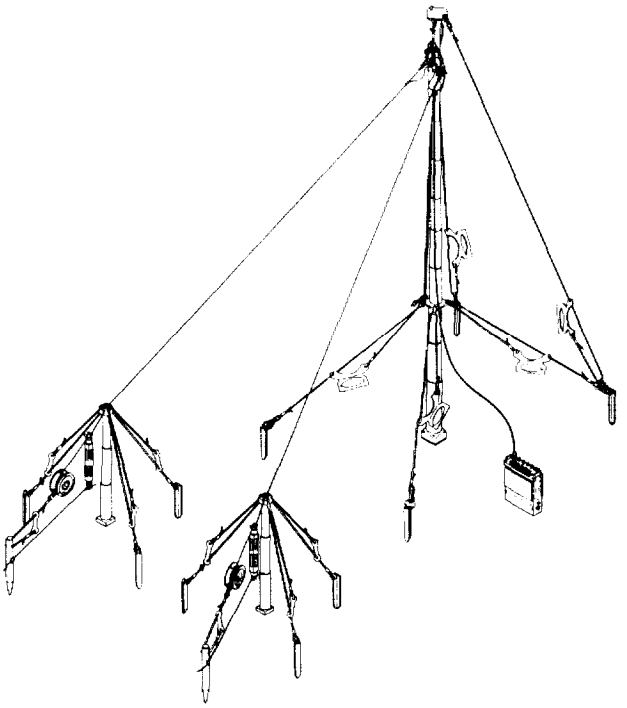
TM 11-5985-391-12

TECHNICAL MANUAL

OPERATOR'S AND UNIT MAINTENANCE MANUAL



SPECIAL OPERATIONS RADIO ANTENNA KIT (SORAK)
ANTENNA GROUP OE-452/PRC
(NSN 5985-01-279-7942)

HEADQUARTERS, DEPARTMENT OF THE ARMY

1 JANUARY 1991

GUIDELINES FOR SORAK OPERATIONS

WARNING

Never erect the antenna directly under power lines.

If you must erect an antenna below a power line, power line pole, tower, or building with overhead power line connections, never put the antenna closer than two times the antenna height from the base of the power line, pole, tower, or building.

Ž Before erecting any SORAK antenna, inspect all the parts making up the antenna kit. Do not deploy antenna if components are missing or damaged.

Ž When erecting the antenna, allow only team personnel in the erection area.

Ž Make sure the areas for antenna anchor and guy rope stakes are firm. If the ground is marshy or sandy, use rocks, trees, or bushes to help secure the antenna.

Ž When selecting locations for antenna anchor and guy rope stakes, avoid traveled areas and roads. If you cannot avoid these areas, clearly mark guy ropes and antenna wires with the warning flags or signs supplied by your unit. In an emergency, use strips of white cloth as warning streamers.

Ž If you suspect that power lines nave made accidental contact with your antenna, stop operating, rope off the antenna area, and notify your superiors.

Ž Keep a sharp eye on your mast guy ropes and stakes, and antenna anchor stakes. Check them daily and immediately before and after bad weather.

DO NOT ERECT ANY ANTENNA DURING AN ELECTRICAL STORM.

5 SAFETY STEPS TO FOLLOW IF SOMEONE IS THE VICTIM OF ELECTRICAL SHOCK

1. DO NOT TRY TO PULL OR GRAB THE INDIVIDUAL
2. IF POSSIBLE, TURN OFF THE ELECTRICAL POWER
3. IF YOU CANNOT TURN OFF THE ELECTRICAL POWER, PULL, PUSH, OR LIFT THE PERSON TO SAFETY USING A DRY WOODEN POLE OR A DRY ROPE OR SOME OTHER INSULATING MATERIAL
4. SEND FOR HELP AS SOON AS POSSIBLE
5. AFTER THE INJURED PERSON IS FREE OF CONTACT WITH THE SOURCE OF ELECTRICAL SHOCK, MOVE THE PERSON A SHORT DISTANCE AWAY AND IMMEDIATELY START ARTIFICIAL RESUSCITATION

Technical Manual

No. 11–5985-391-12

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 1 January 1991

Operator's and Unit Maintenance Manual
Special Operations Radio Antenna Kit (SORAK)
Antenna Group OE-452/PRC
(NSN 5985-01-279-7942)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes, or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-LC-LM-LT, Fort Monmouth, New Jersey 07703-5000.

HOW TO USE THIS MANUAL

This manual tells you how to set up and use the Antenna Group OE-452/PRC Special Operations Radio Antenna Kit (SORAK). It also includes organizational level maintenance instructions and data.

The front cover index gives you a quick reference to important information that you will use most often.

Warning pages are at the beginning of this manual. Study the warnings and always follow safety procedures when installing, using, or maintaining the equipment.

Units of measurement used in this manual are U.S. standard with metrics units in parentheses.

Read all information found at the start of each procedure. It includes important statements about the equipment and your safety.

Paragraphs in this manual are numbered by chapter and order of appearance within a chapter. Indexes at the start of each chapter will help you find information quickly.

CHAPTER 1
INTRODUCTION

Section I. GENERAL INFORMATION

1-1. SCOPE.

TYPE OF MANUAL

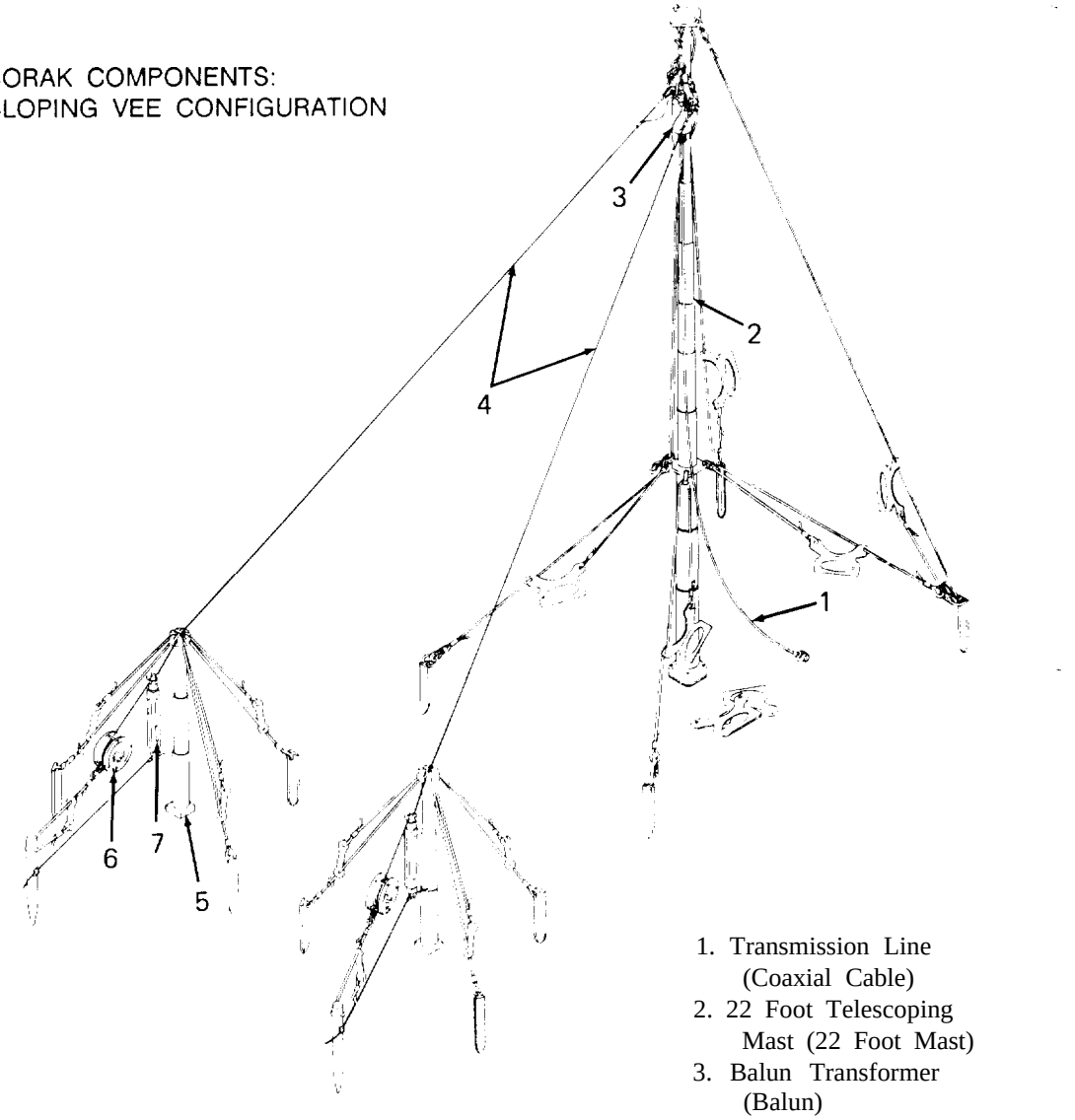
This manual covers operator setup, operation, and organizational maintenance of the OE-452/PRC Special Operations Radio Antenna Kit (SORAK).

PURPOSE OF ANTENNA KIT

The SORAK includes all of the components needed to erect a high frequency (HF) or very high frequency (VHF) antenna for use with low power manpack radios at U.S. Army Special Operations Forces (SOF) out stations. Five different configurations of the antenna can be used to send and receive signals over distances of up to 2500 miles (4000 kilometers). Test equipment is included for checking the antenna's voltage standing wave ratio (VSWR) prior to attempting communications.

1-1. SCOPE (CONT).

SORAK COMPONENTS:
SLOPING VEE CONFIGURATION



1. Transmission Line (Coaxial Cable)
2. 22 Foot Telescoping Mast (22 Foot Mast)
3. Balun Transformer (Balun)
4. Antenna Wire
5. 6 Foot Telescoping Mast (6 Foot Mast)
6. Wire Reel
7. Termination Assembly (Termination)

1-2. MAINTENANCE FORMS, RECORDS, AND REPORTS.

REPORTS OF MAINTENANCE AND UNSATISFACTORY EQUIPMENT

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738–750, as contained in Maintenance Management Update.

REPORTING OF ITEM AND PACKAGING DISCREPANCIES

Fill out and forward SF364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55/SECNAVINST 4355.18/AFR 400-54/MCO 4430.3J.

TRANSPORTATION DISCREPANCY REPORT (TDR) (SF 361)

Fill out and forward Transportation Discrepancy Report (TDR) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33C/AFR 75-18/MCO P4610.19D/DLAR 4500.15.

CONSOLIDATED INDEX OF ARMY PUBLICATIONS AND BLANK FORMS

Refer to the latest issue of DA Pam 25-30 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

1-3. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE.

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.

1-4. PREPARATION FOR STORAGE OR SHIPMENT.

For information needed to prepare SORAK for storage or shipment, refer to Chapter 4, Section VI. The information provided covers special preservation, packaging, packing, and marking requirements.

1-5. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR).

If your equipment needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don’t like about your equipment. Let us know why you don’t like the design or performance. Put it on an SF 368 (Product Quality Deficiency Report). Mail it to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-ED-PH, Fort Monmouth, New Jersey 07703–5000. We ’ll send you a reply.

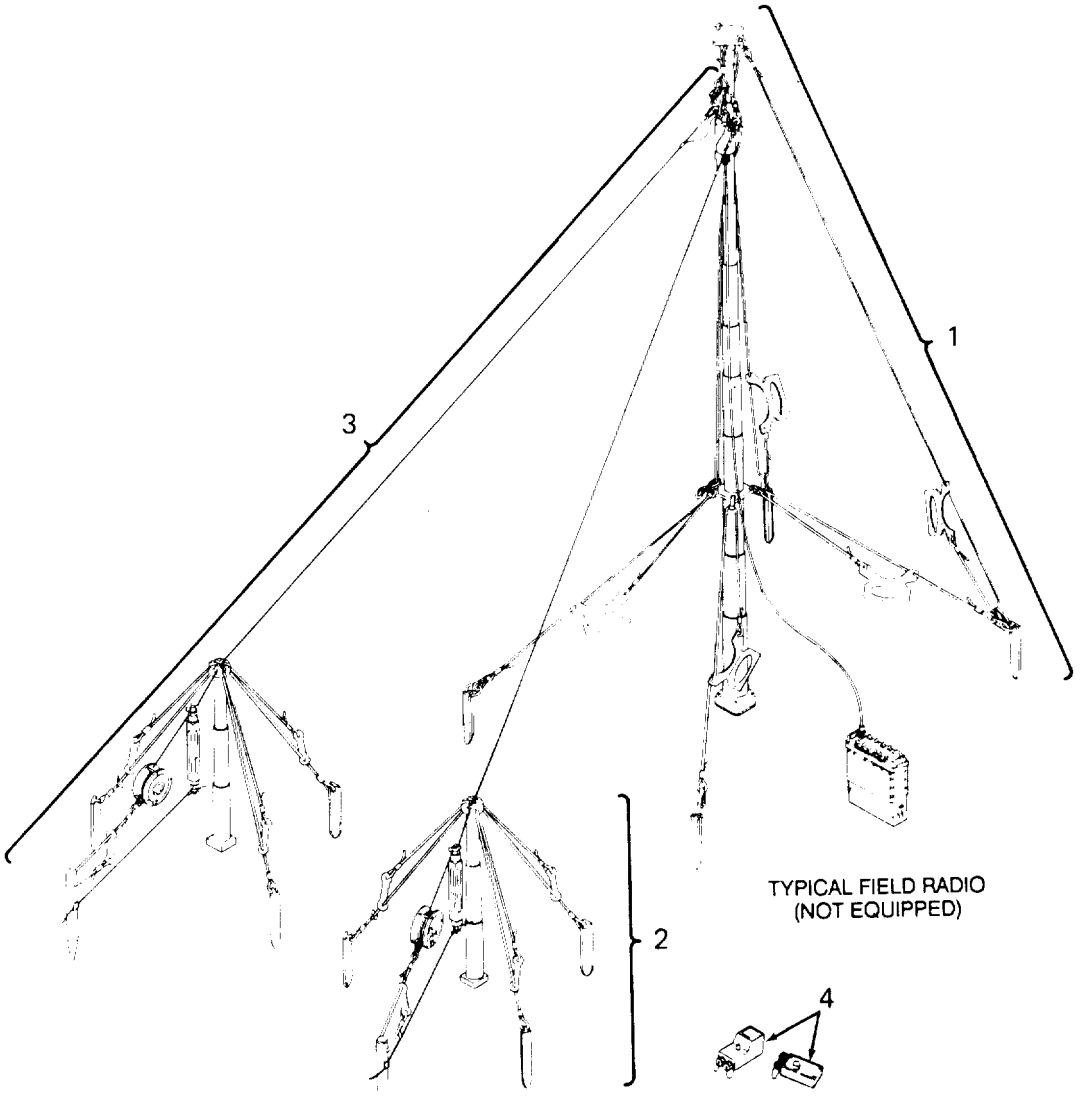
1-6. NOMENCLATURE CROSS REFERENCE LIST.

Common Name	Official Nomenclature
Anchor/Ground Rod Anchor Stake Grounding Rod	Anchor/Ground Rod Assembly
Antenna Kit, SORAK, or Special Operations Radio Antenna Kit, Group OE-452/PRC	Antenna Group, OE-452/PRC
Balun, Balun Transformer	Coupler, Transmission Line
Coaxial Cable, Coax	Line, Transmission or Cable Assembly, Coax
Return Loss Bridge or RLB	Antenna System Test Set (TS-4351/PRC)
RLB Battery	Battery, Nonrechargeable
Termination, Termination Assembly	Absorber, RF Radiation
Wattmeter	Ratio Frequency Power Test Set (TS-4350/PRC)
Wire Reel	Cable Hand Reeling Machine
6 Foot Mast, 6 Ft. Mast Telescoping Mast	Telescoping Mast Assembly, 6 Foot
22 Foot Mast, 22 Ft. Mast, Telescoping Mast	Telescoping Mast Assembly, 22 Foot

Section II. EQUIPMENT DESCRIPTION

1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.

The major components of the SORAK include 22 foot mast/guy assembly (1), two 6 foot mast/guy assemblies (2), antenna assembly (3), and test sets (4). Refer to Section III for a functional description of the major assemblies and their components.



1-8. EQUIPMENT DATA.

Applicable equipment data for the SORAK are as follows:

WEIGHTS AND DIMENSIONS

Deployment Bag and Equipment:	
Weight	16 lbs (7.3 kg)
Width	9 in. (22.9 cm)
Height	7 in. (17.8 cm)
Length	18 in. (45.7 cm)
Mast Bag and Equipment:	
Weight	8 lbs (3.6 kg)
Width	7 in. (17.8 cm)
Height	4.5 in. (11.4 cm)
Length	28 in. (71.0 cm)

ENVIRONMENTAL CONDITIONS

Ambient Operating Temperatures	-51 to + 122°F (-46 to + 50°C)
Storage/Transport Temperatures	-51 to + 160°F (-46 to + 71°C)

OPERATING RANGE

Antenna Length/Configuration:	Range, Communication (comm.) Mode, and Frequency
117 ft. (36 m) Sloping Dipole	0 to 250 mi. (0 to 400 km), HF comm. over 2 to 12 MHz
117 ft. (36 m) Sloping Vee	250 to 650 mi. (400 to 1000 km), HF comm. over 4 to 14 MHz
234 ft. (71 m) Sloping Vee	650 to 1500 mi. (1000 to 2500 km), HF comm. over 4 to 32 MHz
468 ft. (143 m) Bent Longwire	1500 to 2500 mi. (2500 to 4000 km), HF comm. over 6 to 32 MHz
175 ft. (53 m) Bent Longwire	0 to 20 mi. (0 to 30 km), VHF comm. over 30 to 88 MHz

1-9. SAFETY, CARE, AND HANDLING.

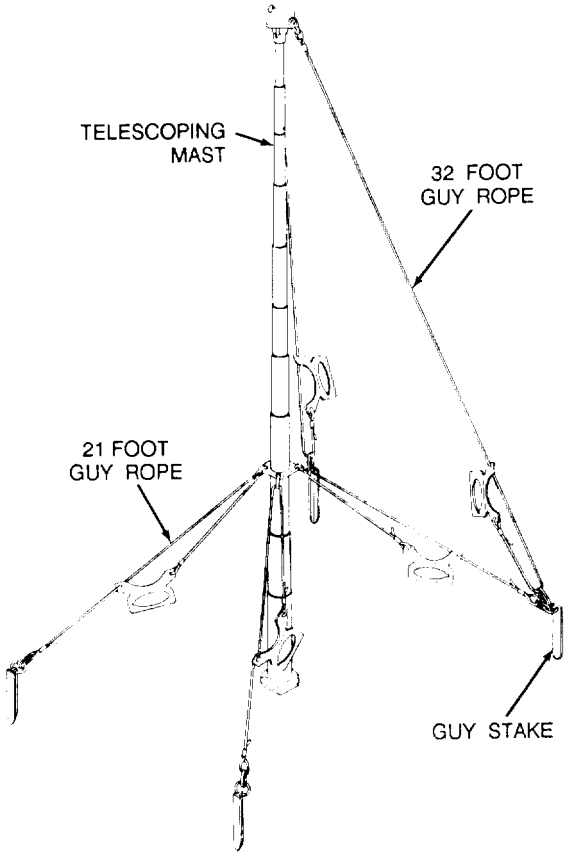
Warnings, safety precautions, and safety procedures are provided at the front of this manual. Operators should become thoroughly familiar with all warnings, safety precautions, and safety procedures before handling or operating the equipment.

Section III. TECHNICAL PRINCIPLES OF OPERATION

1-10. SORAK COMPONENTS.

22 FOOT MAST/GUY ASSEMBLY

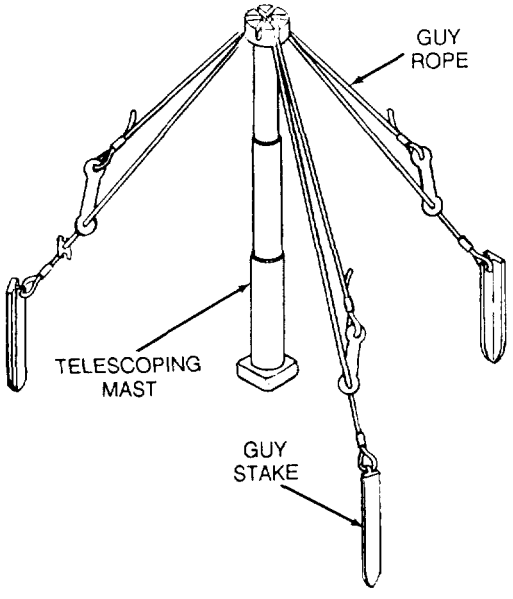
The antenna wires can be elevated by a 22 foot mast to maximize antenna performance. The assembly includes a telescoping mast supported by four 21 foot guy ropes, two 32 foot guy ropes, and four guy stakes. The mast is intended for use when existing structures (poles, buildings, trees, etc.) are not available. A spare 21 foot guy rope, 32 foot guy rope, and guy stake are included in the kit.



1-10. SORAK COMPONENTS (CONT).

6 FOOT MAST/GUY ASSEMBLIES

Two 6 foot mast/guy assemblies are provided to maintain a minimum wire height of 6 feet (1.8 meters) above ground to improve antenna efficiency. Each assembly includes a telescoping mast and three adjustable guy ropes with metal guy stakes.



ANTENNA ASSEMBLY

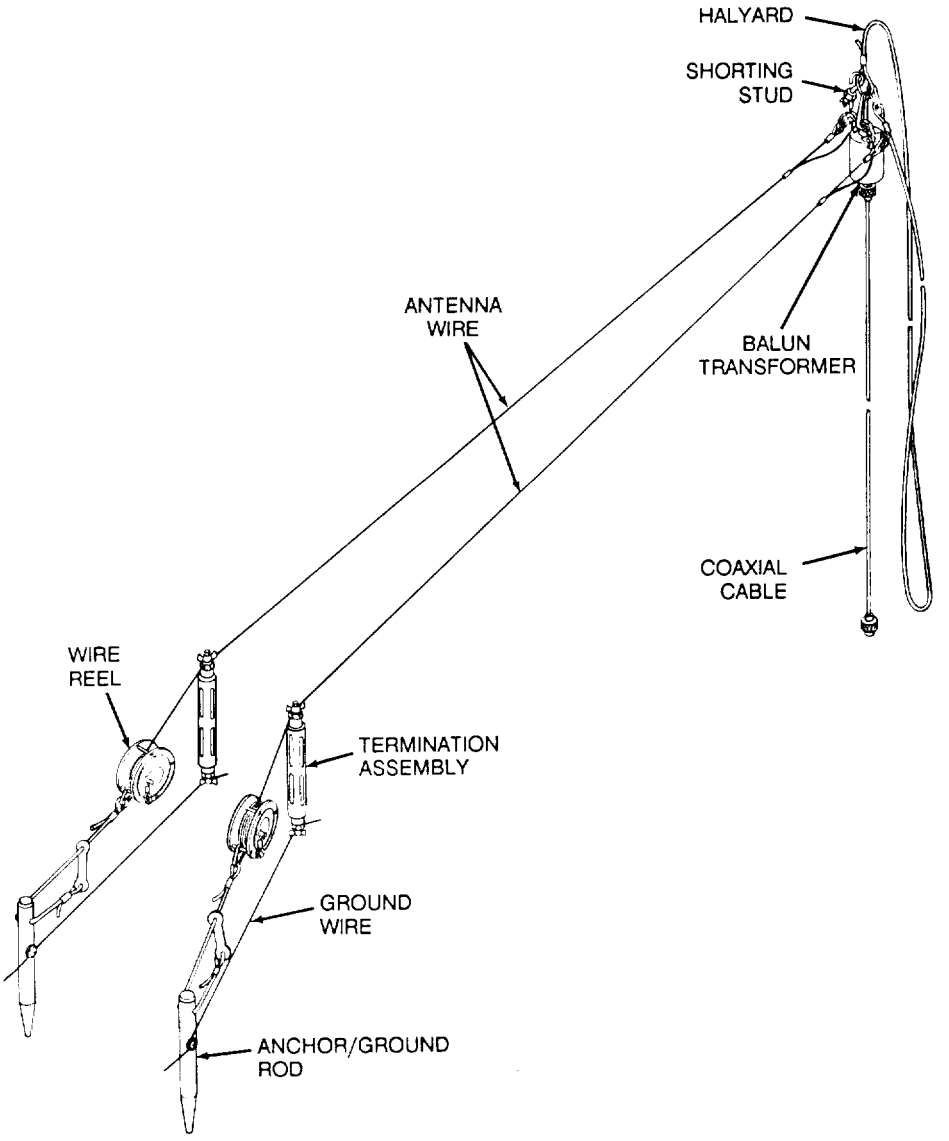
The antenna assembly includes two wire reels. Each wire reel is equipped with a 250 foot (76 meter) antenna wire. The wire reels allow you to quickly deploy and rewind the antenna wires.

