<u>Part No</u>	<u>Nomenclature</u>	<u>Qty</u>	<u>Class of Equipment</u>
0624/5821-99-430-6994		Mounting	1	P
5CW/7541		Switch Nose Lamp	1	C
5CW/1047693		Switch UHF/VHF	1	C
5X/1002695	C223212/1	Terminal Block	1	C

7. EFFECT ON MASS AND MOMENT

This modification causes a weight change of minus 22 lb and a change of moment of plus 2480 lb ins about CG datum.

8. EFFECT ON AIRCRAFT OR EQUIPMENT OPERATION AND HANDLING

- (a) The mod introduces an AD 120 VHF set (ARI 23288/17) in place of the TR 1936 VHF set. The new VHF control unit is on a rearranged starboard shelf which houses (front to rear) Tacan, AD 120, IFF/SSR, fuel panel and oxygen regulator.
- (b) The IFF/SSR fail light and test button are outboard of the IFF/SSR control unit. A repeater oxygen flow magnetic indicator is on the centre instrument panel.
- (c) Aircraft with mod 1391 have the Harley light switches moved to the revised fuel panel on the starboard shelf.
- (d) The AD 120 Control unit has two frequency selector knobs with an associated indicator window, an off/on switch, a volume control and test (squelch disable) button.
- (e) The previous UHF/VHF changeover switch is deleted (AD 120 selections cut UHF signals automatically).

9. EFFECT ON SERVICING AND ON GROUND SUPPORT EQUIPMENT

- (a) Support equipment and simulators are not affected by the embodiment of this modification, but servicing is increased.
- (b) All relevant APs will be considered for amendment action to take account of the changes introduced by this modification.

775/4404 (RO) 1928006/2/84.

M193
1R5

Radio
Intro Of ARI 23301/80

AP 101B-1309-2
Leaflet No Q5

HUNTER GA 11/ PR 11 AIRCRAFT

Mod No Hunter 1480 (Class B/2 Parts A&B)

(Part C - B/O by return to
Aerostructures Hamble)

File Ref: D/SMS 90/10/20/2609

ADP No HU148000

Radio - To make provision for and introduce UHF Communication
System PTR 1751WW (ARI 23301/80) and Tone Generator
Racal W691/2 (10K 5831-99-6352067), in lieu of ARC 52
(RIM 236 REF)

Part A - To introduce Electrical and Structural provisions.

Part B - To introduce Radio Installation PTR 1751WW and Tone
Generator Racal W691/2.

Part C - To introduce Radio Relay Box Pt No D342915 in lieu and
by conversion of Radio Relay Box Pt No D257214 or
D332316.

HEALTH HAZARD The equipment introduced by this Modification
contains components that incorporate the highly
toxic material Beryllium and/or its oxide
Beryllia. Information on the safe handling of
Beryllium/Beryllia is given in AP 100N-0140
Naval Aircraft Maintenance Manual.

Amendment Instructions: Insert this leaflet (9 leaves) in
correct sequence. Update the Section/Sub-section/Equipment
Modification List. Sign the Amendment Record Sheet.

1. INTRODUCTION

This modification replaces the existing ARC-52 main UHF
installation with an updated UHF installation. Only minor
structural alterations are required, and the existing wiring is
used almost unchanged. No modifications are required to the
aerial installation.

(1) This modification is essentially connected with Mod No 1429 - (Radio, to make provision for and introduce VHF communication system AD 120 (ARI 23288), if that work is not already embodied, it must be effected concurrently.

2. EMBODIMENT

This modification is to be embodied in accordance with the procedures for Class B/2 modifications laid down in NMM (AP 100N-0140, Chap 10). To a programme controlled by DGA(N)FWR.

3. APPROXIMATE TIME REQUIRED FOR EMBODIMENT

The work will take approximately 26 man hours (1 to strip; 22 to embody; 1 to reassemble; 2 to test).

4. DRAWINGS REQUIRED

The following drawings are required and are to be demanded from the Ministry of Defence (NAVY), DGA (N) Elog Mods, Room 205, Aircraft Support Executive, Yeovilton, Somerset BA22 8HW.

