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HF AND MF AERIALS

PREVENTIVE MAINTENANCE

BY COMMAND OF THE DEFENCE COUNCIL

MINISTRY OF DEFENCE

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IPT 128.1

PREPARED BY THE RADIO TECHNICAL PUBLICATIONS SECTION

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PRELIMINARY MATERIAL

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PREFACE

1 This publication has been produced in accordance with AP 100B-01 Order 0590. It contains the preventive maintenance schedules required to satisfy the current Support Policy Statement.

2 The maintenance required during each calendar period is divided into tasks. Unless specifically stated to the contrary, each task:

2.1 May be completed at any time within the periodicity limit.

2.2 Does not include any other task.

2.3 Is independent of the completion of any other task.

3 Each task is identified by a code. The code defines the periodicity, type and number of the task. Operational tasks may be completed without interference to the operational use of the equipment. Examples of the codes used are:

3.1 WO.1 Weekly Operational No. 1.

3.2 M.1 Monthly No. 1.

3.3 6M.1 6 Monthly No. 1.

4 In order to prevent duplication of effort, users of this publication considering the submission of an Unsatisfactory Feature Report (UFR) should first contact the Radio Technical Publications Section (RTPS), by telephone, to discuss the matter. If, following the discussion, a UFR is deemed necessary, the procedure detailed in AP 100B-01 Order 0561 is to be followed.

5 Notes immediately following task titles are for the guidance of management.

6 When a page is reissued in amended form, alterations of technical importance are indicated by vertical marginal lines to show where the text has been changed.

LIST OF ASSOCIATED PUBLICATIONS

Mast Antenna	AP 116E-1700-45
Aerial Matching Equipment	AP 116E-1715-1
General and Technical Information	AP 116E-1717-1D-1H/1J-1L
WFA Antennas	AP 116E-1757-1

WARNINGS

HAZARDOUS SUBSTANCES

1 Before using any hazardous substance or material, the user must be conversant with the safety precautions and first aid instructions:

1.1 On the label of the container in which it was supplied.

1.2 On the material Safety Data Sheet.

1.3 In local Safety Orders and Regulations.

WARNINGS

(1) DANGEROUS VOLTAGE. DANGEROUS VOLTAGES EXIST IN THIS EQUIPMENT. REFER TO AP 120A-0001-1.

(2) GASES-COMPRESSED, LIQUIFIED OR DISSOLVED UNDER PRESSURE. THIS EQUIPMENT CONTAINS NITROGEN UNDER HIGH PRESSURE. REFER TO JSP 515 HAZARDOUS STORES INFORMATION SYSTEM, AND AP 100B-10 SECTION 13 DATA SHEET S.1300.

(3) OILS AND LUBRICANTS. OILS AND LUBRICANTS ARE USED IN THE MAINTENANCE OF THIS EQUIPMENT. REFER TO JSP 515 HAZARDOUS STORES INFORMATION SYSTEM, AND AP 100B-10 SECTION 24.

(4) RADIO FREQUENCY RADIATION. A RADIO FREQUENCY RADIATION HAZARD EXISTS IN THIS EQUIPMENT. REFER TO JSP 392.

(5) COPPER NAPHTHENATE. COPPER NAPHTHENATE IS USED IN THE MAINTENANCE OF THIS EQUIPMENT. REFER TO JSP 515 HAZARDOUS STORES INFORMATION SYSTEM, AND AP 100B-10 SECTION 02 DATA SHEET S.0202.

NOTE

Functional hazards exist in this equipment. Refer to the General Notes and Precautions.

GENERAL NOTES AND PRECAUTIONS

SAFETY PRECAUTIONS

General

1 These General Notes and Precautions advise personnel of specific hazards which may be encountered during preventive maintenance, and that control measures are required to prevent injury to personnel, and damage to equipment and/or the environment.

2 The mandatory principles of risk management are defined in AP 400A-0004 which is complementary to JSP 375. Line managers are to adopt safe practices and safe systems of work, and thereby minimize the risk of injury to personnel from hazards in the workplace.

3 Before commencing any task, personnel are to acquaint themselves with all risk assessments relevant to the work site and the task. They must then comply with the control measures detailed in those risk assessments.

4 References covering safety regulations, health hazards and hazardous substances are detailed on the WARNINGS page of this publication. These are referred to in the tasks, when encountered. For hazards which are specific to the equipment (ie functional hazards), a WARNING is included in the relevant task, with further information, if required, in these General Notes.

5 Adequate precautions must be taken to ensure that other personnel do not activate the equipment that has been switched off for maintenance.

6 Where dangerous voltages are exposed during a task, safety men are to be provided as detailed in AP 120A-0001-1. Where safety men are required for any other reason, unit management is to ensure that the personnel detailed are aware of the hazard and are fully briefed on the action to be taken in an emergency.

7 Where the equipment contains heavy components or units which require lifting, lowering, pulling or pushing operations to be performed on them during preventive maintenance, all line managers and tradesmen are to be conversant with the Manual Handling Operations Regulations detailed in AP 400A-0004 and JSP 375 Vol 2.

Provision and use of work equipment

8 If a task requires the use of any machinery, appliance, apparatus, tool or any assembly of components which functions as a whole item, line managers are to ensure that these items are compliant with the Provision and Use of Work Equipment Regulations (PUWER). This is to be achieved through reference to AP 400A-0004 and JSP 375 Vol 2.

Personal protective equipment

9 Line managers are to ensure that when any Personal Protective Equipment (PPE) is required for a task, it is used, maintained and stored in accordance with the requirements of AP 400A-0004.

Falls, and injury due to falling objects, when working at height

10 When working at height, personnel must comply with all relevant Command and Unit Orders, and with the following references:

10.1 AP 100B-01 Order 8104.

10.2 AP 400A-0004 Book 1 Leaflet 1313.

10.3 JSP 375 Vol 2 Leaflet 7.

11 For the definition of the term 'working at height', see the Glossary of Terms.

12 Before any attempt is made to climb a Work Service Manager (WSM) maintained mast or tower, the NCO IC Maintenance Party must ensure that a valid 'Mast Condition' certificate is available for the structure. Local initiative must be used to deal with exceptional circumstances occurring (such as freak weather conditions) after a certificate has been issued. AP 100B-01 Order 8104 refers.

13 During any maintenance task, the NCO IC Maintenance Party is responsible for ensuring that:

13.1 Permission to work on the antenna is obtained from OIC site or his authorised deputy.

13.2 The antenna system is disconnected from all radio equipment.

13.3 The antenna remote control system is rendered inoperative.

13.4 Suitable warning notices are prominently displayed, to ensure that the feeder system is not reconnected.

13.5 All safety equipment has been inspected in accordance with AP 119A-1101-5F.

Induced voltage

14 Before commencing work involving physical contact with an antenna or open wire feeder system, the following is to be carried out.

14.1 A pre-use check on the earthing stick. Refer to Annex E2.

14.2 One end of the earthing stick is to be connected to earth, and the other end as close as possible to the base of the antenna or feeder line being worked on.

Lifting equipment

15 All lifting operations and lifting equipment used, are to comply with the Lifting Operations and Lifting Equipment Regulations (LOLER) 1998. Some of the requirements are listed below, however, line managers are to acquaint themselves with the regulations and implement the appropriate requirements.

15.1 Prior to each lifting operation a written and approved lifting plan is to be produced, including the appointment of the 'Responsible Person' (as defined by LOLER, that is not necessarily the person in charge of the lift).

15.2 A risk assessment is to be made of each lifting operation, including those that raise or lower personnel using equipment such as mobile elevating work platforms.

15.3 Examinations are to be made of: the maintenance logs of hired equipment (eg cranes); the lifting equipment supplied with the hired equipment; and the driver's operator permit.

16 In addition to the requirements of Para 14, in-Service lifting equipment is to be:

16.1 Registered and maintained in accordance with AP 119K-0001-1 and AP 119K-0001-5F.

16.2 Utilized in accordance with the safety orders detailed in AP 100E-10 and AP 119K-0001-1.

ENVIRONMENTAL PROTECTION

17 Where tasks in this publication require the use and disposal of equipment and/or material which have the potential to pollute or damage the environment, it is the responsibility of maintenance personnel to carry out these tasks in accordance with local orders and the environment protection policy, as defined in JSP 418 ~~and AP 100A-0004~~.

MAINTENANCE PRECAUTIONS

18 Where the equipment contains Electrostatic Discharge Sensitive Devices (ESDS Devices), the handling procedures detailed in AP 100B-01 Order 1808 are to be observed.

SERVICEABILITY

19 At the start of each task, the equipment is assumed to be operationally serviceable. If, during any task, a fault becomes apparent (eg a meter indication is found to be outside specification) and no corrective action is given, the equipment is to be regarded as unserviceable. Preventive maintenance is to cease, and the appropriate recording action and any essential corrective action must be taken before preventive maintenance is resumed.

20 The continuous serviceability of a Communications-Electronic (C-E) installation depends not only on preventive maintenance tasks but also on the detection, reporting and rectification of minor physical faults as they occur. During any maintenance task, tradesmen are to be on the lookout for:

20.1 Leaks.

20.2 Loose connections and securing devices.

20.3 Arcing.

20.4 Damage.

20.5 Unserviceable protection devices.

20.6 Unserviceable indicators and audio/visual alarm devices.

PREPARATION

21 When restoring power supplies or using test equipment, sufficient time must be allowed for the equipment to stabilize before measurements are taken or adjustments are made.

MAINTENANCE OF GROUND SUPPORT EQUIPMENT (GSE)

22 Where there are items which are categorized as GSE by the GSE Data Bank and Information and Categorization Cell, Weapons & GSE Section, Wyton, that feature as subassemblies supporting the main C-E system covered by this publication, the periodicity at which the preventive maintenance is to be carried out will be detailed in the Topic 45 or Category 6 relevant to the C-E system using the GSE.

CLEANING

23 In addition to any specific cleaning tasks which may be called up in the schedules, the equipment and surrounding areas are to be cleaned. Unit management is to decide the extent, method and periodicity of this general cleaning.

MANHOURS SYNOPSIS

24 The manhours synopsis is a guide to management when discussing with operational staff, or other agencies, the best way to plan the maintenance tasks to meet the individual requirements of the station.

RECORDING

25 On completion of each task, or group of tasks, reporting and recording procedures are to be in accordance with the Unit Engineering Orders.

GLOSSARY OF TERMS

The words used in this publication have the first spelling and meaning given in the latest edition of the Concise Oxford Dictionary except for the following:

Term	Meaning
CAUTION	A caution is used to denote a possibility of damage to equipment or material.
Check	Make a comparison against a specified standard.
Disconnect	Uncouple or detach cables, plugs or connections.
Ensure	Make certain that the specified conditions are correct, and if necessary take action to achieve the specified conditions.
Examine	Undertake a comprehensive scrutiny, supplemented by measurement and physical testing, to determine the condition of the item. For example the condition of an item can be impaired by one or more of the following: (1) Insecurity of attachment. (2) Cracks, fractures or crazing. (3) Corrosion, contamination or deterioration. (4) Distortion. (5) Loose or missing rivets, bolts, screws, nuts, etc. (6) Chafing, fraying, scoring or wear. (7) Faulty or broken locking devices. (8) Loose clips or packing, obstructions of, or leaks from, pipelines. (9) External damage. (10) Overheating or leaking of fluids, possibly indicated by discoloration. (11) Faulty or broken audio/visual indicating devices.
Examine, as far as possible	Within the physical constraints of the location of the item, carry out an examination to determine its condition without removing it or disconnecting it from the equipment. Any faults identified are to be reported to the supervisor; corrective action is not to be taken unless directed.
Fit	Correctly attach one item to another.
Functional check	Check, as far as can be determined without the use of test equipment or reference to measurements, that the item or system is serviceable and operates correctly.
Inspect	Measure, examine, test, gauge or otherwise compare the item with the applicable requirements.
Isolate	The secure disconnection and separation of the equipment from every source of electrical energy, so as to prevent inadvertent reconnection.

(continued)

GLOSSARY OF TERMS (continued)

Term	Meaning
Look for damage	Undertake a visual check for signs of unserviceability.
NOTE	A note is used to convey, or draw attention to, information that is extraneous to the immediate subject of the text.
Reconnect	Recouple or reattach cables, plugs or connections previously disconnected.
Refit	Fit an item which has been previously removed.
Remove	Correctly disconnect and detach the item from its mounting or position.
Replace	Remove an item and fit a new or serviceable item.
Replenish	Refill or restock a tank, bottle, or other container to a predetermined level, pressure or quantity.
Test	Ascertain, by using the appropriate test equipment, that a component or system functions correctly.
WARNING	A warning is used to denote a danger to personnel of injury or death.
Working at height	Whenever personnel are liable to fall a distance which is likely to cause personal injury.

LIST OF LIFED COMPONENTS

NATO stock No	Nomenclature	Quantity	Life	Location
None known				

MODIFICATIONS AND SERVICING INSTRUCTIONS

1 Modifications and Servicing Instructions (SIs) issued since the publication of this AP, which affect the contents, are to be recorded below by the user.

2 Users are asked to inform the RTPS of any modification or SI which affects the contents of this publication and for which an amendment has not been issued. They should contact the RTPS, by telephone, to discuss the matter before submitting a UFR. If, following the discussion, a UFR is deemed necessary, the procedure outlined in the Preface to this publication is to be followed.

Mod or SI No.	Short Title	Task Affected	Amdt No.

MANHOURS SYNOPSIS

NOTE

These manhours do not include travelling time to and from sites, or rectification time. Down time is defined as that time when the equipment, to which this publication relates, cannot fulfil its stated operational function as defined in the Maintenance/Support Policy Statement.

SCHEDULE 1 - DEPTH A MAINTENANCE

Task	Title	Trades	Manhours	Down Time
WO.1	Feeder and Antenna Checks	Aerial Erector/ Electronic	1 x 15 min (per 100 m)	Nil

SCHEDULE 2 - DEPTH B MAINTENANCE CYPRUS, FALKLAND ISLANDS AND GIBRALTAR

Task	Title	Trades	Manhours	Down Time
M.1	L and T NDB Antenna Checks	Aerial Erector	2 x 30 min	See Note
M.2	Quarter-Wave Antenna Checks	Aerial Erector	2 x 30 min	See Note
M.3	Horizontal Dipole Antenna Checks	Aerial Erector	2 x 1 h	See Note
M.4	Vertical Folded Terminated Dipole Antenna Checks	Aerial Erector	2 x 45 min	See Note
M.5	Biconical Monopole Antenna Checks	Aerial Erector	2 x 45 min	See Note
~~M.6~~	~~Discone Antenna Checks~~	Aerial Erector	2 x 45 min	See Note
M.7	Sloping V Antenna Checks	Aerial Erector	2 x 45 min	See Note
~~M.8~~	~~Rhombic Antenna Checks~~	Aerial Erector	2 x 45 min	See Note
M.9	Jaybeam 1560 283/1561 233 Antenna Checks	Aerial Erector	2 x 30 min	See Note

SCHEDULE 3 - DEPTH C MAINTENANCE

Task	Title	Trades	Manhours	Downtime
6M.1	Vertical Folded Terminated Dipole Antenna Checks (Gibraltar)	Aerial Erector	3 x 3 h	See Note
6M.2	Quarter-Wave Antenna Checks (Gibraltar)	Aerial Erector	2 x 2 h	See Note
6M.3	WFA Antenna Checks (Gibraltar)	Aerial Erector	7 x 8 h	See Note
6M.4	Feeders and Balun Matching Transformer Checks (Gibraltar)	Aerial Erector	1 x 15 min (per 100 m)	See Note

(continued)

SCHEDULE 3 - DEPTH C MAINTENANCE (continued)

Task	Title	Trades	Manhours	Down Time
Y.1	Feeders and Balun Matching Transformer Checks	Aerial Erector	1 x 15 min (per 100 m)	See Note
Y.2	L and T NDB Antenna Checks	Aerial Erector	4 x 4 h	See Note
Y.3	Quarter-Wave Antenna Checks	Aerial Erector	2 x 2 h	See Note
Y.4	Horizontal Dipole Antenna Checks	Aerial Erector	4 x 4 h	See Note
Y.5	Biconical Monopole Antenna Checks	Aerial Erector	3 x 3 h	See Note
Y.6	Discone Antenna Checks	Aerial Erector	3 x 1 h (3 x 1 h 15 min Gibraltar)	See Note
Y.7	Sloping V Antenna Checks	Aerial Erector	3 x 3 h	See Note
Y.8	WFA Antenna Checks	Aerial Erector	7 x 8 h	See Note
Y.9	Rhombic Antenna Checks	Aerial Erector	4 x 4 h 30 min	See Note
Y.10	Vertical Folded Terminated Dipole Antenna Checks	Aerial Erector	3 x 3 h	See Note
Y.11	Jaybeam 1560 283/1561 233 Antenna and Feeder Maintenance	Aerial Erector	3 x 5 h	See Note
3Y.1	Triatic Checks	Aerial Erector	3 x 1 h	See Note
3Y.2	Jaybeam 1560 283/ 1561 233 Antenna Element Maintenance	Aerial Erector	3 x 3 h	See Note

NOTE

Down time in Schedules 2 and 3 is not included since Depths B and C maintenance are carried out during planned down time.

SCHEDULE 1

DEPTH A MAINTENANCE

CONTENTS

FEEDER AND ANTENNA CHECKS

NOTE

This task must be carried out on all antennas and their associated feeder systems.

TRADES AND MANHOURS REQUIRED

Aerial Erector/Electronic	1 man x 15 min (per 100 m)

TOOLS, TEST EQUIPMENT AND MATERIALS REQUIRED

Item No.(Annex C)	Brief Description
T1	Pressurizing kit
T2	Binoculars

BALUN AND MATCHING TRANSFORMER CHECKS

WARNING

RADIO FREQUENCY RADIATION. A RADIO FREQUENCY RADIATION HAZARD EXISTS WHEN WORKING ON THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

1 Carry out a visual inspection of the transformers and Baluns ensuring that:

1.1 There are no signs of oil leakage.

1.2 The air flow around the Balun/transformer units' surfaces is unrestricted.

FEEDER AND DUCT CHECKS

2 Where antenna feeders are installed in cable ducts, ensure that:

2.1 The covers of the ducts are not damaged.

2.2 There are no cuts or abrasions on the outer covering of the feeder, particularly at the points of entry into the ground or building.

OPEN WIRE FEEDER CHECKS

3 Examine the feeder support poles, ensuring that all poles are vertically aligned, the cross arms are horizontal, and the foundations and backstays are secure.

4 Examine the entire length of each feeder run for signs of damage and deterioration to the wire, and for the following:

4.1 Twisting.

4.2 Excessive slackness.

4.3 Insecurity of attachment.

4.4 Damage to the Type 808 stand-off insulators.

ANTENNA CHECKS

5 Ensure that the counter-weight system is secure, and approximately 1 m above the ground (Gibraltar 50 cm above ground level).

6 Using the binoculars, if required, examine the antenna for signs of damage and deterioration, and for the following:

6.1 All the supporting spreaders are secure.

6.2 All the insulators are secure.

6.3 Twisted, slack or broken wires.

7 Examine the insulators on the down-feed to ensure that they are secure.

POWER DISSIPATION LINE CHECKS

8 Where a high power transmitting antenna is fitted with an open wire power dissipation line, examine the line, it supports and insulators for signs of insecurity or damage.

MAST CHECKS

9 Ensure that the masts or poles are vertically aligned.

10 Ensure that the mast support guys are taut, and that the guy anchorage points are secure and not damaged or corroded.

11 Where fitted, ensure that the obstruction light is serviceable.

ANTENNA ENCLOSURE

12 Ensure that the enclosure fence and gate are undamaged and that any vegetation growth is not excessive.

13 On completion of the above checks, lock the enclosure gate.

FEEDER PRESSURIZING CHECK

NOTE

At certain locations, pressurization of feeder cables is achieved and monitored by automatic mechanisms. At these locations, the procedure for checking pressure is detailed in the Air Publication specific to the equipment concerned.

14 Where pressurized coaxial feeder is fitted, using the pressure gauge, ensure that the pressure in the cable is between 5 lbf/in² and 10 lbf/in². If necessary, refer to Annex H and adjust the pressure.