1-10. SORAK COMPONENTS (CONT).

The 40 foot halyard is used to raise the antenna wire on the 22 foot mast. In some configurations, a shorting stud on the halyard is used to short two antenna wires together.

The field radio transmits or receives signals through a coaxial cable connected to the SORAK balun transformer. The balun converts the unbalanced 50 ohm transmission line (coax) to a balanced 450 ohms for hookup with the antenna wires.

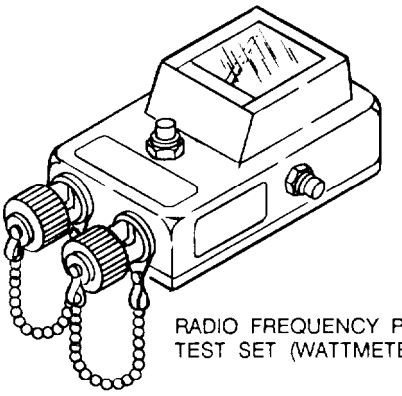
The termination assembly absorbs nonradiated transmission power to reduce standing waves on the antenna wire. This gives the antenna a broadband response, eliminating the need to adjust the antenna wire length to the operating frequency.



1-10. SORAK COMPONENTS (CONT).

TEST SETS

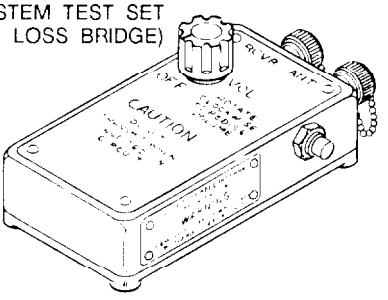
A radio frequency power test set (TS-4350/PRC) is provided, This test set, or wattmeter, allows the user to check the antenna's VSWR or the radio's output power prior to communication.



RADIO FREQUENCY POWER TEST SET (WATTMETER)

An antenna system test set (TS-4351/PRC) is also provided. This test set, or return loss bridge, allows the user to check antenna VSWR with the radio in the receive mode.

ANTENNA SYSTEM TEST SET (RETURN LOSS BRIDGE)



1-11. SORAK OPERATION.

The SORAK is designed for use by U.S. Army Special Operations Forces (SOF). The SOF missions may be conducted in various climates and terrains, using a variety of HF and VHF low-power manpack radios to communicate over a wide range of distances.

The SORAK can be set up in one of four HF antenna configurations or one VHF antenna configuration. These configurations allow you to establish communications between VHF radios within the line of sight or at distances up to 2500 miles (4000 kilometers) using HF radios. The SORAK is composed of strong, lightweight components. The components are easily connected to one another, allowing you to quickly assemble and disassemble the antenna.

Typical field radios used with the SORAK are HF or VHF low-power manpack types. These include the following radios currently in use:

Radio:	Frequency Range (MHz):
ZAN/PRC-70	2 to 76 (HF/VHF)
ZAN/PRC-74,-74A	2 to 12 (HF)
ZAN/PRC-74B,-74C	2 to 18 (HF)
ZAN/PRC-77	30 to 76 (VHF)
ZAN/PRC-104A,-104B(V)1,-104B(V)4	2 to 30 (HF)
ZAN/PRC-l19	30 to 88 (VHF)
ZAN/PRC-l32	2 to 30 (HF)

CHAPTER 2
OPERATING INSTRUCTIONS

Section I. DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS

The SORAK has no operator controls or indicators.

Section II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

All PMCS for the SORAK are done by organizational level personnel. There is no operator PMCS for the SORAK.

Section III. OPERATION UNDER USUAL CONDITIONS

WARNING

Observe all safety precautions at the front of this manual. Failure to follow safety precautions may result in serious injury or death.

2-1. PACKING.

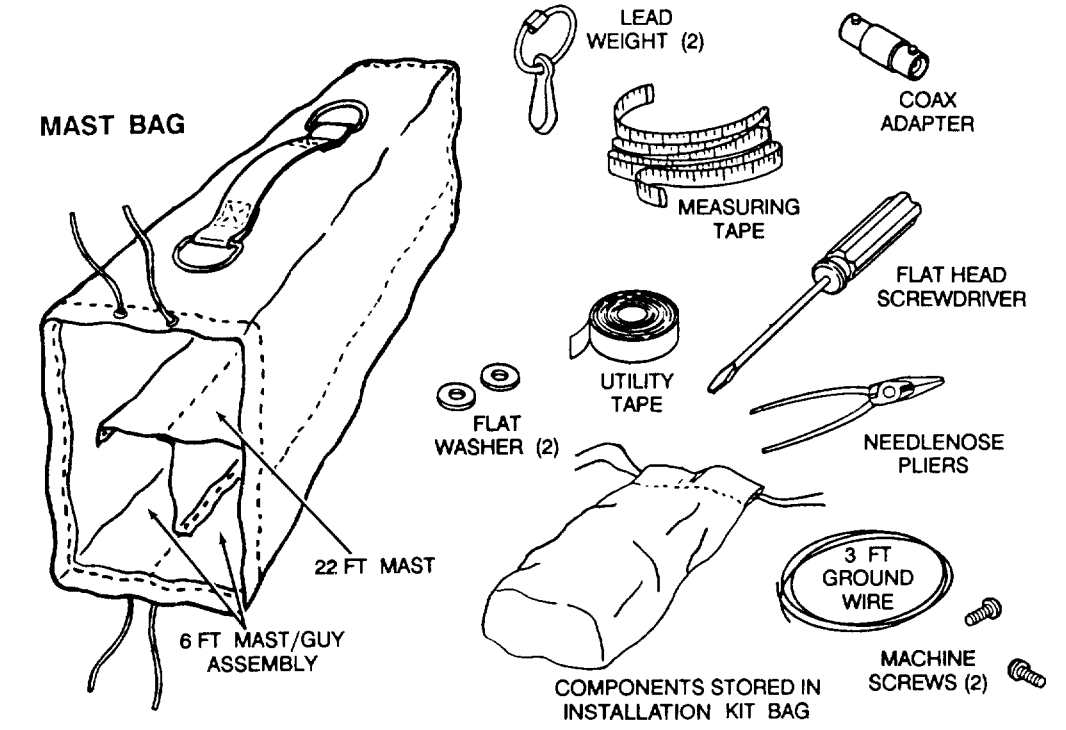
The SORAK is packed in two carrying bags for transport, or storage at the containment center. When staging for deployment in the field, pack the SORAK as follows:

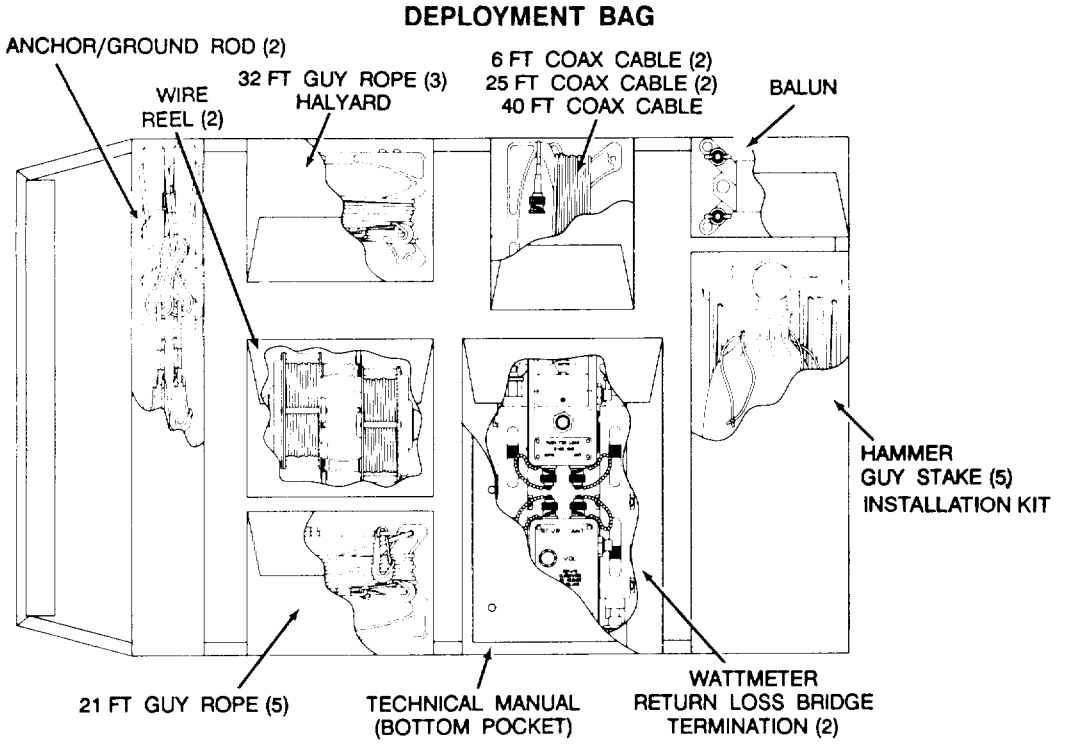
1. Pack the two 6 foot mast/guy assemblies into the two smaller sleeves of the mast bag.

2. Pack the 22 foot mast into the large sleeve.

3. Pack the remaining SORAK components in deployment bag as shown. Pockets are also marked for components. Secure pocket flaps.

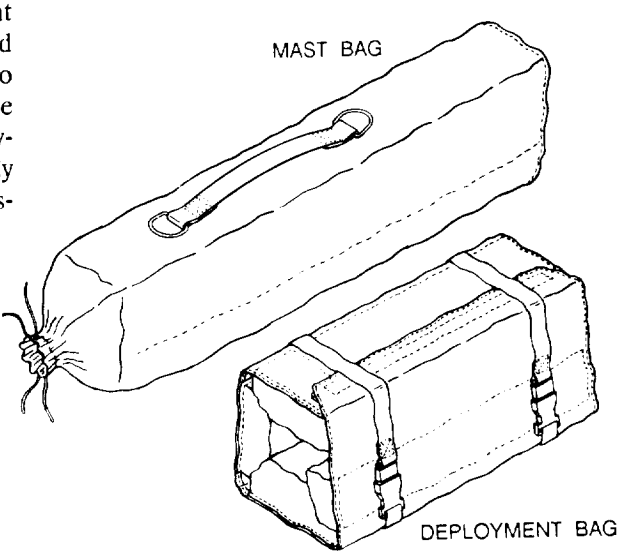
2-1. PACKING (CONT).





2-1. PACKING (CONT).

4. Roll up deployment bag as shown and secure with the two retaining straps. The mast bag and deployment bag are ready for transport to mission site.



2-2. SITE SELECTION.

PRECAUTIONS

Observe the following precautions when selecting a site for setting up the SORAK:

- Never set up an antenna directly under power lines.
- Avoid setting up antenna near power lines, if possible. If antenna must be near power lines, maintain at least 50 feet between antenna and power line.
- Avoid using guy stakes in sandy or marshy areas. If firm support is not available, reinforce with stakes, rocks, or use longer stakes, etc.
- Avoid stringing antenna wires or guy ropes near or across footpaths or roadways.

GROUND COVER

The preferred installation site is a level clearing with only a few small trees or bushes. High trees and heavy growth make setup difficult and can reduce antenna performance.

However, trees and other vegetation can provide cover for covert operations. Use or avoid ground cover based on the needs and priorities of your mission.

2-2. SITE SELECTION (CONT).

CLEARANCES

Overhead clearance is needed for setting up the 6 foot and 22 foot masts.

Antenna wires should not touch tree branches, grasses, shrubs, or any structure. Contact may affect antenna performance.

2-3. ANTENNA SELECTION.

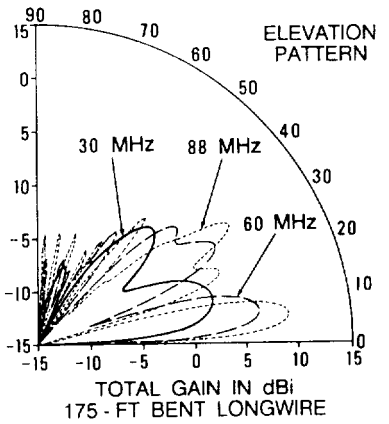
SORAK provides you with five antenna configurations. The preferred antenna configuration depends on the radio and the distance between out station and base station. Refer to Table 2-1 when selecting an antenna configuration. Table 2-1 gives approximate communication ranges for each antenna configuration. Refer to Table 2-2 for each antenna configuration radiation pattern.

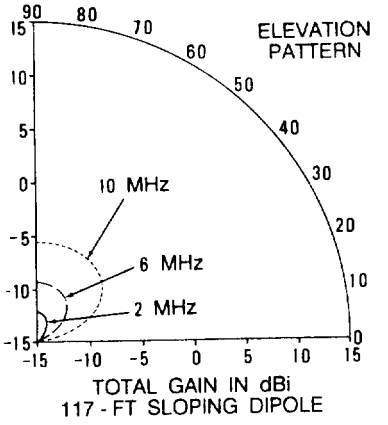
Table 2-1. Antenna Selection Data.

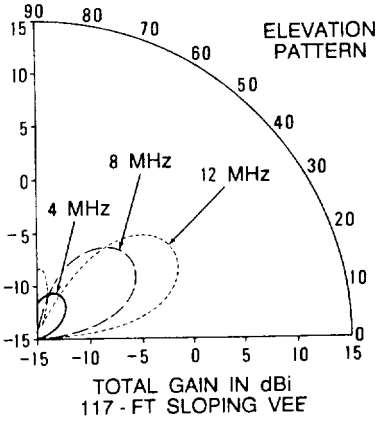
Compatible Field Radios	Comm. Range, Miles (km)	Recommended SORAK Configuration
AN/PRC-70, -77, -119	0 to 20 (0 to 30)	175 Foot Bent Longwire
AN/PRC-70, -74, -74A, -74B, -74C, -104A, -104B(V)1, -104B(V)4, -132	0 to 250 (0 to 400)	117 Foot Sloping Dipole
AN/PRC-70, -74, -74A, -74B, -74C -104A, -104B(V)1, -104B(V)4, -132	250 to 650 (400 to 1000)	117 Foot Sloping Vee
AN/PRC-70, -74, -74A, -74B, -74C, -104A, -104B(V)1, -104B(V)4, -132	650 to 1500 (1000 to 2500)	234 Foot Sloping Vee
AN/PRC-70, -74, -74A, -74B, -74C -104A, -104B(V)1 -104B(V)4, -132	1500 to 2500 (2500 to 4000)	468 Foot Bent Longwire

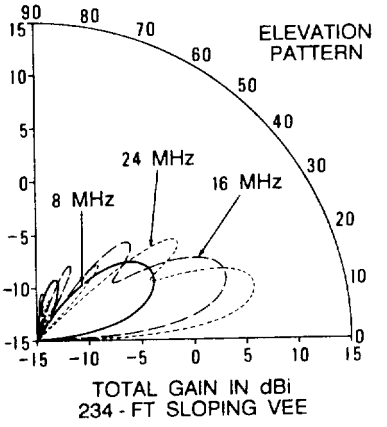
2-3. ANTENNA SELECTION (CONT).

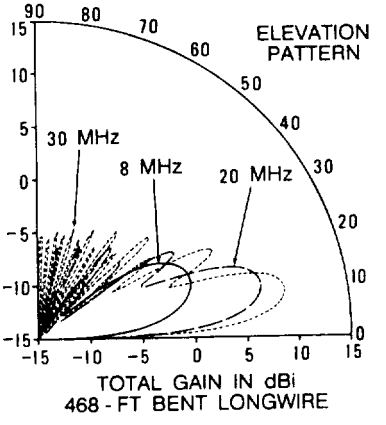
Table 2-2. Typical Antenna Radiation Patterns









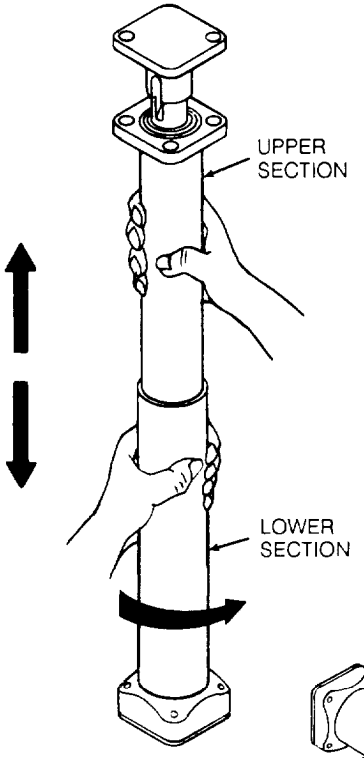


2-4. ANTENNA DEPLOYMENT GENERAL INSTRUCTIONS.

Deploy antennas according to the following paragraphs. Each deployment starts with erecting the 22 foot mast, paragraph 2-5. After erecting the mast, set up the antenna configuration best suited to your mission.

2-5. ERECTING 22 FOOT MAST.

1. Extend only bottom two sections of mast and lock in place per illustrated procedure.

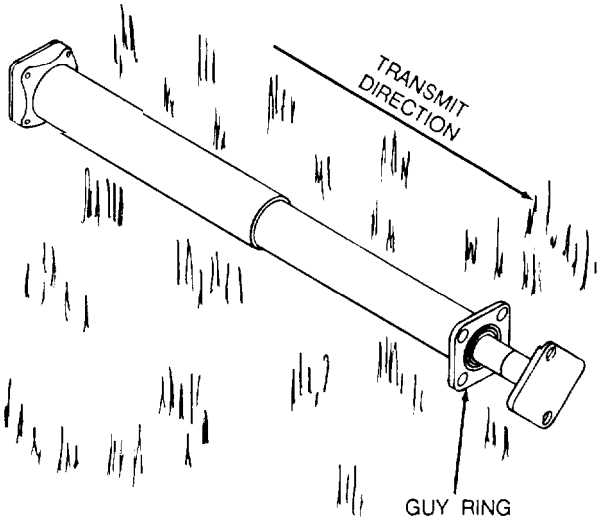


A. Extend and hold upper section upward.

B. Full down and twist lower section counterclockwise until it stops. Push upper section down to lock.

C. Reverse twist to check locking action.

2. Use compass (Appendix D) to find direction of transmission. Lay mast down with guy ring aimed in transmit direction.

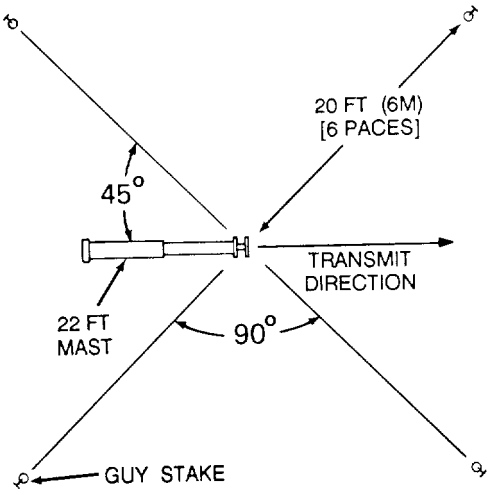


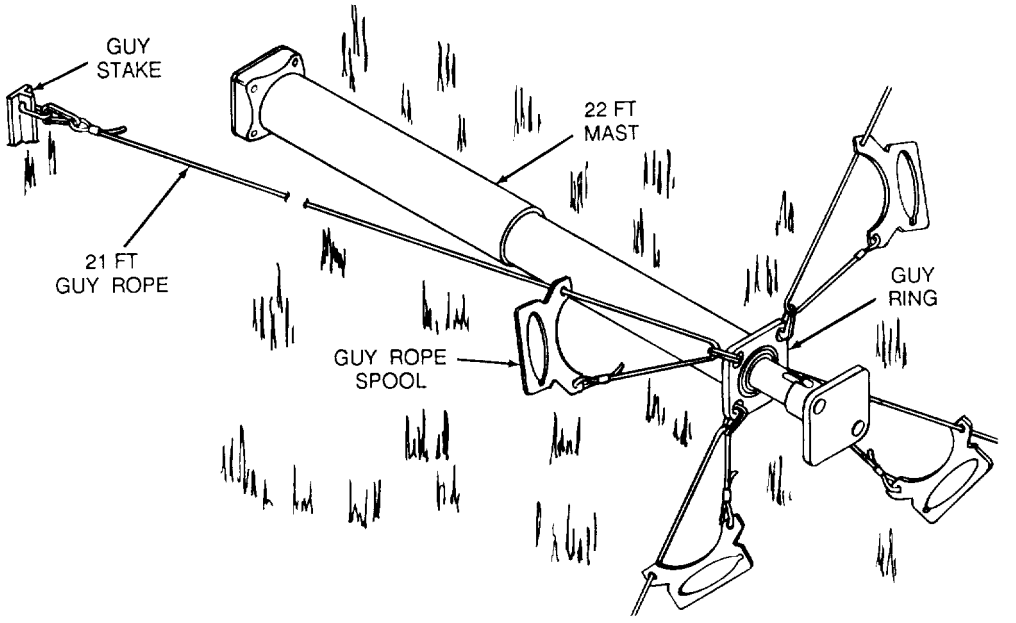
2-5. ERECTING 22 FOOT MAST (CONT).

NOTE

21 foot guy rope spools have one button on edge of spool handle.

3. Drive four guy stakes at points shown. At each stake, hook loose end of 21 foot guy rope. Take guy rope spool back to mast and hook to guy ring.



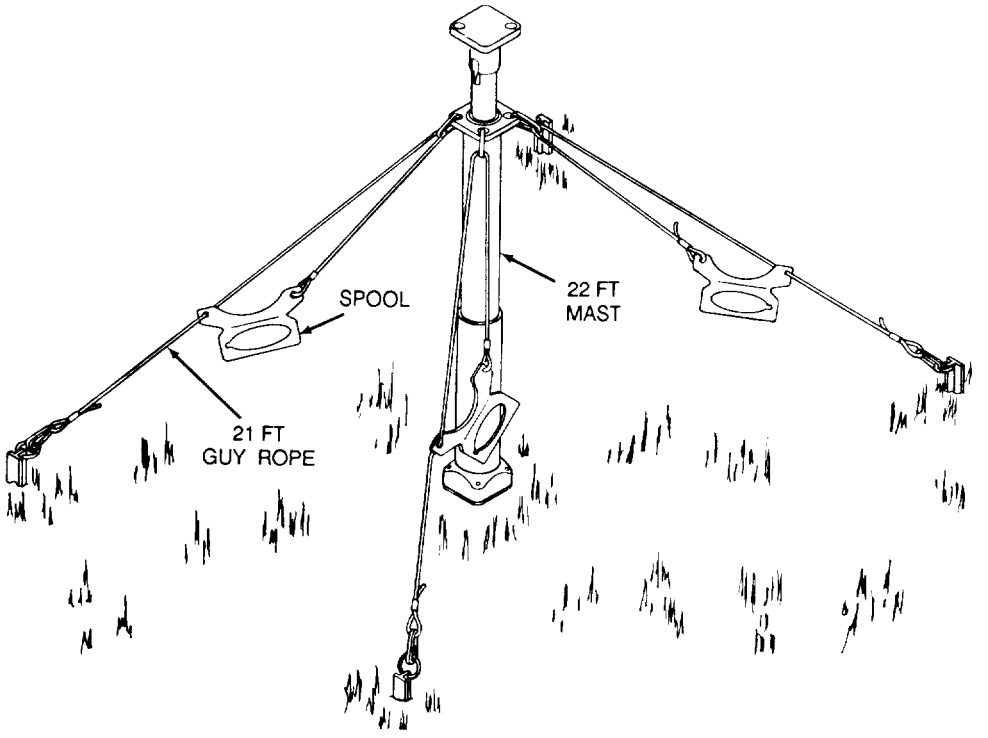


2-5. ERECTING 22 FOOT MAST (CONT).