<u>Drawing No</u>	<u>Title</u>
B 343550	Location of fixing points for Filter Unit
C 246459	Assy of Control Unit Mountings
C 343051	Installation of Cover Plate - Control Unit Mtg
E 342916	Retro UHF Installation
Shts 1 & 2	(ARI 23301)

5. PARTS AND SPECIAL TOOLS

(1) Parts and Materials

(a) The Modification Kit which consists of the following items will be assembled by No 16 MU under Reference No 26FX 111480.

(i) Items supplies by the contractor:

<u>Ref No</u>	<u>Part No</u>	<u>Nomenclature</u>	<u>Qty</u>
	A343416	Panel, Circuit Breaker Mtg	1
10AC/5305-00-0950042	A32-B16	Screw, Round Head, 4BA	2
10AC/5310-99-1201086	AGS 2002 B1	Nut, Lock, 4BA	4

Qty	Ref No	Part No	Nomenclature	Qty
1		B343549	Assy, Cable, F202	1
1		C343548	Plate, Mtg, Filter	1
4		A262-6012	Screw, Pan Head	4
4		SP122E	Washer	4
4		S141-06	Nut, Lock	4
2		A25-3C	Bolt, 2BA, 0.75in	2
2		A25-2C	Bolt, 2BA, 0.65in	2
1		72141-424-0/AV2	Block, Terminal, 4-way	1
1		41853-424-0	Assy, Cover	1
2	5CZ/5340-99-6436329	36765-304-0	Pillar	2
2	5CZ/5940-99-7102996	33537-103-0	Link, 2-way	2
2		2134-394-0	Washer SP 10B	2
2	5365-99-9713442	36162-502-0	Spacer	2
3	5X/5940-99-6225782	32440 (Blue)	Terminal, Ring Tongue, 4BA	3
2	5940-99-9402631	32542 (Yellow)	Terminal, Ring Tongue, 4BA	2
3 ft		BS2G221-110/.0076	Wire, Minyvin 12	3 ft
1 set		SL 4811 VAR	Sleeve, Ident	1 set
12	5340-99-7903782	TY523MR	Tie, Cable, Ty-Rap	12

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<u>Ref No</u>	<u>Part No</u>	<u>Nomenclature</u>	<u>Qty</u>
5940-99- 6615745	31899 (Blue)	Terminal, Ring Tongue, 3BA	1
5940-99- 7428847	32543 (Yellow)	Terminal, Ring Tongue, 3BA	1
	B343052	Plate, Blanking	1
	SP78-404	Rivet	3
	AGS 2007 C1	Nut, Anchor, 2BA	2
	AS 164-305	Rivet	4

(ii) Service Supply Items:

<u>Ref No</u>	<u>Part No</u>	<u>Nomenclature</u>	<u>Qty</u>
5CY/5925-99- 642-9790		Breaker, Circuit, 7.5A	1

(b) Additional government furnished equipment forming part of the complete modification but not assembled in the kit:

<u>Ref No</u>	<u>Part No</u>	<u>Nomenclature</u>	<u>Qty</u>
5821-99- 769-5327	630/1/37854/ 100	Unit, Control, UHF PV1754AA	1
5821-99- 766-7945	630/1/37851/ 118	Transceiver, UHF PTR 1751WW	1
5821-99- 768-3993	630/1/37846/ 101	Unit, Interface PV1746BB	1
10ZZ/471338	630/1/51308	Kit, Installation,	1
5821-99- 649-9755	630/1/37848/ 001	Tray, Mounting UHF PV1748B	1
26FX/0000- 99-0248477	D342915	Box, Assy, Radio Relay *	1
5915-99- 783-6305	630/1/37857	Unit, Filter, PV1757A	1

* Radio Relay Boxes are to be obtained, (Post RTW action at Aerostructures, Hamble), in accordance with instructions from DGA(N)FWR & SM 16c1.