SCHEDULE 2

DEPTH B MAINTENANCE
CYPRUS, FALKLAND ISLANDS AND GIBRALTAR

CONTENTS

L AND T NDB ANTENNA CHECKS

TRADES AND MANHOURS REQUIRED

Aerial Erector	2 men x 30 min

TOOLS, TEST EQUIPMENT AND MATERIALS REQUIRED

Item No.(Annex C)	Brief Description
T1	Pressurizing kit
T2	Binoculars
T3	Shorting link
T4	Warning notice
T5	Earthing stick
TE1	Insulation tester
TE2	Multimeter
M1	Denso tape
M2	Grease, ZX-13
M8	Emery cloth
M9	Mutton cloth
M11	Self-amalgamating tape
M12	100 lb/mile copper wire

WARNING

RADIO FREQUENCY RADIATION. A RADIO FREQUENCY RADIATION HAZARD EXISTS WHEN WORKING ON THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

RADIO EQUIPMENT BUILDING

1 Disconnect the feeder from the radio equipment, or deselect the antenna at the exchange and remove the keys, as appropriate. Display the warning notice.

VISUAL SAFETY CHECKS

2 Using the binoculars, if required, examine the antenna and its supporting structure for signs of damage which could make maintenance hazardous.

3 Examine the guy anchorage points for signs of damage and deterioration.

FEEDER CABLE ELECTRICAL CHECKS

WARNINGS

(1) OILS AND LUBRICANTS. BEFORE USING DENSO TAPE. REFER TO THE WARNINGS PAGE.

(2) DANGEROUS VOLTAGE. INDUCED VOLTAGE MAY BE PRESENT IN THIS EQUIPMENT. REFER TO THE GENERAL NOTES AND PRECAUTIONS.

4 At the Antenna Tuning Unit (ATU), remove the Denso tape and self-amalgamating tape from the feeder connection.

5 Disconnect the coaxial feeder cable and connect the shorting link across the inner and outer conductors of the coaxial cable.

6 Using the multimeter, between the inner and outer conductors of the coaxial cable, ensure that the continuity resistance of the coaxial cable is less than 1 Ω.

7 Remove the shorting link.

8 Using the insulation tester, measure the insulation resistance between the inner and outer conductors of the coaxial cable. Ensure that the reading is greater than 20 MΩ.

9 Reconnect the coaxial cable to the ATU.

10 Using the self-amalgamating tape, seal the feeder connection.

11 Using the Denso tape, weatherproof the connection.

ANTENNA CHECKS

12 Using the binoculars, if required, examine the antenna system and its associated support equipment for signs of damage and deterioration. Look specifically for:

(1) RF arc burns on insulators.

(2) Damaged or slipped insulators and spreaders.

(3) Broken or twisted wires.

(4) Corrosion on pulleys, shackles and other metallic components, including wire ropes.

13 Ensure that the counter-weight system is secure and approximately 1 m above the ground (Gibraltar 50 cm above ground level).

ANTENNA ELECTRICAL CHECKS

14 At the feed-through insulator, mounted in the wall of the ATU hut, disconnect the antenna feeder wire.

15 Connect the insulation tester between the antenna feeder wire and the earth system. Measure the insulation resistance of the antenna system. Ensure that the reading is greater than 2 MΩ.

16 Clean the feed-through insulator body, using damp mutton cloth if necessary, but finishing with dry mutton cloth.

17 Using the emery cloth, clean the mating surfaces of the feed-through insulator terminal and the antenna feed wire, then reconnect them.

18 Using the multimeter, ensure that the continuity resistance of the connection is less than 1 Ω.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE ZX-13, REFER TO THE WARNINGS PAGE.

19 Using grease ZX-13, apply a coat of grease to the connection.

EARTH SYSTEM

NOTE

The earth system may be either a buried or suspended earth mat, or counterpoise.

Earth system electrical checks

20 At the ATU, disconnect the earth lead from the ATU earth terminal.

21 Using the emery cloth, clean the mating surfaces of the earth lead and the ATU terminal, then reconnect them.

22 Using the multimeter, ensure that the continuity resistance of the connection is less than 1 Ω.

23 Using grease ZX-13, apply a coat of grease to the connection.

Suspended earth system

24 Examine the antenna supporting structure and all associated rigging tackle for security and deterioration.

25 Examine all system wiring for security and deterioration. Look particularly for loose connections between the radial and ring wires.

Buried earth system

26 Select at random three widely separated radial wires, and uncover a 1 m section of each.

27 On the exposed section of wire, clean off any corrosion and compare the remaining thickness of wire with that of a new piece of 100 lb/mile copper wire. Replace all broken and severely corroded radials, using new 100 lb/mile copper wire.

NOTE

If there is widespread corrosion or broken radials, a check of the complete earth system is to be made, and all broken or corroded radials replaced, using new wire.

ANTENNA ENCLOSURE

28 Ensure that the enclosure fence and gate are undamaged and that any vegetation growth is not excessive.

29 On completion of the above checks, lock the enclosure gate.

FEEDER PRESSURIZATION

NOTE

At certain locations, pressurization of feeder cables is achieved and monitored by automatic mechanisms. At these locations, the procedure for checking pressure is detailed in the Air Publication specific to the equipment concerned.

WARNING

COMPRESSED GAS. PRESSURISED NITROGEN GAS IS USED IN THE MAINTENANCE OF THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

30 Where pressurized coaxial cable feeder is fitted, using the pressure gauge, ensure that the pressure in the cable is between 5 lbf/in² and 10 lbf/in². If necessary, refer to Annex H and adjust the pressure.

SERVICEABILITY CHECKS

NOTES

(1) If a facility exists as part of the radio equipment to measure the Voltage Standing Wave Ratio (VSWR), it is to be used as part of the final serviceability check.

(2) If there is no facility to carry out a VSWR check, request the electronic tradesman to carry out a functional check of the radio equipment, to determine that each antenna system is serviceable.

VSWR CHECK

31 Request the electronic tradesman to carry out a VSWR check, as detailed in Annex E1.

32 On completion of a satisfactory VSWR or functional check, restore the equipment to the required operational condition.

QUARTER-WAVE ANTENNA CHECKS

TRADES AND MANHOURS REQUIRED

Aerial Erector	2 men x 30 min

TOOLS, TEST EQUIPMENT AND MATERIALS REQUIRED

Item No.(Annex C)	Brief Description
T1	Pressurizing kit
T2	Binoculars
T3	Shorting link
T4	Warning notice
T5	Earthing stick
TE1	Insulation tester
TE2	Multimeter
M1	Denso tape
M2	Grease, ZX-13
M6	Grease, XG-250
M8	Emery cloth
M9	Mutton cloth
M11	Self- amalgamating tape

WARNING

RADIO FREQUENCY RADIATION. A RADIO FREQUENCY RADIATION HAZARD EXISTS WHEN WORKING ON THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

RADIO EQUIPMENT BUILDING

1 Disconnect the feeder from the radio equipment, or deselect the antenna at the exchange and remove the keys, as appropriate. Display the warning notice.

VISUAL SAFETY CHECKS

2 Using the binoculars, if required, examine the antenna and its supporting structure for signs of damage which could make maintenance hazardous.

3 Examine the guy anchorage points for signs of damage and deterioration.

FEEDER CABLE ELECTRICAL CHECKS

WARNING

DANGEROUS VOLTAGE. INDUCED VOLTAGE MAY BE PRESENT IN THIS EQUIPMENT. REFER TO THE GENERAL NOTES AND PRECAUTIONS.

NOTE

The feeder system may be either a hybrid arrangement (part coaxial cable, part open-wire), or entirely open wire.

WARNING

OILS AND LUBRICANTS. BEFORE USING DENSO TAPE, REFER TO THE WARNINGS PAGE.

4 Where a hybrid feeder system is fitted, remove the Denso tape and self-amalgamating tape from the feeder connection.

5 Disconnect the coaxial cable from the matching transformer and connect the shorting link across the inner and outer conductors of the coaxial cable.

6 Using the multimeter, ensure that the continuity resistance between the inner and outer conductors of the coaxial cable is less than 1 Ω.

7 Remove the shorting link.

8 Using the insulation tester, measure the insulation resistance between the inner and outer conductors of the coaxial cable. Ensure that the reading is greater than 20 MΩ.

9 Reconnect the coaxial cable to the matching transformer.

10 Using the self-amalgamating tape, seal the feeder connection.

11 Using the Denso tape, weatherproof the connection.

JUNCTION BOX CHECKS

12 At the antenna base, remove the cover and sealing gasket from the feeder cable junction box, ensure that:

12.1 The internal soldered connections are secure and serviceable.

12.2 That there is no ingress of water or other foreign matter.

12.3 That the box is securely mounted on its support stirrup.

13 Disconnect the antenna jumper wire from the feed-through insulator on the junction box.

14 Clean the body of the feed-through insulator, using damp mutton cloth if necessary, but finishing with dry mutton cloth.

15 Using the Denso tape, ensure that the coaxial cable entry gland on the junction box is sealed.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE XG-250, REFER TO THE WARNINGS PAGE.

16 Smear both faces of the cover sealing gasket with grease XG-250.

17 Refit the gasket and the cover to the junction box.

ANTENNA CHECKS

18 Using the binoculars, if required, examine the antenna system and its associated support equipment for signs of damage and deterioration. Look specifically for:

18.1 RF arc burns on insulators.

18.2 Damaged or slipped insulators and spreaders.

18.3 Broken or twisted wires.

18.4 Corrosion on pulleys, shackles and other metallic components, including wire ropes.

19 Ensure that the counter-weight system is secure and approximately 1 m above the ground (Gibraltar 50 cm above ground level).

ANTENNA ELECTRICAL CHECKS

20 Connect the insulation tester between the antenna jumper wire and a good earth connection on the junction box. Ensure that the insulation resistance of the antenna system is greater than 2 MΩ.

21 Using the emery cloth, clean the mating surfaces of the antenna jumper wire and the junction box feed-through insulator terminal, then reconnect them.

22 Using the multimeter, ensure that the continuity resistance of the connection is less than 1 Ω.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE ZX-13, REFER TO THE WARNINGS PAGE.

23 Using grease ZX-13, apply a coat of grease to the connection.

ANTENNA ENCLOSURE

24 Ensure that the enclosure fence and gate are undamaged and that any vegetation growth is not excessive.

25 On completion of the above checks, lock the enclosure gate.

FEEDER PRESSURIZATION

NOTE

At certain locations, pressurization of feeder cables is achieved and monitored by automatic mechanisms. At these locations, the procedure for checking pressure is detailed in the Air Publication specific to the equipment concerned.

WARNING

COMPRESSED GAS. PRESSURISED GAS IS USED IN THE MAINTENANCE OF THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

26 Where pressurized coaxial cable feeder is fitted, using the pressure gauge, ensure that the pressure in the cable is between 5 lbf/in² and 10 lbf/in². If necessary, refer to Annex H and adjust the pressure.

SERVICEABILITY CHECKS

NOTES

(1) If a facility exists as part of the radio equipment to measure the Voltage Standing Wave Ratio (VSWR), it is to be used as part of the final serviceability check.

(2) If there is no facility to carry out a VSWR check, request the electronic tradesman to carry out a functional check of the radio equipment, to determine that each antenna system is serviceable.

VSWR CHECK

27 Request the electronic tradesman to carry out a VSWR check, as detailed in Annex E1.

28 On completion of a satisfactory VSWR or functional check, restore the equipment to the required operational condition.

HORIZONTAL DIPOLE ANTENNA CHECKS

TRADES AND MANHOURS REQUIRED

Aerial Erector	2 men x 1 h

TOOLS, TEST EQUIPMENT AND MATERIALS REQUIRED

Item No.(Annex C)	Brief Description
T1	Pressurizing kit
T2	Binoculars
T3	Shorting link
T4	Warning notice
T5	Earthing stick
TE1	Insulation tester
TE2	Multimeter
M1	Denso tape
M2	Grease, ZX-13
M8	Emery cloth
M11	Self-amalgamating tape

WARNING

RADIO FREQUENCY RADIATION. A RADIO FREQUENCY RADIATION HAZARD EXISTS WHEN WORKING ON THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

RADIO EQUIPMENT BUILDING

1 Disconnect the feeder from the radio equipment, or deselect the antenna at the exchange and remove the keys, as appropriate. Display the warning notice.

VISUAL SAFETY CHECKS

2 Using the binoculars, if required, examine the antenna and its supporting structure for signs of damage which could make maintenance hazardous.

3 Examine the guy anchorage points for signs of damage and deterioration.

WARNING

DANGEROUS VOLTAGE. INDUCED VOLTAGE MAY BE PRESENT IN THIS EQUIPMENT. REFER TO THE GENERAL NOTES AND PRECAUTIONS.

FEEDER CABLE ELECTRICAL CHECKS

NOTE

The feeder system may be either a hybrid arrangement (part coaxial cable, part open wire), or entirely open wire.

WARNING

OILS AND LUBRICANTS. BEFORE USING DENSO TAPE , REFER TO THE WARNINGS PAGE.

4 Where a hybrid feeder system is fitted, remove the Denso tape and self-amalgamating tape from the feeder connection.

5 Disconnect the coaxial cable from the matching transformer and connect the shorting link across the inner and outer conductors of the coaxial cable.

6 Using the multimeter, ensure that the continuity resistance between the inner and outer conductors of the coaxial cable is less than 1 Ω.

7 Remove the shorting link.

8 Using the insulation tester, measure the insulation resistance between the inner and outer conductors of the coaxial feeder. Ensure that the reading is greater than 20 MΩ.

9 Reconnect the coaxial cable to the matching transformer.

10 Using the self-amalgamating tape, seal the feeder connection.

11 Using the Denso tape, weatherproof the connection.

ANTENNA CHECKS

12 Using the binoculars, if required, examine the antenna system and its associated support equipment for signs of damage and deterioration. Look specifically for:

12.1 Damaged or slipped insulators and spacers.

12.2 Broken or twisted wires.

12.3 Corrosion on shackles, mast sections and any other metallic components.

13 Examine all rope guys, halyards and martingales for cuts, bad splicing and wear.

14 Ensure that the counter-weight system is secure and approximately 1 m above the ground (Gibraltar 50 cm above ground level).

FEEDER AND ANTENNA RESISTANCE CHECK

15 Disconnect the open wire feeder from the matching transformer.

16 Using the insulation tester, measure the combined insulation resistance of the open wire feeder and antenna. Ensure that the reading is greater than 2 MΩ.

17 Using the emery cloth, clean the mating surfaces of the antenna jumper wire.

18 Reconnect the open wire feeder to the matching transformer.

19 Using the multimeter, ensure that the continuity resistance of the connections is less than 1 Ω.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE ZX-13, REFER TO THE WARNINGS PAGE.

20 Using grease ZX-13, apply a coat of grease to the connection.

ANTENNA ENCLOSURE

21 Ensure that the enclosure fence and gate are undamaged and that any vegetation growth is not excessive.

22 On completion of the above checks, lock the enclosure gate.

FEEDER PRESSURIZATION

NOTE

At certain locations, pressurization of feeder cables is achieved and monitored by automatic mechanisms. At these locations, the procedure for checking pressure is detailed in the Air Publication specific to the equipment concerned.

WARNING

COMPRESSED GAS. PRESSURISED NITROGEN GAS IS USED IN THE MAINTENANCE OF THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

23 Where pressurized coaxial cable feeder is fitted, using the pressure gauge, ensure that the pressure in the cable is between 5 lbf/in² and 10 lbf/in². If necessary, refer to Annex H and adjust the pressure.

SERVICEABILITY CHECKS

Note

(1) If a facility exists as part of the radio equipment to measure the Voltage Standing Wave Ratio (VSWR), it is to be used as part of the final serviceability check.

(2) If there is no facility to carry out a VSWR check, request the electronic tradesman to carry out a functional check of the radio equipment, to determine that each antenna system is serviceable.

VSWR CHECK

24 Request the electronic tradesman to carry out a VSWR check, as detailed in Annex E1.

25 On completion of a satisfactory VSWR or functional check, restore the equipment to the required operational condition.

VERTICAL FOLDED TERMINATED DIPOLE ANTENNA CHECKS

TRADES AND MANHOURS REQUIRED

Aerial Erector	2 men x 45 min

TOOLS, TEST EQUIPMENT AND MATERIALS REQUIRED

Item No.(Annex C)	Brief Description
T1	Pressurizing kit
T2	Binoculars
T3	Shorting link
T4	Warning notice
T5	Earthing stick
TE1	Insulation tester
TE2	Multimeter
TE3	Bridge megger
M1	Denso tape
M2	Grease, ZX-13
M8	Emery cloth
M11	Self-amalgamating tape

WARNING

RADIO FREQUENCY RADIATION. A RADIO FREQUENCY RADIATION HAZARD EXISTS WHEN WORKING ON THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

RADIO EQUIPMENT BUILDING

1 Disconnect the feeder from the radio equipment, or deselect the antenna at the exchange and remove the keys, as appropriate. Display the warning notice.

VISUAL SAFETY CHECKS

2 Using the binoculars, if required, examine the antenna and its supporting structure for signs of damage which could make maintenance hazardous.

3 Examine the guy anchorage points for damage and deterioration.

WARNING

DANGEROUS VOLTAGE. INDUCED VOLTAGE MAY BE PRESENT IN THIS EQUIPMENT. REFER TO THE GENERAL NOTES AND PRECAUTIONS.

FEEDER CABLE ELECTRICAL CHECKS

NOTE

The feeder system may be either a hybrid arrangement (part coaxial cable, part open-wire), or entirely open wire.

WARNING

OILS AND LUBRICANTS. BEFORE USING DENSO TAPE , REFER TO THE WARNINGS PAGE.

4 Where a hybrid feeder system is fitted, remove the Denso tape and self-amalgamating tape from the feeder connection.

5 Disconnect the coaxial cable from the matching transformer and connect the shorting link across the inner and outer conductors of the coaxial cable.

6 Using the multimeter, ensure that the continuity resistance between the inner and outer conductors of the coaxial cable is less than 1 Ω.

7 Remove the shorting link.

8 Using the insulation tester, measure the insulation resistance between the inner and outer conductors of the coaxial cable. Ensure that the reading is greater than 20 MΩ.

9 Reconnect the coaxial cable to the matching transformer.

10 Using the self-amalgamating tape, seal the feeder connection.

11 Using the Denso tape, weatherproof the connection.

ANTENNA CHECKS

12 Using the binoculars, if required, examine the antenna system and its associated support equipment for signs of damage and deterioration. Look specifically for:

12.1 Damaged or slipped insulators and spacers.

12.2 Broken or twisted wires.

12.3 Corrosion on shackles, mast sections and any other metallic components.

13 Examine all rope guys, halyards and martingales for cuts, bad splicing and wear.

14 Ensure that the counter-weight system is secure and approximately 1 m above the ground (Gibraltar 50 cm above ground level).

LOOP RESISTANCE CHECKS

15 Disconnect the open wire feeder from the matching transformer.

16 Using the bridge megger as a resistance bridge, connect it between the conductors of the open wire feeder and measure the loop resistance of the feeder, antenna and termination resistor system. Ensure that the reading is between 570 Ω and 630 Ω.

17 Transfer the bridge megger earth lead from the open wire feeder to the earth connection on the matching transformer. Measure the loop resistance through one half of the antenna system to earth, via the centre tab of the terminating resistance. Ensure that the reading is between 285 Ω and 315 Ω.

18 Transfer the bridge megger live lead to the other leg of the open wire feeder and measure the loop resistance. Ensure that this reading is between 285 Ω and 315 Ω.

19 Using the emery cloth, clean the mating surfaces of the open wire feeder and reconnect to the matching transformer.

20 Using the multimeter, ensure that the continuity resistance of the connections are less than 1Ω.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE ZX-13, REFER TO THE WARNINGS PAGE.

21 Using grease ZX-13, apply a coat of grease to the connection.

TERMINATING LOAD

22 Examine the terminating load according to type as follows:

22.1 Dissipation runs - as for open-wire feeder systems (refer to Sched 3 Task Y.1).

22.2 Resistance units - examine the resistor(s) for signs of damage, deterioration and security.

ANTENNA ENCLOSURE

23 Ensure that the enclosure fence and gate are undamaged and that any vegetation growth is not excessive.

24 On completion of the above checks, lock the enclosure gate.

FEEDER PRESSURIZATION

NOTE

At certain locations, pressurization of feeder cables is achieved and monitored by automatic mechanisms. At these locations, the procedure for checking pressure is detailed in the Air Publication specific to the equipment concerned.

WARNING

COMPRESSED GAS. PRESSURISED NITROGEN GAS IS USED IN THE MAINTENANCE OF THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

25 Where pressurized coaxial cable feeder is fitted, using the pressure gauge, ensure that the pressure in the cable is between 5 lbf/in² and 10 lbf/in². If necessary, refer to Annex H and adjust the pressure.

SERVICEABILITY CHECKS

Note

(1) If a facility exists as part of the radio equipment to measure the Voltage Standing Wave Ratio (VSWR), it is to be used as part of the final serviceability check.

(2) If there is no facility to carry out a VSWR check, request the electronic tradesman to carry out a functional check of the radio equipment, to determine that each antenna system is serviceable.