NOTE

When tightening guy ropes, allow enough slack to facilitate raising guy ring tube section.

4. Raise mast upright and pull each spool outward to tighten guy ropes.



NOTE

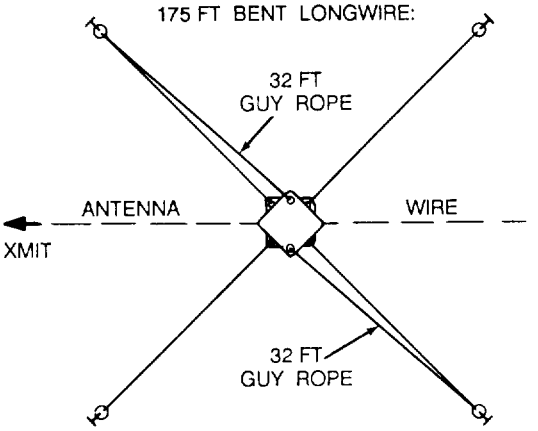
32 foot guy rope spools have two buttons on edge of spool handle.

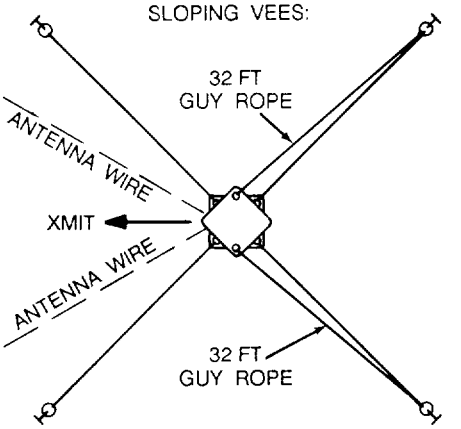
5. Hook loose ends of 32 foot guy ropes to top of mast. Take guy rope spools and hook to guy stakes per the diagram for your configuration. Leave 32 foot guy ropes loose.

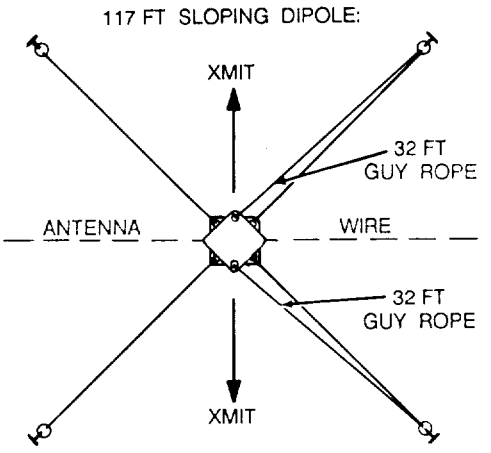
NOTE

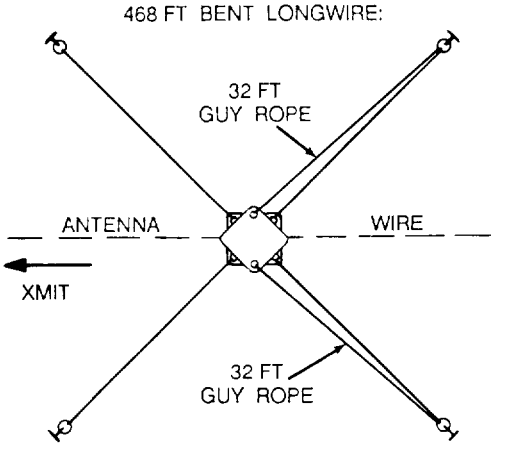
Halyard spool has no buttons on spool handle.

2-5. ERECTING 22 FOOT MAST (CONT).



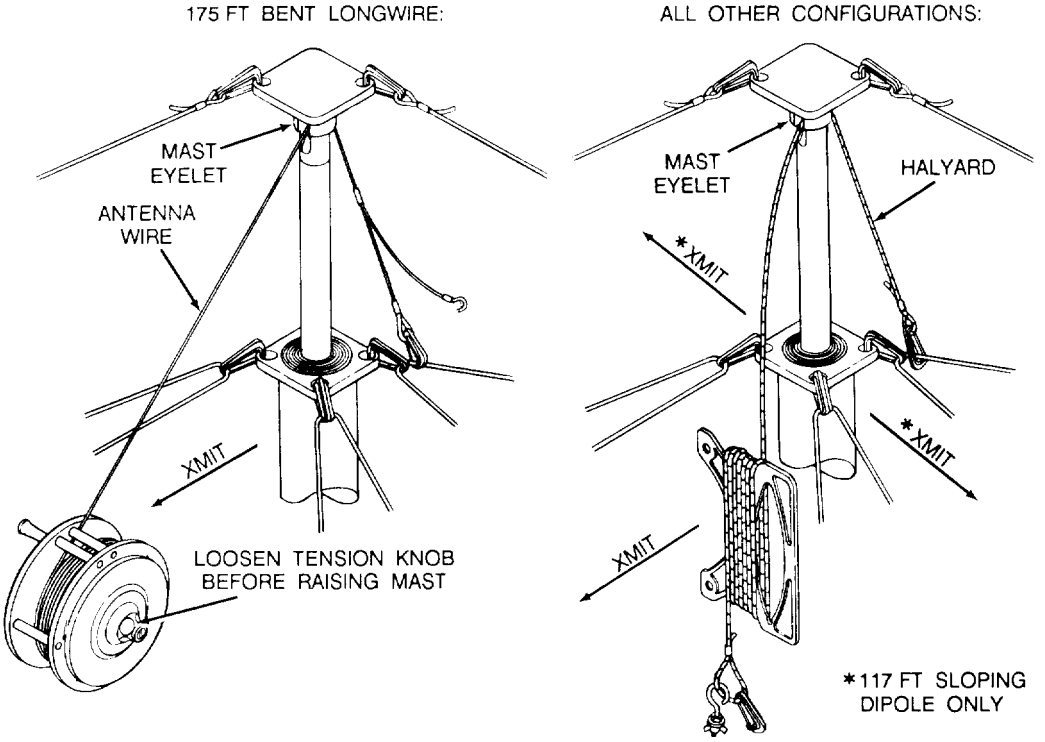




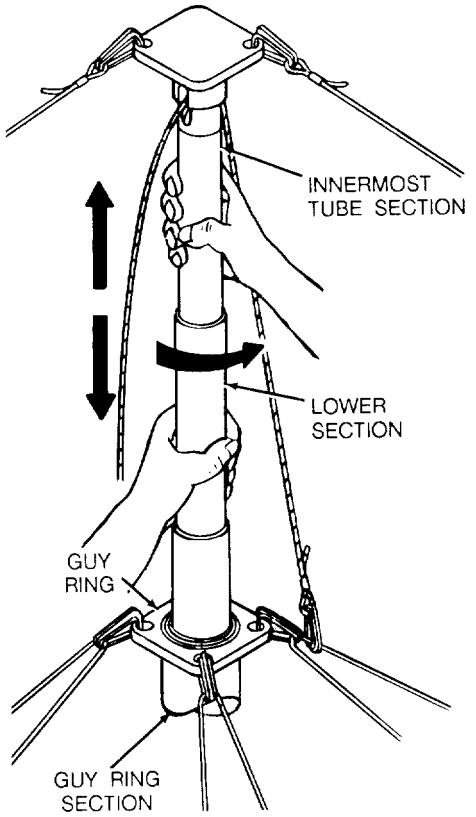


2-5. ERECTING 22 FOOT MAST (CONT).

6. Feed loose end of halyard or antenna wire through mast eyelet and connect per illustration that applies to your configuration. Lay halyard spool or reel on ground.



2-5. ERECTING 22 FOOT MAST (CONT).



7. Extend sections of mast, one at a time as shown, starting with the innermost section. To avoid tangling wires, turn only lower mast sections. Extend guy ring section last.

   A Extend and hold upper section upward.

   B. Pull down and twist lower section counterclockwise until it stops. Push upper section down to lock.

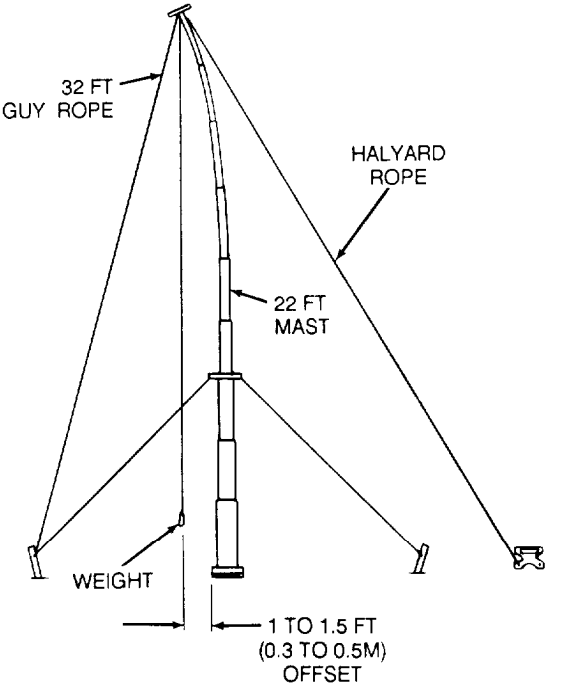
   C. Reverse twist to check locking action.

8. Apply tension to 32 foot guy ropes. Set guy rope tension as follows:

   Ž If deploying 175 foot bent long-wire, mast should be vertical.

2-5. ERECTING 22 FOOT MAST (CONT).

- If deploying 117 foot sloping dipole or 468 foot bent longwire, mast should be bent slightly beyond vertical and opposite to pull of first antenna wire deployed.
- If deploying a sloping vee, preload top of mast for an offset of 1 to 1.5 feet (0.3 to 0.5 meters) from vertical. A weighted halyard line can be used to measure the offset of the mast top from the mast base.

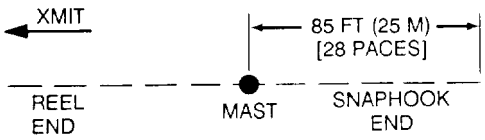


9. Refer to the illustrated procedures that follow for the balance of the deployment procedures. Refer only to the following pages for the procedures that apply to your antenna configuration:

2-6. 175 FOOT BENT LONGWIRE ANTENNA.

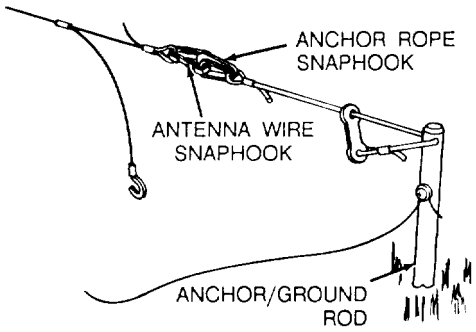
Set up 175 foot bent Iongwire antenna as follows:

1. Deploy one antenna wire per the following illustrated procedures.

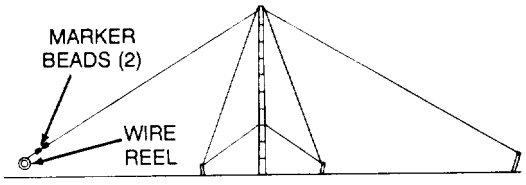


A. Pick up deployment bag. Unhook antenna wire and walk off 85 feet (28 paces) opposite transmit direction per diagram.

B. Line up wire with mast along line of transmission.

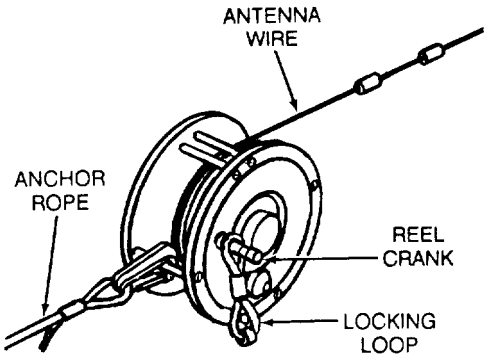


C. Drive anchor/ground rod and hook antenna wire snaphook to anchor rope snaphook. Return to mast.

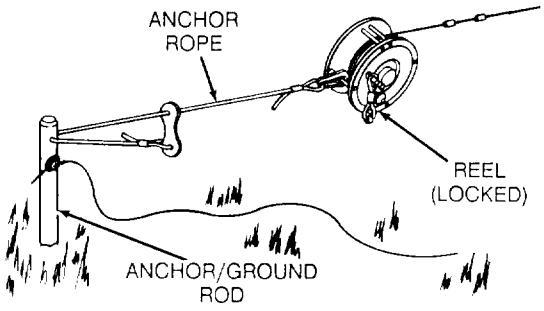


D. Pick up wire reel and deploy antenna wire to 175 foot marker (2 beads on wire).

E. Lock reel with locking loop.



2-6. 175 FOOT BENT LONGWIRE ANTENNA (CONT).



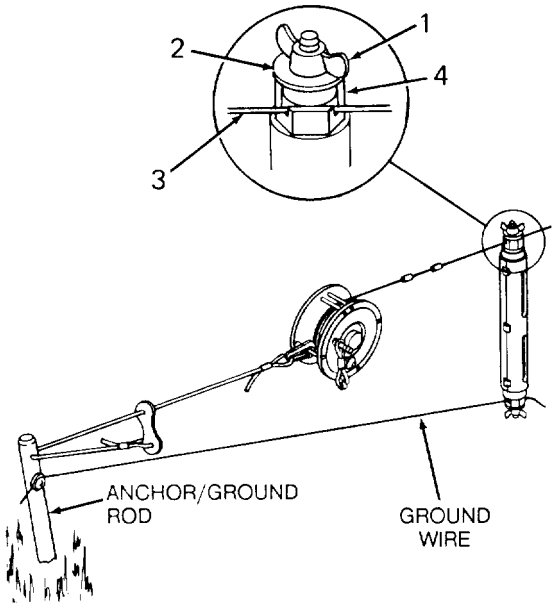
CAUTION

Do not overtighten antenna wire. Excess tension may cause mast to buckle.

F. Line up wire with opposite half of antenna. Pull wire to remove most of the slack. Drive anchor/ground rod.

G. Hook anchor rope to reel and wind in excess slack.

2. Terminate the deployed antenna wire per the following illustrated procedures.



NOTE:
ADJUSTMENTS OF GROUND WIRE LENGTH SHOULD BE MADE AT ANCHOR/GROUND ROD.

CAUTION

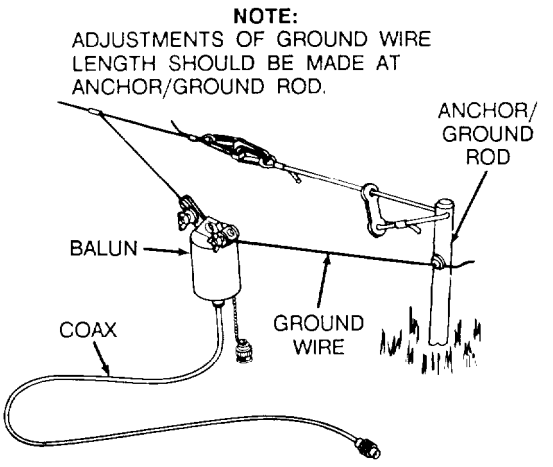
Do not allow ground wire to short against antenna wire or wire reel. Shorting will reduce antenna performance.

A. Loosen wing nut (1), raise retaining sleeve (2), and place antenna wire (3) in groove of retaining nut (4) as shown. Tighten wing nut (1) to clamp wire.

B. Connect ground wire to opposite end of termination.

C. Return to mast and snug up guys.

2-6. 175 FOOT BENT LONGWIRE ANTENNA (CONT).



CAUTION

Shorting across balun terminals will prevent communication and may severely damage radio during transmit.

D. Hook up balun, ground wire, and coax at opposite end to complete antenna setup.

3. Connect radio and check antenna performance per instructions in Section V, paragraphs 2-13 and 2-14.

Dismantle the 175 foot bent longwire antenna as follows:

1. Disconnect radio.

2. Disconnect coax, ground wire, and balun. Unhook antenna wire from anchor rope and pull out anchor/ground rod. Pack components in deployment bag.

CAUTION

After collapsing guy ring section, make sure lower guy ropes are tight enough to keep mast upright while lowering upper sections.

3. With deployment bag, return to mast. Collapse mast by starting with guy ring (third) tube section. Pull sections apart to unlock and twist lower section clockwise. When completely collapsed, make sure inner tube sections lock in base.

2-6. 175 FOOT BENT LONGWIRE ANTENNA (CONT).

4. Move to reel end of antenna. Disconnect termination and ground wire. Pull out anchor/ground rod.

NOTE

Keep tension on antenna wire during reeling process to avoid snarls.

5. With termination and anchor/ground rod, return to mast reeling in antenna wire as you go.

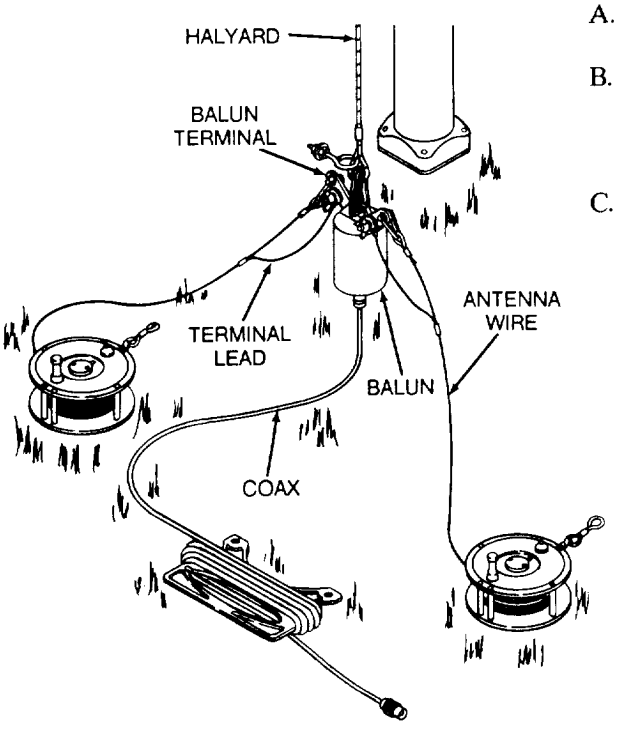
6. Unhook guy ropes from mast and guy stakes; pull out stakes.

7. Pack mast in mast bag and all other components in deployment bag.

2-7. 117 FOOT SLOPING DIPOLE AND 117/234 FOOT SLOPING VEE ANTENNAS.

Set up antenna as follows:

1. Rig antenna assembly at 22 foot mast per the following procedures.



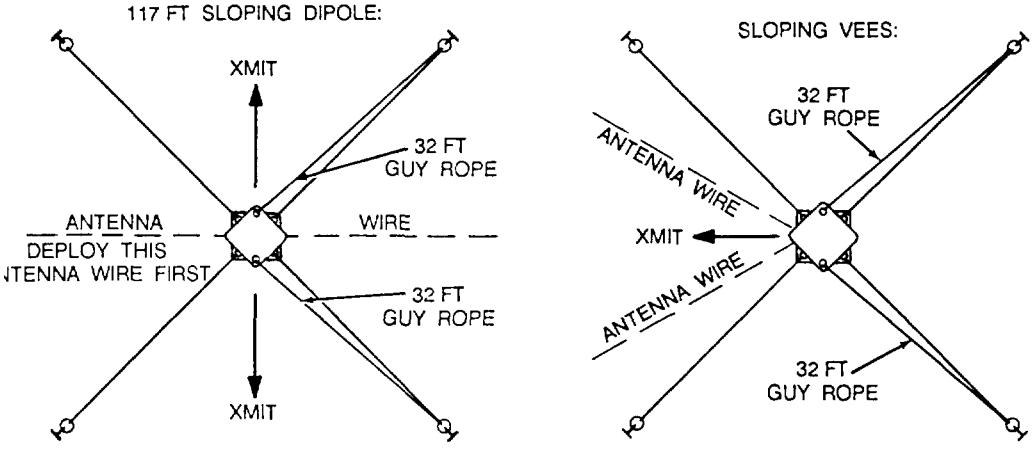
A. Snap halyard to balun as shown.

B. Connect antenna wire snaphooks, terminal leads, and loose end of coax to balun.

C. Place wire reels between guy ropes with reel cranks facing up. Wire reels should be about 6 feet (2 meters) apart.

2-7. 117 FOOT SLOPING DIPOLE AND 117/234 FOOT SLOPING VEE ANTENNAS (CONT).

2. Use compass to find antenna wire deployment heading per applicable diagram. Sight a landmark, if possible.



CAUTION

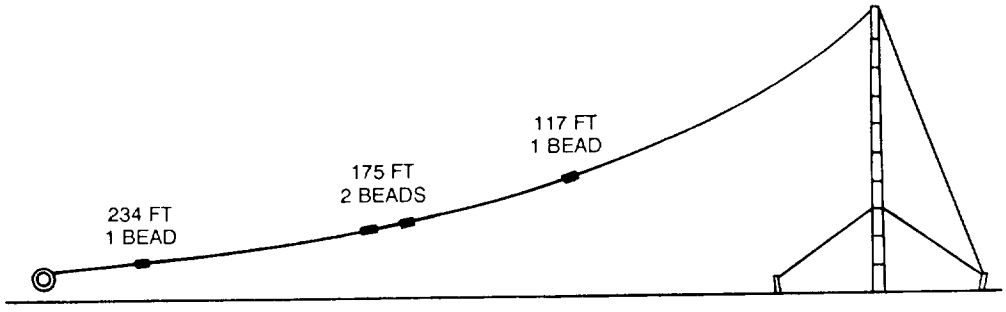
The first antenna wire deployed on the 117 foot sloping dipole antenna must pull against the 32 foot guy ropes that anchor the top of the mast. Failure to have upper mast support when pulling the first antenna wire may cause damage to the mast.

3. Turn reel tension knob for a slight drag on the antenna wire. Pick up mast bag, deployment bag, and one wire reel. Make sure that the pull of the antenna on the upper mast is opposite to and balanced by the pull of the 32 foot guy ropes.

2-7. 117 FOOT SLOPING DIPOLE AND 117/234 FOOT SLOPING VEE ANTENNAS (CONT).

4. Deploy antenna wire along proper heading. Watch for distance marker heads along deployed wire. At proper distance, lock reel with rope loop.