NOTE:

All the above items are to be demanded in accordance with current regulations.

(c) The following materials are to be supplied under unit arrangements:

Ref No	Part No	Nomenclature	Qty
8030-99-2249318	Loctite 270	Compound, Thread Locking	A/R

HEALTH HAZARD:

The item listed above has Health and Safety implications. Refer to JSP 395(F) for the relevant data sheet.

(2) Special Tools and Test Equipment

No special tools or test equipment are required for the embodiment of this modification, other than the spanner Part No 630/2/43433, supplied in the installation kit, Part No 10ZZ/471388.

6. MODIFICATION OF SPARES

No spares are affected by this modification.

7. CHANGES OF REFERENCE, PART AND ASSEMBLY NUMBERS

There are no changes of Reference, Part or Assembly Numbers as a result of this modification.

8. SEQUENCE OF OPERATIONS

The following is the sequence of operations:

WARNINGS:

1. REFER TO THE SERVICING MANUAL 'LETHAL WARNING' MARKER CARD AND OBSERVE THE RELEVANT SAFETY PRECAUTIONS BEFORE ENTERING THE COCKPIT OR PERFORMING ANY OPERATIONS ON THE AIRCRAFT.
2. BEFORE ANY ELECTRICAL CIRCUIT IS DISTURBED OR DISCONNECTED, ALL ELECTRICAL POWER SUPPLIES IN, TO OR FROM THE AIRCRAFT ARE TO BE DISCONNECTED. POWER SUPPLIES ARE TO BE RECONNECTED ONLY WHEN THE PERSON RESPONSIBLE FOR EMBODYING OR INSPECTING THE MODIFICATION IS SATISFIED THAT ALL ACTION HAS BEEN TAKEN TO MAKE THE AIRCRAFT SAFE FOR RECONNECTION.

3. THIS MODIFICATION IS TO BE EMBODIED AS DIRECTED WITHOUT ANY DEVIATION, AND THE PRESCRIBED ROUTING OF ELECTRICAL CABLES IS TO BE STRICTLY FOLLOWED.

CAUTION

Do not connect the new PTR 1751 WW Transceiver into the system before disconnecting and removing the redundant UHF Control Unit, or the Transceiver will be damaged.

NOTES:

1. Retain all items of equipment removed, together with securing items, ie nuts, bolts, washers, 'p' clips, until after completion of embodiment, when redundant items can be discarded.
2. Where instrument panels, instruments, LRUs and components etc are removed, these are to be inspected for serviceability before being placed in a holding store for safe keeping. All open ended pipes, plugs or apertures are to be suitably masked off, both on instruments, cable assemblies and airframe, to prevent ingress of swarf, debris etc. When disconnecting existing cable cores ensure all core idents are legible to assist on reassembly.
3. Standard stock items, eg nuts, bolts and washers, and securing fittings retained for re-use, are to be examined for serviceability before re-use.
4. All electrical wiring is to be identified IAW current procedures.
5. Dimensions quoted within this work schedule are to be verified by reference to the appropriate drawing.
6. Read all instructions before proceeding with the modification, and take note of any notes contained within the text.
7. Obtain certification that all blanks have been removed before refitting pipes or components.
8. Enter any breakdowns not mentioned in this text in the breakdown book.
9. Ensure that all foreign objects have been removed from within the aircraft and ensure inspection is satisfied before closing up.

10. Ensure that the modification kit is the correct type for the aircraft to be modified.

General

- (1) Carry out a full Functional Check of the existing radio system IAW the relevant procedures.
- (2) Render the aircraft electrically safe IAW AP 101B-1309-1B, Sect 5, Chap 1, Group A1.
- (3) Remove the radio equipment bay access panels, and store them in a safe place.
- (4) Observing all relevant safety precautions, lower the gun bay to clear the forward screws on the UHF circuit breaker mounting strips. These items are mounted below the main supply panel.
- (5) Disconnect and remove the aircraft's main and standby batteries IAW the relevant procedures.
- (6) Ensure that the ejection seat is removed from the aircraft.