VSWR CHECK

26 Request the electronic tradesman to carry out a VSWR check, as detailed in Annex E1.

27 On completion of a satisfactory VSWR or functional check, restore the equipment to the required operational condition.

BICONICAL MONOPOLE ANTENNA CHECKS

TRADES AND MANHOURS REQUIRED

Aerial Erector	2 men x 45 min

TOOLS, TEST EQUIPMENT AND MATERIALS REQUIRED

Item No.(Annex C)	Brief Description
T1	Pressurizing kit
T2	Binoculars
T3	Shorting link
T4	Warning notice
T5	Earthing stick
TE1	Insulation tester
TE2	Multimeter
M2	Grease, ZX-13
M8	Emery cloth
M9	Mutton cloth
M12	100 lb/mile copper wire

WARNING

RADIO FREQUENCY RADIATION. A RADIO FREQUENCY RADIATION HAZARD EXISTS WHEN WORKING ON THIS EQUIPMENT, REFER TO THE WARNINGS PAGE.

RADIO EQUIPMENT BUILDING

1 Disconnect the feeder from the radio equipment, or deselect the antenna at the exchange and remove the keys, as appropriate. Display the warning notice.

VISUAL SAFETY CHECKS

2 Using the binoculars, if required, examine the antenna and its supporting structure for signs of damage which could make maintenance hazardous.

3 Examine the guy anchorage points for damage and deterioration.

WARNING

DANGEROUS VOLTAGE. INDUCED VOLTAGE MAY BE PRESENT IN THIS EQUIPMENT. REFER TO THE GENERAL NOTES AND PRECAUTIONS.

FEEDER CABLE ELECTRICAL CHECKS

4 In the radio equipment building, connect the shorting link across the inner and outer conductors of the coaxial cable.

5 At the antenna end of the feeder, disconnect the antenna feeder jumper wire from the centre conductor of the coaxial cable.

6 Using the multimeter, ensure that the continuity resistance of the coaxial cable is less than 1 Ω.

7 Remove the shorting link.

8 Using the insulation tester, ensure that the reading is greater than 20 MΩ.

ANTENNA ELECTRICAL CHECK

9 Connect the insulation tester between the antenna jumper wire and the earth system. Ensure that the reading is greater than 2 MΩ.

10 Using the emery cloth, clean the mating surfaces of the antenna jumper wire and the centre conductor of the coaxial feeder cable, then reconnect them.

11 Using the multimeter, ensure that the continuity resistance of the connection is less than 1 Ω.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE ZX-13, REFER TO THE WARNINGS PAGE.

12 Coat the connection with grease ZX-13.

EARTH SYSTEM

NOTE

The earth system may be either a buried or suspended earth mat, or a counterpoise.

13 Examine the system supporting structure, and all associated rigging tackle for security, damage and deterioration.

14 Examine all system wiring for signs of damage and deterioration. Look particularly for loose connections between the radial and ring wires.

Buried earth system

15 Select at random three widely separated radial wires, and uncover a 1 m section of each.

16 On the exposed section of wire, clean off any corrosion and compare the remaining thickness of wire with that of a new piece of 100 lb/mile copper wire. Replace all broken and severely corroded radials, using new 100 lb/mile copper wire.

NOTE

If there is widespread corrosion or broken radials, a check of the complete earth system is to be made, and all broken or corroded radials replaced, using new 100 lb/mile copper wire.

ANTENNA CHECKS

17 Using the binoculars, if required, examine the antenna system and its associated support equipment for signs of damage and deterioration. Look specifically for:

17.1 RF arc burns on insulators.

17.2 Damaged or slipped insulators and spreaders.

17.3 Broken or twisted wires.

17.4 Corrosion on pulleys, shackles and other metallic components, including wire ropes.

18 Clean the antenna mast base insulator, using damp mutton cloth if necessary, but finishing with dry mutton cloth.

ANTENNA ENCLOSURE

19 Ensure that the enclosure fence and gate are undamaged and that any vegetation growth is not excessive.

20 On completion of the above checks, lock the enclosure gate.

FEEDER PRESSURIZATION

NOTE

At certain locations, pressurization of feeder cables is achieved and monitored by automatic mechanisms. At these locations, the procedure for checking pressure is detailed in the Air Publication specific to the equipment concerned.

WARNING

COMPRESSED GAS. PRESSURISED NITROGEN GAS IS USED IN THE MAINTENANCE OF THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

21 Where pressurized coaxial cable feeder is fitted, using the pressure gauge, ensure that the pressure in the cable is between 5 lbf/in² and 10 lbf/in². If necessary, refer to Annex H and adjust the pressure.

SERVICEABILITY CHECKS

Note

(1) If a facility exists as part of the radio equipment to measure the Voltage Standing Wave Ratio (VSWR), it is to be used as part of the final serviceability check.

(2) If there is no facility to carry out a VSWR check, request the electronic tradesman to carry out a functional check of the radio equipment, to determine that each antenna system is serviceable.

VSWR CHECK

22 Request the electronic tradesman to carry out a VSWR check, as detailed in Annex E1.

23 On completion of a satisfactory VSWR or functional check, restore the equipment to the required operational condition.

DISCONE ANTENNA CHECKS

TRADES AND MANHOURS REQUIRED

Aerial Erector	2 men x 45 min

TOOLS, TEST EQUIPMENT AND MATERIALS REQUIRED

Item No.(Annex C)	Brief Description
T1	Pressurizing kit
T2	Binoculars
T3	Shorting link
T4	Warning notice
T5	Earthing stick
T6	Ice pricker
TE1	Insulation tester
TE2	Multimeter
M1	Denso tape
M2	Grease, ZX-13
M8	Emery cloth
M11	Self-amalgamating tape

WARNING

RADIO FREQUENCY RADIATION. A RADIO FREQUENCY RADIATION HAZARD EXISTS WHEN WORKING ON THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

RADIO EQUIPMENT BUILDING

1 Disconnect the feeder from the radio equipment, or deselect the antenna at the exchange and remove the keys, as appropriate. Display the warning notice.

VISUAL SAFETY CHECKS

2 Using the binoculars, if required, examine the antenna and its supporting structure for signs of damage which could make maintenance hazardous.

3 Examine the guy anchorage points for damage and deterioration.

WARNING

DANGEROUS VOLTAGE. INDUCED VOLTAGE MAY BE PRESENT IN THIS EQUIPMENT. REFER TO THE GENERAL NOTES AND PRECAUTIONS.

FEEDER CABLE ELECTRICAL CHECKS

NOTE

The feeder system may be either a hybrid arrangement (part coaxial cable, part open-wire), or entirely open wire.

4 Where a hybrid feeder system is fitted, remove the Denso tape and self-amalgamating tape from the feeder connection.

5 Disconnect the coaxial cable from the matching transformer and connect the shorting link across the inner and outer conductors of the coaxial cable.

6 At the antenna termination box, mounted below the suspended centre of the earth mat, ensure that the feeder cable is securely connected to the box and that the connection is sealed with self-amalgamating tape and weatherproofed with Denso tape.

7 Ensure that the desiccator crystals are deep blue in colour.

8 At the antenna termination box, disconnect the braided wire strap from the stand-off insulator terminal.

9 Connect the insulation tester between the wire strap and a good earth point on the suspended earth mat. Ensure that the reading is greater than 2 MΩ.

10 Connect the multimeter between the stand-off insulator terminal and the earth point on the mat. Ensure that continuity resistance is less than 1 Ω.

11 Remove the shorting link.

12 Connect the insulation tester between the stand-off insulator terminal and the earth point on the mat. Ensure that the reading is greater than 20 MΩ.

13 At the antenna termination box, using the emery cloth, clean the end of the braided wire strap.

14 Connect the braided wire strap to the stand-off insulator terminal.

15 Using the multimeter, ensure that the continuity resistance of the connection is less than 1 Ω.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE ZX-13, REFER TO THE WARNINGS PAGE.

16 Using grease ZX-13, apply a coat of grease to the connection.

17 Examine the wooden earth support frame for signs of:

17.1 Deterioration.

17.2 Splits and flaking.

17.3 Warping.

17.4 Rot, by spiking with the ice-pricker.

17.5 Contamination by fungoid growths.

ANTENNA CHECKS

18 Using the binoculars, if required, examine the antenna system and its associated support equipment for signs of damage and deterioration. Look specifically for:

18.1 RF arc burns on insulators.

18.2 Damaged or slipped insulators and spreaders.

18.3 Broken or twisted wires.

18.4 Corrosion on pulleys, shackles and other metallic components, including wire ropes.

19 Ensure that all swaged terminations have no broken or worn strands around the swage, the swage is secure and that there is no movement of the rope in the ferrule.

20 Examine the apex casting for corrosion and damage. Ensure that the antenna elements are secure in their slotted clamping studs.

21 Using the multimeter, ensure that the continuity resistance of the connections is less than 1 Ω.

22 Using grease ZX-13, apply a coat of grease to the connection.

WARNING

OILS AND LUBRICANTS. BEFORE USING DENSO TAPE, REFER TO THE WARNINGS PAGE.

23 Reconnect the coaxal cable removed at Para 5.

24 Using the self-amalgamating tape, seal the connection.

25 Using the Denso tape, weatherproof the connection.

ANTENNA ENCLOSURE

26 Ensure that the enclosure fence and gate are undamaged and that any vegetation growth is not excessive.

27 On completion of the above checks, lock the enclosure gate.

FEEDER PRESSURIZATION

NOTE

At certain locations, pressurization of feeder cables is achieved and monitored by automatic mechanisms. At these locations, the procedure for checking pressure is detailed in the Air Publication specific to the equipment concerned.

WARNING

COMPRESSED GAS. PRESSURISED NITROGEN GAS IS USED IN THE MAINTENANCE OF THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

28 Where pressurized coaxial cable feeder is fitted, using the pressure gauge, ensure that the pressure in the cable is between 5 lbf/in² and 10 lbf/in². If necessary, refer to Annex H and adjust the pressure.

SERVICEABILITY CHECKS

NOTES

(1) If a facility exists as part of the radio equipment to measure the Voltage Standing Wave Ratio (VSWR), it is to be used as part of the final serviceability check.

(2) If there is no facility to carry out a VSWR check, request the electronic tradesman to carry out a functional check of the radio equipment, to determine that each antenna system is serviceable.

VSWR CHECK

29 Request the electronic tradesman to carry out a VSWR check, as detailed in Annex E1.

30 On completion of a satisfactory VSWR or functional check, restore the equipment to the required operational condition.

SLOPING V ANTENNA CHECKS

TRADES AND MANHOURS REQUIRED

Aerial Erector	2 men x 45 min

TOOLS, TEST EQUIPMENT AND MATERIALS REQUIRED

Item No.(Annex C)	Brief Description
T1	Pressurizing kit
T2	Binoculars
T3	Shorting link
T4	Warning notice
T5	Earthing stick
TE1	Insulation tester
TE2	Multimeter
TE3	Bridge megger
M1	Denso tape
M2	Grease, ZX-13
M8	Emery cloth
M11	Self-amalgamating tape

WARNING

RADIO FREQUENCY RADIATION. A RADIO FREQUENCY RADIATION HAZARD EXISTS WHEN WORKING ON THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

RADIO EQUIPMENT BUILDING

1 Disconnect the feeder from the radio equipment, or deselect the antenna at the exchange and remove the keys, as appropriate. Display the warning notice.

VISUAL SAFETY CHECKS

2 Using the binoculars, if required, examine the antenna and its supporting structure for signs of damage which could make maintenance hazardous.

3 Examine the guy anchorage points for damage and deterioration.

WARNING

DANGEROUS VOLTAGE. INDUCED VOLTAGE MAY BE PRESENT IN THIS EQUIPMENT. REFER TO THE GENERAL NOTES AND PRECAUTIONS.

FEEDER CABLE ELECTRICAL CHECKS

NOTE

The feeder system may be either a hybrid arrangement (part coaxial cable, part open-wire), or entirely open wire.

4 **WARNING**

OILS AND LUBRICANTS. BEFORE USING DENSO TAPE , REFER TO THE WARNINGS PAGE.

5 Where a hybrid feeder system is fitted, remove the Denso tape and self-amalgamating tape from the feeder connection.

6 Disconnect the coaxial cable from the matching transformer and connect the shorting link across the inner and outer conductors of the coaxial cable.

7 Using the multimeter, ensure that the continuity resistance of the coaxial cable is less than 1 Ω.

8 Remove the shorting link.

9 Using the insulation tester, ensure that the insulation resistance of the coaxial cable is greater than 20 MΩ.

10 Reconnect the coaxial cable to the matching transformer.

11 Using the self-amalgamating tape, seal the feeder connection.

12 Using the Denso tape, weatherproof the connection.

ANTENNA CHECKS

13 Using the binoculars, if required, examine the antenna system and its associated support equipment for signs of damage and deterioration. Look specifically for:

13.1 Damaged or slipped insulators and spacers.

13.2 Broken or twisted wires.

13.3 Corrosion on shackles, mast sections and any other metallic components.

14 Examine all rope guys, halyards and martingales for cuts, bad splicing and wear.

15 Ensure that the counter-weight system is secure and approximately 1 m above the ground.

TERMINATING LOAD

16 At the resistance units, examine the resistor(s) for signs of damage and deterioration.

LOOP RESISTANCE CHECKS

17 Disconnect the open wire feeder from the matching transformer.

18 Using the bridge megger as a resistance bridge, connect it between the conductors of the open wire feeder. Measure the loop resistance of the feeder, antenna and earth system. Ensure that the reading is between 684 Ω and 756 Ω.

19 Transfer the bridge megger earth lead from the open wire feeder to the earth connection on the matching transformer. Measure the loop resistance of one leg of the antenna system. Ensure that the reading is between 342 Ω and 378 Ω.

20 Transfer the bridge megger live lead to the other leg of the open wire feeder. Measure the loop resistance. Ensure that this reading is also between 342 Ω and 378 Ω.

21 Using the emery cloth, clean the mating surfaces of the open wire feeder.

22 Reconnect the open wire feeder to the matching transformer.

23 Using the multimeter, ensure that the continuity resistance of the connections are less than1 Ω.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE ZX-13, REFER TO THE WARNINGS PAGE.

24 Using grease ZX-13, apply a coat of grease to the connections.

25 At the distant (low) end of the antenna, ensure that the terminating resistor is securely connected between the antenna element and the earth bonding wire.

ANTENNA ENCLOSURE

26 Ensure that the enclosure fence and gate are undamaged and that any vegetation growth is not excessive.

27 On completion of the above checks, lock the enclosure gate.

FEEDER PRESSURIZATION

NOTE

At certain locations, pressurization of feeder cables is achieved and monitored by automatic mechanisms. At these locations, the procedure for checking pressure is detailed in the Air Publication specific to the equipment concerned.

WARNING

COMPRESSED GAS. PRESSURISED NITROGEN GAS IS USED IN THE MAINTENANCE OF THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

28 Where pressurized coaxial cable feeder is fitted, using the pressure gauge, ensure that the pressure in the cable is between 5 lbf/in² and 10 lbf/in². If necessary, refer to Annex H and adjust the pressure.

SERVICEABILITY CHECKS

NOTES

(1) If a facility exists as part of the radio equipment to measure the Voltage Standing Wave Ratio (VSWR), it is to be used as part of the final serviceability check.

(2) If there is no facility to carry out a VSWR check, request the electronic tradesman to carry out a functional check of the radio equipment, to determine that each antenna system is serviceable.

VSWR CHECK

29 Request the electronic tradesman to carry out a VSWR check, as detailed in Annex E1.

30 On completion of a satisfactory VSWR or functional check, restore the equipment to the required operational condition.

RHOMBIC ANTENNA CHECKS

TRADES AND MANHOURS REQUIRED

Aerial Erector	2 men x 45 min

TOOLS, TEST EQUIPMENT AND MATERIALS REQUIRED

Item No.(Annex C)	Brief Description
T1	Pressurizing kit
T2	Binoculars
T3	Shorting link
T4	Warning notice
T5	Earthing stick
TE1	Insulation tester
TE2	Multimeter
TE3	Bridge megger
M1	Denso tape
M2	Grease, ZX-13
M8	Emery cloth
M11	Self-amalgamating tape

WARNING

RADIO FREQUENCY RADIATION. A RADIO FREQUENCY RADIATION HAZARD EXISTS WHEN WORKING ON THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

RADIO EQUIPMENT BUILDING

1 Disconnect the feeder from the radio equipment, or deselect the antenna at the exchange and remove the keys, as appropriate. Display the warning notice.

VISUAL SAFETY CHECKS

2 Using the binoculars, if required, examine the antenna and its supporting structure for signs of damage which could make maintenance hazardous.

3 Examine the guy anchorage points for signs of damage and deterioration.

WARNING

DANGEROUS VOLTAGE. INDUCED VOLTAGE MAY BE PRESENT IN THIS EQUIPMENT. REFER TO THE GENERAL NOTES AND PRECAUTIONS.

FEEDER CABLE ELECTRICAL CHECKS

NOTE

The feeder system may be either a hybrid arrangement (part coaxial cable, part open-wire), or entirely open wire.

WARNING

OILS AND LUBRICANTS. BEFORE USING DENSO TAPE , REFER TO THE WARNINGS PAGE.

4 Where a hybrid feeder system is fitted, remove the Denso tape and self-amalgamating tape from the feeder connection.

5 Disconnect the coaxial cable from the matching transformer and connect the shorting link across the inner and outer conductors of the coaxial cable.

6 Using the multimeter, ensure that the continuity resistance of the coaxial cable is less than 1 Ω.

7 Remove the shorting link.

8 Using the insulation tester, ensure that the insulation resistance of the coaxial cable is greater than 20 MΩ.

9 Reconnect the coaxial cable to the matching transformer.

10 Using the self-amalgamating tape, seal the feeder connection.

11 Using the Denso tape, weatherproof the connection.

ANTENNA CHECKS

12 Using the binoculars, if required, examine the antenna system and its associated support equipment for signs of damage and deterioration. Look specifically for:

12.1 Damaged or slipped insulators and spacers.

12.2 Broken or twisted wires.

12.3 Corrosion on shackles, mast sections and any other metallic components.

13 Examine all rope guys, halyards and martingales for cuts, bad splicing and wear.

14 Ensure that the counter-weight system is secure and approximately 1 m above the ground

TERMINATING LOAD

15 Examine the terminating load according to type, as follows:

15.1 Dissipation run - as for open-wire feeder systems (refer to Sched 3 Task Y.1).

15.2 Resistor units - examine the resistor(s) for damage and deterioration.

LOOP RESISTANCE CHECKS

16 Disconnect the open wire feeder system from the matching transformer.

17 Connect the bridge megger to the open wire feeder system and ensure that the effective total load resistance of the systems is within the following limits:

17.1 Transmitting rhombics 80 Ω to 150 Ω.

17.2 Receiving rhombics 570 Ω to 630 Ω.

18 Using the emery cloth, clean the mating surfaces of the open wire feeder and reconnect to the matching transformer.

19 Using the multimeter, ensure that the continuity resistance of the connections are less than1 Ω.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE ZX-13, REFER TO THE WARNINGS PAGE.

20 Using grease ZX-13, apply a coat of grease to the connections.

ANTENNA ENCLOSURE

21 Ensure that the enclosure fence and gate are undamaged and that any vegetation growth is not excessive.

22 On completion of the above checks, lock the enclosure gate.

FEEDER PRESSURIZATION

NOTE

At certain locations, pressurization of feeder cables is achieved and monitored by automatic mechanisms. At these locations, the procedure for checking pressure is detailed in the Air Publication specific to the equipment concerned.

WARNING

COMPRESSED GAS. PRESSURISED NITROGEN GAS IS USED IN THE MAINTENANCE OF THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

23 Where pressurized coaxial cable feeder is fitted, using the pressure gauge, ensure that the pressure in the cable is between 5 lbf/in² and 10 lbf/in². If necessary, refer to Annex H and adjust the pressure.

SERVICEABILITY CHECKS

NOTES

(1) If a facility exists as part of the radio equipment to measure the Voltage Standing Wave Ratio (VSWR), it is to be used as part of the final serviceability check.

(2) If there is no facility to carry out a VSWR check, request the electronic tradesman to carry out a functional check of the radio equipment, to determine that each antenna system is serviceable.

VSWR CHECK

24 Request the electronic tradesman to carry out a VSWR check, as detailed in Annex E1.

25 On completion of a satisfactory VSWR or functional check, restore the equipment to the required operational condition.