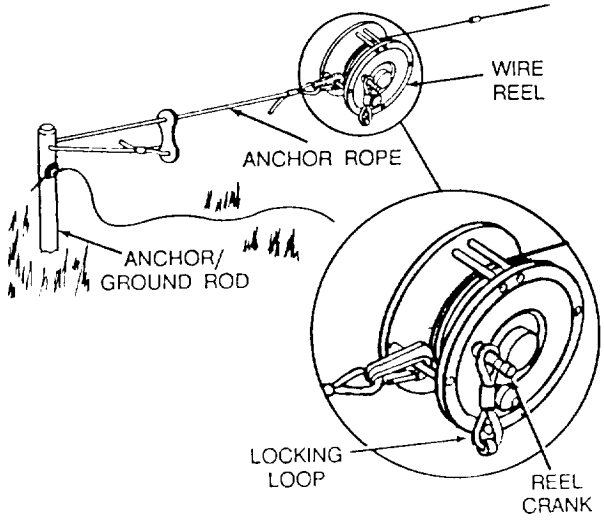
   - If deploying 117 foot sloping dipole or sloping vee, unreel wire to first single-bead marker.
   - If deploying 234 foot sloping vee, unreel wire to second single-bead marker.



CAUTION

Do not overtighten antenna wire. Excess tension may cause mast to buckle.

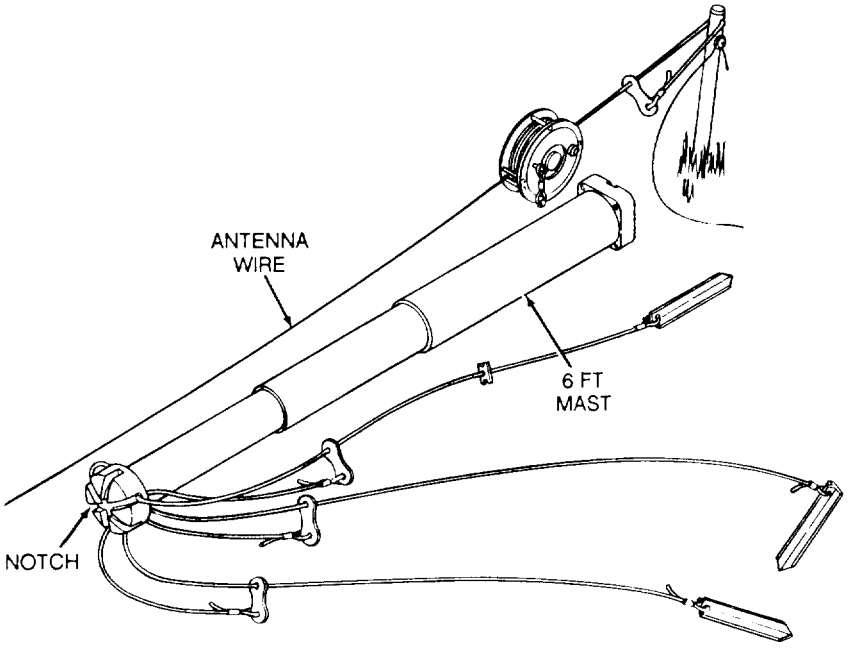
5. To determine antenna anchor point, pull antenna until full length of wire is just off ground. Drive anchor/ground rod. Hook anchor rope to wire reel.

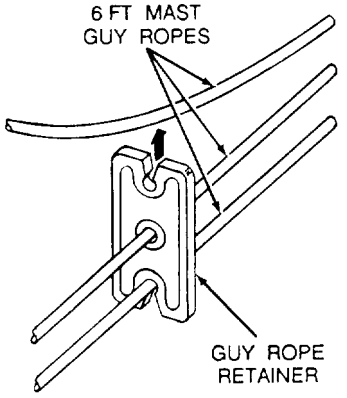


2-7. 117 FOOT SLOPING DIPOLE AND 117/234 FOOT SLOPING VEE ANTENNAS (CONT).

6. Erect 6 foot mast per the following procedures.

A. Extend 6 foot mast and place on ground, Line up one of three notches in top of mast with antenna wire. Make sure the guy rope in the notch aligned with antenna wire is down or away from wire. Antenna wire should not rest on guy rope when mast is raised.

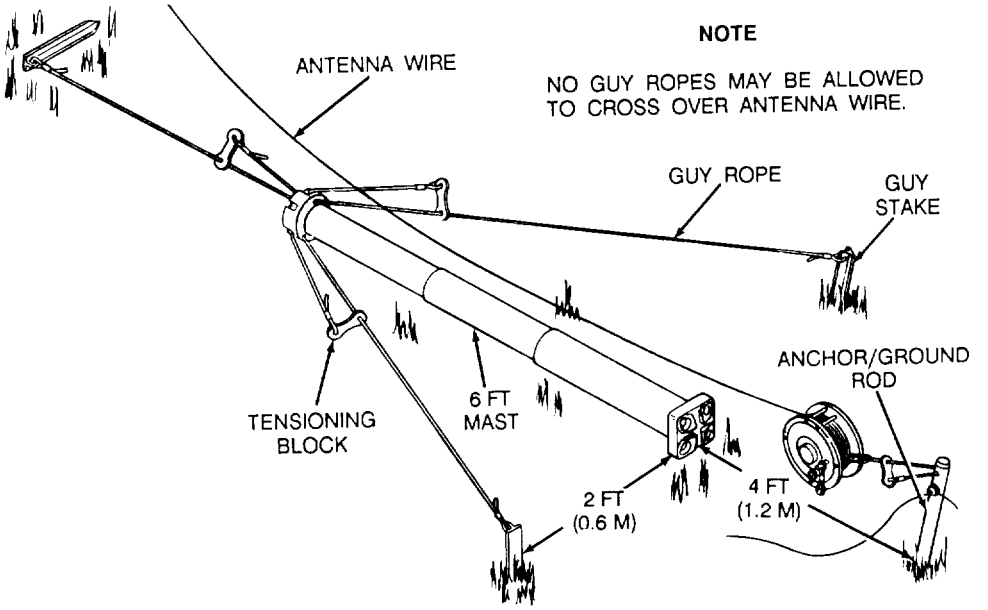


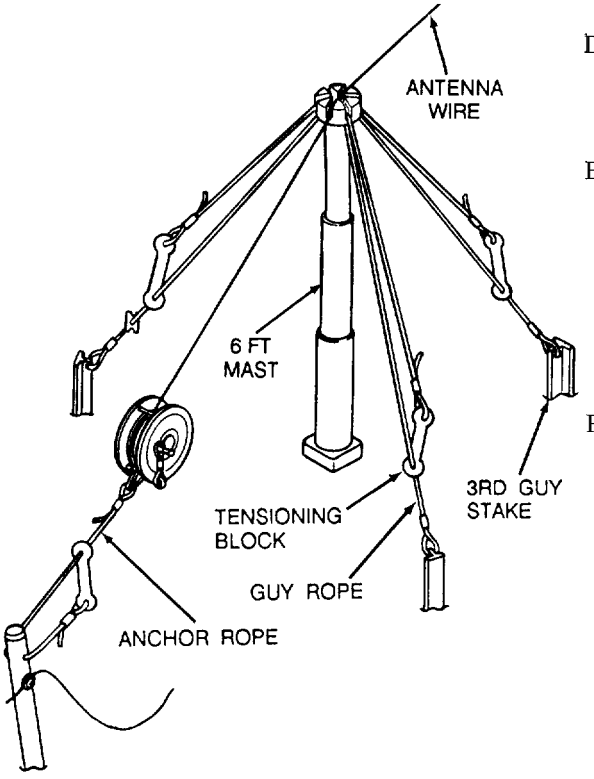


B. Separate guy ropes from rope retainer.

2-7. 117 FOOT SLOPING DIPOLE AND 117/234 FOOT SLOPING VEE ANTENNAS (CONT).

C. Lay out guy ropes to avoid tangling. Make sure that no guy rope crosses over antenna wire. Drive the two guy stakes nearest to the wire reel.





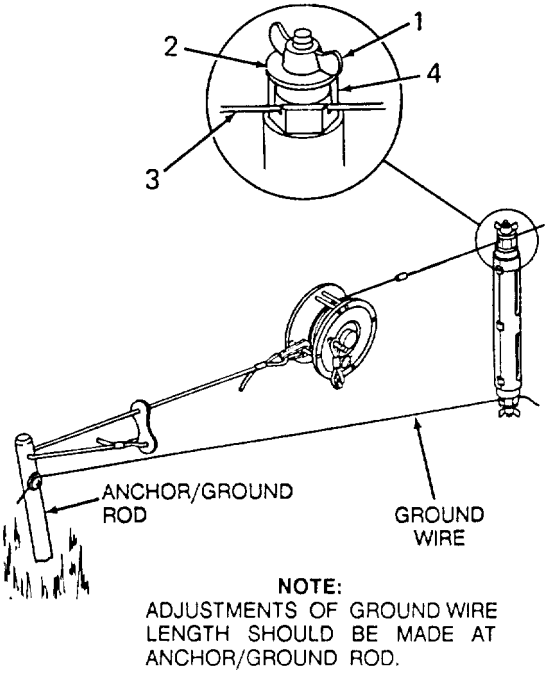
D. Raise mast to vertical position. Center the mast beneath antenna wire placing wire in notch.

E. Drive third guy stake and tighten all guy ropes with tensioning blocks.

F. Reel in excess antenna wire slack. Tighten anchor rope.

2-7. 117 FOOT SLOPING DIPOLE AND 117/234 FOOT SLOPING VEE ANTENNAS (CONT).

7. Terminate ends of deployed antenna wire per the following procedures.



CAUTION

Do not allow ground wire to short against antenna wire or wire reel. Shorting will reduce antenna performance.

A. Loosen termination wing nut (1), raise retaining sleeve (2), and place antenna wire (3) in groove of retaining nut (4) as shown. Tighten wing nut (1) to clamp antenna wire.

B. Connect ground wire to opposite end of termination.

8. Return to 22 foot mast and repeat steps 2 through 7 of paragraph 2-7 to deploy other leg of the antenna.

9. Return to 22 foot mast and connect field radio. Check antenna performance per instructions in Section V, paragraphs 2-13 and 2-14.

If longer coax is needed from balun to radio, use coax adapter from installation kit and connect together two coax cables.

Dismantle the 117 foot sloping dipole and 117/234 foot sloping vee antennas as follows:

1. Disconnect radio.

2. Untie halyard rope and lower balun and antenna wires. Disconnect coax and antenna wires, and unhook halyard from balun.

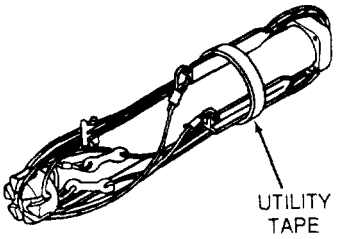
2-7. 117 FOOT SLOPING DIPOLE AND 117/234 FOOT SLOPING VEE ANTENNAS (CONT).

CAUTION

After collapsing guy ring section, make sure lower guy ropes are tight enough to keep mast upright while lowering upper sections.

3. Collapse mast by starting with guy ring (third) tube section. Pull sections apart to unlock and twist lower section clockwise. When completely collapsed, remove halyard. Unhook guy ropes from 22 foot mast and guy stakes; pull out stakes. Make sure mast inner tube sections lock in base. Pack mast in mast bag and all other components in deployment bag.

4. With deployment bag, move to the termination end of one of the antenna legs. Collapse the 6 foot mast and pull out guy stakes. Place guy ropes in rope retainer. Wrap guy ropes around ends of mast and secure with utility tape as shown. Pack mast in mast bag.



5. Disconnect termination and ground wire. Unhook anchor rope from reel and pull out anchor/ground rod. Pack termination and anchor/ground rod in deployment bag.

NOTE

Keep tension on antenna wire during reeling process to avoid snarls.

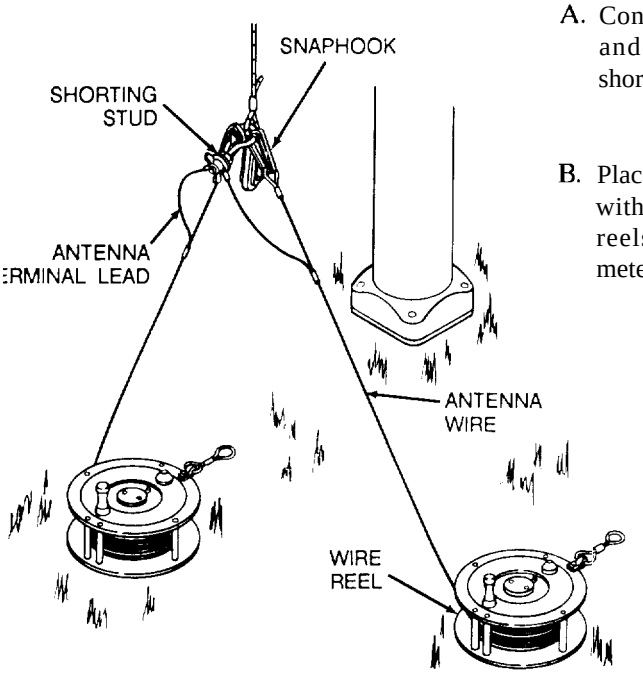
6. With deployment bag, return to 22 foot mast, reeling in antenna wire as you go.

7. Repeat steps 4 through 6 for remaining antenna leg.

8. Pack 6 foot mast in mast bag and wire reel in deployment bag.

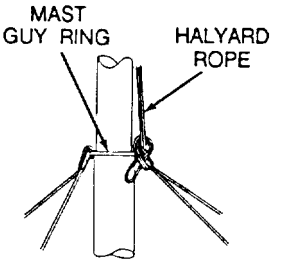
2-8. 468 FOOT BENT LONGWIRE ANTENNA. Setup antenna as follows:

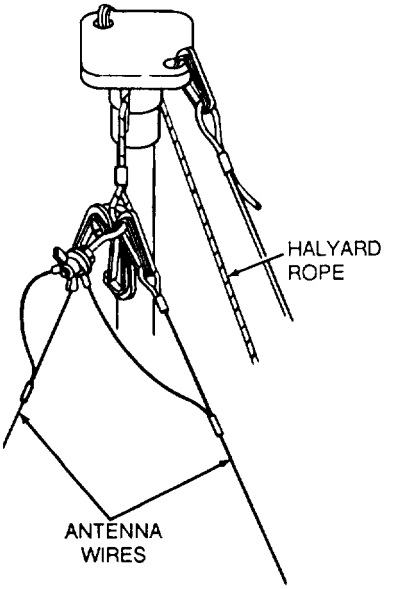
1. Rig antenna assembly at 22 foot mast per the following illustrated procedures.



A. Connect antenna wire snaphooks and antenna terminal leads to shorting stud as shown.

B. Place wire reels between guy ropes with reel cranks facing up. Wire reels should be about 6 feet (2 meters) apart.



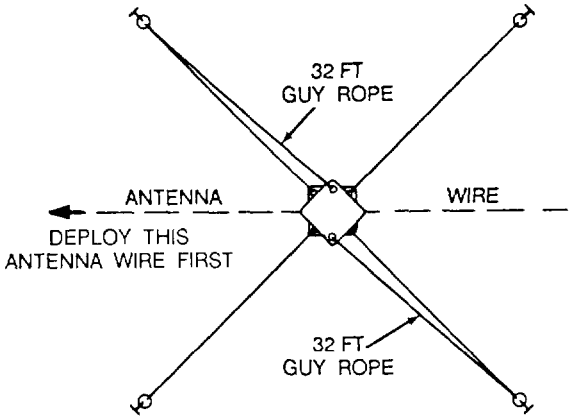


C. Pull halyard rope to hoist antenna. Tie off halyard at mast guy ring.

D. Visually check that halyard rope and antenna wires are not twisted at top of mast. Also check that both antenna wires will be above 21 foot guy ropes when deployed.

2-8. 468 FOOT BENT LONGWIRE ANTENNA (CONT).

2. Use compass to find antenna wire deployment heading per transmit direction diagram. Sight a landmark, if possible.

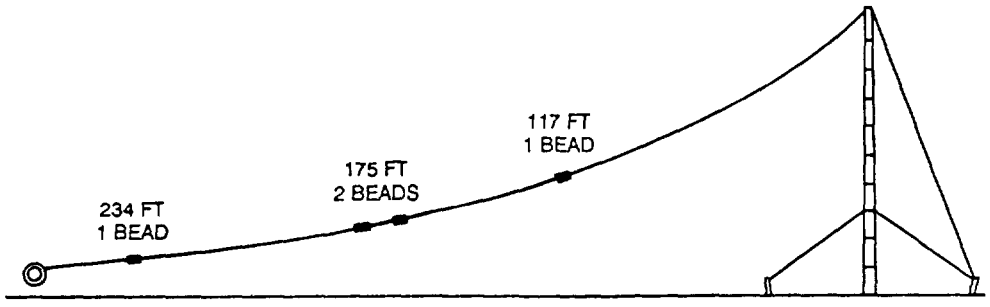


CAUTION

The first antenna wire deployed must pull against the 32 foot guy ropes that anchor the top of the mast. Failure to have upper mast support when deploying antenna wires may cause damage to the mast.

3. Turn reel tension knob for a slight drag on the antenna wire. Pick up mast bag, deployment bag, and one wire reel. Make sure that the pull on the upper mast is balanced by the pull of the 32 foot guy ropes.

4. Deploy antenna wire along proper heading. Watch for the second single-bead marker. At the proper distance, lock reel with locking loop.

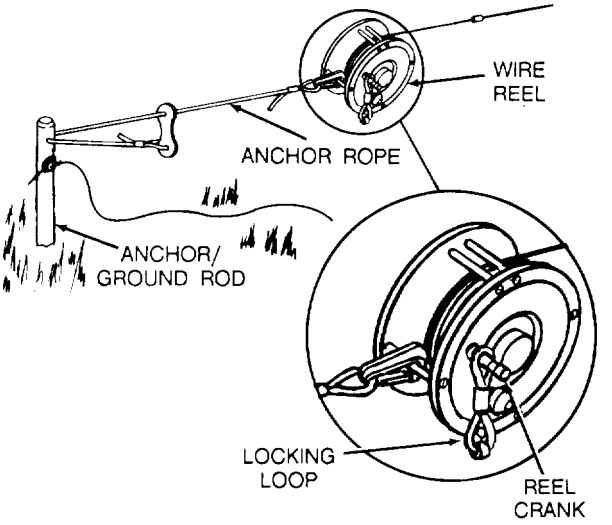


2-8. 468 FOOT BENT LONGWIRE ANTENNA (CONT).

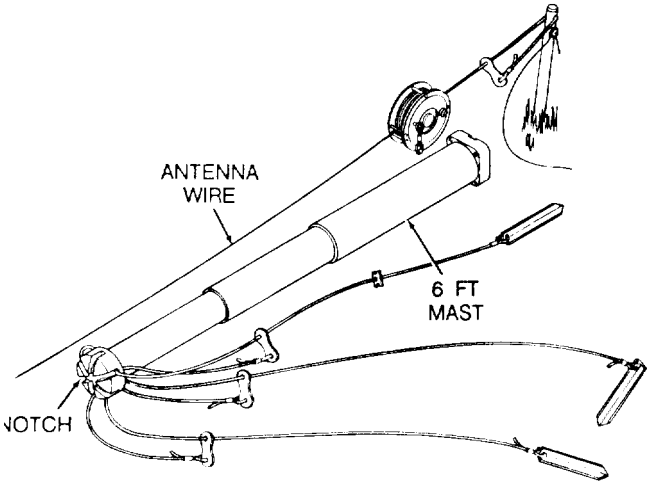
CAUTION

Do not overtighten antenna wire. Excess tension may cause mast to buckle.

5. To determine antenna anchor point, pull antenna until full length of wire is just off ground. Drive anchor/ground rod. Hook anchor rope to wire reel.

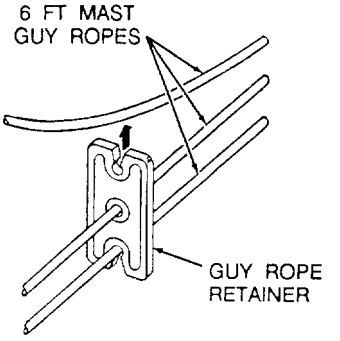


6. Erect 6 foot mast per the following illustrated procedures.

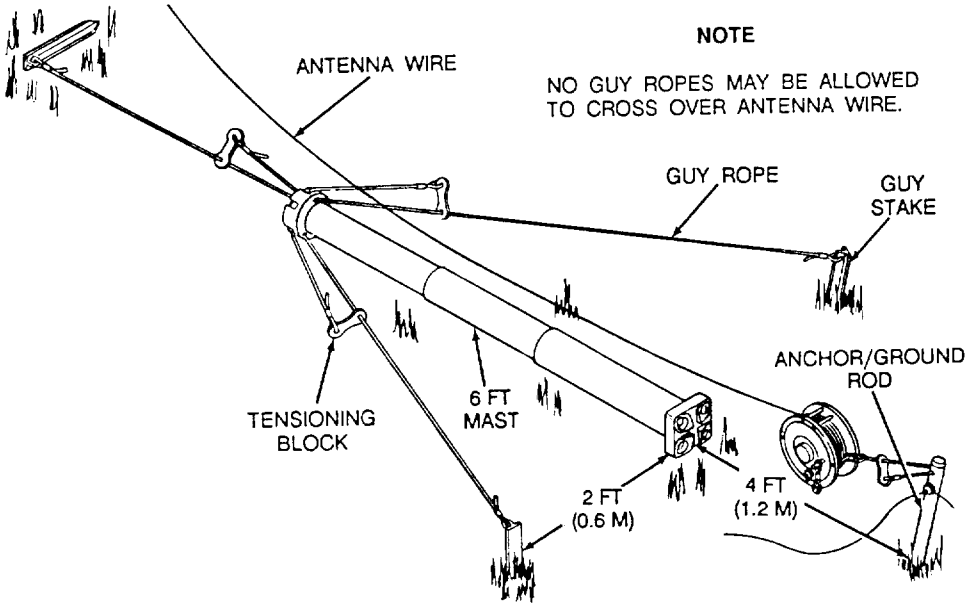


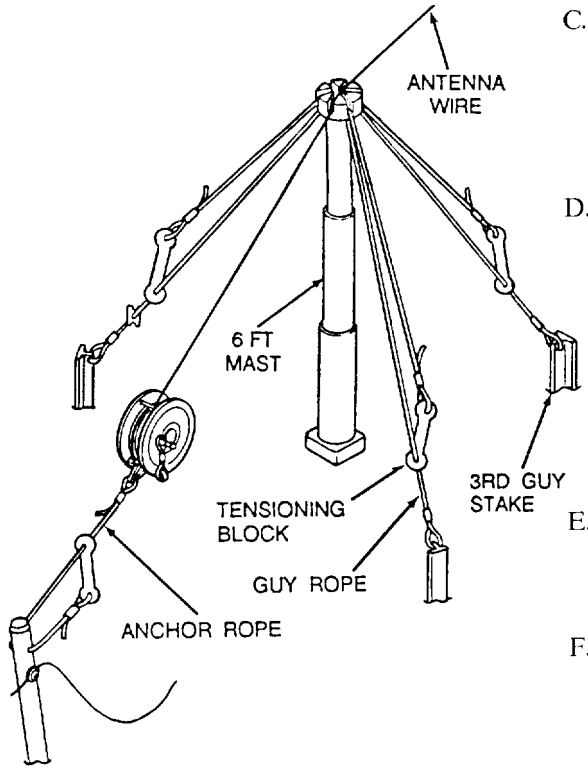
A. Extend 6 foot mast and place on ground. Line up one of three notches in top of mast with antenna wire. Make sure the guy rope in notch aligned with antenna wire is down or away from wire.

B. Separate guy ropes from rope retainer.



2-8. 468 FOOT BENT LONGWIRE ANTENNA (CONT).





C. Lay out guy ropes to avoid tangling. Make sure that no guy rope crosses over antenna wire. Drive the two guy stakes nearest to the wire reel.