Cockpit

- (7) In the cockpit, electrically disconnect and remove the redundant UHF Control Unit from its left-hand console position.
- (8) Make preparations to contain swarf etc within the left-hand console aperture. Blank off exposed connectors and pipe ends as required.
- (9) Referring to drawing C246459, de-rivet and remove the redundant filler strip, item 15.
- (10) Referring to drawing C343051, locate and clamp in position the new blanking plate, B343052 item 1. Secure the blanking plate with 3 off rivets SP78-404, item 2.
- (11) Ensure that all swarf and drilled out rivets are removed, then paint the blanking plate to conform with the existing paint scheme.
- (12) Remove all blanks from connectors and pipe ends, as fitted previously.

(13) Ensuring correct orientation, electrically connect and install the new PV 1754 AA UHF Control Unit in the left-hand console. Reorientate the connector backshell as required for the installation.

Radio Equipment Bay

(14) Refer to drawing E342916 sht 1 and identify the mounting position for the new PV1757A Filter Unit, item 16. The Filter Unit and an attached mounting plate will be secured to the forward and aft bearers of a mounting crate. Two new and two existing 2BA anchor nuts provide the attachment points on the forward and aft bearers respectively.

(15) Refer to drawing B343550, which shows a scrap view of the starboard end of the crate forward bearer. Make preparations to contain swarf under this item, and blank off any exposed connectors and pipe ends as required.

(16) On the forward bearer, mark off, drill and deburr the holes required for the two new 2BA anchor nuts, item 1. Countersink the two smaller holes at each position.

(17) Rivet the anchor nuts to the forward bearer as shown on the drawing, using 4 off rivets AS164-305, item 2.

(18) Ensure that all swarf is removed from the immediate area.

NOTE: The Filter Unit is to be tried for fit, but will be installed later.

(19) Refer to drawing E342916 shts 1 and 2, and identify the support bracket, item 34. The new 4-way terminal block, item 23, will be fitted at this position. Make preparations for containing swarf in the immediate area.

(20) Mark off, drill and deburr the upper attachment hole for the terminal block, as detailed on drawing sht 2, using a 3.7mm drill (No 26 drill on drawing).

(21) Ensure that all swarf is removed from the immediate area.

NOTE: This concludes the structural alterations.

(22) Disassemble the terminal block, item 23, and position with terminal 1 uppermost on the support bracket. Secure with pillars, washers and 4BA nuts, items 25, 28 and 27 respectively. Temporarily refit the terminal block cover assembly, item 24.

NOTE: Spacers, item 29, are to be used where necessary when connecting the terminal block wiring.

(23) Apply the identifying mark TB60 adjacent to the terminal block, as detailed on the drawing.

(24) In the upper section of the bay, identify and then electrically disconnect and remove the redundant Radio Relay Box. If required retain the earth wire for use with the replacement unit. Return Radio Relay Box to Aerostructures, Hamble for RTW action. (In accordance with instructions from DGA(N) FWR & SM 16c1).

(25) On the port lower side of the bay, identify and then electrically disconnect and remove the redundant ARC 52 UHF Transmitter/Receiver (TX/RX).

(26) Using the spanner supplied in the installation kit, 10ZZ/471338, release the redundant UHF mounting tray from the four anti-vibration mounts (AVMs). Remove the tray and discard the securing bolts.

NOTE: For the following operation, it may be necessary to release and move to one side the aircraft's 28V dc NATO ground supply socket to gain access to the rear AVM attachments.

(27) Remove the four UHF mounting tray AVMs. Retain the screw attachments and bonding strips, but discard the AVMs.

(28) Inspect the visible UHF Comms wiring insulation for cracking and ageing without dismantling the cable looms. Report/rectify faults as necessary.

(29) Referring to drawing E342916 sht 1, position the two new rear AVMs, item 7, and secure with screw attachments retained in operation (27).

NOTE: The bonding strips are to be fitted at the front AVM positions, therefore the local structure should be cleaned to provide good electrical bonding.