JAYBEAM 1560 283/1561 233 ANTENNA CHECKS

TRADES AND MAN-HOURS REQUIRED

Aerial Erector	2 men x 30 min (per antenna and feeder)

TOOLS, TEST EQUIPMENT AND MATERIALS REQUIRED

Item No.(Annex C)	Brief Description
T2	Binoculars
T4	Warning notice
T5	Earthing stick
M2	Grease ZX 13
M9	Mutton cloth

RADIO EQUIPMENT BUILDING

WARNINGS

(1) RADIO FREQUENCY HAZARD. A RADIO FREQUENCY HAZARD EXISTS WHEN WORKING ON THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

(2) DANGEROUS VOLTAGE. INDUCED VOLTAGE MAY BE PRESENT IN THIS EQUIPMENT. REFER TO THE GENERAL NOTES AND PRECAUTIONS.

1 Disconnect the feeder cable from the radio equipment, or deselect the antenna at the exchange and remove the key, as appropriate. Display the warning notice.

MAST AND ANTENNA

2 Using the binoculars, if required, examine the antenna system and its associated support equipment to ensure:

2.1 The mast is straight and vertical.

2.2 The mast support guys are not slack.

2.3 There are no damaged or slipped insulators and spreaders.

2.4 That the antenna elements are not broken or twisted.

2.5 That there is no corrosion on pulleys, shackles and other metallic components, including wire ropes.

3 Clean the antenna mast base insulator, using damp mutton cloth if necessary, but finishing with dry mutton cloth.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE ZX-13, REFER TO THE WARNINGS PAGE.

4 Using grease ZX 13, ensure that all electrical contact surfaces are coated.

5 If fitted, visually check, that the obstruction light is working.

SERVICEABILITY CHECKS

NOTES

(1) If a facility exists as part of the radio equipment to measure the Voltage Standing Wave Ratio (VSWR), it is to be used as part of the final serviceability check.

(2) If there is no facility to carry out a VSWR check, request the electronic tradesman to carry out a functional check of the radio equipment, to determine that each antenna system is serviceable.

VSWR CHECK

6 Request the electronic tradesman to carry out a VSWR check, as detailed in Annex E1.

7 On completion of a satisfactory VSWR or functional check, restore the equipment to the required operational condition.

SCHEDULE 3

DEPTH C MAINTENANCE

CONTENTS

VERTICAL FOLDED TERMINATED DIPOLE ANTENNA CHECKS (GIBRALTAR)

NOTES

(1) Task 6M.4 must be carried out in conjunction with this task.

(2) The manhours given for this task refer only to the maintenance of the antenna. Manhours consumed in the lowering and raising of the antenna support structure are not included.

TRADES AND MANHOURS REQUIRED

Aerial Erector	3 men x 3 h

TOOLS, TEST EQUIPMENT AND MATERIALS REQUIRED

Item No.(Annex C)	Brief Description
T1	Pressurizing kit
T2	Binoculars
T3	Shorting link
T4	Warning notice
T5	Earthing stick
TE1	Insulation tester
TE2	Multimeter
TE3	Bridge Megger
M1	Denso tape
M2	Grease, ZX-13
M3	Grease, XG-271
M8	Emery cloth
M11	Self-amalgamating tape

WARNING

RADIO FREQUENCY RADIATION. A RADIO FREQUENCY RADIATION HAZARD EXISTS WHEN WORKING ON THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

RADIO EQUIPMENT BUILDING

1 Disconnect the feeder from the radio equipment, or deselect the antenna at the exchange and remove the keys, as appropriate. Display the warning notice.

VISUAL SAFETY CHECKS

2 Using the binoculars, if required, examine the antenna and its supporting structure for signs of damage which could make maintenance hazardous.

3 Examine the guy anchorage points for signs of damage and deterioration.

FEEDER CABLE ELECTRICAL CHECKS

WARNING

DANGEROUS VOLTAGE. INDUCED VOLTAGE MAY BE PRESENT IN THIS EQUIPMENT. REFER TO THE GENERAL NOTES AND PRECAUTIONS.

NOTE

The feeder system may be either a hybrid arrangement (part coaxial cable, part open-wire), or entirely open wire.

WARNING

OILS AND LUBRICANTS. BEFORE USING DENSO TAPE , REFER TO THE WARNINGS PAGE.

4 Where a hybrid feeder system is fitted, remove the Denso tape and self-amalgamating tape from the feeder connection.

5 Disconnect the coaxial cable from the matching transformer and connect the shorting link across the inner and outer conductors of the coaxial cable.

6 Using the multimeter, ensure that the continuity resistance between the inner and outer conductors of the coaxial cable is less than 1 Ω.

7 Remove the shorting link.

8 Using the insulation tester, measure the insulation resistance between the inner and outer conductors of the coaxial cable. Ensure that the reading is greater than 20 MΩ.

9 Reconnect the coaxial cable to the matching transformer.

10 Using the self-amalgamating tape, seal the feeder connection.

11 Using the Denso tape, weatherproof the connection.

ANTENNA CHECKS

12 Lower the antenna, in accordance with AP 116E-1717-1G.

13 Carry out the antenna checks detailed in Task 6M.4.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE XG-271, REFER TO THE WARNINGS PAGE.

14 Using grease XG-271, apply a coat of grease to all shackles, turnbuckles and associated hardware.

15 Raise the antenna, in accordance with AP 116E-1717-1G.

16 Ensure that the counter-weight system is secure and approximately 1 m above the ground

TERMINATING LOAD

17 Examine the terminating load according to type as follows:

17.1 Dissipation runs - as for open-wire feeder system (refer to Task 6M.4).

17.2 Resistance units - examine the resistor(s) for signs of damage, deterioration and security.

LOOP RESISTANCE CHECKS

18 Disconnect the open wire feeder from the matching transformer.

19 Using the bridge megger as a resistance bridge, connect it between the conductors of the open wire feeder. Measure the loop resistance of the feeder, antenna and termination resistor system. Ensure that the reading is between 570 Ω and 630 Ω.

20 Transfer the bridge megger earth lead from the open wire feeder to the earth connection on the matching transformer. Measure the loop resistance through one half of the antenna system to earth, via the centre tab of the terminating resistance. Ensure that the reading is between 285 Ω and 315 Ω.

21 Transfer the bridge megger live lead to the other leg of the open wire feeder. Measure the loop resistance. Ensure that this reading is also between 285 Ω and 315 Ω.

22 Using the emery cloth, clean the mating surfaces of the open wire feeder.

23 Reconnect the open wire feeder to the matching transformer.

24 Using the multimeter, ensure that the continuity resistance of the connections are less than 1 Ω.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE ZX-13, REFER TO THE WARNINGS PAGE.

25 Using grease ZX-13 apply a coat of grease to the connections.

ANTENNA ENCLOSURE

26 Ensure that the enclosure fence and gate are undamaged and that any vegetation growth is not excessive.

27 On completion of the above checks, lock the enclosure gate.

FEEDER PRESSURIZATION

NOTE

At certain locations, pressurization of feeder cables is achieved and monitored by automatic mechanisms. At these locations, the procedure for checking pressure is detailed in the Air Publication specific to the equipment concerned.

WARNING

COMPRESSED GAS. PRESSURISED NITROGEN GAS IS USED IN THE MAINTENANCE OF THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

28 Where pressurized coaxial cable feeder is fitted, using the pressure gauge, ensure that the pressure in the cable is between 5 lbf/in² and 10 lbf/in². If necessary, refer to Annex H and adjust the pressure.

SERVICEABILITY CHECKS

NOTES

(1) If a facility exists as part of the radio equipment to measure the Voltage Standing Wave Ratio (VSWR), it is to be used as part of the final serviceability check.

(2) If there is no facility to carry out a VSWR check, request the electronic tradesman to carry out a functional check of the radio equipment, to determine that each antenna system is serviceable.

VSWR CHECK

29 Request the electronic tradesman to carry out a VSWR check, as detailed in Annex E1.

30 On completion of a satisfactory VSWR or functional check, restore the equipment to the required operational condition.

QUARTER-WAVE ANTENNA CHECKS (GIBRALTAR)

NOTES

(1) Task 6M.4 must be carried out in conjunction with this task.

(2) The manhours given for this task refer only to the maintenance of the antenna. Manhours consumed in the lowering and raising of the antenna support structure are not included.

TRADES AND MANHOURS REQUIRED

Aerial Erector	2 men x 2 h

TOOLS, TEST EQUIPMENT AND MATERIALS REQUIRED

Item No.(Annex C)	Brief Description
T1	Pressurizing kit
T2	Binoculars
T3	Shorting link
T4	Warning notice
T5	Earthing stick
TE1	Insulation tester
TE2	Multimeter
M1	Denso tape
M2	Grease, ZX-13
M3	Grease, XG-271
M6	Grease, XG-250
M8	Emery cloth
M9	Mutton cloth
M11	Self-amalgamating tape

WARNING

RADIO FREQUENCY RADIATION. A RADIO FREQUENCY RADIATION HAZARD EXISTS WHEN WORKING ON THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

RADIO EQUIPMENT BUILDING

1 Disconnect the feeder from the radio equipment, or deselect the antenna at the exchange and remove the keys, as appropriate. Display the warning notice.

VISUAL SAFETY CHECKS

2 Using the binoculars, if required, examine the antenna and its supporting structure for signs of damage which could make maintenance hazardous.

3 Examine the guy anchorage points for signs of damage and deterioration.

FEEDER CABLE ELECTRICAL CHECKS

WARNINGS

(1) DANGEROUS VOLTAGE. INDUCED VOLTAGE MAY BE PRESENT IN THIS EQUIPMENT. REFER TO THE GENERAL NOTES AND PRECAUTIONS.

(2) OILS AND LUBRICANTS. BEFORE USING DENSO TAPE, REFER TO THE WARNINGS PAGE.

NOTE

The feeder system may be either a hybrid arrangement (part coaxial cable, part open-wire), or entirely open wire.

4 Where a hybrid feeder system is fitted, remove the Denso tape and self-amalgamating tape from the feeder connection.

5 Disconnect the coaxial cable from the matching transformer and connect the shorting link across the inner and outer conductors of the coaxial cable.

6 Using the multimeter, ensure that the continuity resistance between the inner and outer conductors of the coaxial cable is less than 1 Ω.

7 Remove the shorting link.

8 Using the insulation tester, measure the insulation resistance between the inner and outer conductors of the coaxial cable. Ensure that the reading is greater than 20 M Ω.

9 Reconnect the coaxial cable to the matching transformer.

10 Using the self-amalgamating tape, seal the feeder connection.

11 Using the Denso tape, weatherproof the connection.

JUNCTION BOX CHECKS

12 At the antenna base, remove the cover and sealing gasket from the feeder cable junction box, check that:

12.1 The internal soldered connections are secure and serviceable.

12.2 That there is no ingress of water or other foreign matter.

12.3 That the box is securely mounted on its support stirrup.

13 Disconnect the antenna jumper wire from the feed-through insulator on the junction box.

14 Clean the body of the feed-through insulator, using damp mutton cloth if necessary, but finishing with dry mutton cloth.

15 Using the Denso tape, ensure that the coaxial cable entry gland on the junction box is sealed.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE XG-250, REFER TO THE WARNINGS PAGE.

16 Using grease XG-250, smear both faces of the cover sealing gasket.

17 Refit the gasket and the cover to the junction box.

ANTENNA CHECKS

18 Lower the antenna, in accordance with AP 116E-1717-1G.

19 Carry out the antenna checks as, detailed in Task 6M.4.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE XG-271, REFER TO THE WARNINGS PAGE.

20 Using grease XG-271, apply a coat of grease to all shackles, turnbuckles and associated hardware.

21 Raise the antenna, in accordance with AP 116E-1717-1G.

22 Clean the mast base insulator, using damp mutton cloth, but finishing with dry mutton cloth.

ANTENNA ELECTRICAL CHECKS

23 Connect the insulation tester between the antenna jumper wire and a good earth connection on the junction box, and measure the insulation resistance of the antenna system. Ensure that the reading is greater than 2 MΩ.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE ZX-13, REFER TO THE WARNINGS PAGE.

24 Using the emery cloth, clean the mating surfaces of the antenna jumper wire and the junction box feed-through insulator terminal.

25 Reconnect the antenna jumper wire to the feed-through insulator on the junction box.

26 Using the multimeter, ensure that the continuity resistance of the connection is less than 1 Ω.

27 Using grease ZX-13, apply a coat of grease to the connection.

FEEDER PRESSURIZATION

NOTE

At certain locations, pressurization of feeder cables is achieved and monitored by automatic mechanisms. At these locations, the procedure for checking pressure is detailed in the Air Publication specific to the equipment concerned.

WARNING

COMPRESSED GAS. PRESSURISED NITROGEN GAS IS USED IN THE MAINTENANCE OF THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

28 Where pressurized coaxial cable feeder is fitted, using the pressure gauge, ensure that the pressure in the cable is between 5 lbf/in² and 10 lbf/in². If necessary, refer to Annex H and adjust the pressure.

SERVICEABILITY CHECKS

NOTES

(1) If a facility exists as part of the radio equipment to measure the Voltage Standing Wave Ratio (VSWR), it is to be used as part of the final serviceability check.

(2) If there is no facility to carry out a VSWR check, request the electronic tradesman to carry out a functional check of the radio equipment, to determine that each antenna system is serviceable.

VSWR CHECK

29 Request the electronic tradesman to carry out a VSWR check, as detailed in Annex E1.

30 On completion of a satisfactory VSWR or functional check, restore the equipment to the required operational condition.

WFA ANTENNA CHECKS (GIBRALTAR)

NOTES

(1) Task 6M.4 must be carried out in conjunction with this task.

(2) The manhours given for this task refer only to the maintenance of the antenna. Manhours consumed in the lowering and raising of the antenna support structure are not included.

TRADES AND MANHOURS REQUIRED

Aerial Erector	7 men x 8 h

TOOLS, TEST EQUIPMENT AND MATERIALS REQUIRED

Item No.(Annex C)	Brief Description
T1	Pressurizing kit
T2	Binoculars
T3	Shorting link
T4	Warning notice
T5	Earthing stick
TE1	Insulation tester
TE2	Multimeter
M1	Denso tape
M2	Grease, ZX-13
M3	Grease, XG-271
M8	Emery cloth
M11	Self-amalgamating tape

WARNING

RADIO FREQUENCY RADIATION. A RADIO FREQUENCY RADIATION HAZARD EXISTS WHEN WORKING ON THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

RADIO EQUIPMENT BUILDING

1 Disconnect the feeder from the radio equipment, or deselect the antenna at the exchange and remove the keys, as appropriate. Display the warning notice.

VISUAL SAFETY CHECKS

2 Using the binoculars, if required, examine the antenna and its supporting structure for signs of damage which could make maintenance hazardous.

3 Examine the guy anchorage points for signs of damage and deterioration.

FEEDER CABLE ELECTRICAL CHECK

WARNINGS

(1) DANGEROUS VOLTAGE. INDUCED VOLTAGE MAY BE PRESENT IN THIS EQUIPMENT. REFER TO THE GENERAL NOTES AND PRECAUTIONS.

(2) OILS AND LUBRICANTS. BEFORE USING DENSO TAPE, REFER TO THE WARNINGS PAGE.

NOTE

The feeder system may be either a hybrid arrangement (part coaxial cable, part open-wire), or entirely open wire.

4 Where a hybrid feeder system is fitted, remove the Denso tape and self-amalgamating tape from the feeder connection.

5 Disconnect the coaxial cable from the matching transformer and connect the shorting link across the inner and outer conductors of the coaxial cable.

6 Using the multimeter, ensure that the continuity resistance between the inner and outer conductors of the coaxial cable is less than 1 Ω.

7 Remove the shorting link.

8 Using the insulation tester, measure the insulation resistance between the inner and outer conductors of the coaxial cable. Ensure that the reading is greater than 20 MΩ.

9 Reconnect the coaxial cable to the matching transformer.

10 Using the self-amalgamating tape, seal the feeder connection.

11 Using the Denso tape, weatherproof the connection.

ANTENNA CHECKS

CAUTION

EQUIPMENT DAMAGE. The antennas are not to be raised or lowered if the wind speed is greater then 10 knots.

12 Lower the antenna in accordance with AP 116E-1757-1.

13 Carry out the antenna checks, as detailed in Task 6M.4.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE XG-271, REFER TO THE WARNINGS PAGE.

14 Using grease XG-271, apply a coat of grease to all shackles, turnbuckles and associated hardware.

15 Raise the antenna in accordance with AP 116E-1757-1.

ANTENNA ELECTRICAL CHECKS

16 Disconnect the open wire feeder from the matching transformer.

17 Connect the insulation tester between the antenna feeder wire and a good earth connection, and measure the insulation resistance of the antenna system. Ensure that the reading is greater than 2 MΩ.

18 Using the emery cloth, clean the mating surfaces of the open wire feeder.

19 Reconnect the open wire feeder to the matching transformer.

20 Using the multimeter, ensure that the continuity resistance of the connection is less than 1 Ω.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE ZX-13 , REFER TO THE WARNINGS PAGE.

21 Using grease ZX-13, apply a coat of grease to the connections.

FEEDER PRESSURIZATION

NOTE

At certain locations, pressurization of feeder cables is achieved and monitored by automatic mechanisms. At these locations, the procedure for checking pressure is detailed in the Air Publication specific to the equipment concerned.

WARNING

COMPRESSED GAS. PRESSURISED NITROGEN GAS IS USED IN THE MAINTENANCE OF THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

22 Where pressurized coaxial cable feeder is fitted, using the pressure gauge, ensure that the pressure in the cable is between 5 lbf/in² and 10 lbf/in². If necessary, refer to Annex H and adjust the pressure.

SERVICEABILITY CHECKS

NOTES

(1) If a facility exists as part of the radio equipment to measure the Voltage Standing Wave Ratio (VSWR), it is to be used as part of the final serviceability check.

(2) If there is no facility to carry out a VSWR check, request the electronic tradesman to carry out a functional check of the radio equipment, to determine that each antenna system is serviceable.

VSWR CHECK

23 Request the electronic tradesman to carry out a VSWR check, as detailed in Annex E1.

24 On completion of a satisfactory VSWR or functional check, restore the equipment to the required operational condition.

FEEDERS AND BALUN MATCHING TRANSFORMER CHECKS (GIBRALTAR)

NOTES

(1) This task must be carried out on all antennas and their associated feeder systems.

(2) During maintenance checks on baluns and matching transformers on a transmitter site, aerials on either side of the equipment under maintenance must also be deselected and warning notices displayed.

TRADES AND MANHOURS REQUIRED

Aerial Erector	1 man x 15 min per 100 metres

TOOLS, TEST EQUIPMENT AND MATERIALS REQUIRED

Item No.(Annex C)	Brief Description
T1	Pressurizing kit
T2	Binoculars
T4	Warning notice
T6	Ice pricker
M1	Denso tape
M4	Oil, OMD 80X
M5	Copper naphthenate
M9	Mutton cloth

WARNING

RADIO FREQUENCY RADIATION. A RADIO FREQUENCY RADIATION HAZARD EXISTS WHEN WORKING ON THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

RADIO EQUIPMENT BUILDING

1 Disconnect the feeder from the radio equipment, or deselect the antenna at the exchange and remove the keys, as appropriate. Display the warning notice.

MAST CHECKS

2 Ensure that the masts or poles are vertically aligned.

3 Ensure that the mast support guys and anchorage points are secure.

WARNING

DANGEROUS VOLTAGE. INDUCED VOLTAGE MAY BE PRESENT IN THIS EQUIPMENT. REFER TO THE GENERAL NOTES AND PRECAUTIONS.

4 Ensure that the obstruction light, where fitted, is serviceable.

ANTENNA CHECKS

5 Using the binoculars, if required, examine the antenna system and its associated support equipment for signs of damage and deterioration. Look specifically for:

5.1 RF arc burns on insulators.

5.2 Damaged or slipped insulators and spreaders.

5.3 Broken or twisted wires.

5.4 Corrosion on pulleys, shackles and other metallic components, including wire ropes.

5.5 Damage to the fibreglass catenaries.

5.6 Cuts, bad splicing and wear on rope guys, halyards and martingales.

6 Ensure that the antenna supporting structure and all associated rigging tackle is secure and undamaged.

7 Where the antenna is supported by a triatic, ensure that the rigging is secure and undamaged.

8 Where the antenna has a tuning unit, ensure that it is secure.

9 Where a counterpoise or suspended earth system is fitted, ensure that its wires are not broken and that its supporting structure is secure and undamaged.

10 Where a pilot line is fitted, ensure that it is secure.

11 Ensure that the counter-weight system is secure and approximately 50 cm above ground level.

RESISTANCE UNIT

12 Where a resistance unit box is fitted, ensure that the end of the open-wire termination run is secure.

POWER DISSIPATION LINE

13 Where a high power transmitting antenna is fitted with an open wire power dissipation line, using the binoculars, if required, examine the system, as for the open wire feeder checks.