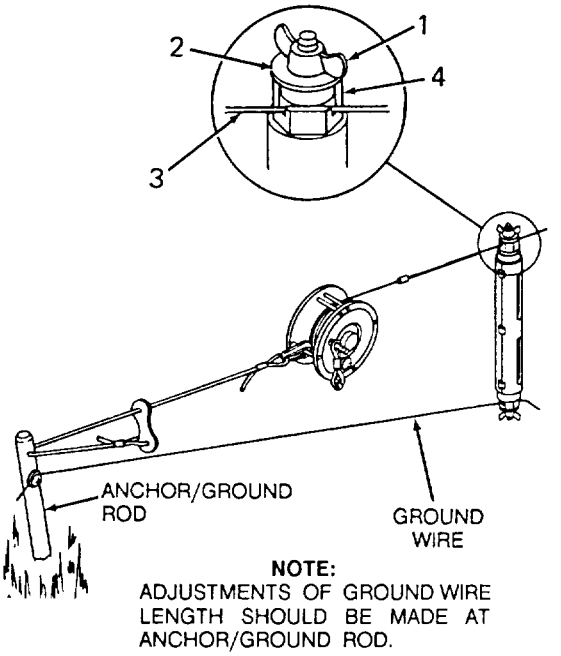
D. Raise mast to vertical position. Center the mast beneath antenna wire placing wire in notch.

E. Drive third guy stake and tighten all guy ropes with tensioning blocks.

F. Reel in excess antenna wire slack. Tighten anchor rope.

2-8. 468 FOOT BENT LONGWIRE ANTENNA (CONT).

7. Terminate end of deployed antenna wire per the following procedures.



CAUTION

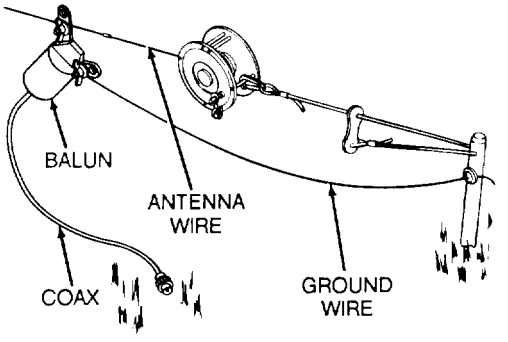
Do not allow ground wire to short against antenna wire or wire reel. Shorting will reduce antenna performance.

A. Loosen termination wing nut (l), raise retaining sleeve (2), and place antenna wire (3) in groove of retaining nut (4) as shown. Tighten wing nut (1) to clamp antenna wire.

B. Connect ground wire to opposite end of termination.

8. Return to 22 foot mast and repeat steps 2 through 7 to deploy the other leg of the antenna.

9. Terminate end of second antenna wire per the following procedures.



CAUTION

Do not allow ground wire to short against antenna wire. Shorting across balun terminals will prevent communication and may severely damage radio during transmit.

A. Attach one balun terminal to antenna wire as shown.

B. Connect end of ground wire to opposite balun terminal.

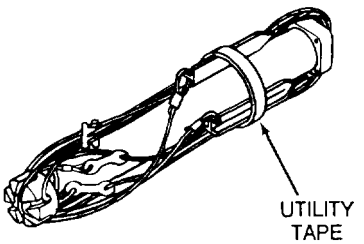
C. Hook up coax to balun. Connect field radio. Check antenna performance per instructions in Section V, paragraphs 2-13 and 2-14.

2-8. 468 FOOT BENT LONGWIRE ANTENNA (CONT).

Dismantle the 468 foot bent longwire as follows:

1. Disconnect radio.

2. Collapse the 6 foot mast and pull out guy stakes. Place guy ropes in rope retainer. Wrap guy ropes around ends of mast and secure with utility tape as shown. Pack mast in mast bag.



3. Disconnect coax, ground wire, and balun. Unhook antenna wire from anchor rope and pull out anchor/ground rod. Pack components in deployment bag.

NOTE

Keep tension on antenna wire during reeling process to avoid snarls.

4. With mast and deployment bag, return to 22 foot mast, reeling in antenna wire as you go. Place reel on ground at mast.

5. Untie halyard rope and lower antenna wires. Disconnect antenna wires from halyard shorting stud. Reel in remaining antenna wire on reel at mast.

CAUTION

After collapsing guy ring section, make sure lower guy ropes are tight enough to keep mast upright while lowering upper sections.

6. Collapse 22 foot mast by starting with guy ring (third) tube section. Pull sections apart to unlock and twist lower section clockwise. When completely collapsed, remove halyard. Unhook guy ropes from 22 foot mast and guy stakes; pull out stakes. Make sure mast inner tube sections lock in base. Pack mast in mast bag and all other components in deployment bag.

2-8. 468 FOOT BENT LONGWIRE ANTENNA (CONT).

7. With deployment bag, move to the termination end of the remaining antenna leg. Collapse the 6 foot mast and pull out guy stakes. Place guy ropes in rope retainer. Wrap guy ropes around ends of mast and secure with utility tape. Pack mast in mast bag.

8. Disconnect termination and ground wire. Unhook anchor rope from reel and pull out anchor/ground rod. Pack termination and anchor/ground rod in deployment bag.

9. With mast and deployment bags, return to 22 foot mast reeling in antenna wire as you go.

10. Pack 6 foot mast in mast bag and wire reel in deployment bag.

Section IV. OPERATION UNDER UNUSUAL CONDITIONS

2-9. ALTERNATE COMPONENTS.

ANTENNA SUPPORTS

WARNING

Shock hazard. Never use utility poles or other power line structures to support the antenna. Use of power line supports can lead to serious injury or death.

CAUTION

When using a tree to support the antenna, use a spring or strip of rubber at one end of the antenna wire. If a flexible tie is not available, leave plenty of slack in the wire.

You can use poles, trees, or buildings to support antenna wires. However, reduced antenna performance may result. Avoid using metallic supports, if possible.

To deploy antenna using alternate supports such as a tree or building, attach one or both weights to loose end of halyard and toss over tree branch or building. Hoist antenna in normal fashion.

If longer coax is needed from balun to radio, use coax adapter from installation kit and connect together two coax cables.

2-9. ALTERNATE COMPONENTS (CONT).

ANTENNA WIRES

Any metal wire can be used as an antenna. Examples include power cords, barbed wire, other fence wire, or metal-core clothesline.

A bent longwire antenna can be set up with only one wire reel.

GROUNDING RODS

WARNING

Explosion hazard. Piping or underground tanks may contain flammable materials. Failure to check contents of piping or underground tanks before use may result in serious injury or death.

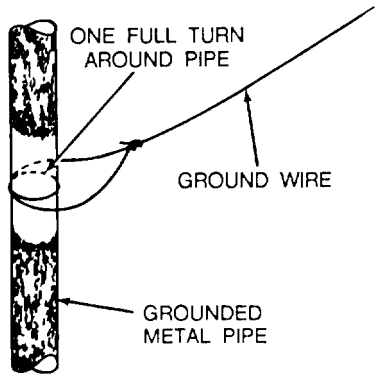
Any metal can be used as a grounding rod. Water pipes, reinforcing rods, or metal posts often provide good earth grounds.

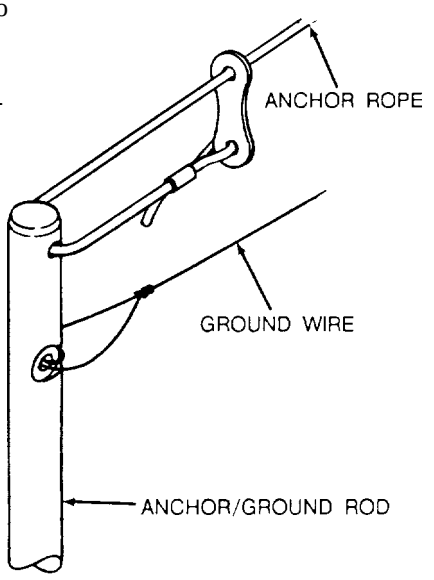
Always check for flammable materials in piping or tanks. If in doubt about contents, don't use the container for a ground.

Remove paint from all ground rod surfaces to be in direct contact with termination ground wire.

When attaching ground wire to pipe or similar object, use one full turn around pipe as shown to ensure ground connection.

Also follow this procedure if ground screw is missing from anchor/ground rod.





2-10. OPERATION IN SEVERE WEATHER.

Observe the following warnings before attempting to set up or operate the SORAK in severe weather conditions.

WARNING

Severe shock hazard. Do not set up or adjust antenna during electrical storms. Handling equipment during electrical storms may lead to serious injury or death by electrocution.

WARNING

To avoid frostbite, use arctic gloves when setting up or adjusting SORAK in cold weather conditions.

Due to slower body motion and the use of arctic gloves, SORAK installation in cold weather may take much longer than usual.

2-11. SWIMMING OR FORDING.

WARNING

Electrical shock hazard. Do not use return loss bridge if recently submerged or exposed to large amounts of water.

The deployment bag is designed to be water-repellent during heavy rain or short submersion. If recently submerged or exposed to a large amount of water, unscrew battery compartment cover of return loss bridge and drain water.

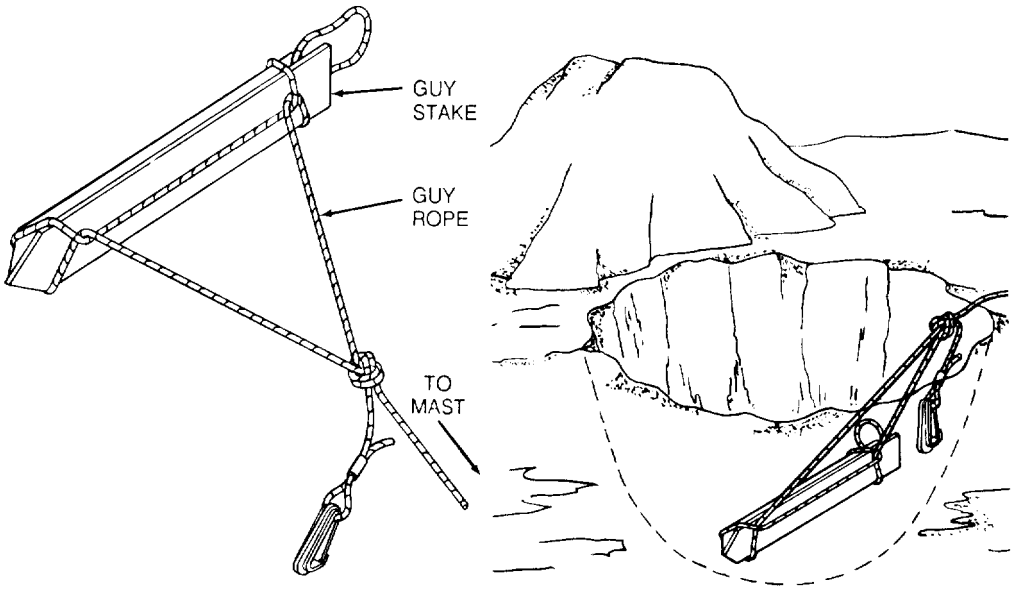
2-12. SETUP IN DEEP SAND OR SNOW.

To improve holding strength of guy stakes and anchor/ground rods in deep sand or snow, use one or more of the following suggestions:

- Tie off or pin down guy ropes and/or anchor/ground rod with heavy objects (rocks, logs, etc.), if available.
- Dig down to find firm ground for anchoring.

2-12. SETUP IN DEEP SAND OR SNOW (CONT).

- Dig down two or three feet at each anchor point. Tie off guy rope at middle of guy stake as shown. Bury the guy stake. When burying guy stake, wet down sand or snow to aid packing and anchor strength.



- If buried guy stake doesn't hold, tie off guy rope to a stick, item of clothing, or other bulky item and bury it.

To improve grounding of antenna in deep sand, use one of the following methods:

- Use additional wire as a counterpoise.
- Dig down until firmer ground is found.
- Wet down area around anchor/ground rod just prior to transmit.

To improve grounding of antenna in deep snow and frozen ground, use one of the following methods:

- Use additional wire as a counterpoise.
- Dig down until thawed ground is found.
- Wet down area around anchor/ground rod just prior to transmit.

Section V. EQUIPMENT CHECKS

2-13. GENERAL.

CAUTION

Failure to check SORAK performance before attempting communication can result in damage to equipment.

When possible, test SORAK antenna performance before use. Either the wattmeter or the return loss bridge (RLB) can be used to determine the voltage standing wave ratio (VSWR). In hostile areas, use the return loss bridge to avoid unnecessary signal transmission.

NOTE

The maximum acceptable VSWR is different for different radios. Refer to the radio's technical manual for the maximum acceptable VSWR value.

Normally, a low VSWR indicates high antenna performance:

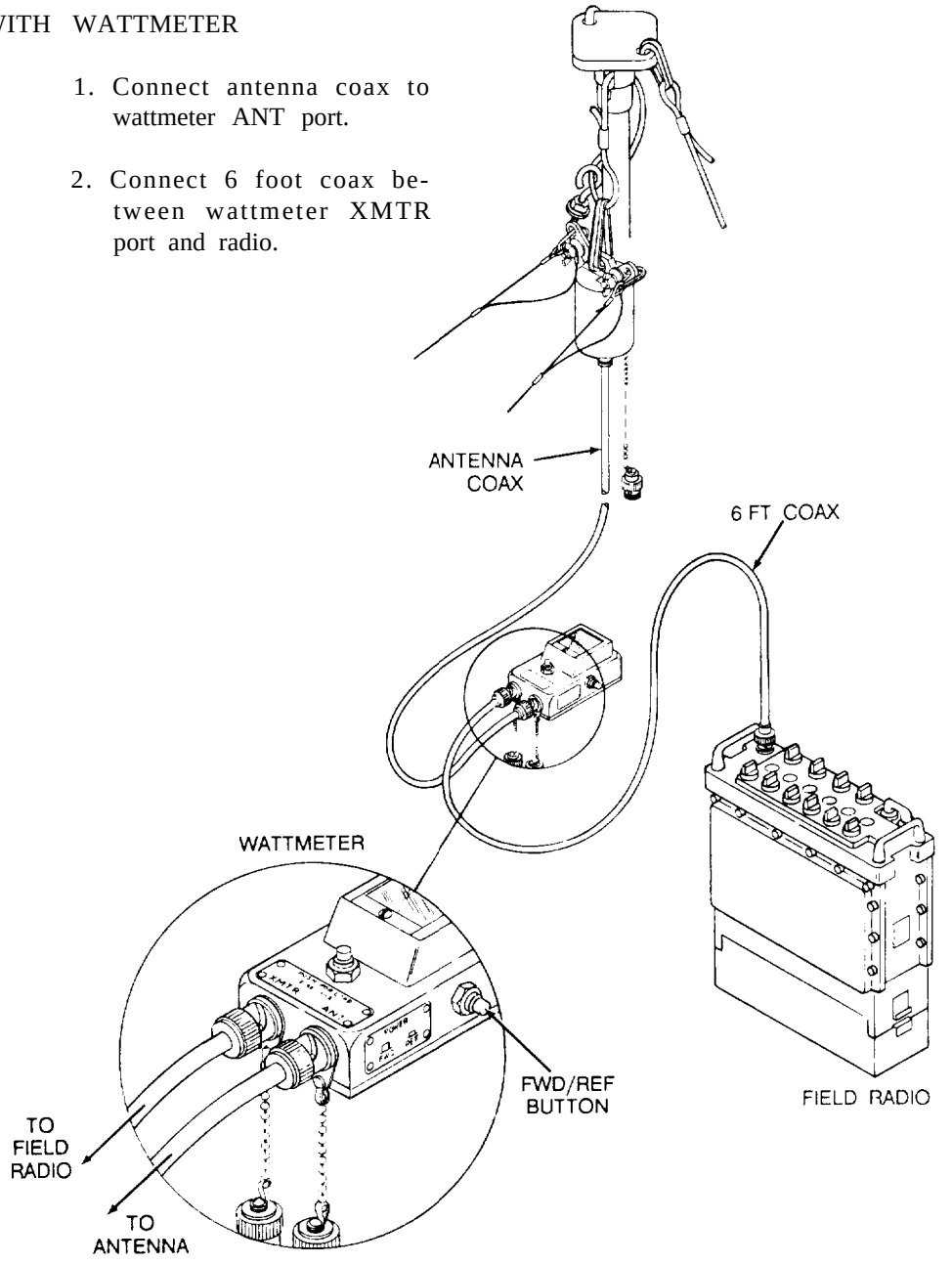
- A VSWR between 1.0:1 and 2.0:1 is desirable.
- A VSWR between 2.1:1 and 3.5:1 is generally acceptable.
- If the VSWR is above 3.5:1, antenna performance may be poor.

2-14. CHECKING VOLTAGE STANDING WAVE RATIO (VSWR).

The following procedures allow you to check the VSWR with either the wattmeter or return loss bridge. Both are included in the SORAK.

WITH WATTMETER

1. Connect antenna coax to wattmeter ANT port.
2. Connect 6 foot coax between wattmeter XMTR port and radio.



2-14. CHECKING VOLTAGE STANDING WAVE RATIO (VSWR) (CONT).

CAUTION

It is necessary to disconnect the antenna when operating wattmeter internal load. However, reconnect antenna or stop keying transmitter before releasing load button. Releasing load button while transmitter is keyed without antenna connected may damage equipment.

Wattmeter in LOAD position places all radiated power on wattmeter's internal load. Apply load for one minute, maximum. After LOAD check, allow 10 minutes before further use of internal load. Failure to follow this caution may cause severe damage to your wattmeter.

3. Turn radio on, adjust to operating frequency, and tune radio if necessary. Key transmitter (not to exceed 50 watts) and record forward (FWD) power reading on wattmeter.

4. Key transmitter (not to exceed 50 watts). Press and hold FWD/REF button down and record reflected (REF) power reading on wattmeter.

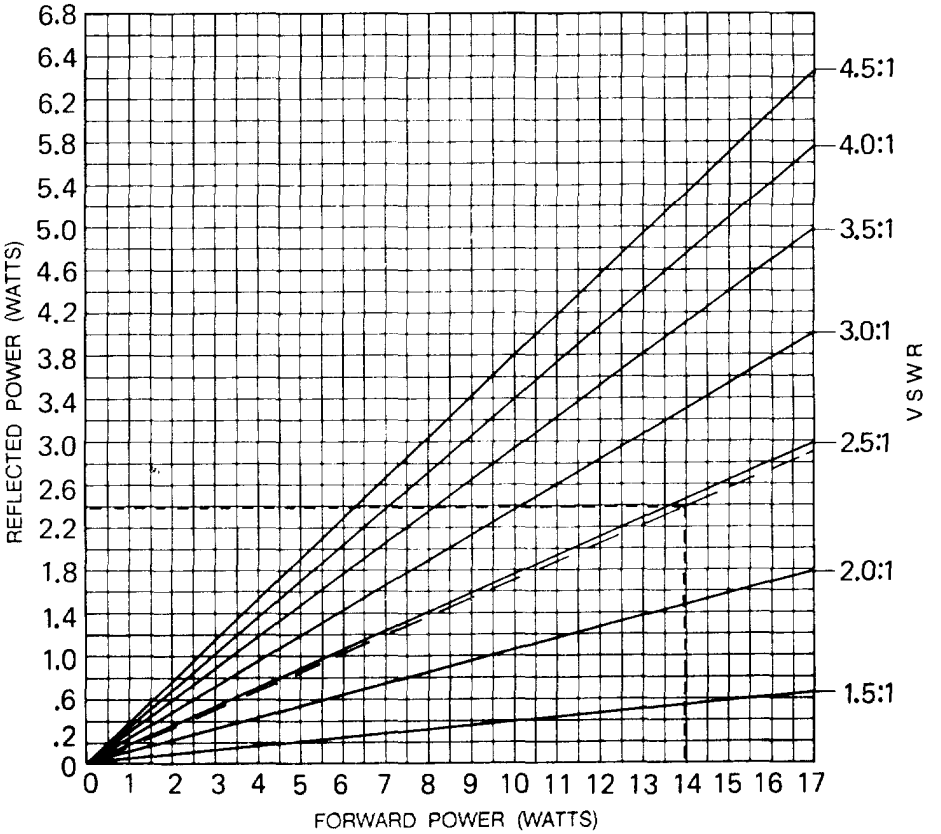
5. Select VSWR table that matches rated wattage output of your radio. Intersect Reflected Power and Forward Power values. Extend a line from origin (0,0) through intersect, to right-hand border of table. Read approximate VSWR from right hand column.

   EXAMPLE: (See dotted lines in VSWR table for 2, 5, and 15 watt radios.)

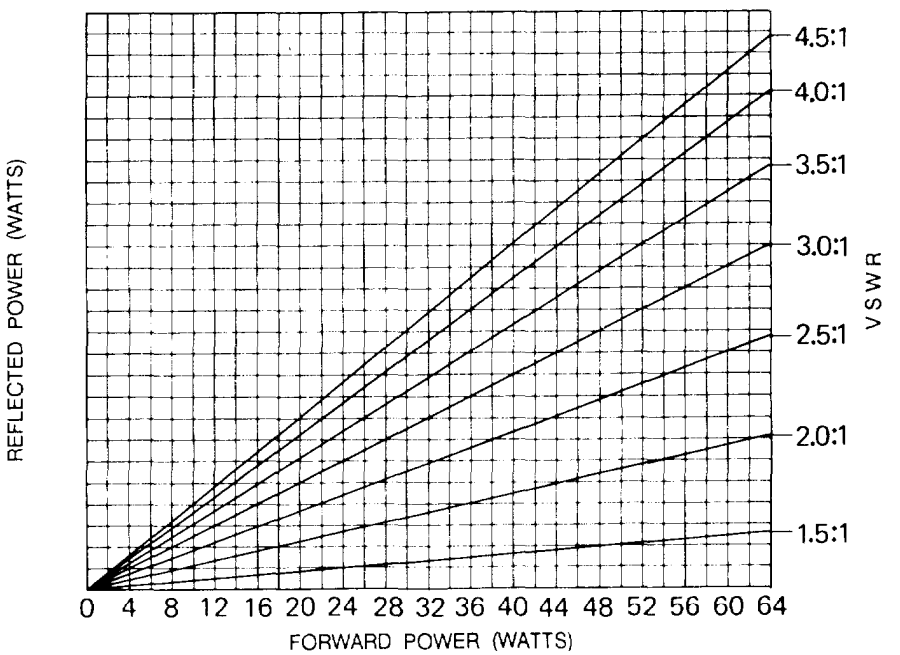
   With a forward power reading of 14 watts and a reflected power reading of 2.4 watts, the line from the origin, through the intersect, to the right column indicates a VSWR of just under 2.5:1.

2-14. CHECKING VOLTAGE STANDING WAVE RATIO (VSWR) (CONT).