(30) If the NATO supply socket was moved for reasons of access, reposition and secure it.

(31) Position the two front AVMs, item 6, and the two retained bonding strips and secure with screw attachments retained in operation (27).

(32) Ensuring correct orientation, position the new UHF mounting tray, item 5, and secure to the four AVMs using the screws and spanner supplied in the installation kit.

The washers provided are to be discarded, and the screws treated with Loctite 270 prior to assembly.

(33) Using the small screws provided on the mounting tray, attach the TX/RX earth bonding link and one AVM bonding strip to the left side of the tray, then attach the other AVM bonding strip to the right side of the tray.

(34) Refer to drawing E342916 sht 2, and observe the wiring changes detailed on the two wiring diagrams. Wire links 'A' and 'B' shown on the drawing are to be made up from parts supplied in the modification kit.

(35) At new terminal block TB60, loosely fit the 2-way links, item 26, between terminals 1 and 2 and between 3 and 4. Do not tighten the terminal nuts until instructed.

(36) Release the adjacent UHF circuit breakers by removing the four pan head attachment screws from the mounting strips. Retain screws for re-use in Op (49).

(37) Electrically disconnect and remove the redundant 25A ARC 52 circuit breaker, on circuit breaker panel situated below Generator Control Panel in the Radio Bay.

(38) Disconnect the three wires from terminal 1 of the 45A UHF SERVICES circuit breaker. Discard the redundant wire link that connected to terminal 1 on the UHF circuit breaker and terminal 1 on the ARC 52 circuit breaker.

(39) Positively identify wires F23B1 and F23B2, just disconnected from terminal 1 of the 45A UHF SERVICES circuit breaker, then cut off the wires as close a possible to the existing terminal ends. Discard the terminal ends.

(40) Strip the two cut off wire ends and crimp on a new 4BA ring tongue terminal, item 31, to each wire.

(41) Loosely connect the wires to TB60, with F23B1 on terminal 1 and F23B2 on terminal 2.

NOTE: All TB60 wiring is to be connected on the aircraft skin side.

(42) Identify wire ARC 52, disconnected from terminal 2 of the redundant 25A circuit breaker, then cut off the wire as close a possible to the existing terminal end, and discard the terminal ends. Re-identify this wire as PTR 1751 CB TML2.

(43) Strip the cut off wire end and crimp on a new 3BA ring tongue terminal, item 36.

(44) Connect new wire link 'A' to terminal 1 of the 45A UHF SERVICES circuit breaker, routing the wire behind the mountings to terminal 1 of TB60. Ensure that both wires at the circuit breaker are secure, then refit the terminal cover.

(45) Attach the new PTR 1751 mounting panel, item 10, to the new 7.5A circuit breaker, item 11.

(46) Connect new wire link 'B' (3BA end) to terminal 1 of the 7.5A PTR 1751 circuit breaker, routing the wire behind the mountings to terminal 4 of the TB60.

(47) Connect re-identified wire PTR 1751 to terminal 2 of the 7.5A PTR 1751 circuit breaker. Ensure that both wires at the circuit breaker are secure, then refit the terminal cover.

(48) Ensuring correct orientation, position the 7.5A PTR 1751 circuit breaker and secure to the mounting strips with round head screws and locknuts, items 12 and 13.

(49) Reposition the UHF circuit breakers, and secure the mounting strips with the four pan head screws, on the panel detailed in Operation (37).

(50) Referring to drawing E342916 sht 1, attach the new PV1757A Filter Unit, item 16, to the mounting plate, item 17, using 4 off pan head screws, washers and lock nuts, items 18, 19 and 20.

NOTE: The completed assembly should have the mounting plate and screws above, with the Filter Unit attached to the underside with the washers and nuts.

(51) At the mounting crate aft bearer, remove and discard the existing 2BA bolts that secure the standby UHF resistor tray and cable clamp.