SUSPENDED COUNTERPOISE (GIBRALTAR)

14 Examine the suspended counterpoise system and its supporting structure for security, damage and deterioration.

OPEN WIRE FEEDER CHECKS

15 Ensure that all support poles are vertically aligned, and that the foundations and back stays are secure.

16 Examine the Type 808 stand-off insulators for damage.

17 Examine the feeder/dissipation support poles as follows:

17.1 Examine wooden poles for:

17.1.1 Warping.

17.1.2 Splits and flaking.

17.1.3 Contamination by fungoid growth.

17.1.4 Security of attachments.

17.1.5 Corrosion of metal fixtures.

17.1.6 Rot, by spiking suspected areas with a sharp ice-pricker.

17.1.7 Deterioration.

17.2 Examine concrete poles for:

17.2.1 Cracking.

17.2.2 Chipping.

17.2.3 Exposure of the steel reinforcing rods.

17.2.4 Security of attachment.

17.3 Examine aluminium poles for:

17.3.1 Dents.

17.3.2 Splits.

17.3.3 Corrosion, particularly at points where dissimilar metals are in contact.

WARNING

COPPER NAPHTHENATE. BEFORE USING COPPER NAPHTHENATE, REFER TO THE WARNINGS PAGE.

18 If necessary, treat wooden poles with copper naphthenate.

19 Examine the entire length of each open wire feeder run for signs of damage, deterioration, and the following:

19.1 Twisting.

19.2 Kinking.

19.3 Excessive slackness.

19.4 Insecurity of attachment.

FEEDER AND DUCT CHECKS

WARNING

OILS AND LUBRICANTS. BEFORE USING DENSO TAPE, REFER TO THE WARNINGS PAGE.

20 Where Denso tape is used for weatherproofing, replace as necessary.

21 Where antenna feeders are installed in cable ducts, look for damage to the duct covers.

22 Examine all exposed lengths of coaxial feeder for signs of damage and deterioration.

23 Ensure that there are no cuts and abrasions on the outer covering, particularly at the points of entry into the ground or building.

24 Ensure that the feeders are formed into suitable swan-necks at the points of entry into the building.

25 Where coaxial feeders are supported by a catenary:

25.1 Examine the catenary for damage, deterioration and corrosion.

25.2 Ensure that the coaxial cable hangers are secure, serviceable and spaced a nominal 600 mm apart.

25.3 Examine all associated hardware for corrosion.

26 Ensure that the route of buried coaxial feeder is indicated at the following points:

26.1 Approximately 50 metre intervals.

26.2 Direction changes.

26.3 Cable joints.

BALUN AND MATCHING TRANSFORMER CHECKS

WARNING

OILS AND LUBRICANTS. BEFORE USING OMD-80X, REFER TO THE WARNINGS PAGE.

27 Where an antenna matching transformer is fitted, examine it for security, signs of damage and deterioration. Ensure that, where appropriate:

27.1 There are no signs of oil leakage.

27.2 The oil levels are correct (refer to AP 116E-1715-1).

27.3 The casing is not damaged.

27.4 The air flow around the Balun/Transformer cooling surfaces is unrestricted.

27.5 The ceramic stand-off insulators are clean and undamaged. Using the mutton cloth, clean as necessary.

27.6 The open-wire feeder connections are secure and clean.

27.7 The coaxial cable connections are securely attached and weatherproofed.

27.8 Where protection against lightning and static discharge is provided by means of spark gaps, the gap is correct in accordance with the approved publications.

27.9 The continuity resistance of the connection between the spark gaps and the buildings earth system is less than 1 Ω. Check, using the multimeter.

27.10 The desiccator crystals are deep blue in colour. Replace if pink or pale blue.

ANTENNA ENCLOSURE

28 Ensure that the enclosure fence and gate are undamaged, and that any vegetation growth is not excessive.

29 On completion of the above checks, lock the enclosure gate.

FEEDER PRESSURIZING CHECK

NOTE

At certain locations, pressurization of feeder cables is achieved and monitored by automatic mechanisms. At these locations, the procedure for checking pressure is detailed in the Air Publication specific to the equipment concerned.

WARNING

COMPRESSED GAS. PRESSURISED NITROGEN GAS IS USED IN THE MAINTENANCE OF THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

30 Where pressurized coaxial cable feeder is fitted, using the pressure gauge, ensure that the pressure in the cable is between 5 lbf/in² and 10 lbf/in². If necessary, refer to Annex H and adjust the pressure.

SERVICEABILITY CHECKS

NOTES

(1) If a facility exists as part of the radio equipment to measure the Voltage Standing Wave Ratio (VSWR), it is to be used as part of the final serviceability check.

(2) If there is no facility to carry out a VSWR check, request the electronic tradesman to carry out a functional check of the radio equipment, to determine that each antenna system is serviceable.

VSWR CHECK

31 Request the electronic tradesman to carry out a VSWR check, as detailed in Annex E1.

32 On completion of a satisfactory VSWR or functional check, restore the equipment to the required operational condition.

FEEDERS AND BALUN MATCHING TRANSFORMER CHECKS

NOTES

(1) This task must be carried out on all antennas and their associated feeder systems which do not require 6-Monthly servicing.

(2) During maintenance checks on baluns and matching transformers on a transmitter site, aerials on either side of the equipment under maintenance must also be deselected and warning notices displayed.

TRADES AND MANHOURS REQUIRED

Aerial Erector	1 man x 15 min per 100 metres

TOOLS, TEST EQUIPMENT AND MATERIALS REQUIRED

Item No.(Annex C)	Brief Description
T1	Pressurizing kit
T2	Binoculars
T4	Warning notice
T6	Ice pricker
M1	Denso tape
M4	Oil, OMD-80X
M5	Copper naphthenate
M9	Mutton cloth

WARNING

RADIO FREQUENCY RADIATION. A RADIO FREQUENCY RADIATION HAZARD EXISTS WHEN WORKING ON THIS EQUIPMENT, REFER TO THE WARNINGS PAGE.

RADIO EQUIPMENT BUILDING

1 Disconnect the feeder from the radio equipment, or deselect the antenna at the exchange and remove the keys, as appropriate. Display the warning notice.

MAST CHECKS

2 Ensure that the masts or poles are vertically aligned.

3 Ensure that the mast support guys and anchorage points are secure.

WARNING

DANGEROUS VOLTAGE. INDUCED VOLTAGE MAY BE PRESENT IN THIS EQUIPMENT. REFER TO THE GENERAL NOTES AND PRECAUTIONS.

4 Ensure that the obstruction light, where fitted, is serviceable.

ANTENNA CHECKS

5 Using the binoculars, if required, examine the antenna system and its associated support equipment for signs of damage and deterioration. Look specifically for:

5.1 RF arc burns on insulators.

5.2 Damaged or slipped insulators and spreaders.

5.3 Broken or twisted wires.

5.4 Corrosion on pulleys, shackles and other metallic components, including wire ropes.

5.5 Damage to the fibreglass catenaries.

5.6 Cuts, bad splicing and wear on rope guys, halyards and martingales.

6 Ensure that the antenna supporting structure and all associated rigging tackle are secure and undamaged.

7 Where the antenna is supported by a triatic, ensure that the rigging is secure and undamaged.

8 Where the antenna has a tuning unit, ensure that it is secure.

9 Where a counterpoise or suspended earth system is fitted, ensure that its wires are not broken and that its supporting structure is secure and undamaged.

10 Where a pilot line is fitted, ensure that it is secure.

11 Ensure that the counter-weight system is secure and approximately 1 m above the ground (Gibraltar 50 cm above ground level).

RESISTANCE UNIT

12 Where a resistance unit box is fitted, ensure that the end of the open-wire termination run is secure.

POWER DISSIPATION LINE

13 Where a high power transmitting antenna is fitted with an open wire power dissipation line, using binoculars, if required, visually examine the system, as for the open wire feeder checks.

SUSPENDED COUNTERPOISE (GIBRALTAR)

14 Examine the suspended counterpoise system and its supporting structure for security, damage and deterioration.

OPEN WIRE FEEDER CHECKS

15 Ensure that all support poles are vertically aligned, and that the foundations and back stays are secure.

16 Examine the Type 808 stand-off insulators for damage.

17 Examine the feeder/dissipation support poles as follows:

17.1 Examine wooden poles for:

17.1.1 Warping.

17.1.2 Splits and flaking.

17.1.3 Contamination by fungoid growth.

17.1.4 Security of attachments.

17.1.5 Corrosion of metal fixtures.

17.1.6 Rot, by spiking suspected areas with a sharp ice-pricker.

17.1.7 Deterioration.

17.2 Examine concrete poles for:

17.2.1 Cracking.

17.2.2 Chipping.

17.2.3 Exposure of the steel reinforcing rods.

17.2.4 Insecurity of attachment.

17.3 Examine aluminium poles for:

17.3.1 Dents.

17.3.2 Splits.

17.3.3 Corrosion, particularly at points where dissimilar metals are in contact.

WARNING

COPPER NAPHTHENATE. BEFORE USING COPPER NAPHTHENATE, REFER TO THE WARNINGS PAGE.

18 If necessary, treat wooden poles with copper naphthenate.

19 Examine the entire length of each open wire feeder run for signs of damage, deterioration, and the following:

19.1 Twisting.

19.2 Kinking.

19.3 Excessive slackness.

19.4 Security of attachment.

FEEDER AND DUCT CHECKS

WARNING

OILS AND LUBRICANTS. BEFORE USING DENSO TAPE , REFER TO THE WARNINGS PAGE.

20 Where Denso tape is used for weatherproofing, replace as necessary.

21 Where antenna feeders are installed in cable ducting, look for damage to the duct covers.

22 Examine all exposed lengths of coaxial feeder for damage and deterioration.

23 Ensure that there are no cuts and abrasions on the outer covering, particularly at the points of entry into the ground or building.

24 Ensure that the feeders are formed into suitable swan-necks at the points of entry into the building.

25 Where coaxial feeders are supported by a catenary:

25.1 Examine the catenary for damage, deterioration and corrosion.

25.2 Ensure that the coaxial cable hangers are secure, serviceable and spaced a nominal 600 mm apart.

25.3 Examine all associated hardware for corrosion.

26 Ensure that the route of buried coaxial feeder is indicated at the following points:

26.1 Approximately 50 metre intervals.

26.2 Direction changes.

26.3 Cable joints.

BALUN AND MATCHING TRANSFORMER CHECKS

27 Where an antenna matching transformer is fitted, examine it for security, damage and deterioration. Ensure that there are no signs of oil leakage.

WARNING

OILS AND LUBRICANTS. BEFORE USING OIL OMD 80X, REFER TO THE WARNINGS PAGE.

27.1 The oil levels are correct (refer to AP 116E-1715-1). If necessary, replenish with OMD-80X

27.2 The casing is not damaged.

27.3 The air flow around the Balun/Transformer cooling surfaces is unrestricted.

27.4 The ceramic stand-off insulators are clean and undamaged, using the mutton cloth, clean as necessary.

27.5 The open-wire feeder connections are secure and clean.

27.6 The coaxial cable connections are securely attached and weatherproofed.

27.7 Where protection against lightning and static discharge is provided by means of spark gaps, the gap is correct in accordance with the approved publications.

27.8 The continuity resistance of the connection between the spark gaps and the buildings earth system is less than 1 Ω. Check, using the multimeter.

27.9 The desiccator crystals are deep blue in colour. Replace if pink or pale blue.

ANTENNA ENCLOSURE

28 Ensure that the enclosure fence and gate are undamaged, and that any vegetation growth is not excessive.

29 On completion of the above checks, lock the enclosure gate.

FEEDER PRESSURIZATION

NOTE

At certain locations, pressurization of feeder cables is achieved and monitored by automatic mechanisms. At these locations, the procedure for checking pressure is detailed in the Air Publication specific to the equipment concerned.

WARNING

COMPRESSED GAS. PRESSURISED NITROGEN GAS IS USED IN THE MAINTENANCE OF THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

30 Where pressurized coaxial cable feeder is fitted, using the pressure gauge, ensure that the pressure in the cable is between 5 lbf/in² and 10 lbf/in². If necessary, refer to Annex H and adjust the pressure.

SERVICEABILITY CHECKS

NOTES

(1) If a facility exists as part of the radio equipment to measure the Voltage Standing Wave Ratio (VSWR), it is to be used as part of the final serviceability check.

(2) If there is no facility to carry out a VSWR check, request the electronic tradesman to carry out a functional check of the radio equipment, to determine that each antenna system is serviceable.

VSWR CHECK

31 Request the electronic tradesman to carry out a VSWR check, as detailed in Annex E1.

32 On completion of a satisfactory VSWR or functional check, restore the equipment to the required operational condition.

L AND T NDB ANTENNA CHECKS

NOTES

(1) Task Y.1 must be carried out in conjunction with this task.

(2) The manhours given for this task refer only to the maintenance of the antenna. Manhours consumed in the lowering and raising of the antenna support structure are not included.

TRADES AND MANHOURS REQUIRED

Aerial Erector	4 men x 4 h

TOOLS, TEST EQUIPMENT AND MATERIALS REQUIRED

Item No.(Annex C)	Brief Description
T1	Pressurizing kit
T2	Binoculars
T3	Shorting link
T4	Warning notice
T5	Earthing stick
TE1	Insulation tester
TE2	Multimeter
M1	Denso tape
M2	Grease, ZX-13
M3	Grease, XG-271
M8	Emery cloth
M9	Mutton cloth
M11	Self-amalgamating tape
M12	100 lb/mile copper wire

WARNING

RADIO FREQUENCY RADIATION. A RADIO FREQUENCY RADIATION HAZARD EXISTS WHEN WORKING ON THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

RADIO EQUIPMENT BUILDING

1 Disconnect the feeder from the radio equipment, or deselect the antenna at the exchange and remove the keys, as appropriate. Display the warning notice.

VISUAL SAFETY CHECKS

2 Using the binoculars, if required, examine the antenna and its supporting structure for signs of damage which could make maintenance hazardous.

3 Examine the guy anchorage points for signs of damage and deterioration.

FEEDER CABLE ELECTRICAL CHECKS

WARNINGS

(1) OILS AND LUBRICANTS. BEFORE USING DENSO TAPE, REFER TO THE WARNINGS PAGE.

(2) DANGEROUS VOLTAGE. INDUCED VOLTAGE MAY BE PRESENT IN THIS EQUIPMENT. REFER TO THE GENERAL NOTES AND PRECAUTIONS.

4 At the Antenna Tuning Unit (ATU), remove the Denso tape and self-amalgamating tape from the feeder connection.

5 Disconnect the coaxial feeder cable and connect the shorting link across the inner and outer conductors of the coaxial cable.

6 Using the multimeter, ensure that the continuity resistance of the coaxial cable is less than 1 Ω.

7 Remove the shorting link.

8 Using the insulation tester, measure the insulation resistance between the inner and outer conductors of the coaxial cable. Ensure that the reading is greater than 20 MΩ.

9 Reconnect the coaxial cable to the ATU.

10 Using the self-amalgamating tape, seal the feeder connection.

11 Using the Denso tape, weatherproof the connection.

EARTH SYSTEM

NOTE

The earth system may be either a buried or suspended earth mat, or a counterpoise.

Earth system electrical checks

12 At the ATU, disconnect the earth lead from the ATU earth terminal.

13 Using the emery cloth, clean the mating surfaces of the earth lead and the ATU terminal, then reconnect them.

14 Using the multimeter, ensure that the continuity resistance of the connection is less than 1 Ω.

15 Using grease ZX-13, apply a coat of grease to the connection.

Suspended earth system

16 Examine the antenna supporting structure and all associated rigging tackle for security and deterioration.

17 Examine all system wiring for security and deterioration. Look particularly for loose connections between the radial and ring wires.

Buried earth system

18 Select at random three widely separated radial wires, and uncover a 1 m section of each.

19 On the exposed section of wire, using the emery cloth, clean off any corrosion and compare the remaining thickness of wire with that of a new piece of 100 lb/mile copper wire. Replace all broken and severely corroded radials, using new 100 lb/mile copper wire.

NOTE

If there is widespread corrosion or broken radials, a check of the complete earth system is to be made, and all broken or corroded radials replaced, using new 100 lb/mile copper wire.

ANTENNA CHECKS

20 Lower the antenna, in accordance with AP 116E-1717-1G.

WARNING

OILS AND LUBRICANTS. BEFORE USING XG-271, REFER TO THE WARNINGS PAGE.

21 Using grease XG-271 apply a coat of grease to all shackles, turnbuckles and associated hardware.

22 Raise the antenna, in accordance with AP 116E-1717-1G.

ANTENNA ELECTRICAL CHECKS

23 At the feed-through insulator in the side of the antenna feed ATU hut, disconnect the antenna feeder wire.

24 Connect the insulation tester between the antenna feeder wire and the earth system. Ensure that the reading obtained is greater than 2 MΩ.

25 Clean the feed-through insulator body, using damp mutton cloth if necessary, but finishing with dry mutton cloth.

26 Using the emery cloth, clean the mating surfaces of the feed-through insulator terminal and the antenna feed wire, then reconnect them.

27 Using the multimeter, ensure that the continuity resistance of the connection is less than 1Ω.

28 Using grease ZX-13, apply a coat of grease to the connection.

FEEDER PRESSURIZATION

NOTE

At certain locations, pressurization of feeder cables is achieved and monitored by automatic mechanisms. At these locations, the procedure for checking pressure is detailed in the Air Publication specific to the equipment concerned.

WARNING

COMPRESSED GAS. PRESSURISED NITROGEN GAS IS USED IN THE MAINTENANCE OF THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

29 Where pressurized coaxial cable feeder is fitted, using the pressure gauge, ensure that the pressure in the cable is between 5 lbf/in² and 10 lbf/in². If necessary, refer to Annex H and adjust the pressure.

SERVICEABILITY CHECKS

NOTES

(1) If a facility exists as part of the radio equipment to measure the Voltage Standing Wave Ratio (VSWR), it is to be used as part of the final serviceability check.

(2) If there is no facility to carry out a VSWR check, request the electronic tradesman to carry out a functional check of the radio equipment, to determine that each antenna system is serviceable.

VSWR CHECK

30 Request the electronic tradesman to carry out a VSWR check, as detailed in Annex E1.

31 On completion of a satisfactory VSWR or functional check, restore the equipment to the required operational condition.

QUARTER-WAVE ANTENNA CHECKS

NOTES

(1) Task Y.1 must be carried out in conjunction with this task.

(2) The manhours given for this task refer only to the maintenance of the antenna. Manhours consumed in the lowering and raising of the antenna support structure are not included.

TRADES AND MANHOURS REQUIRED

Aerial Erector	2 men x 2 h

TOOLS, TEST EQUIPMENT AND MATERIALS REQUIRED

Item No.(Annex C)	Brief Description
T1	Pressurizing kit
T2	Binoculars
T3	Shorting link
T4	Warning notice
T5	Earthing stick
TE1	Insulation tester
TE2	Multimeter
M1	Denso tape
M2	Grease, ZX-13
M3	Grease, XG-271
M6	Grease, XG-250
M8	Emery cloth
M9	Mutton cloth
M11	Self-amalgamating tape

WARNING

RADIO FREQUENCY RADIATION. A RADIO FREQUENCY RADIATION HAZARD EXISTS WHEN WORKING ON THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

RADIO EQUIPMENT BUILDING

1 Disconnect the feeder from the radio equipment, or deselect the antenna at the exchange and remove the keys, as appropriate. Display the warning notice.

VISUAL SAFETY CHECKS

2 Using the binoculars, if required, examine the antenna and its supporting structure for signs of damage which could make maintenance hazardous.

3 Examine the guy anchorage points for signs of damage and deterioration.

FEEDER CABLE ELECTRICAL CHECKS

WARNINGS

(1) DANGEROUS VOLTAGE. INDUCED VOLTAGE MAY BE PRESENT IN THIS EQUIPMENT. REFER TO THE GENERAL NOTES AND PRECAUTIONS.

(2) OILS AND LUBRICANTS. BEFORE USING DENSO TAPE, REFER TO THE WARNINGS PAGE.

NOTE

The feeder system may be either a hybrid arrangement (part coaxial cable, part open-wire), or entirely open wire.

4 Where a hybrid feeder system is fitted, remove the Denso tape and self-amalgamating tape from the feeder connection.

5 Disconnect the coaxial cable from the matching transformer and connect the shorting link across the inner and outer conductors of the coaxial cable.

6 Using the multimeter, ensure that the continuity resistance of the coaxial cable is less than 1 Ω.

7 Remove the shorting link.

8 Using the insulation tester, measure the insulation resistance between the inner and outer conductors of the coaxial cable. Ensure that the reading is greater than 20 M Ω.