VSWR TABLE FOR 2, 5, AND 15 WATT RADIOS



VSWR TABLE FOR 20, 30, AND 50 WATT RADIOS

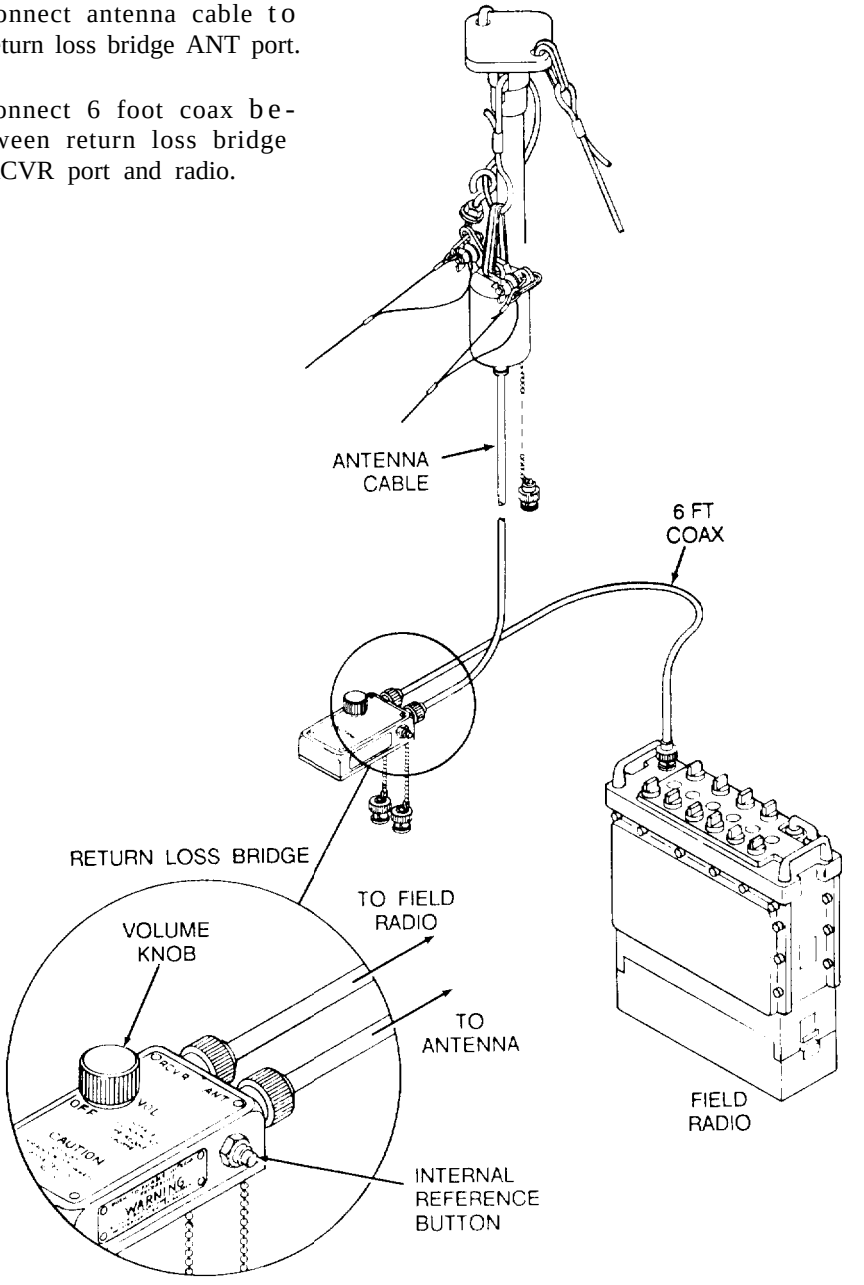


2-14. CHECKING VOLTAGE STANDING WAVE RATIO (VSWR) (CONT).

WITH RETURN LOSS BRIDGE (RLB)

1. Connect antenna cable to return loss bridge ANT port.

2. Connect 6 foot coax between return loss bridge RCVR port and radio.



2-14. CHECKING VOLTAGE STANDING WAVE RATIO (VSWR) (CONT).

CAUTION

Do not transmit into RLB. Transmitting signal to RLB will cause severe damage to the unit.

3. Turn RLB VOL knob clockwise until only internal radio noise is audible through headset. Then, turn VOL knob counterclockwise until steady tone becomes audible.

4. Press and release internal reference button several times and listen for a change in tone volume.

   - If tone volume decreases with internal reference button pressed, antenna performance is good.
   - If tone is same or slightly louder with button pressed, antenna performance is acceptable.
   - If tone gets louder, antenna performance is poor.

CHAPTER 3
OPERATOR MAINTENANCE INSTRUCTIONS

3-1. OPERATOR MAINTENANCE.

All maintenance work for SORAK is done by organizational level personnel. There is no operator maintenance for the SORAK.

CHAPTER 4
ORGANIZATIONAL MAINTENANCE

Section I. REPAIR PARTS, SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

4-1. COMMON TOOLS AND EQUIPMENT.

Refer to your unit's Modified Table of Organization and Equipment (MTOE) for authorized common tools and equipment.

4-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT.

All tools and support equipment required are in the SORAK kit.

4-3. REPAIR PARTS.

Repair parts are listed and illustrated in TM 11-5985–391–20P.

Section II. SERVICE UPON RECEIPT

4-4. UNPACKING SORAK COMPONENTS.

On initial receipt or return of SORAK from field, refer to illustrations in paragraph 4-21 and unpack all items from mast bag and/or deployment bag. Check unpacked components against Components of End Item and Basic Issue Items lists in Appendix C to verify that all components of the SORAK are on hand. If any components of the SORAK are missing, replace them at this time.

4-5. CHECKING SORAK COMPONENTS.

Inspect general condition and, if necessary, clean or replace SORAK components in accordance with the Preventive Maintenance Checks and Services (PMCS) in Section III. Record the results of the PMCS on DA Form 2404, Equipment Inspection and Maintenance Worksheet.

4-6. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT.

Perform the following preliminary tests to qualify electrical components of the SORAK for further inspection and/or return to service.

The general test procedures below are used to check the performance of the electrical components of the SORAK, including the wattmeter and return loss bridge. The procedures are designed to help you isolate a faulty SORAK component through a process of elimination. The test will also help you detect a faulty field radio, a required part of the test setup.

No adjustments of the SORAK components are required and no special tools are required.

The following tests should be performed only after the radio has been proven operational by test. Refer to your radio's technical manual for test procedures.

CAUTION

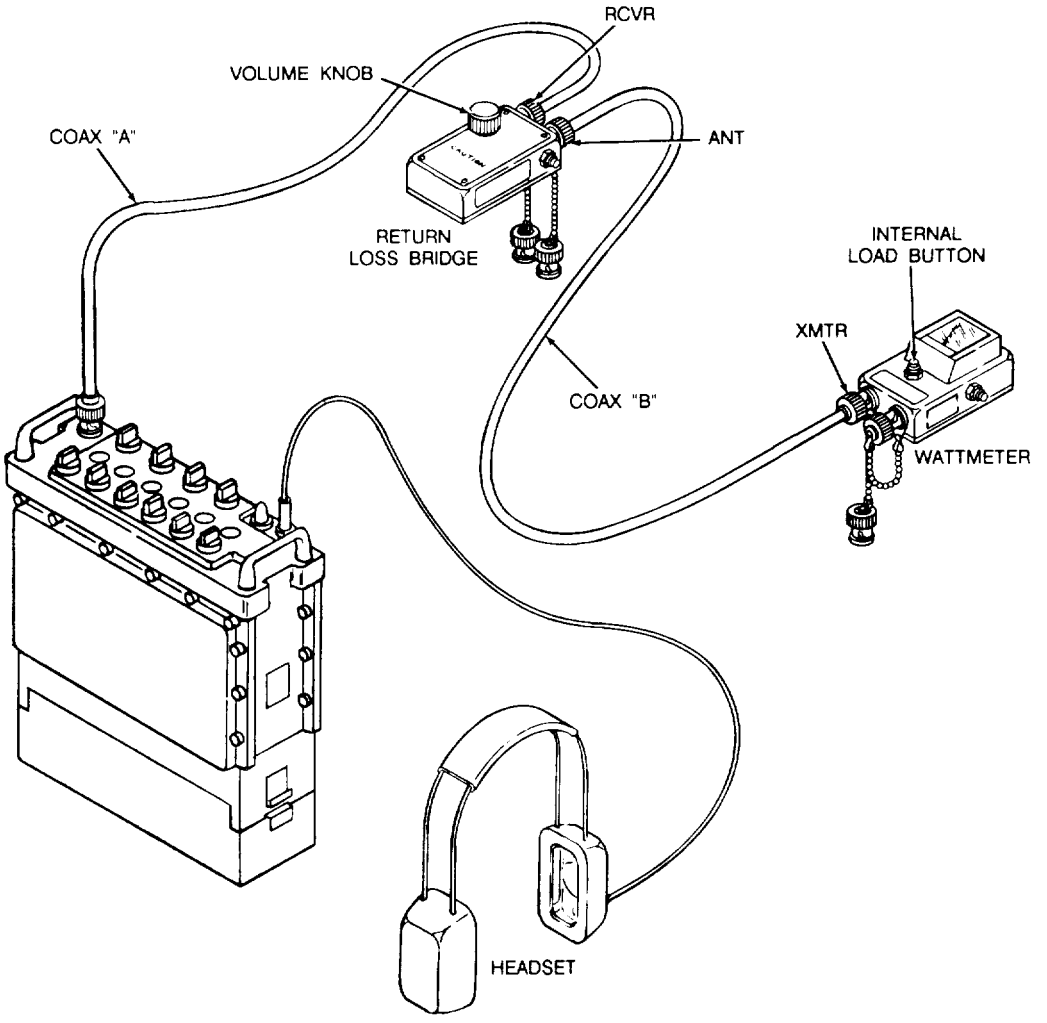
Coax cables used in transmit-mode tests must be proven serviceable by test. Use of faulty coax cables in transmit-mode tests may cause serious damage to the transmitter.

4-6. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT (CONT).

PRELIMINARY COAX TEST

1. Turn radio off. Connect 6 foot SORAK coax (coax “A”) from ANT input of manpack radio to RCVR input of return loss bridge (RLB).

2. Connect 6 foot SORAK coax (coax “B”) from ANT output of return loss bridge to XMTR input of wattmeter.



4-6. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT (CONT).

Do not transmit into the return loss bridge (RLB). Transmitting into the return loss bridge will cause permanent damage to the unit.

3. Turn squelch off at radio. Put the radio in the receive mode. Hookup headset to radio.

4. Turn RLB volume (VOL) knob clockwise to ON position and listen for a steady tone from the headset.

   Ž If steady tone is heard, proceed to step 5.

   Ž If no tone is heard, turn RLB off, replace coax "A", and recheck for tone.

   Ž If no tone is heard with replacement coax, RLB may have low battery, be defective, or second coax may be faulty. Replace battery or substitute RLB or coax as needed to achieve steady test tone.

5. Push wattmeter internal load button. Steady tone should disappear.

   Ž If the tone disappears when the internal load button is pushed, the coax cables in the test setup should be rated in good working order.

   Ž If the steady tone is still heard when the internal load button is pushed, coax "B' may be faulty. Replace coax "B" and repeat step 5.

   Ž If replacing coax "B' does not change test result, then replacement coax or wattmeter internal load may be faulty. Replace coax "B" or wattmeter as needed to achieve proper test result.

TRANSMIT TEST SETUP

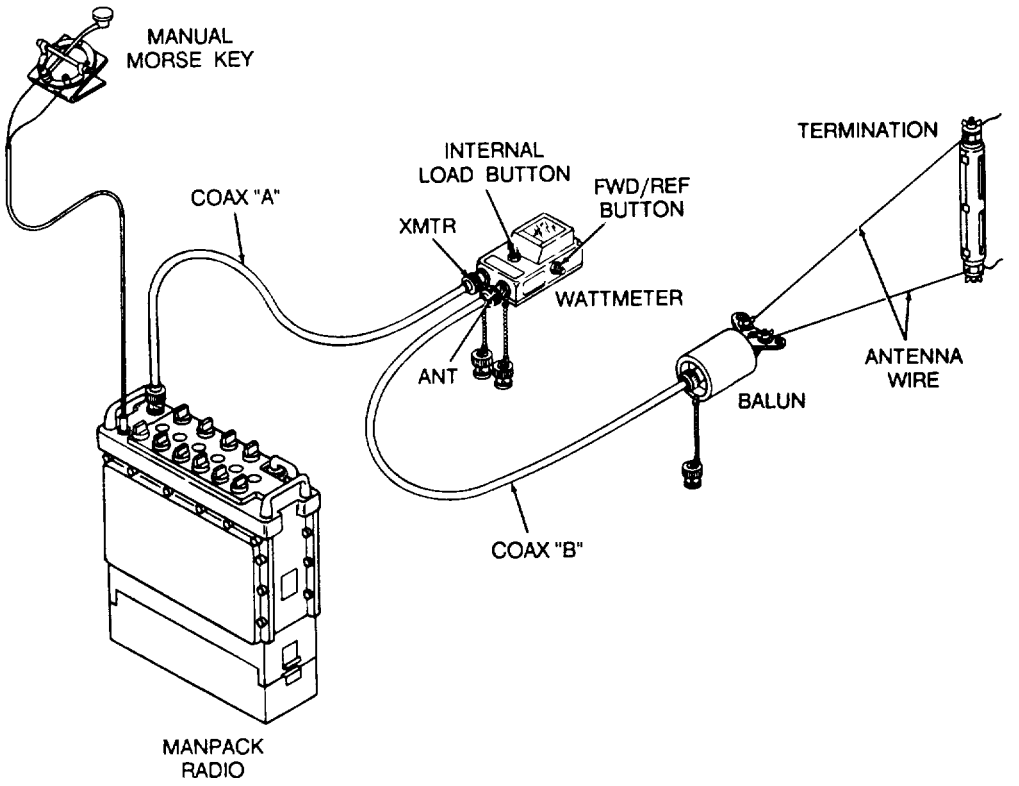
CAUTION

Coax cables used in transmit-mode tests must be proven serviceable by test. Use of faulty coax cables in transmit-mode tests may cause serious damage to the transmitter.

1. Connect 6 foot SORAK coax (coax "A") from ANT input of manpack radio to XMTR input of wattmeter.

2. Connect 6 foot SORAK coax (coax "B") from ANT output of wattmeter to coax connector of balun.

4-6. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT (CONT).



CAUTION

Do not allow wires to short circuit the balun terminals. Do not allow balun terminals, wires, or termination ends to contact a metal surface.

3. Use two 4 to 6 inch lengths of antenna wire to connect the termination across the balun terminals.

4. Connect a manual Morse key or handset to the radio.

4-6. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT (CONT).

TRANSMITTER/WATTMETER TEST PROCEDURE

WARNING

Burn Hazard. Keying transmitter heats up the wattmeter internal load resistor when the internal load button is pressed. Avoid keying transmitter for more than 30 seconds. Failure to follow this warning may result in a burn on contact with the wattmeter or damage to the equipment.

1. Adjust HF radios to 10 MHz or VHF radios to 30 MHz. Tune radio, if necessary.

CAUTION

Key transmitter only when load button is depressed. Be sure to release transmitter key before releasing load button. Keying transmitter with load button released can cause damage to the radio.

2. Disconnect coax “B’ from ANT output of wattmeter. Put radio in transmit mode.

3. Press and hold wattmeter internal LOAD button. Key the transmitter momentarily and read the wattmeter. Record the reading as forward (FWD/INT) power.

4. Press and hold both the FWD/REF and LOAD buttons. Key the transmitter momentarily and read the wattmeter. Record the reading as reflected (REF/INT) power.

5. Isolate equipment faults or continue testing per the instructions that apply to your radio.

   For radios with rated output power exceeding 10 watts:

   Ž If forward (FWD/INT) power exceeds 80% of the radio’s rated output and the reflected (REF/INT) power is less than 20% of the forward power, the radio and wattmeter can be rated operational; proceed to antenna components test procedure.

4-6. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT (CONT).

- If forward (FWD/INT) power is less than 80% of the radio's rated output, retune the radio and repeat steps 1 and 2. If the same result occurs, replace coax "A" and repeat steps 1 and 2 again. If the result is again the same, the wattmeter and/or radio maybe faulty.

- If the reflected (REF/INT) power exceeds 20% of the forward power, the wattmeter internal load circuit may be faulty; replace wattmeter and repeat test.

For radios with rated output power less than 10 watts:

- If forward (FWD/INT) power exceeds 60% of the radio's rated output and the reflected (REF/INT) power is less than 20% of the forward power, the radio and wattmeter can be rated operational; proceed to antenna components test procedure.

- If forward (FWD/INT) power is less than 60% of the radio's rated output, retune the radio and repeat steps 1 and 2. If the same result occurs, replace coax "A" and repeat steps 1 and 2 again. If the result is again the same, the wattmeter and/or radio may be faulty.

- If the reflected (REF/INT) power exceeds 20% of the forward power, the wattmeter internal load circuit may be faulty; replace wattmeter and repeat test.

6. Reconnect coax "B" to ANT output of wattmeter.

ANTENNA COMPONENTS TEST PROCEDURE

WARNING

Burn Hazard. Keying transmitter heats up the termination. Avoid direct contact with termination during or after keying transmitter. Failure to follow this warning may result in minor burn on contact.

4-6. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT (CONT).

CAUTION

Coax cables used in transmit-mode tests must be proven serviceable by test. Use of faulty coax cables in transmit-mode tests may cause serious damage to the transmitter.

NOTE

The transmitter and wattmeter should be rated operational by test before you start the following test procedure.

1. Tune the radio and apply power by keying the transmitter momentarily.

2. With the transmitter keyed, read the wattmeter. Record the reading as forward (FWD) power.

CAUTION

High reflected power can damage the radio. Failure to halt keying transmitter when a high reflected power is indicated may result in serious damage to the radio.

3. Press and hold the wattmeter FWD/REF button. Key the transmitter momentarily and read the wattmeter. Record the reading as reflected (REF) power.

4. Isolate equipment faults or continue testing per instructions as follows:

Ž If reflected power does not exceed 20% of forward power, the components of the test setup can be rated operational; discontinue testing.

4-6. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT (CONT).

- Replace coax "B" and repeat steps 1 through 3. If fault condition is corrected, original coax should be rated faulty. If fault condition persists, continue.
- Replace termination in test setup with 2nd SORAK termination and repeat steps 1 through 3. If fault condition is corrected, 1st termination should be rated faulty. If fault condition persists, continue.
- Replace balun if an alternate is available. If fault condition is corrected, original balun should be rated faulty. If fault condition persists, both terminations should be considered faulty; replace terminations.

RETURN LOSS BRIDGE TEST PROCEDURE

NOTE

The following test will only be valid if all components in previous test setup are proven good.

1. Disconnect the wattmeter from the previous test setup. Connect coax "A" from ANT input of manpack radio to RCVR input of RLB.

CAUTION

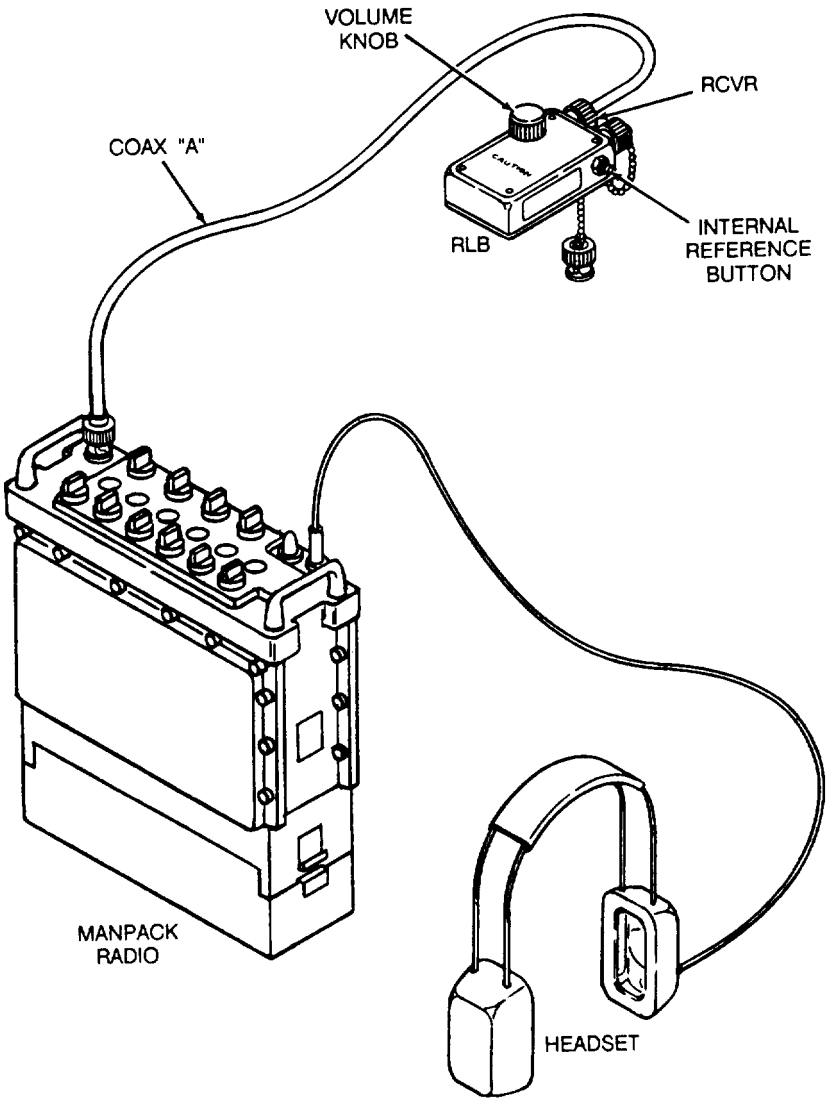
Do not transmit into the RLB. Transmitting into the RLB will cause permanent damage to the unit.

2. Hook up headset to radio. Turn squelch off. Put the radio in the receive mode.

3. Turn RLB volume (VOL) knob fully clockwise to minimum volume level.

4. Put headset on and adjust radio volume until internal background noise can be heard.

4-6. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT (CONT).



5. Slowly turn RLB volume knob counterclockwise until a steady tone becomes clearly audible. The internal receiver noise should still be audible in the background.

6. Press and hold the internal reference button for one second; then release it for one second. Listen for a change in tone when the button is pressed and released.

4-6. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT (CONT).

7. Repeat pressing and releasing button as needed to identify the tone change. Assess operating condition of RLB as follows:

- If the tone volume increases when the internal reference button is pressed, the RLB should be rated in good working order.

- If no change in tone volume is noticeable when the internal reference button is pressed, the RLB should be rated unfit for service.

- If the tone volume is low or zero when the internal reference button is pressed, replace the 9 volt battery and repeat test. If a new battery has no effect, try tuning the radio to a different frequency. If retuning has no effect, the RLB unit should be considered unfit for service.

Section III. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

4-7. INTRODUCTION.

The PMCS table lists the checks and services to be performed at organizational level. PMCS items are listed in the order they should be performed, regardless of the interval.

Refer to Table 4-1 for maintenance checks and services to be performed at the organizational level.

4-8. EXPLANATION OF COLUMNS.

a. Item No. Column. An item number is assigned to each procedure. This column shall be used as a source of item numbers for the TM Number Column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, when recording results of PMCS.

b. Interval Column. Entries in this column indicate how often the PMCS item should be performed. A listing above the table gives you the meaning of each entry used in the interval column.

c. Item to be Inspected/Procedure Column. This column lists the assemblies and components to be checked and/or serviced. Components that are part of a major assembly are grouped together. Accessory items are listed separately. The common name of the assembly or component is used so you can identify the item easier.

This column also describes the check and/or service procedures to be performed. When part replacement or repair is required, the maintenance procedure required is given by reference.

Table 4-1. Preventive Maintenance Checks and Services
B - Before mission D - During mission A - After mission

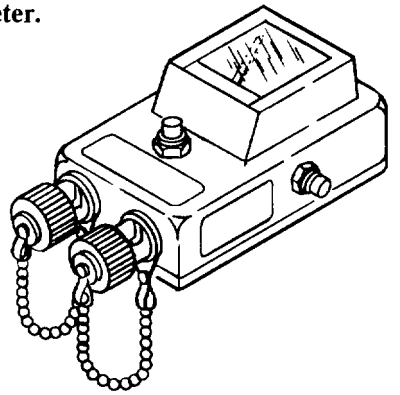
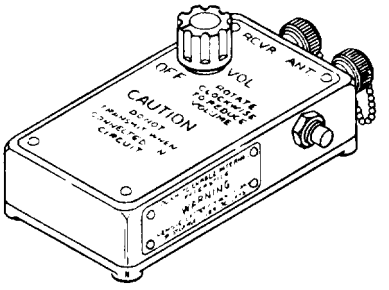
ITEM NO.	INTERVAL B	INTERVAL D	INTERVAL A	ITEM TO BE INSPECTED PROCEDURE
				Wattmeter. 
1			X	Inspect housing and connectors for obvious signs of damage or corrosion. Replace wattmeter if visibly damaged.
				Return Loss Bridge (RLB). 
2			X	Inspect housing coax connectors and battery connections for obvious signs of damage or corrosion. Replace RLB unit if housing is damaged.