(52) Ensuring correct orientation, ie connector facing aft, offer up the Filter Unit assembly to the mounting crate forward and aft bearers. Position the aft side of the mounting plate above the lugs on the standby UHF resistor tray, and secure all items as follows:-

a. Use the new short (0.65in) 2BA bolts, item 22, to secure the mounting plate to the modified forward bearer.

b. Use the new long (0.75in) 2BA bolts, item 21, to secure the mounting plate, standby UHF resistor tray and cable clamp to the aft bearer.

(53) Connect new cable assembly F202, item 14, to the Filter Unit, then route the cable forward and along with the existing cable looms, as shown on the drawing, toward terminal block TB60.

(54) Connect cable F202 wire ends A and B to earth terminal 5 on the forward bulkhead.

(55) At TB60, connect cable F202 wire ends E and F to terminal 2, and wire ends C and D to terminal 3.

(56) Ensure that the wiring at TB60 conforms with drawing E342916 sht 2, then tighten down the four terminal nuts. Refit the terminal block cover assembly.

(57) Ensure that the new D342915 Radio Relay Box, item 9, is fitted with a tone generator, electrically connected via its cable assembly.

(58) Install and electrically connect the new Radio Relay Box in the upper section of the bay. Ensure that the unit earth wire is properly reconnected.

(59) Refer to drawing E342916 sht 1, and slide the new PTR 1751 WW UHF Transceiver, item 3, into the UHF mounting tray. Secure with the two self-locking nuts.

NOTE: Self-locking securing nuts of this type are to be fully hand-tight only. No wire-locking is required.

(60) Slide the new PV 1746BB Interface Unit, item 4, into the UHF mounting tray. Secure with the single self-locking nut.

(61) Electrically connect the Transceiver and Interface Unit as follows:

(a) Attach the earth bonding link to the Transceiver front panel earth point with the screw and washers provided.

(b) Connect the Interface Unit fly-leads to PL1 and PL2 on the Transceiver.

(c) Connect the existing 42-way connector to PL5 on the Interface Unit.

(d) Connect the UHF antenna feeder to the N type connector on the Transceiver.

(62) Secure all new and disturbed wiring with cable ties, item 37, but ensure that sufficient cable bight is allowed at the cable ends for connection and disconnection.

(63) Carry out a standard bonding check of the installed system IAW the relevant procedures.

Aircraft Refit

(64) Check for cleanliness of the radio equipment bay and remove all extraneous items of equipment.

(65) Check for cleanliness of the cockpit area and remove all extraneous items of equipment.

(66) Carry out an inspection of all work carried out in the cockpit and in the radio equipment bay.

(67) Observing all relevant safety precautions, raise and secure the gun bay.

(68) Refit and electrically connect the aircraft's main and standby batteries IAW the relevant process sheets.

(69) Refit the radio equipment bay access panels.

(70) Inform the armament personnel that the ejection seat can be replaced, if required.

9. SPECIAL TESTS AFTER EMBODIMENT

When the modification has been embodied and inspected, carry out the following tests:

Carry out a full Functional Check of the modified radio system IAW the relevant procedures. Observing the precautions contained in AP 100N-0140 Chap 43, include in the check a two-way call up, using a suitable local station.

10. RECORDING ACTION

When this modification has been embodied and inspected IAW current authorised procedures, the relevant entries are to be made in the appropriate aircraft records.

11. DISPOSAL OF REDUNDANT PARTS

(1) The undermentioned parts rendered redundant by the embodiment of this modification are to be returned to 30 MU.

Ref No	Part No	Nomenclature	Qty
5821-99- 942-8543	C1607	Unit, Control, ARC 52, UHF	1
5821-99- 942-8542	TR5	Transmitter/Receiver, UHF, ARC 52	1
5821-99- 942-8544	MT1477	Tray, Mounting, UHF	1

(2) The undermentioned parts rendered redundant by the embodiment of this modification will be disposed of by return to 16 MU for despatch, (in accordance with instructions from DGA(N)FWR & SM 16c1), to Aerostructures, Hamble, for modification to D342915 Standard.