9 Reconnect the coaxial cable to the matching transformer.

10 Using the self-amalgamating tape, seal the feeder connection.

11 Using the Denso tape, weatherproof the connection.

JUNCTION BOX CHECKS

12 At the antenna base, remove the cover and sealing gasket from the feeder cable junction box, check that:

12.1 The internal soldered connections are secure and serviceable.

12.2 That there is no ingress of water or other foreign matter.

12.3 That the box is securely mounted on its support stirrup.

13 Disconnect the antenna jumper wire from the feed-through insulator on the junction box.

14 Clean the feed-through insulator body, using damp mutton cloth if necessary, but finishing with dry mutton cloth.

15 Using the Denso tape, ensure that the coaxial cable entry gland on the junction box is sealed.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE XG-250, REFER TO THE WARNINGS PAGE.

16 Using grease XG-250, smear both faces of the cover sealing gasket.

17 Refit the gasket and the cover to the junction box.

ANTENNA CHECKS

18 Lower the antenna, in accordance with AP 116E-1717-1G.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE XG-271, REFER TO THE WARNINGS PAGE.

19 Using grease XG-271 apply a coat of grease to all shackles, turnbuckles and associated hardware.

20 Raise the antenna, in accordance with AP 116E-1717-1G.

21 Clean the mast base insulator, using damp mutton cloth, but finishing with dry mutton cloth.

ANTENNA ELECTRICAL CHECKS

22 Connect the insulation tester between the antenna jumper wire and a good earth connection on the junction box and measure the insulation resistance of the antenna system. Ensure that the reading is greater than 2 MΩ.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE ZX-13, REFER TO THE WARNINGS PAGE.

23 Using the emery cloth, clean the mating surfaces of the antenna jumper wire and the junction box feed-through insulator terminal.

24 Reconnect the antenna jumper wire to the feed-through insulator on the junction box.

25 Using the multimeter, ensure that the continuity resistance of the connection is less than 1 Ω.

26 Using grease ZX-13, apply a coat of grease to the connection.

FEEDER PRESSURIZATION

NOTE

At certain locations, pressurization of feeder cables is achieved and monitored by automatic mechanisms. At these locations, the procedure for checking pressure is detailed in the Air Publication specific to the equipment concerned.

WARNING

COMPRESSED GAS. PRESSURISED NITROGEN GAS IS USED IN THE MAINTENANCE OF THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

27 Where pressurized coaxial cable feeder is fitted, using the pressure gauge, ensure that the pressure in the cable is between 5 lbf/in² and 10 lbf/in². If necessary, refer to Annex H and adjust the pressure.

SERVICEABILITY CHECKS

NOTES

(1) If a facility exists as part of the radio equipment to measure the Voltage Standing Wave Ratio (VSWR), it is to be used as part of the final serviceability check.

(2) If there is no facility to carry out a VSWR check, request the electronic tradesman to carry out a functional check of the radio equipment, to determine that each antenna system is serviceable.

VSWR CHECK

28 Request the electronic tradesman to carry out a VSWR check, as detailed in Annex E1.

29 On completion of a satisfactory VSWR or functional check, restore the equipment to the required operational condition.

HORIZONTAL DIPOLE ANTENNA CHECKS

NOTES

(1) Task Y.1 must be carried out in conjunction with this task.

(2) The manhours given for this task refer only to the maintenance of the antenna. Manhours consumed in the lowering and raising of the antenna support structure are not included.

TRADES AND MANHOURS REQUIRED

Aerial Erector	4 men x 4 h

TOOLS, TEST EQUIPMENT AND MATERIALS REQUIRED

Item No.(Annex C)	Brief Description
T1	Pressurizing kit
T2	Binoculars
T3	Shorting link
T4	Warning notice
T5	Earthing stick
TE1	Insulation tester
TE2	Multimeter
M1	Denso tape
M2	Grease, ZX-13
M3	Grease, XG-271
M8	Emery cloth
M11	Self-amalgamating tape

WARNING

RADIO FREQUENCY RADIATION. A RADIO FREQUENCY RADIATION HAZARD EXISTS WHEN WORKING ON THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

RADIO EQUIPMENT BUILDING

1 Disconnect the feeder from the radio equipment, or deselect the antenna at the exchange and remove the keys, as appropriate. Display the warning notice.

VISUAL SAFETY CHECKS

2 Using the binoculars, if required, examine the antenna and its supporting structure for signs of damage which could make maintenance hazardous.

3 Examine the guy anchorage points for damage and deterioration.

FEEDER CABLE ELECTRICAL CHECKS

WARNINGS

(1) DANGEROUS VOLTAGE. INDUCED VOLTAGE MAY BE PRESENT IN THIS EQUIPMENT. REFER TO THE GENERAL NOTES AND PRECAUTIONS.

(2) OILS AND LUBRICANTS. BEFORE USING DENSO TAPE, REFER TO THE WARNINGS PAGE.

NOTE

The feeder system may be either a hybrid arrangement (part coaxial cable, part open-wire), or entirely open wire.

4 Where a hybrid feeder system is fitted, remove the Denso tape and self-amalgamating tape from the feeder connection.

5 Disconnect the coaxial cable from the matching transformer and connect the shorting link across the inner and outer conductors of the coaxial cable.

6 Using the multimeter, ensure that the continuity resistance between the inner and outer conductors of the coaxial cable is less than 1 Ω.

7 Remove the shorting link.

8 Using the insulation tester, measure the insulation resistance between the inner and outer conductors of the coaxial cable. Ensure that the reading is greater than 20 MΩ.

9 Reconnect the coaxial cable to the matching transformer.

10 Using the self-amalgamating tape, seal the feeder connection.

11 Using the Denso tape, weatherproof the connection.

ANTENNA RESISTANCE CHECKS

12 Disconnect the open wire feeder from the matching transformer.

13 Using the insulation tester, measure the combined insulation resistance of the open wire feeder and antenna. Ensure that the reading is greater than 2 MΩ.

14 Using the emery cloth, clean the mating surfaces of the open wire feeder.

15 Reconnect the open wire feeder to the matching transformer.

16 Using the multimeter, ensure that the continuity resistance of the connection is less than 1 Ω.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE ZX-13, REFER TO THE WARNINGS PAGE.

17 Using grease ZX-13, apply a coat of grease to the connections.

ANTENNA CHECK

18 Lower the antenna, in accordance with AP 116E-1717-1H

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE XG-271, REFER TO THE WARNINGS PAGE.

19 Using grease XG-271 apply a coat of grease to all shackles, turnbuckles and associated hardware.

20 Raise the antenna, in accordance with AP 116E-1717-1H

FEEDER PRESSURIZATION

NOTE

At certain locations, pressurization of feeder cables is achieved and monitored by automatic mechanisms. At these locations, the procedure for checking pressure is detailed in the Air Publication specific to the equipment concerned.

WARNING

COMPRESSED GAS. PRESSURISED NITROGEN GAS IS USED IN THE MAINTENANCE OF THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

21 Where pressurized coaxial cable feeder is fitted, using the pressure gauge, ensure that the pressure in the cable is between 5 lbf/in² and 10 lbf/in². If necessary, refer to Annex H and adjust the pressure.

SERVICEABILITY CHECKS

NOTES

(1) If a facility exists as part of the radio equipment to measure the Voltage Standing Wave Ratio (VSWR), it is to be used as part of the final serviceability check.

(2) If there is no facility to carry out a VSWR check, request the electronic tradesman to carry out a functional check of the radio equipment, to determine that each antenna system is serviceable.

VSWR CHECK

22 Request the electronic tradesman to carry out a VSWR check, as detailed in Annex E1.

23 On completion of a satisfactory VSWR or functional check, restore the equipment to the required operational condition.

BICONICAL MONOPOLE ANTENNA CHECKS

NOTES

(1) Task Y.1 must be carried out in conjunction with this task.

(2) The manhours given for this task refer only to the maintenance of the antenna. Manhours consumed in the lowering and raising of the antenna support structure are not included.

(3) An access platform (cherry picker), is required to carry out this task (Cyprus only).

TRADES AND MANHOURS REQUIRED

Aerial Erector	3 men x 3 h

TOOLS, TEST EQUIPMENT AND MATERIALS REQUIRED

Item No.(Annex C)	Brief Description
T1	Pressurizing kit
T2	Binoculars
T3	Shorting link
T4	Warning notice
T5	Earthing stick
TE1	Insulation tester
TE2	Multimeter
M2	Grease, ZX-13
M3	Grease, XG-271
M8	Emery cloth
M9	Mutton cloth
M12	100 lb/mile copper wire

WARNING

RADIO FREQUENCY RADIATION. A RADIO FREQUENCY RADIATION HAZARD EXISTS WHEN WORKING ON THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

RADIO EQUIPMENT BUILDING

1 Disconnect the feeder from the radio equipment, or deselect the antenna at the exchange and remove the keys, as appropriate. Display the warning notice.

VISUAL SAFETY CHECKS

2 Using the binoculars, if required, examine the antenna and its supporting structure for signs of damage which could make maintenance hazardous.

3 Examine the guy anchorage points for signs of damage and deterioration.

FEEDER CABLE ELECTRICAL CHECKS

WARNING

DANGEROUS VOLTAGE. INDUCED VOLTAGE MAY BE PRESENT IN THIS EQUIPMENT. REFER TO THE GENERAL NOTES AND PRECAUTIONS.

4 In the radio equipment building, connect the shorting link across the conductors of the coaxial cable.

5 At the antenna end of the feeder, disconnect the antenna feeder jumper wire from the centre conductor of the coaxial cable.

6 Using the multimeter, ensure that the continuity resistance of the coaxial cable is less than 1 Ω.

7 Remove the shorting link.

8 Using the insulation tester, measure the insulation resistance between the conductors of the coaxial cable. Ensure that the reading is greater than 20 MΩ.

ANTENNA ELECTRICAL CHECK

9 Connect the insulation tester between the antenna jumper wire and the earth system. Ensure that the reading is greater than 2 MΩ.

10 Using the emery cloth, clean the mating surfaces of the antenna-feeder jumper wire and the centre conductor of the coaxial feeder cable.

11 Reconnect the antenna feeder jumper wire to the centre conductor of the coaxial cable.

12 Using the multimeter, ensure that the continuity resistance of the connection is less than 1 Ω.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE ZX-13, REFER TO THE WARNINGS PAGE.

13 Using grease ZX-13, apply a coat of grease to the connection.

EARTH SYSTEM

NOTE

The earth system may be either a buried or suspended earth mat, or a counterpoise.

Suspended earth system

14 Examine the system supporting structure, and all associated rigging tackle for security, damage and deterioration.

15 Examine all system wiring for damage and deterioration. Look particularly for loose connections between the radial and ring wires.

Buried earth system

16 Select at random three widely separated radial wires, and uncover a 1 m section of each.

17 On the exposed section of wire, clean off any corrosion and compare the remaining thickness of wire with that of a new piece of 100 lb/mile copper wire. Replace all broken and severely corroded radials, using new 100 lb/mile copper wire.

NOTE

If there is widespread corrosion or broken radials, a check of the complete earth system is to be made, and all broken or corroded radials replaced, using new 100 lb/mile copper wire.

ANTENNA CHECKS

NOTE

In Cyprus only, ignore Paras 18 and 21 and carry out Paras 19 and 20 using an access platform (cherry picker).

18 Lower the antenna.

19 Carry out the antenna checks, detailed in Task Y.1.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE XG-271, REFER TO THE WARNINGS PAGE.

20 Using grease XG-271, apply a coat of grease to all shackles, turnbuckles and associated hardware.

21 Raise the antenna.

22 Clean the antenna mast base insulator, using damp mutton cloth if necessary, but finishing with dry mutton cloth.

FEEDER PRESSURIZATION

NOTE

At certain locations, pressurization of feeder cables is achieved and monitored by automatic mechanisms. At these locations, the procedure for checking pressure is detailed in the Air Publication specific to the equipment concerned.

WARNING

COMPRESSED GAS. PRESSURISED NITROGEN GAS IS USED IN THE MAINTENANCE OF THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

23 Where pressurized coaxial cable feeder is fitted, using the pressure gauge, ensure that the pressure in the cable is between 5 lbf/in² and 10 lbf/in². If necessary, refer to Annex H and adjust the pressure.

SERVICEABILITY CHECKS

NOTES

(1) If a facility exists as part of the radio equipment to measure the Voltage Standing Wave Ratio (VSWR), it is to be used as part of the final serviceability check.

(2) If there is no facility to carry out a VSWR check, request the electronic tradesman to carry out a functional check of the radio equipment, to determine that each antenna system is serviceable.

VSWR CHECK

24 Request the electronic tradesman to carry out a VSWR check, as detailed in Annex E1.

25 On completion of a satisfactory VSWR or functional check, restore the equipment to the required operational condition.

DISCONE ANTENNA CHECKS

NOTES

(1) Task Y.1 must be carried out in conjunction with this task.

(2) The manhours given for this task refer only to the maintenance of the antenna. Manhours consumed in the lowering and raising of the antenna support structure are not included.

TRADES AND MANHOURS REQUIRED

Aerial Erector	3 men x 1 h (3 men x 1 h 15 min Gibraltar only)

TOOLS, TEST EQUIPMENT AND MATERIALS REQUIRED

Item No.(Annex C)	Brief Description
T1	Pressurizing kit
T2	Binoculars
T3	Shorting link
T4	Warning notice
T5	Earthing stick
T6	Ice pricker
TE1	Insulation tester
TE2	Multimeter
TE4	Bonding tester
M1	Denso tape
M2	Grease, ZX-13
M3	Grease, XG-271
M8	Emery cloth
M11	Self-amalgamating tape
M12	100 lb/mile copper wire

WARNING

RADIO FREQUENCY RADIATION. A RADIO FREQUENCY RADIATION HAZARD EXISTS WHEN WORKING ON THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

RADIO EQUIPMENT BUILDING

1 Disconnect the feeder from the radio equipment, or deselect the antenna at the exchange and remove the keys, as appropriate. Display the warning notice.

VISUAL SAFETY CHECKS

2 Using the binoculars, if required, examine the antenna and its supporting structure for signs of damage which could make maintenance hazardous.

3 Examine the guy anchorage points for signs of damage and deterioration.

FEEDER CABLE ELECTRICAL CHECKS

NOTE

The feeder system may be either a hybrid arrangement (part coaxial cable, part open-wire), or entirely open wire.

WARNING

OILS AND LUBRICANTS. BEFORE USING DENSO TAPE, REFER TO THE WARNINGS PAGE.

4 Where a hybrid feeder system is fitted, remove the Denso tape and self-amalgamating tape from the feeder connection.

5 Disconnect the coaxial cable from the matching transformer and connect the shorting link across the inner and outer conductors of the coaxial cable.

6 At the antenna termination box, mounted below the suspended centre of the earth mat, ensure that the feeder cable is securely connected to the box and that the connection is sealed with self-amalgamating tape and weatherproofed with Denso tape.

7 Ensure that the desiccator crystals are deep blue in colour.

8 At the antenna termination box, disconnect the braided wire strap from the stand-off insulator terminal.

9 Connect the insulation tester between the wire strap and a good earth point on the suspended earth mat. Ensure that the reading is greater than 2 MΩ.

10 Connect the multimeter between the stand-off insulator terminal and the earth point on the mat. Ensure that continuity resistance is less than 1 Ω.

11 Remove the shorting link.

12 Connect the insulation tester between the stand-off insulator terminal and the earth point on the mat. Ensure that the reading is greater than 20 MΩ.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE ZX-13, REFER TO THE WARNINGS PAGE.

13 At the antenna termination box, using the emery cloth, clean the end of the braided wire strap.

14 Reconnect the braided wire strap to the stand-off insulator terminal.

15 Using the multimeter, ensure that the continuity resistance of the connection is less than 1 Ω.

16 Using grease ZX-13 apply a coat of grease to the connection.

17 Examine the wooden earth support frame for signs of:

17.1 Deterioration.

17.2 Splits and flaking.

17.3 Warping.

17.4 Rot by spiking with the ice-pricker.

17.5 Contamination by fungoid growths.

ANTENNA CHECKS

18 Using the binoculars, if required, examine the antenna system and its associated support equipment for signs of damage and deterioration. Look specifically for:

18.1 RF arc burns on insulators.

18.2 Damaged or slipped insulators and spreaders.

18.3 Broken or twisted wires.

18.4 Corrosion on pulleys, shackles and other metallic components, including wire ropes.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE XG-271, REFER TO THE WARNINGS PAGE.

19 Using grease XG-271, apply a coat of grease to all shackles, turnbuckles and associated hardware.

20 Ensure that all swaged terminations have no broken or worn strands around the swage, the swage is secure, and that there is no movement of the rope in the ferrule.

21 Examine the apex casting for corrosion and damage. Ensure that the antenna elements are secure in their slotted clamping studs.

22 Using the multimeter, ensure that the continuity resistance of the connections is less then 1 Ω.

23 Using grease ZX-13, apply a coat of grease to the connections.

GROUND EARTH SYSTEM BONDING CHECK

24 Using the bonding tester, ensure that:

24.1 The wire connection between the antenna termination box and the expanded metal earth mat are bonded together. Ensure the continuity reading is less than 1Ω.

24.2 All the soldered joints connecting the expanded metal earth mat to the radial earth wires are bonded together. Ensure the continuity reading is less than 1Ω.

25 Ensure that none of the exposed radial earth wires are broken.

26 Select at random three widely separated radial wires, and uncover a 1 m section of each.

27 On the exposed section of wire, clean off any corrosion and compare the remaining thickness of wire with that of a new piece of 100 lb/mile copper wire. Replace all broken and severely corroded radials, using new 100 lb/mile copper wire.

NOTE

If there is widespread corrosion or broken radials, a check of the complete earth system is to be made, and all broken or corroded radials replaced, using new 100 lb/mile copper wire.

FEEDER PRESSURIZATION

NOTE

At certain locations, pressurization of feeder cables is achieved and monitored by automatic mechanisms. At these locations, the procedure for checking pressure is detailed in the Air Publication specific to the equipment concerned.

WARNING

COMPRESSED GAS. PRESSURISED NITROGEN GAS IS USED IN THE MAINTENANCE OF THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

28 Where pressurized coaxial cable feeder is fitted, using the pressure gauge, ensure that the pressure in the cable is between 5 lbf/in^2 and 10 lbf/in^2. If necessary, refer to Annex H and adjust the pressure.

SERVICEABILITY CHECKS

NOTES

(1) If a facility exists as part of the radio equipment to measure the Voltage Standing Wave Ratio (VSWR), it is to be used as part of the final serviceability check.

(2) If there is no facility to carry out a VSWR check, request the electronic tradesman to carry out a functional check of the radio equipment, to determine that each antenna system is serviceable.

VSWR CHECK

29 Request the electronic tradesman to carry out a VSWR check, as detailed in Annex E1.

30 On completion of a satisfactory VSWR or functional check, restore the equipment to the required operational condition.

SLOPING V ANTENNA CHECKS

NOTES

(1) Task Y.1 must be carried out in conjunction with this task.

(2) The manhours given for this task refer only to the maintenance of the antenna. Manhours consumed in the lowering and raising of the antenna support structure are not included.

TRADES AND MANHOURS REQUIRED

Aerial Erector	3 men x 3 h

TOOLS, TEST EQUIPMENT AND MATERIALS REQUIRED

Item No.(Annex C)	Brief Description
T1	Pressurizing kit
T2	Binoculars
T3	Shorting link
T4	Warning notice
T5	Earthing stick
TE1	Insulation tester
TE2	Multimeter
TE3	Bridge megger
M1	Denso
M2	Grease, ZX-13
M3	Grease, XG-271
M8	Emery cloth
M11	Self-amalgamating tape

WARNING

RADIO FREQUENCY RADIATION. A RADIO FREQUENCY RADIATION HAZARD EXISTS WHEN WORKING ON THIS EQUIPMENT, REFER TO THE WARNINGS PAGE.

RADIO EQUIPMENT BUILDING

1 Disconnect the feeder from the radio equipment, or deselect the antenna at the exchange and remove the keys, as appropriate. Display the warning notice.

VISUAL SAFETY CHECKS

2 Using the binoculars, if required, examine the antenna and its supporting structure for signs of damage which could make maintenance hazardous.

3 Examine the guy anchorage points for signs of damage and deterioration.

WARNING

DANGEROUS VOLTAGE. INDUCED VOLTAGE MAY BE PRESENT IN THIS EQUIPMENT. REFER TO THE GENERAL NOTES AND PRECAUTIONS.

FEEDER CABLE ELECTRICAL CHECKS

NOTE

The feeder system may be either a hybrid arrangement (part coaxial cable, part open-wire), or entirely open wire.