Table 4-1. Preventive Maintenance Checks and Services (CONT)
B - Before mission D - During mission A - After mission

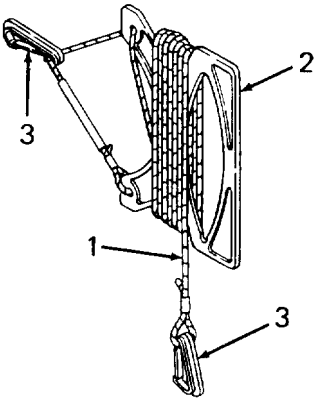
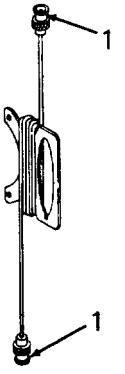
ITEM NO.	INTERVAL B	INTERVAL D	INTERVAL A	ITEM TO BE INSPECTED PROCEDURE
				Guy Rope Assemblies. 
3		X		Check rope (1) for cuts or fraying. To repair, cut out damaged rope and tie loose ends in square knot.
4			X	Inspect for cuts, abrasions, or knots in rope (l). Check for cracked or broken rope spool (2) and snaphooks (3). Replace damaged parts.
				Transmission Lines (Coax). 
5		X	X	Check for loose, dirty, corroded, or otherwise damaged coax connectors (l). Replace coax if damaged.

Table 4-1. Preventive Maintenance Checks and Services (CONT)
B - Before mission D - During mission A - After mission

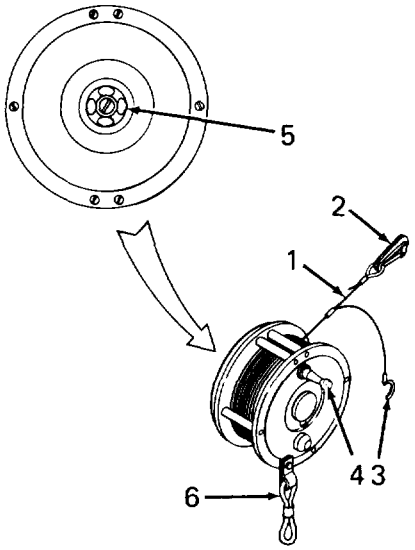
ITEM NO.	INTERVAL B	INTERVAL D	INTERVAL A	ITEM TO BE INSPECTED PROCEDURE
				Antenna Wire/Reel Assemblies.
				
6		X		Inspect full length of antenna wires (1) for breaks, fraying, or cuts. To repair, cut out any defective wire and tie loose ends with a square knot.
7			X	Inspect full length of antenna wires (1) for breaks, fraying, cuts, or knots. Check for broken or missing snaphooks (2) and/or antenna terminal leads (3). Check operation of wire reel cranks (4) and tension (drag), adjust knob (5). Check that locking loop (6) is intact. Replace missing or damaged parts.

Table 4-1. Preventive Maintenance Checks and Services (CONT)
B - Before mission D - During mission A - After mission

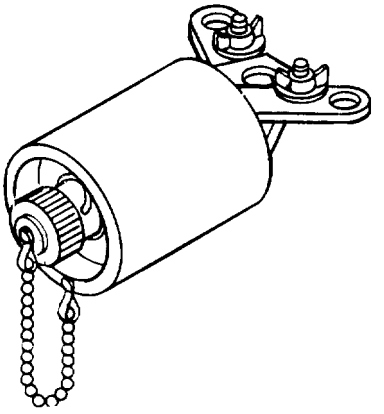
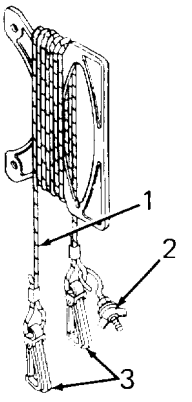
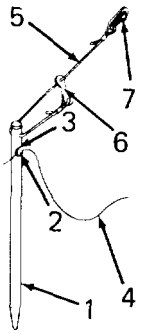
ITEM NO.	INTERVAL B	INTERVAL D	INTERVAL A	ITEM TO BE INSPECTED PROCEDURE
				Balun. 
8			X	Check for corrosion or damaged balun. Replace balun if damaged.
				Halyard.
9		X		Check rope (1) for cuts or fraying. Repair by cutting out damaged rope and tying loose ends with square knot.
10			X	Inspect for cuts, abrasions, or knots in rope (l). Check for smooth operation of wing nut on shorting stud (2). Check for cracked, broken, or missing snaphooks (3). Replace halyard if components are missing or damaged. 

Table 4-1. Preventive Maintenance Checks and Services (CONT)
B - Before mission D - During mission A - After mission

ITEM NO.	INTERVAL B			ITEM TO BE INSPECTED PROCEDURE
				Anchor/Ground Rod Assemblies.
11				Inspect anchor/ground rod (l), screw (2), flat washer (3), and ground wire (4) for corrosion and/or damage. Check that each anchor rope assembly (5) is equipped with serviceable tensioning block (6) and snaphook (7). Replace damaged or missing items. 

Section IV. TROUBLESHOOTING

4-9. GENERAL.

NOTE

In many cases, the only symptoms of a deployed antenna system malfunction are high VSWR readings and/or prolonged failure to communicate. Communication failures also can result from radio failures, improper frequency selection, improper antenna configuration, or improper antenna positioning. Natural phenomena such as solar flares and geomagnetic storms also may degrade communications at high frequency. The troubleshooting section in this manual addresses only high VSWR readings and indications of faulty VSWR measuring devices.

Look through the symptom index for symptoms found during operation or maintenance of the SORAK. The index refers you to the associated malfunctions listed in Table 4-2, Troubleshooting. Refer to paragraph 4-10 for use of the troubleshooting table.

SYMPTOM INDEX

4-10. INTRODUCTION TO TROUBLESHOOTING.

The troubleshooting table lists the common malfunctions that you may find during the operation or maintenance of the SORAK or its components. You should perform the tests/inspections and corrective actions in the order listed.

This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify your supervisor.

Table 4-2. Troubleshooting

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

1. LOW FORWARD POWER READING ON WATTMETER

Step 1. Make sure that radio batteries are fully charged and that radio functions properly.

Step 2. Retune radio (if applicable) and recheck forward power reading.

Step 3. Check field radio for proper transmit power setting (low/high).

Adjust transmit power setting and recheck forward power reading.

Step 4. Check coax cable between radio and wattmeter for loose, dirty, damaged, or corroded connectors. Also check cable for damage.

Clean surface dirt and/or corrosion from cable and connectors. If damaged or if corrosion is not removable, replace coax per paragraph 4-16.

Step 5. Check for dirty or corroded coax connectors on radio.

Clean radio connectors if dirty or corroded.

Step 6. Check for faulty wattmeter operation per instructions in paragraph 4-6.

Replace faulty wattmeter per paragraph 4-12.

2. HIGH REFLECTED POWER READING ON WATTMETER

Step 1. Check coax cable between wattmeter and balun for loose, dirty, damaged, or corroded connectors. Also check cable for damage.

Clean surface dirt and/or corrosion from cable and connectors. If damaged or if corrosion is not removable, replace coax per paragraph 4-16.

Table 4-2. Troubleshooting (CONT)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

2. HIGH REFLECTED POWER READING ON WATTMETER (CONT)

Step 2. Check for corroded or loose connections between balun and antenna wires or ground rod wire. Also check for corroded contact surfaces on balun terminals.

Tighten loose connections to antenna wires and remove corrosion to expose clean, bare metal. Reconnect balun and recheck VSWR.

Step 3. Check for broken antenna wire.

Tie broken wire together with square knot.

Step 4. Check for loose connections at termination assembly and anchor/ground rod. Unhook ground wire at grounding rod and termination assembly and check all components for dirty or corroded contact surfaces.

Remove all dirt or corrosion to expose clean, bare metal. Reconnect ground wire and recheck VSWR.

Step 5. Check grounding rod area for poor grounding conditions (dry earth, ground rod not driven deep enough, etc.).

Moisten earth around anchor/ground rod and/or drive rod deeper to improve grounding. Recheck VSWR.

Step 6. If possible, check for faulty termination or balun transformer per instructions in paragraph 4-6.

Replace faulty termination or balun per paragraph 4-16.

3. HIGH VSWR INDICATION WITH RETURN LOSS BRIDGE

Step 1. Listen with headset for interference on communication frequency.

Change frequency by about 10 kHz. Continue changing frequency until interference-free channel is found. Recheck VSWR.

Table 4-2. Troubleshooting (CONT)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
3. HIGH VSWR INDICATION WITH RETURN LOSS BRIDGE (CONT)
Step 2. Check coax cable between return loss bridge and balun for loose, dirty, damaged, or corroded connectors. Also check coax cable for damage. Clean surface dirt and/or corrosion from cable and connectors. If damaged or if corrosion is not removable, replace coax per paragraph 4-16.
Step 3. Check for corroded or loose connections between balun and antenna wires or anchor/ground rod wire. Also check for corroded surfaces on balun terminals. Tighten connections and remove corrosion to bare metal. Reconnect and recheck VSWR.
Step 4. Check for broken antenna wire. Tie broken wire together with square knot.
Step 5. Check for loose connections at termination assembly and anchor/ground rod. Unhook ground wire at grounding rod and termination assembly and check all components for dirty or corroded contact surfaces. Remove all dirt or corrosion to expose clean, bare metal. Reconnect ground wire and recheck VSWR.
Step 6. Check anchor/ground rod area for poor grounding (dry earth, grounding rod not driven deep enough, etc.). Moisten earth around anchor/ground rod and/or drive rod deeper to improve grounding. Recheck VSWR.
Step 7. If possible, check for faulty termination or balun transformer per instructions in paragraph 4-6. Replace faulty termination or balun per paragraph 4-16.

Table 4-2. Troubleshooting (CONT)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

4. NO AUDIBLE TONE FROM RETURN LOSS BRIDGE

Step 1. Check RLB gain (VOL) adjust knob.

Turn VOL knob on and listen for audible tone.

Step 2. Check for proper test setup.

Make sure radio is connected to RCVR input on RLB. Also check that radio is in receive mode.

Step 3. Check coax cable between radio and RLB for loose, dirty, damaged, or corroded connectors. Also check coax cable for damage.

Clean surface dirt and/or corrosion from cable and connectors. If damaged or if corrosion is not removable, replace coax per paragraph 4-16.

Step 4. Replace 9 volt battery if replacement is available. Then repeat checks in steps 1 through 3.

Replace faulty RLB with working unit.

5. WEAK TONE FROM RETURN LOSS BRIDGE

Step 1. Check RLB gain (VOL) adjust knob.

Turn VOL knob on and listen for audible tone.

Step 2. Check coax cable between radio and RLB for loose, dirty, damaged, or corroded connectors. Also check coax cable for damage.

Clean surface dirt and/or corrosion from cable and connectors. If damaged or if corrosion is not removable, replace coax per paragraph 4-16.

Step 3. Replace 9 volt battery if replacement battery is available. Then repeat checks in steps 1 and 2.

Replace faulty RLB with working unit.

Section V. MAINTENANCE PROCEDURES

4-11. INTRODUCTION.

The following maintenance procedures are authorized at the organizational level in accordance with the Maintenance Allocation Chart in Appendix B of this manual.

4-12. ANTENNA GROUP OE-452/PRC (SORAK).

INSPECT

1. Inspect deployment bag, mast bag, and wattmeter to make sure they are fit for service.

2. Inspect, test, and, if necessary, repair all other antenna group components in accordance with instructions in paragraphs 4-13 through 4-19.

TEST

Test antenna transmission components and VSWR check devices according to the procedures in paragraph 4-6.

4-12. ANTENNA GROUP OE-452/PRC (SORAK) (CONT).

REPAIR

1. If visual inspection of deployment bag, wattmeter, or mast bag indicates that an item is not fit for service, replace it.

2. If wattmeter or antenna transmission components fail tests in paragraph 4-16, replace it.

4-13. ANTENNA SYSTEM TEST SET (RETURN LOSS BRIDGE).

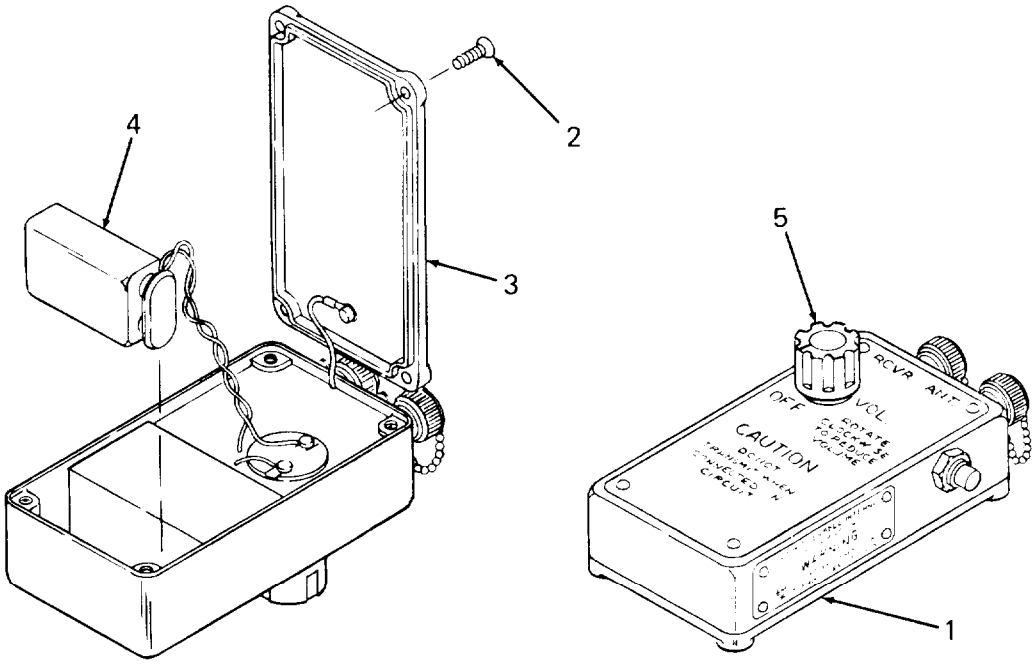
INSPECT

1. Inspect return loss bridge (1) for breakage, dents, corroded connectors, or other defects that could prevent its use.

2. Check that all four screws (2) are placed in battery compartment cover (3).

3. Open battery compartment and check for 9 volt battery (4). Check battery for corrosion and leakage.

4. Check that VOL knob (5) is in place and not broken.



4-13. ANTENNA SYSTEM TEST SET (RETURN LOSS BRIDGE) (CONT).

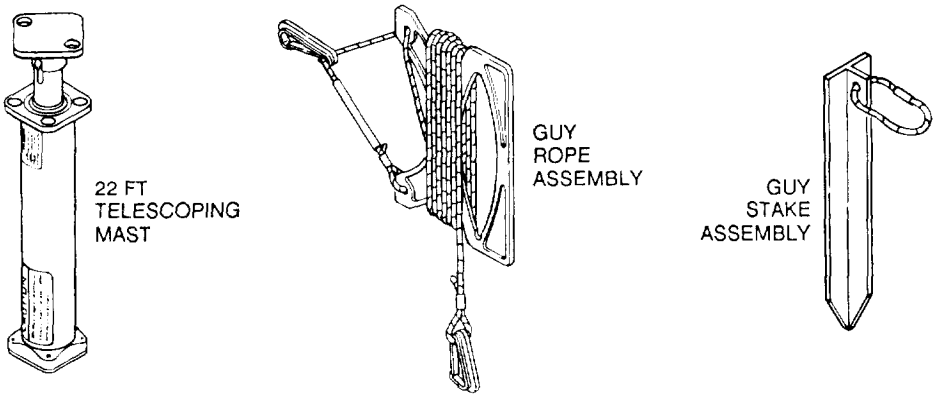
REPAIR

1. If visual inspection of return loss bridge indicates unit is not fit for service, replace it.
2. If any screws (2) in battery compartment cover (3) are missing, replace them.
3. If 9 volt battery (4) is missing or defective, replace it.
4. If VOL knob (5) is broken or missing, replace it.

4-14. 22 FOOT MAST/GUY ASSEMBLY.

INSPECT

1. Check that the kit includes a 22 foot telescoping mast, five 21 foot guy rope assemblies, three 32 foot guy rope assemblies, and five guy stake assemblies.

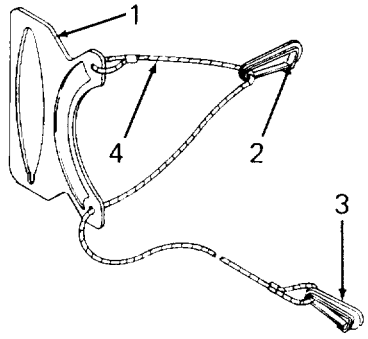


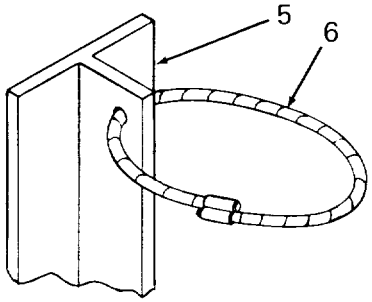
Check that each guy rope assembly is equipped with serviceable spool/tensioner (l), and snaphooks (2 and 3). Check each guy rope (4) for cuts or fraying.

Check general condition of each guy stake assembly to determine if stake (5) is serviceable. Check each rope loop (6) for cuts or fraying.

Inspect telescoping mast per paragraph 4-15.

4-14. 22 FOOT MAST/GUY ASSEMBLY (CONT).

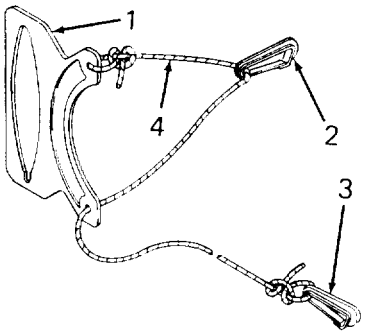


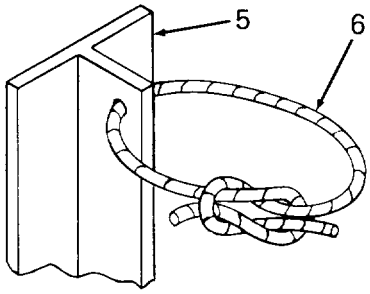


REPAIR

1. If spool/tensioner (1), snaphooks (2 or 3), or guy rope (4) is damaged or missing, cut end of guy rope, replace damaged component and retie assembly as shown.

2. If guy stake (5) is not serviceable, replace guy stake assembly. If rope loop (6) is damaged or missing, tie new loop of rope through guy stake as shown.



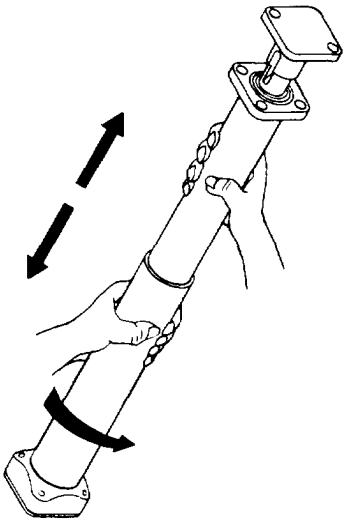


3. If telescoping mast is damaged, disassemble per procedures in paragraph 4-15 and survey extent of damage. If three or more tube sections are damaged, replace mast assembly.

4-15. 22 FOOT MAST ASSEMBLY.

INSPECT

1. Extend all sections of telescoping mast per instructions shown. Check for smooth extension of tube sections. Clean all dirt from mast tube surfaces.



A. Extend and hold upper section upward.

B. Pull down and twist lower section counterclockwise until stop. Push upper tube section down to lock.

C. Reverse twist to check locking action.

2. Verify that each inner tube section (1) operates smoothly and locks into position in mating tube section (2).

3. Check that mast tube sections are not chipped, gouged, broken, or split.

4. Check that guy ring (3) is secured in place by guy ring retainer (4). Check that top assembly (5) is in place. Check snaphook holes (6) in guy ring and top assembly are intact.

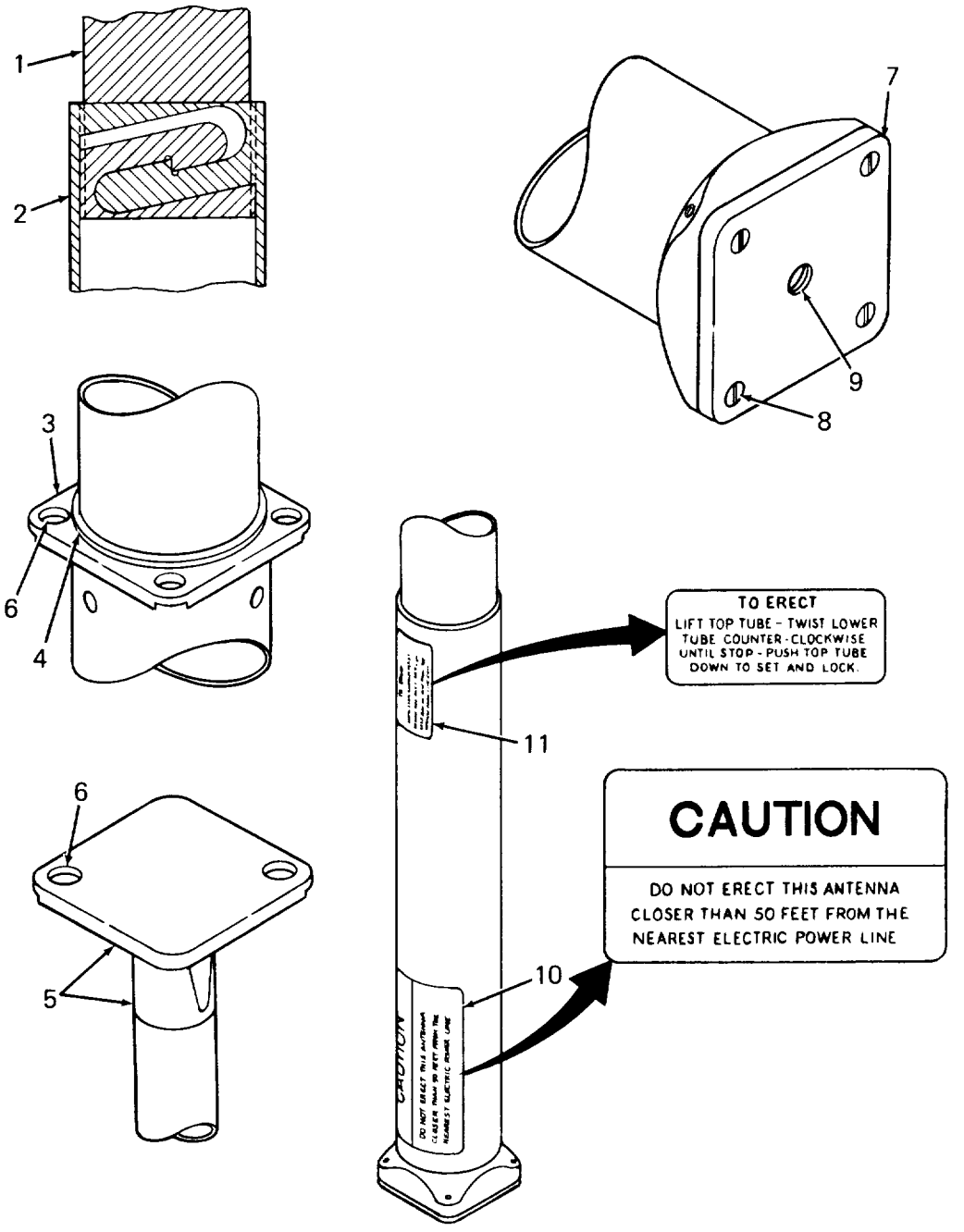
5. Check that base cover (7) is held in place by four flat head screws (8).