Ref No	Part No	Nomenclature	Qty
26FX/20372	D257214	Box, Assy, Radio Relay	1
OR			
26FX/13370	D332316	Box, Assy, Radio Relay	1

(3) The undermentioned parts rendered redundant by the embodiment of this modification will be disposed of under local unit arrangements.

Ref No	Part No	Nomenclature	Qty
		Mount Anti-Vibration	4
	C246459/1	Strip, Filler	1
5CY/9992777		Breaker, Circuit, 25A	1

12. EFFECT ON MASS AND MOMENT

This modification causes a mass change of minus 24.66 lb and a moment change of plus 1758 lb in.

13. EFFECT ON AIRCRAFT OR EQUIPMENT OPERATION AND HANDLING

1. Post-mod 1480, the UHF Comms installation comprises a new PTR 1751 main UHF and the existing standby UHF. The new main set provides 7,000 channels from 225.0 MHz to 399.975 MHz at 25 kHz spacing. The standby set provides two channels only, normally pre-tuned to 243.0 MHz and 243.8 MHz.

The PTR 1751 control unit is on the port shelf outboard of HP cock. Panel illumination only controlled by an external dimmer switch on the cockpit starboard wall. The brightness of the digital displays is controlled by an integral DIM control. The control unit has the following switches and indicators:

(1) Function Switch

OFF : Installation off

TEST : With the mode switch in the PRE, or GU positions, causes the frequency display to show the operating frequency. With the mode switch in the MAN position, all display elements show the figure 8; A 1 kHz tone will be audible with the switch in this position.

T/R : Installation on. Guard Receiver off.

T/R + G : Installation on. Guard Receiver on.

T/R + H : Installation on. Homing equipment on (if fitted).

T/R + G + H : Installation on. Guard Receiver on. Homing equipment on (if fitted).

(2) Mode Switch

MAN : Installation operates at the manually selected frequency.

PRE : Installation operates at the frequency of selected preset channel.

GV : Inoperative.

GU : Installation operates at the UHF distress (243 MHz). Secure speech is inhibited.

READ : Installation operates at the manually selected frequency but the frequency display can be changed by operation of the manual frequency select switches.

LOAD : The frequency indicated in the READ position is transferred to the memory location selected by the present channel switch.

(3) Manual frequency selection switches (five) select a frequency in 100 MHz, 10 MHz, 1 MHz, 100 kHz and 25 kHz increments.

(4) Preset channel switch which selects one of 30 preset channels.

(5) VOL control. Controls the level of Transmitter-Receiver audio output.

(6) DIM control. Controls the brightness of the frequency and channel number displays.

(7) AJ/NORM switch. When set to AJ, defines the 'frequency hopping' mode of operation. (Operational only in Have Quick compatible units). Must be set to norm otherwise.

(8) S/R TIME Switch. Used to synchronise time in the PTR1751.

(Operational only in Have Quick compatible units). Switch has no effect otherwise.

(9) Frequency Display. 6 digits which indicate the last manually selected frequency in 25 kHz increments.

(10) Channel number display. Two digits which indicate the selected channel number. Channel selection only valid when C.U. mode switch set to PRE.

2. PTR 1751 UHF

Limitation on the main UHF are on transmit only:

Maximum 5 minutes in any 15 minutes and 15 minutes in any hour.

14. EFFECT ON MAINTENANCE AND GROUND SUPPORT EQUIPMENT

(1) The removal/replacement procedures now include a Filter Unit, Interface Unit and Tone Generator.

(2) The digital circuits will have to be taken into account when carrying out continuity and insulation resistance checks.

(3) All relevant publications will be amended to take account of the changes introduced by this modification.

15. EFFECT ON NUCLEAR SAFETY AND ELECTRO-MAGNETIC COMPATIBILITY

This modification has no effect on nuclear safety or electro-magnetic compatibility.

16. HEALTH HAZARD

The equipment introduced by this modification contains components that incorporate the highly toxic material Beryllium and/or its oxide Beryllia. Information on the safe handling of Beryllium/Beryllia is given in Naval Aircraft Maintenance Manuals (NAMMs).

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