WARNING

OILS AND LUBRICANTS. BEFORE USING DENSO TAPE, REFER TO THE WARNINGS PAGE.

4 Where a hybrid feeder system is fitted, remove the Denso tape and self-amalgamating tape from the feeder connection.

5 Disconnect the coaxial cable from the matching transformer and connect the shorting link across the inner and outer conductors of the coaxial cable.

6 Using the multimeter, ensure that the continuity resistance of the coaxial cable is less than 1 Ω.

7 Remove the shorting link.

8 Using the insulation tester, ensure that the insulation resistance of the coaxial cable is greater than 20 MΩ.

9 Reconnect the coaxial cable to the matching transformer.

10 Using the self-amalgamating tape, seal the feeder connection.

11 Using the Denso tape, weatherproof the connection.

ANTENNA CHECKS

12 Lower the antenna, in accordance with AP 116E-1717-1H.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE XG-271, REFER TO THE WARNINGS PAGE.

13 Using grease XG-271, apply a coat of grease to all shackles, turnbuckles and associated hardware.

14 Raise the antenna, in accordance with AP 116E-1717-1H.

LOOP RESISTANCE CHECKS

15 Disconnect the open wire feeder from the matching transformer.

16 Using the bridge megger, as a resistance bridge, connect it between the conductors of the open wire feeder. Measure the loop resistance of the feeder, antenna and earth system. Ensure that the reading is between 684 Ω and 756 Ω.

17 Transfer the bridge megger earth lead, from the open wire feeder, to the earth connection on the matching transformer. Measure the loop resistance of one leg of the antenna system. Ensure that the reading is between 342 Ω and 378 Ω.

18 Transfer the bridge megger live lead, to the other leg of the open wire feeder. Measure the loop resistance. Ensure that this reading is also between 342 Ω and 378 Ω.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE ZX-13, REFER TO THE WARNINGS PAGE.

19 Using the emery cloth, clean the mating surfaces of the open wire feeder.

20 Reconnect the open wire feeder to the matching transformer.

21 Using the multimeter, ensure that the continuity resistance of the connections is less than 1 Ω.

22 Using grease ZX-13, apply a coat of grease to the connections.

23 At the distant (low) end, of the antenna, check that the terminating resistor is securely connected between the antenna element and the earth bonding wire.

BURIED EARTH SYSTEM

24 Between the antenna leg termination points, carry out the following:

24.1 Uncover a 1 m section of the earth wire.

24.2 On the exposed section of wire, using the emery cloth, clean off any corrosion and compare the remaining thickness of wire with that of a new piece of 100 lb/mile copper wire. Replace, if broken or severely corroded, using new wire.

FEEDER PRESSURIZATION

NOTE

At certain locations, pressurization of feeder cables is achieved and monitored by automatic mechanisms. At these locations, the procedure for checking pressure is detailed in the Air Publication specific to the equipment concerned.

WARNING

COMPRESSED GAS. PRESSURISED NITROGEN GAS IS USED IN THE MAINTENANCE OF THIS EQUIPMENT, REFER TO THE WARNINGS PAGE.

25 Where pressurized coaxial cable feeder is fitted, using the pressure gauge, ensure that the pressure in the cable is between 5 lbf/in² and 10 lbf/in². If necessary, refer to Annex H and adjust the pressure.

SERVICEABILITY CHECKS

NOTES

(1) If a facility exists as part of the radio equipment to measure the Voltage Standing Wave Ratio (VSWR), it is to be used as part of the final serviceability check.

(2) If there is no facility to carry out a VSWR check, request the electronic tradesman to carry out a functional check of the radio equipment, to determine that each antenna system is serviceable.

VSWR CHECK

26 Request the electronic tradesman to carry out a VSWR check, as detailed in Annex E1.

27 On completion of a satisfactory VSWR or functional check, restore the equipment to the required operational condition.

WFA ANTENNA CHECKS

NOTES

(1) Task Y.1 must be carried out in conjunction with this task.

(2) The manhours given for this task refer only to the maintenance of the antenna. Manhours consumed in the lowering and raising of the antenna support structure are not included.

TRADES AND MANHOURS REQUIRED

Aerial Erector	7 men x 8 h

TOOLS, TEST EQUIPMENT AND MATERIALS REQUIRED

Item No.(Annex C)	Brief Description
T1	Pressurizing kit
T2	Binoculars
T3	Shorting link
T4	Warning notice
T5	Earthing stick
TE1	Insulation tester
TE2	Multimeter
M1	Denso tape
M2	Grease, ZX-13
M3	Grease, XG-271
M8	Emery cloth
M11	Self-amalgamating tape

WARNING

RADIO FREQUENCY RADIATION. A RADIO FREQUENCY RADIATION HAZARD EXISTS WHEN WORKING ON THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

RADIO EQUIPMENT BUILDING

1 Disconnect the feeder from the radio equipment, or deselect the antenna at the exchange and remove the keys, as appropriate. Display the warning notice.

VISUAL SAFETY CHECKS

2 Using the binoculars, if required, examine the antenna and its supporting structure for signs of damage which could make maintenance hazardous.

3 Examine the guy anchorage points for signs of damage and deterioration.

FEEDER CABLE ELECTRICAL CHECK

WARNINGS

(1) DANGEROUS VOLTAGE. INDUCED VOLTAGE MAY BE PRESENT IN THIS EQUIPMENT. REFER TO THE GENERAL NOTES AND PRECAUTIONS.

(2) OILS AND LUBRICANTS. BEFORE USING DENSO TAPE , REFER TO THE WARNINGS PAGE.

NOTE

The feeder system may be either a hybrid arrangement (part coaxial cable, part open-wire), or entirely open wire.

4 Where a hybrid feeder system is fitted, remove the Denso tape and self-amalgamating tape from the feeder connection.

5 Disconnect the coaxial cable from the matching transformer and connect the shorting link across the inner and outer conductors of the coaxial cable.

6 Using the multimeter, ensure that the continuity resistance between the inner and outer conductors of the coaxial cable is less than 1 Ω.

7 Remove the shorting link.

8 Using the insulation tester, measure the insulation resistance between the inner and outer conductors of the coaxial cable. Ensure that the reading is greater than 20 MΩ.

9 Reconnect the coaxial cable to the matching transformer.

10 Using the self-amalgamating tape, seal the feeder connection.

11 Using the Denso tape, weatherproof the connection.

ANTENNA CHECKS

CAUTION

EQUIPMENT DAMAGE. The antennas are not to be raised or lowered if the wind speed is greater then 10 knots.

12 Lower the antenna, in accordance with AP 116E-1757-1.

13 Carry out the antenna checks, detailed in Task Y.1.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE XG-271, REFER TO THE WARNINGS PAGE.

14 Using grease XG-271 apply a coat of grease to all shackles, turnbuckles and associated hardware.

15 Raise the antenna, in accordance with AP 116E-1757-1.

ANTENNA ELECTRICAL CHECKS

16 Disconnect the open wire feeder from the matching transformer.

17 Connect the insulation tester between the antenna feeder wire and a good earth connection, and measure the insulation resistance of the antenna system. Ensure that the reading is greater than 2 MΩ.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE ZX-13 , REFER TO THE WARNINGS PAGE.

18 Using the emery cloth, clean the mating surfaces of the open wire feeder.

19 Reconnect the open wire feeder to the matching transformer.

20 Using the multimeter, ensure that the continuity resistance of the connection is less than 1 Ω.

21 Using grease ZX-13, apply a coat of grease to the connections.

FEEDER PRESSURIZATION

NOTE

At certain locations, pressurization of feeder cables is achieved and monitored by automatic mechanisms. At these locations, the procedure for checking pressure is detailed in the Air Publication specific to the equipment concerned.

WARNING

COMPRESSED GAS. PRESSURISED NITROGEN GAS IS USED IN THE MAINTENANCE OF THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

22 Where pressurized coaxial cable feeder is fitted, using the pressure gauge, ensure that the pressure in the cable is between 5 lbf/in² and 10 lbf/in². If necessary, refer to Annex H and adjust the pressure.

SERVICEABILITY CHECKS

NOTES

(1) If a facility exists as part of the radio equipment to measure the Voltage Standing Wave Ratio (VSWR), it is to be used as part of the final serviceability check.

(2) If there is no facility to carry out a VSWR check, request the electronic tradesman to carry out a functional check of the radio equipment, to determine that each antenna system is serviceable.

VSWR CHECK

23 Request the electronic tradesman to carry out a VSWR check, as detailed in Annex E1.

24 On completion of a satisfactory VSWR or functional check, restore the equipment to the required operational condition.

RHOMBIC ANTENNA CHECKS

NOTES

(1) Sched 3 Task Y.1 must be carried out in conjunction with this task.

(2) The manhours given for this task refer only to the maintenance of the antenna. Manhours consumed in the lowering and raising of the antenna support structure are not included.

TRADES AND MANHOURS REQUIRED

Aerial Erector	4 men x 4 h 30 min

TOOLS, TEST EQUIPMENT AND MATERIALS REQUIRED

Item No.(Annex C)	Brief Description
T1	Pressurizing kit
T2	Binoculars
T3	Shorting link
T4	Warning notice
T5	Earthing stick
TE1	Insulation tester
TE2	Multimeter
TE3	Bridge megger
M1	Denso tape
M2	Grease, ZX-13
M3	Grease, XG-271
M8	Emery cloth
M11	Self-amalgamating tape

WARNING

RADIO FREQUENCY RADIATION. A RADIO FREQUENCY RADIATION HAZARD EXISTS WHEN WORKING ON THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

RADIO EQUIPMENT BUILDING

1 Disconnect the feeder from the radio equipment, or deselect the antenna at the exchange and remove the keys, as appropriate. Display the warning notice.

VISUAL SAFETY CHECKS

2 Using the binoculars, if required, examine the antenna and its supporting structure for signs of damage which could make maintenance hazardous.

3 Examine the guy anchorage points for signs of damage and deterioration.

WARNING

DANGEROUS VOLTAGE. INDUCED VOLTAGE MAY BE PRESENT IN THIS EQUIPMENT. REFER TO THE GENERAL NOTES AND PRECAUTIONS.

FEEDER CABLE ELECTRICAL CHECKS

NOTE

The feeder system may be either a hybrid arrangement (part coaxial cable, part open-wire), or entirely open wire.

WARNING

OILS AND LUBRICANTS. BEFORE USING DENSO TAPE , REFER TO THE WARNINGS PAGE.

4 Where a hybrid feeder system is fitted, remove the Denso tape and self-amalgamating tape from the feeder connection.

5 Disconnect the coaxial cable from the matching transformer and connect the shorting link across the inner and outer conductors of the coaxial cable.

6 Using the multimeter, ensure that the continuity resistance of the coaxial cable is less than 1 Ω.

7 Remove the shorting link.

8 Using the insulation tester, ensure the insulation resistance of the coaxial cable is greater than 20 MΩ.

9 Reconnect the coaxial cable to the matching transformer.

10 Using the self-amalgamating tape, seal the feeder connection.

11 Using the Denso tape, weatherproof the connection.

ANTENNA CHECKS

12 Lower the antenna, in accordance with AP 116E-1717-1B.

13 Carry out the antenna checks, detailed in Sched 3 Task Y.1.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE XG-271, REFER TO THE WARNINGS PAGE.

14 Using grease XG-271, apply a coat of grease to all shackles, turnbuckles and associated hardware.

15 Raise the antenna, in accordance with AP 116E-1717-1B.

TERMINATING LOAD

16 Examine the terminating load according to type, as follows:

16.1 Dissipation runs - as for open-wire feeder system (refer to Sched 3 Task Y.1).

16.2 Resistance units - examine resistor(s) for signs of damage and deterioration.

LOOP RESISTANCE CHECKS

17 Disconnect the open wire feeder from the matching transformer.

18 Using the bridge megger, as a resistance bridge, ensure that the effective total load resistance of the system is within the following limits:

18.1 Transmitting rhombics 80 Ω to 150 Ω.

18.2 Receiving rhombics 570 Ω to 630 Ω.

19 Using the emery cloth, clean the mating surfaces of the open wire feeder.

20 Reconnect the open wire feeder to the matching transformer.

21 Using the multimeter, ensure that the continuity resistance of the connection is less than 1 Ω.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE ZX-13, REFER TO THE WARNINGS PAGE.

22 Using grease ZX-13, apply a coat of grease to the connections.

FEEDER PRESSURIZATION

NOTE

At certain locations, pressurization of feeder cables is achieved and monitored by automatic mechanisms. At these locations, the procedure for checking pressure is detailed in the Air Publication specific to the equipment concerned.

WARNING

COMPRESSED GAS. PRESSURISED NITROGEN GAS IS USED IN THE MAINTENANCE OF THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

23 Where pressurized coaxial cable feeder is fitted, using the pressure gauge, ensure that the pressure in the cable is between 5 lbf/in² and 10 lbf/in². If necessary, refer to Annex H and adjust the pressure.

SERVICEABILITY CHECKS

NOTES

(1) If a facility exists as part of the radio equipment to measure the Voltage Standing Wave Ratio (VSWR), it is to be used as part of the final serviceability check.

(2) If there is no facility to carry out a VSWR check, request the electronic tradesman to carry out a functional check of the radio equipment, to determine that each antenna system is serviceable.

VSWR CHECK

24 Request the electronic tradesman to carry out a VSWR check, as detailed in Annex E1.

25 On completion of a satisfactory VSWR or functional check, restore the equipment to the required operational condition.

VERTICAL FOLDED TERMINATED DIPOLE ANTENNA CHECKS

NOTES

(1) Sched 3 Task Y.1 must be carried out in conjunction with this task.

(2) The manhours given for this task refer only to the maintenance of the antenna. Manhours consumed in the lowering and raising of the antenna support structure are not included.

TRADES AND MANHOURS REQUIRED

Aerial Erector	3 men x 3 h

TOOLS, TEST EQUIPMENT AND MATERIALS REQUIRED

Item No.(Annex C)	Brief Description
T1	Pressurizing kit
T2	Binoculars
T3	Shorting link
T4	Warning notice
T5	Earthing stick
TE1	Insulation tester
TE2	Multimeter
TE3	Bridge megger
M1	Denso tape
M2	Grease, ZX-13
M3	Grease, XG-271
M8	Emery cloth
M11	Self-amalgamating tape

WARNING

RADIO FREQUENCY RADIATION. A RADIO FREQUENCY RADIATION HAZARD EXISTS WHEN WORKING ON THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

RADIO EQUIPMENT BUILDING

1 Disconnect the feeder from the radio equipment, or deselect the antenna at the exchange and remove the keys, as appropriate. Display the warning notice.

VISUAL SAFETY CHECKS

2 Using the binoculars, if required, examine the antenna and its supporting structure for signs of damage which could make maintenance hazardous.

3 Examine the guy anchorage points for signs of damage and deterioration.

FEEDER CABLE ELECTRICAL CHECKS

WARNING

DANGEROUS VOLTAGE. INDUCED VOLTAGE MAY BE PRESENT IN THIS EQUIPMENT. REFER TO THE GENERAL NOTES AND PRECAUTIONS.

NOTE

The feeder system may be either a hybrid arrangement (part coaxial cable, part open-wire), or entirely open wire.

WARNING

OILS AND LUBRICANTS. BEFORE USING DENSO TAPE , REFER TO THE WARNINGS PAGE.

4 Where a hybrid feeder system is fitted, remove the Denso tape and self-amalgamating tape from the feeder connection.

5 Disconnect the coaxial cable from the matching transformer and connect the shorting link across the inner and outer conductors of the coaxial cable.

6 Using the multimeter, ensure that the continuity resistance between the inner and outer conductors of the coaxial cable is less than 1 Ω.

7 Remove the shorting link.

8 Using the insulation tester, measure the insulation resistance between the inner and outer conductors of the coaxial cable. Ensure that the reading is greater than 20 MΩ.

9 Reconnect the coaxial cable to the matching transformer.

10 Using the self-amalgamating tape, seal the feeder connection.

11 Using the Denso tape, weatherproof the connection.

ANTENNA CHECKS

12 Lower the antenna.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE XG-271, REFER TO THE WARNINGS PAGE.

13 Using grease XG-271, apply a coat of grease to all shackles, turnbuckles and associated hardware.

14 Raise the antenna.

LOOP RESISTANCE CHECKS

15 Disconnect the open wire feeder from the matching transformer.

16 Using the bridge megger as a resistance bridge, connect it between the conductors of the open wire feeder. Measure the loop resistance of the feeder, antenna and termination resistor system. Ensure that the reading is between 570 Ω and 630 Ω.

17 Transfer the bridge megger earth lead from the open wire feeder to the earth connection on the matching transformer. Measure the loop resistance through one half of the antenna system to earth, via the centre tab of the terminating resistance. Ensure that the reading is between 285 Ω and 315 Ω.

18 Transfer the bridge megger live lead to the other leg of the open wire feeder. Measure the loop resistance. Ensure that this reading is also between 285 Ω and 315 Ω.

19 Using the emery cloth, clean the mating surfaces of the open wire feeder.

20 Reconnect the open wire feeder to the matching transformer.

21 Using the multimeter, ensure that the continuity resistance of the connections are less than 1 Ω.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE ZX-13, REFER TO THE WARNINGS PAGE.

22 Using grease ZX-13, apply a coat of grease to the connections.

TERMINATING LOAD

23 Examine the terminating load according to type, as follows:

23.1 Dissipation runs - as for open-wire feeder system (refer to Sched 3 Task Y.1).

23.2 Resistance units - examine the resistor(s) for signs of damage, deterioration and insecurity.

FEEDER PRESSURIZATION

NOTE

At certain locations, pressurization of feeder cables is achieved and monitored by automatic mechanisms. At these locations, the procedure for checking pressure is detailed in the Air Publication specific to the equipment concerned.

WARNING

COMPRESSED GAS. PRESSURISED NITROGEN GAS IS USED IN THE MAINTENANCE OF THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

24 Where pressurized coaxial cable feeder is fitted, using the pressure gauge, ensure that the pressure in the cable is between 5 lbf/in² and 10 lbf/in². If necessary, refer to Annex H and adjust the pressure.

SERVICEABILITY CHECKS

NOTES

(1) If a facility exists as part of the radio equipment to measure the Voltage Standing Wave Ratio (VSWR), it is to be used as part of the final serviceability check.

(2) If there is no facility to carry out a VSWR check, request the electronic tradesman to carry out a functional check of the radio equipment, to determine that each antenna system is serviceable.

VSWR CHECK

25 Request the electronic tradesman to carry out a VSWR check, as detailed in Annex E1.

26 On completion of a satisfactory VSWR or functional check, restore the equipment to the required operational condition.

JAYBEAM 1560 283/1561 233 ANTENNA AND FEEDER MAINTENANCE

TRADES AND MANHOURS REQUIRED

Aerial Erector	3 men x 5 h

TOOLS, TEST EQUIPMENT AND MATERIALS REQUIRED

Item No.(Annex C)	Brief Description
T2	Binoculars
T3	Shorting link
T4	Warning notice
T5	Earthing stick
TE1	Insulation tester
TE2	Multimeter
TE5	Tensionmeter
M1	Denso tape
M2	Grease, ZX-13
M3	Grease, XG-271
M8	Emery cloth
M9	Mutton cloth

WARNINGS

(1) RADIO FREQUENCY HAZARD. A RADIO FREQUENCY HAZARD EXISTS WHEN WORKING ON THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

(2) DANGEROUS VOLTAGE. DANGEROUS VOLTAGES EXIST IN THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

RADIO EQUIPMENT BUILDING

1 Disconnect the feeder from the radio equipment, or deselect the antenna at the exchange and remove the keys, as appropriate. Display the warning notice.

VISUAL SAFETY CHECKS

2 Using the binoculars, if required, examine the antenna and its supporting structure for signs of damage which could make maintenance hazardous.

3 Examine the guy anchorage points for damage and deterioration.

ANTENNA CHECKS

WARNINGS

(1) DANGEROUS VOLTAGE. INDUCED VOLTAGE MAY BE PRESENT IN THIS EQUIPMENT. REFER TO THE GENERAL NOTES AND PRECAUTIONS.

(2) WORKING AT HEIGHT. THIS TASK INVOLVES WORKING AT HEIGHT. REFER TO THE GENERAL NOTES AND PRECAUTIONS.

4 Visual examine the antenna elements for damage.

5 At the mast head, examine the antenna element connections for signs of corrosion. Clean them as necessary, and ensure that they are secure.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE ZX-13, REFER TO THE WARNINGS PAGE.

6 Using grease ZX-13 apply a coat of grease to the connections.

7 At the base of the mast, examine the antenna element connections to the corona ring for signs of corrosion. Clean as necessary, and ensure that they are secure.

8 Using grease ZX-13, apply a coat of grease to the connections.

9 Clean the antenna mast base insulator, using damp mutton cloth if necessary, but finishing with dry mutton cloth.

10 Ensure the four nuts securing the earth plate to the square base plate are tight.

11 Ensure the four bolts securing the round base plate to the earthing plate are tight.

LIGHTNING SYSTEM

12 Examine the lightning arrestor for signs of corrosion and deterioration.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE XG-271 AND DENSO TAPE, REFER TO THE WARNINGS PAGE.

13 Ensure the wire brace assembly is taut. Apply grease XG-271 to the bulldog grips and wire, replace the Denso tape on turnbuckle if required.

14 Ensure that the spark gap is set to 2cm.

ANTENNA ELEMENT TENSIONING GUYS

15 Using the tensiometer, ensure that the antenna element tensioning guys are correctly tensioned as follows:

15.1 Jaybeam 1560 283 (68kg).

15.2 Jaybeam 1561 233 (37kg).

16 At the outer ring of anchorage blocks, examine the rigging screws and shackles which secure the antenna element tensioning guys, for signs of corrosion and other damage.

17 Clean the rigging screws and shackles as necessary.

18 Using grease XG 271 apply a coat of grease to the rigging screws and shackles. Apply Denso tape where necessary.

FEEDER CABLE CHECKS

19 Examine all exposed lengths of coaxial feeder for damage and deterioration.

20 Ensure that there are no cuts or abrasions on the outer covering, particularly at the point of entry into the ground or building.

21 Examine the feeder cable tray for damage and security of attachment to the feeder poles.

22 Examine the feeder poles concrete bases for:

22.1 Erosion.

22.2 Cracks/chips.

22.3 Security of attachment to the supporting pole.

22.4 Ingress of water at the supporting pole base.

FEEDER CABLE ELECTRICAL CHECKS

23 In the radio equipment building, connect the shorting link across the inner and outer conductors of the coaxial cable.

24 At the antenna end of the feeder, disconnect the feed through capacitor assembly from the end terminal and corona ring. Connect the multimeter, between the inner and outer conductors of the end terminal ensuring, that the continuity resistance of the coaxial cable is less than 1 Ω.

25 Remove the shorting link.

26 Using the insulation tester, measure the insulation resistance between the inner and outer conductors of the coaxial cable. Ensure that the reading is greater than 20 MΩ.

EARTH SYSTEM

27 Select at random three widely separated radial wires, and uncover a 1 m section of each.

28 On the exposed section of wire, clean off any corrosion and compare the remaining thickness of wire with that of a new piece of 100 lb/mile copper wire. Replace all broken and severely corroded radials.

29 Disconnect the earth radials from the earth mat.

30 Using the emery cloth clean the earth mat where the radials fit.

31 Using grease ZX-13 apply a thin coat of grease to the cleaned surfaces.

32 Reconnect the earth radials and grease with ZX-13.

NOTE

If there is widespread corrosion or broken radials, a check of the complete earth system is to be made, and all broken or corroded radials replaced with new pieces of 100 lb/mile copper wire.

ANTENNA ELECTRICAL CHECK

33 Select an antenna element and connect the insulation tester between that element and an earth strap.

34 Remove the earthing stick used for earthing the antenna.

35 Carry out an insulation test and ensure that the insulation resistance is greater than 50 MΩ.

36 Remove the insulation tester.

37 Select an antenna element and connect it to the outer conductor of the end terminal with a shorting link.

38 Connect the multimeter between a second antenna element and an earth strap and ensure that the continuity resistance is less than 1 Ω.

39 Disconnect the multimeter.

40 Repeat Paras 33 to 38 on at least 25 % of the antenna elements.

41 Using the emery cloth, clean all the electrical surface of the feed through capacitor assembly removed at Para 20, apply a thin coat of ZX-13.

42 Refit the feed through capacitor assembly and coat all electrical connections with ZX-13.

43 Weatherproof the coaxial feeder connection with Denso tape.

SERVICEABILITY CHECKS

NOTES

(1) If a facility exists as part of the radio equipment to measure the Voltage Standing Wave Ratio (VSWR), it is to be used as part of the final serviceability check.

(2) If there is no facility to carry out a VSWR check, request the electronic tradesman to carry out a functional check of the radio equipment, to determine that each antenna system is serviceable.

VSWR CHECK

44 Request the electronic tradesman to carry out a VSWR check, as detailed in Annex E1.

45 On completion of a satisfactory VSWR or functional check, restore the equipment to the required operational condition.

TRIATIC CHECKS

NOTES

(1) Sched 3 Task Y.10 must be carried out in conjunction with this task.

(2) The man hours given for this task refer only to the maintenance of the Triatic. Manhours consumed in lowering and raising the triatic are not included.

TRADES AND MANHOURS REQUIRED

Aerial Erector	3 men x 1 h

TOOLS, TEST EQUIPMENT AND MATERIALS REQUIRED

Item No.(Annex C)	Brief Description
T2	Binoculars
M3	Grease, XG-271

VISUAL SAFETY CHECKS

1 Using the binoculars, if required, examine the antenna and its supporting structure for signs of damage which could make lowering of the triatic hazardous.

2 Examine the guy anchorage points for signs of damage and deterioration.

TRIATIC CHECK

3 Carry out Sched 3 Task Y.10.

4 Lower the triatic.

5 Examine the triatic and ensure that:

5.1 There is no corrosion on pulleys, shackles, wire ropes and other metallic components.

5.2 The counter-weight system is secure.

5.3 The triatic anchor points are secure.

WARNING

OILS AND LUBRICANTS. BEFORE USING GREASE XG-271, REFER TO THE WARNINGS PAGE.

6 Using grease XG-271, apply a coat of grease to all shackles, turnbuckles and associated hardware.

7 Raise the triatic.

JAYBEAM 1560 283/1561 233 ANTENNA ELEMENT MAINTENANCE

NOTES

(1) This task is to be carried out in conjunction with, and immediately before, Sched 3 Y.11.

(2) The manhours estimate for this task does not include an allowance for the completion of Sched 3 Y.11.

TRADES AND MANHOURS REQUIRED

Aerial Erector	3 men x 3 h (per antenna)

TOOLS, TEST EQUIPMENT AND MATERIALS REQUIRED

Item No.(Annex C)	Brief Description
T1	Pressurizing kit
T4	Warning notice
T5	Earthing stick
M1	Denso tape
M10	Locking wire

RADIO EQUIPMENT BUILDING

WARNING

(1) RADIO FREQUENCY HAZARD. A RADIO FREQUENCY HAZARD EXISTS WHEN WORKING ON THIS EQUIPMENT. REFER TO THE WARNINGS PAGE.

(2) DANGEROUS VOLTAGE. INDUCED VOLTAGE MAY BE PRESENT IN THIS EQUIPMENT. REFER TO THE GENERAL NOTES AND PRECAUTIONS.

1 Disconnect the feeder cable from the radio equipment, or deselect the antenna at the exchange and remove the key, as appropriate. Display warning notice.

ANTENNA SITES

WARNING

(1) WORKING AT HEIGHT. THIS TASK INVOLVES WORKING AT HEIGHT. REFER TO THE GENERAL NOTES AND PRECAUTIONS.

(2) INDUCED VOLTAGE. INDUCED VOLTAGE MAY BE PRESENT IN THIS EQUIPMENT, REFER TO THE GENERAL NOTES AND PRECAUTIONS.

2 At the outer ring of anchorage blocks, slacken off the rigging screws that tension the antenna element tensioning guys.

3 Disconnect the guys from the rigging screws and manoeuvre the elements to the mast to allow close inspection.

4 Examine all antenna elements and replace if necessary.

5 Ensure all catenary rope to radiator connections are secure.

6 Examine all the antenna element tensioning guys, replace if necessary.

WARNING

OILS AND LUBRICANTS. BEFORE USING DENSO TAPE, REFER TO THE WARNINGS PAGE.

7 Reconnect the antenna element tensioning guys to the rigging screws and tension as follows:

(a) Jaybeam 1560 283 (68kg).

(2) Jaybeam 1561 233 (37kg).

8 Lock off the rigging screws with the locking wire then weatherproof with Denso tape.

NOTE

Unless local management has directed otherwise, preventive maintenance should now continue, carrying out Schedule 3 Y.11 commencing at Para 3. If local management has directed that the yearly maintenance is to be carried out separately, proceed to the remaining paragraphs of this schedule.

SERVICEABILITY CHECKS

Note

(1) If a facility exists as part of the radio equipment to measure the Voltage Standing Wave Ratio (VSWR), it is to be used as part of the final serviceability check.

(2) If there is no facility to carry out a VSWR check, request the electronic tradesman to carry out a functional check of the radio equipment, to determine that each antenna system is serviceable.

VSWR CHECK

9 Request the electronic tradesman to carry out a VSWR check, as detailed in Annex E1.

10 On completion of a satisfactory VSWR or functional check, restore the equipment to the required operational condition.

ANNEXES

CONTENTS

NOTE

The following annexes are not included for the reasons stated:

A Setting up procedures - not required

B Alignment procedures - not required

D Simple fault finding - not required

F Performance figures - not required

G Mechanical adjustments - not required

J Functional Check - not required

ANNEX C

TOOLS, TEST EQUIPMENT AND MATERIALS

NOTE

Refer to ALTE Serial No. G/271 for the scale and authority to demand the class 1(P) and class 4(L) general purpose hand tools (GPHT), special to type tools and the items of test equipment listed below. Class 7(C) GPHT are to be demanded in accordance with the procedures detailed in AP 100A-01.

Item No.	NATO Stock No.	Nomenclature	Qty
TOOLS			
T1	1730 99 4710427	Mark 3 tyre inflator kit (pressurizing kit)	1
T2	6650 99 4466210	Binoculars 7 x 50	1
T3	See note 1	Shorting link	1
T4	See note 2	Warning notice	1
T5	5975 99 9552560	Earthing stick	1
T6	5120 99 1389293	Ice pricker	1
TEST EQUIPMENT			
TE1	6625 99 6505337	Insulation tester, BM 8 Mk 2	1
TE2	6625 99 2523606	Multimeter, Fluke 25	1
TE3	6625 99 1951272	Bridge megger type B	1
TE4	6625 99 1097544	Bonding tester, type C	1
TE5	6635 99 2278468	Tensiometer, type 03C	1
MATERIALS			
M1	~~8030 99 6337642~~ 8030	Denso tape	A/R
M2	~~9150~~ 99 9100528	Grease, ZX-13 (graphite)	A/R
M3	9150 99 ~~2248885~~ 9100511	Grease, XG-271	A/R
M4	9150 99 2253822	Oil, OMD-80X	A/R
M5	8010 99 9429393	Copper naphthenate	A/R
M6	5970 99 2248408	Grease, XG-250	A/R
M7	6850 99 7510203	Leak fluid	A/R
M8	5350 99 9426817	Emery cloth	A/R
M9	~~7920~~ 8305 99 1250407	Mutton cloth	A/R
M10	9505 99 6363056	Locking wire	A/R
M11	5999 99 4662100	Self amalgamating tape	A/R
M12	6145 99 6420578	100 lb/mile copper wire	A/R

NOTES

(1) The shorting link is constructed from a one metre length of multi-strand insulated wire with a crocodile clip soldered to each end.

(2) A Warning Notice of suitable size with prominent lettering, DO NOT SWITCH ON, is to be locally manufactured.

ANNEX E1

VOLTAGE STANDING WAVE RATIO (VSWR) CHECK

1 Carry out a VSWR check over the frequency range of the antenna and obtain the forward and reflected power readings.

2 Plot the power readings obtained at Para 1, using the VSWR graph at Fig 1 and ensure that the VSWR is not greater than 2:1.

NOTES

(1) The graph at Fig 1 was derived from the following formula for calculating the VSWR, given forward power (fp) and reflected power (rp):

$$VSWR = \frac{\sqrt{fp} + \sqrt{rp}}{\sqrt{fp} - \sqrt{rp}} : 1$$

(2) Coordinates that meet on the left of the plotted line indicate a VSWR less than 2:1.

(3) Coordinates that meet on the right of the plotted line indicate a VSWR greater than 2:1.

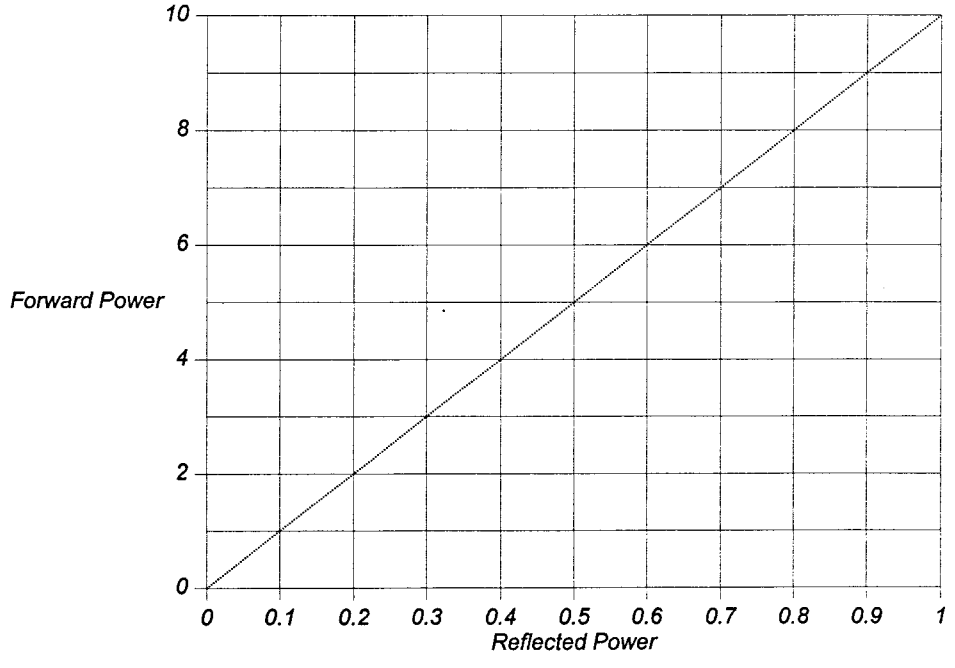

Fig 1 VSWR graph

ANNEX E 2

EARTHING STICK PRE-USE CHECK

NOTES

(1) Earthing sticks are used to ensure that all residual electrical energy in an equipment is discharged to earth after the equipment has been switched off, and prior to the commencement of maintenance.

(2) This check is to be carried out on each occasion that the earthing stick is to be used.

1 Carry out a physical examination of the earthing stick for component integrity and security of connection of the electrical components. Ensure that the earthing stick lead is securely and permanently bonded to the equipment chassis earth.

2 Ensure that the earthing stick handle and lead are clean, undamaged, and free from contamination by oil, grease and moisture.

3 Determine the value of the resistor or resistive device, where fitted.

4 Connect a multimeter, set to the ohms range, between the earthing stick probe and a suitable earth point on the equipment chassis and ensure that:

4.1 Where a resistor or resistive device is fitted, the resistance between the earthing stick probe and the equipment chassis earth is within 10 % of the value determined at Para 3.

4.2 Where a resistor or resistive device is not fitted, the resistance between the earthing stick probe and the equipment chassis earth is not greater than 0.1 Ω.

NOTE

On earthing sticks having a probe connected to earth via a resistive device and a probe connected directly to earth, resistance measurements must be taken between the equipment chassis earth and both probes, and the requirements of Paras 4.1 and 4.2 must both be met.

5 Assess the serviceability of the earthing stick from the results obtained.

ANNEX H

PRESSURIZATION OF HELICAL MEMBRANE COAXIAL CABLES

WARNING

COMPRESSED GAS. BEFORE USING COMPRESSED NITROGEN GAS, REFER TO THE WARNINGS PAGE.

SAFETY PRECAUTIONS

1 The following precautions must be strictly observed:

1.1 Nitrogen gas is stored under high pressure, the stored cylinders must be handled with great care.

1.2 Nitrogen gas cylinders are coloured LIGHT GRAY with a BLACK neck and black lettering.

1.3 Gas cylinders are to be stored in a cool, dry area.

1.4 When gas cylinders are being moved they must not be lifted by their valves or valve protecting caps. Do not jolt or drop cylinders in any way.

1.5 Do not alter or tamper with gas cylinders colour coding, markings or valve threads.

1.6 Do not attempt to dismantle regulators.

1.7 Do not attempt to mix gases in a cylinder or to transfer gas from one cylinder to another.

1.8 Do not under any circumstances apply grease, oil, or any other form of lubricant to the valves of the regulator connections.

INITIAL INSTALLATION OF CABLE-PRESSURIZING EQUIPMENT

CAUTION

EQUIPMENT DAMAGE. Not all cylinders have the same gas pressure, only the specified item, is to be used.

NOTES

(1) The cylinder specified for this purpose has a gas pressure of 1980 lbf/in² when full.

(2) Equipment demands are to be endorsed 'Cylinders having a pressure greater than 2000 lbf/in² cannot be accepted in lieu'.

2 If a cylinder has been in use, ensure that the cylinder outlet valve is closed (clockwise) before moving the cylinder to another position.

3 Connect one end of the hose to the tyre inflator and the other end to the nitrogen regulator.

Ensure that both connections are secure.

4 Ensure that the outlet valve is not facing any personnel.

5 Remove the plastic blanking cap from the valve outlet.

6 Slightly open the cylinder valve by turning the valve key a quarter turn anticlockwise. Allow gas to escape for one or two seconds to clear any accumulated dust from the cylinder outlet socket threads and then close the valve.

NOTE

When viewed from the operating handle side, the regulating valve is opened by turning the handle clockwise and closed by turning the handle anticlockwise.

7 Ensure that the nitrogen regulator valve is fully closed.

8 Ensure that the bull-nose nipple on the regulator and the cylinder valve are free from foreign matter, which could prevent a gas-tight seal. Clean as necessary.

9 Fit the nipple of the nitrogen regulator into the cylinder valve and tighten the nut with a spanner. Ensure that only sufficient force is used to obtain a gas-tight seal.

CAUTIONS

(1) EQUIPMENT DAMAGE. To prevent a sudden increase of pressure on the contents gauges, the cylinder valve must be opened very slowly.

(2) EQUIPMENT DAMAGE. If the pressure indicated by the gauge exceeds 2000 lbf/in^2, close the cylinder valve immediately and check that the correct type cylinder is being used.

10 Slowly open the nitrogen cylinder valve one turn, while observing the pressure build-up on the cylinder contents gauge.

11 Slowly open the nitrogen regulator valve (clockwise) until an indication of 30 lbf/in^2 is indicated on the working pressure gauge.

12 Operate the tyre inflator for a few seconds and allow the gas to blow out any dust or protective chalk powder from the system.

PRESSURIZATION OF CABLES

13 Remove the cap from the Schraeder valve on the cable being checked.

14 Using the pressure gauge, check the pressure of gas already in the cable. A working figure for an average installation is from 5 lbf/in^2 to10 lbf/in^2.

NOTE

On initial installation only, the cable gas pressure is raised to 15 lbf/in^2 for 24 hours to show up any pressure loss caused by leaks. It is then reduced to the normal working pressure.

15 If the pressure is found to be low, remove the pressure gauge, connect the tyre inflator to the Schraeder valve and operate the inflator until the correct pressure is obtained. Disconnect the tyre inflator.

16 Refit the Schraeder valve cap.

17 When all required cable pressurization tasks have been completed, close the cylinder valve firmly and release the pressure in the nitrogen regulator by opening the tyre inflator.

TESTING FOR GAS LEAKAGE

18 If it is suspected that nitrogen gas is escaping from any part of the cable or the pressurization equipment, the presence of a leak may be detected by applying a solution of leak fluid (Annex C, Item M7) to the suspect point. The leakage will be indicated by bubbles.

THAWING OF FROZEN VALVES

19 If a cylinder valve or a regulator valve should freeze over, the ice is to be melted by repeated applications of a cloth soaked in hot water.

REPLACEMENT OF A CYLINDER

CAUTION

EQUIPMENT DAMAGE. Cylinders are not to be discharged to a pressure lower than 50 lbf/in².

20 When the cylinder contents gauge on the regulator indicates a pressure lower than 100 lbf/in², the cylinder is to be replaced by a fully charged cylinder of the specified type.

21 Ensure that the cylinder valve is firmly closed and all remaining pressure in the regulator has been released by operating the inflator.

22 Loosen the nut which secures the regulator to the cylinder, then unscrew and remove the regulator.

23 Refit the valve blanking cap and the gas cylinder protective cap. Return the cylinder through the appropriate channels for recharging.

24 Connect the fully charged replacement cylinder as detailed at Paras 2 to 14.