6. Check that drain hole (9) in base cover (7) is not clogged. Unclog drain hole, if necessary.

7. Check that caution label (10) and instruction label (11) are in place and legible.

8. Collapse mast assembly and check that assembly locks in place when fully collapsed.

4-15. 22 FOOT MAST ASSEMBLY (CONT).



4-15. 22 FOOT MAST ASSEMBLY (CONT).

REPAIR

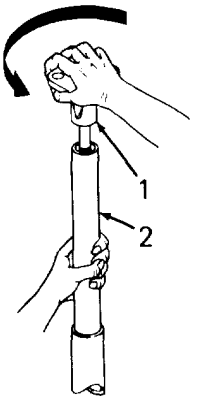
1. If three or more mast tube sections are unfit for service, replace mast assembly.

2. If less than three mast tube sections, top assembly, guy ring, base assembly, or locking mechanism is defective or missing, replace according to the procedure shown.

3. If caution label (12) or instruction label (13) is missing or not readable, replace it on a clean portion of outermost tube.

4. Replace any missing flat head screws (3).

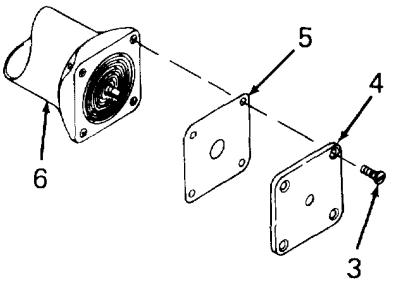
MAST DISASSEMBLY/ASSEMBLY:



A. Unscrew top assembly (1) from innermost tube section (2).

B. Collapse all sections of telescoping mast.

C. Remove screws (3). Remove base cover (4) and gasket (5) from outermost tube section (6).

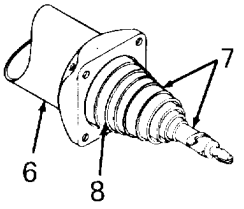


D. Pull out nested tube sections (7) from bottom of outermost tube section (6) until you reach guy ring tube section (8).

E. While lifting up on guy ring (9), use screwdriver to push the three guy ring retainer buttons (10) in, one at a time. Remove guy ring retainer (11) and guy ring (9).

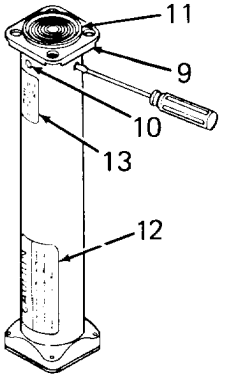
4-15. 22 FOOT MAST ASSEMBLY (CONT).

MAST DISASSEMBLY/ASSEMBLY (CONT)



F. Replace faulty tube section or attaching part. Refer to 22 foot mast tube section, Table 4-3, to identify tube sections.

G. Insert tube sections in reverse order of removal.



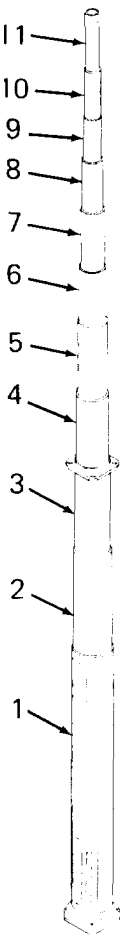
H. After inserting guy ring tube section (8), install guy ring (9) and lock in place with guy ring retainer (11). Make sure that retainer buttons (10) seat in locking holes of mast tube section. Insert remaining sections.

I. Install gasket (5), base cover (4), and secure with screws (3).

J. Screw top assembly (1) into innermost tube section (2) at top of mast.

Table 4-3.
22 Foot Mast Tube Sections

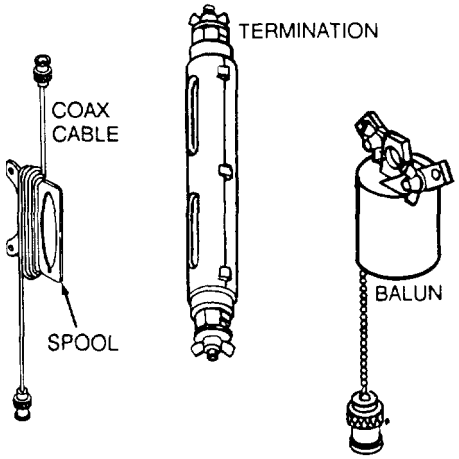
Item No.	Tube Section/ Description	Tube Diameter In. (cm)	Tube Length In. (cm)	Replacement Tube Part No.
1	Outermost section	3.83 (9.73)	26.89 (68.30)	A3158117
2	No. 2 section	3.53 (8.97)	26.95 (68.45)	A3158118-2
3	Guy ring section	3.23 (8.20)	27.30 (69.34)	A3158137
4	No. 4 section	2.92 (7.42)	27.42 (69.65)	A3158118-4
5	No. 5 section	2.62 (6.65)	27.42 (69.65)	A3158118-5
6	No. 6 section	2.32 (5.89)	27.42 (69.65)	A3158118-6
7	No. 7 section	2.02 (5.13)	27.42 (69.65)	A3158118-7
8	No. 8 section	1.72 (4.37)	27.42 (69.65)	A3158118-8
9	No. 9 section	1.41 (3.58)	25.09 (63.73)	A3158118-9
10	No. 10 section	1.11 (2.82)	25.09 (63.73)	A3158118-10
11	Innermost section	0.81 (2.06)	24.46 (62.13)	A3158119



4-16. ANTENNA ASSEMBLY.

INSPECT

1. Perform maintenance test procedure in paragraph 4-6 to check performance of coax cables, terminations, and balun.



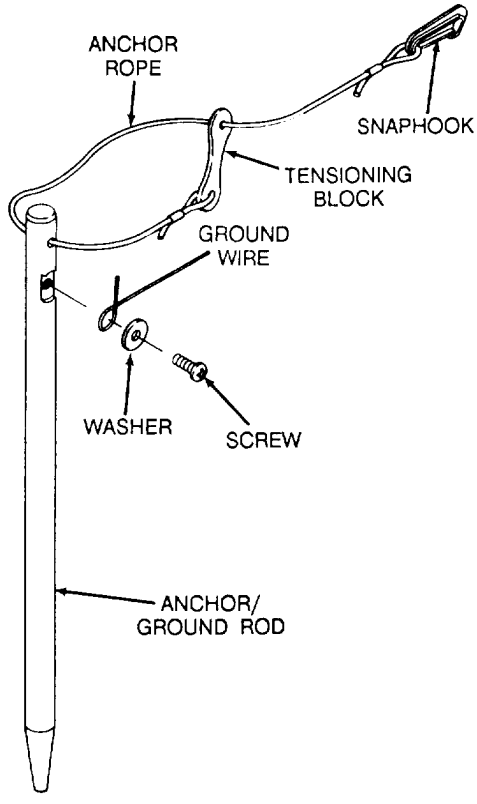
4-16. ANTENNA ASSEMBLY (CONT).

2. Check that 25 and 40 foot coax cables are equipped with a serviceable spool.

3. Check that coax adapter is on hand and in serviceable condition.

4. Check that all components of anchor/ground rod assemblies are on hand and in serviceable condition.

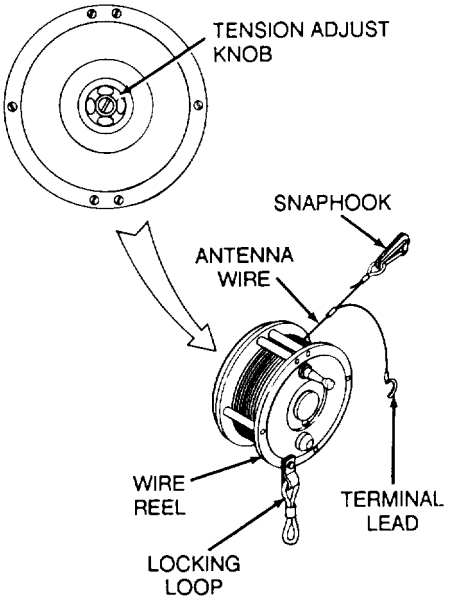
5. Check anchor/ground rod assemblies for visible corrosion.



4-16. ANTENNA ASSEMBLY (CONT).

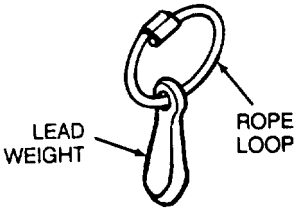
6. Inspect full length of antenna wires for breaks, fraying, cuts, or knots.

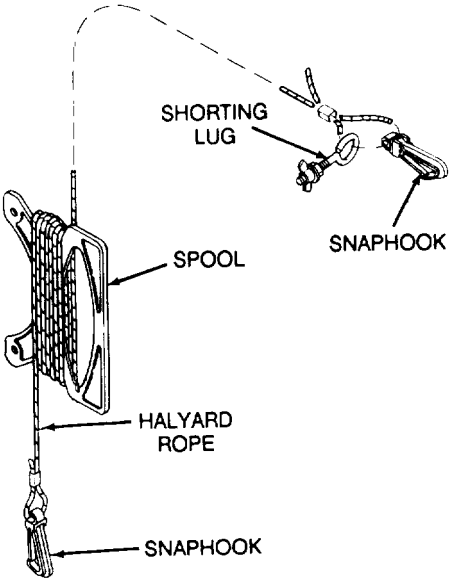
7. Reel in wire to check operation of reels. Tighten tension adjust knob and check for drag on antenna wire. Check that snaphooks, terminal leads, and locking loops are intact.



8. Check that halyard is equipped with a serviceable spool, shorting stud, and snap-hooks. Check halyard rope for cuts or fraying.

9. Check that lead weights are on hand and check rope loop for cuts or fraying.



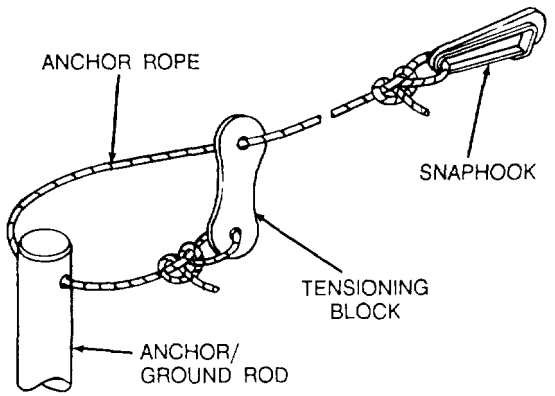


4-16. ANTENNA ASSEMBLY (CONT).

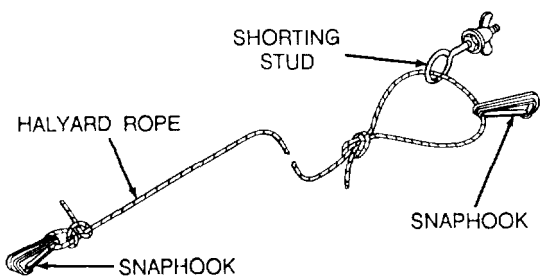
REPAIR

1. If a coax cable or halyard spool is missing or not serviceable, replace it.

2. If anchor rope, tensioning block, or snaphook is damaged or missing, install new component(s) and tie rope as shown.



3. If halyard rope, shorting stud, or snaphook is damaged or missing, install new component(s) and tie halyard rope as shown.



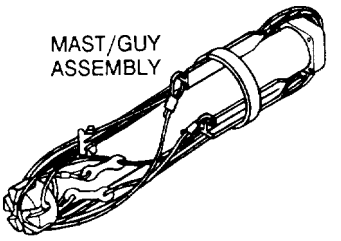
4. If lead weight rope loop is damaged or missing, replace with new rope and tie loose ends.

5. If any other component part of the antenna assembly is missing, faulty, or found not to be in a serviceable condition, replace it.

4-17. 6 FOOT MAST/GUY SYSTEM.

INSPECT

Check 6 foot mast/guy system for two mast guy assemblies.



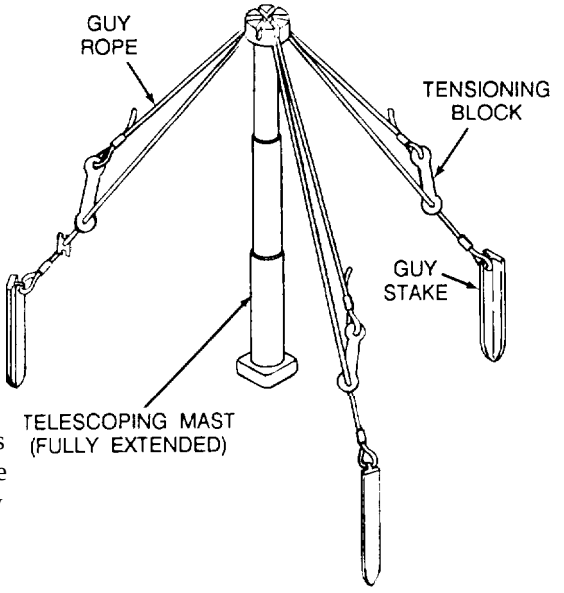
REPAIR

If mast/guy assembly is missing or unfit for service, replace it.

4-18. 6 FOOT MAST ASSEMBLY.

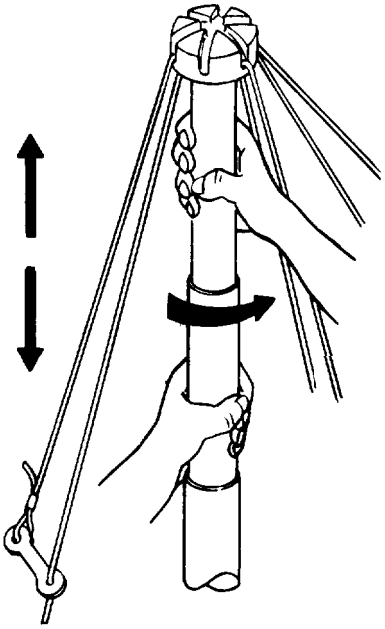
INSPECT

1. Unwrap guy ropes from mast/guy assembly.
2. Visually inspect that each mast/guy assembly equipped with three guy ropes.
3. Check that each guy rope is equipped with a serviceable tensioning block and guy stake.
4. Check each guy rope for cuts or fraying.



4-18. 6 FOOT MAST ASSEMBLY (CONT).

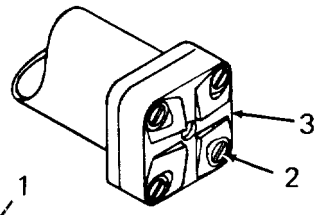
5. Extend telescoping mast per instructions shown. Check for smooth extension of tube sections. Clean all dirt from mast surfaces.

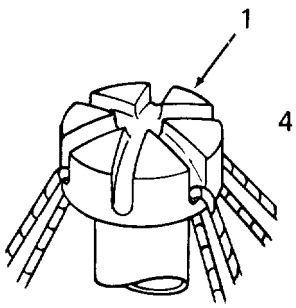


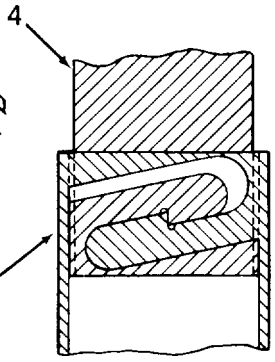
A. Extend and hold top section upward.

B. Pull down and twist lower section counterclockwise until it stops. Push upper tube down to lock.

C. Reverse twist to check locking action.





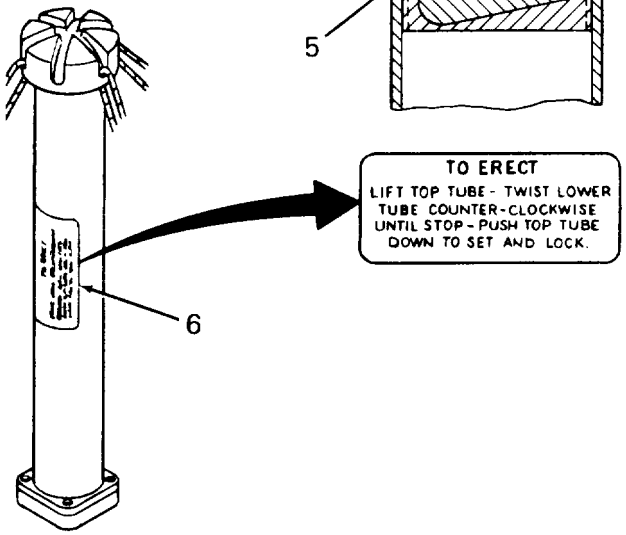


6. Check that top assembly (l), screws (2), and base cover (3) are in place and serviceable.

7. Verify that each tube section (4) operates smoothly and locks into position with mating tube section (5).

8. Check that mast tube sections are not chipped, gouged, broken, or split.

9. Check that instruction label (6) is in place and legible.

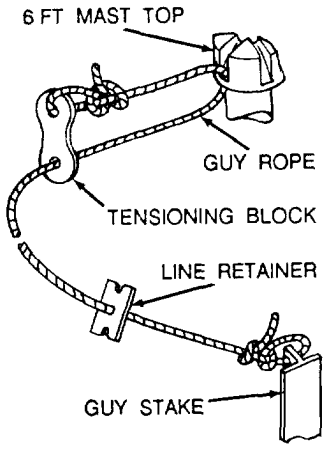


4-18. 6 FOOT MAST ASSEMBLY (CONT).

REPAIR

1. If a guy rope or its attaching parts are missing or are not in a serviceable condition, replace the guy rope assembly as shown.

REPLACING GUY ROPE ASSEMBLY:



A. Remove damaged guy rope assembly from mast.

B. Feed loose end of replacement guy rope through line retainer (if needed) and through hole in guy stake.

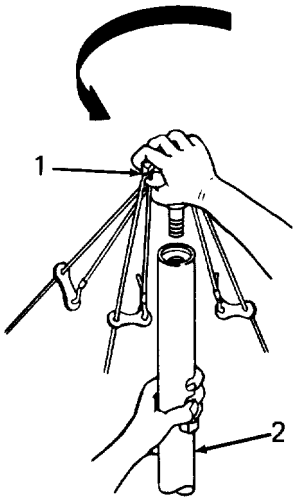
C. Feed opposite end of line back through open hole in tensioning block, through mast top, and tie to tensioning block as shown.

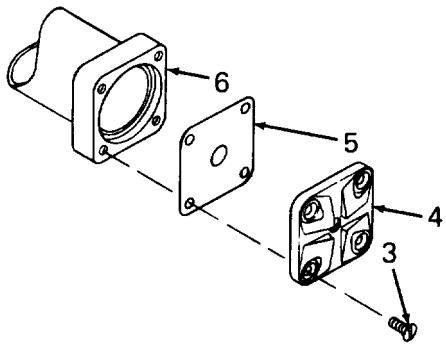
D. Tie knot at guy stake as shown.

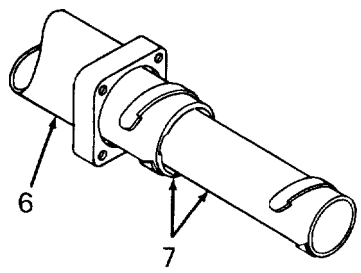
4-18. 6 FOOT MAST ASSEMBLY (CONT).

2. If a mast tube section or an attaching part is damaged or defective, replace the tube section or attaching part as shown.

MAST DISASSEMBLY/ASSEMBLY:







A. Unscrew top assembly (1) from innermost tube section (2).

B. Collapse all sections of telescoping mast.

c. Remove four screws (3) from base cover (4). Remove base cover (4) and gasket (5) from outermost tube section (6).

D. Pull out nested tube sections (7) from bottom of mast assembly until faulty tube is removed.

E. Replace faulty tube section(s) or attaching part(s). Refer to 6 foot mast tube section, Table 4-4, to identify tube sections.

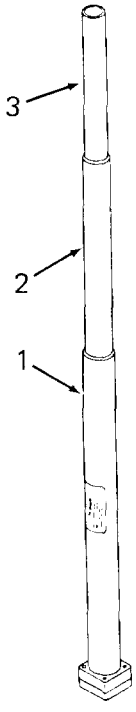
F. Insert tube sections in reverse order of removal.

G. Install gasket (5), base cover (4), and secure with screws (3).

H. Screw top assembly (1) into innermost tube section (2) at top of mast.

Table 4-4. 6-Foot Mast Tube Sections

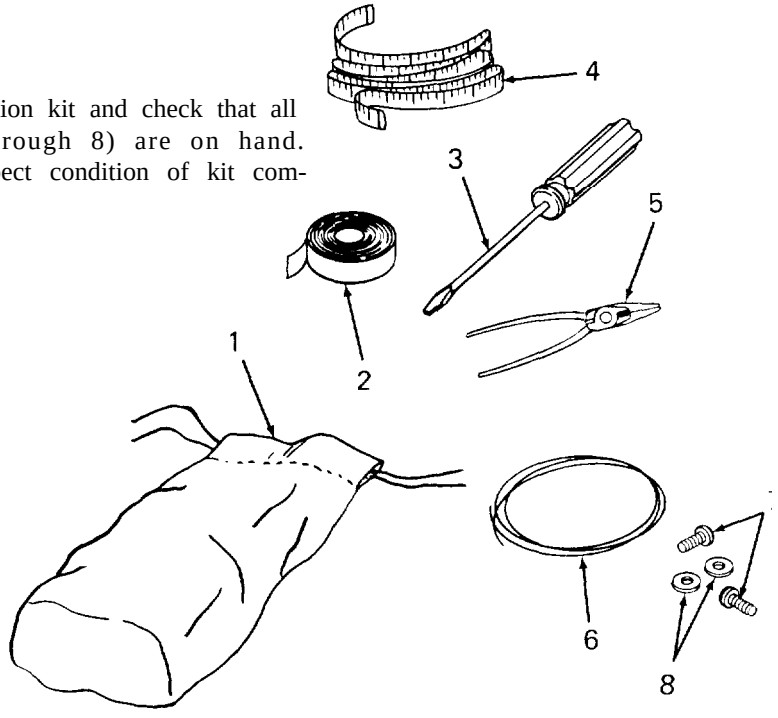
Item No.	Tube Section/ Description	Tube Diameter In. (cm)	Tube Length In. (cm)	Replacement Tube Part No.
1	Outermost section	1.72 (4.37)	25.54 (64.87)	A3158073
2	Middle section	1.41 (3.58)	25.60 (65.02)	A3158074
3	Innermost section	1.11 (2.82)	25.60 (65.02)	A3158076



4-19. INSTALLATION KIT.

INSPECT

Open installation kit and check that all items (1 through 8) are on hand. Visually inspect condition of kit components.



1. Installation Kit Bag
2. Utility Tape
3. Flat Head Screwdriver
4. Measuring Tape
5. Needlenose Pliers
6. Ground Wire (Spare)
7. Anchor/Ground Rod Screw (2 spares)
8. Flat Washer (2 spares)

REPAIR

Replace all items of installation kit that are missing or unfit for return to service.

Section VI. PREPARATION FOR STORAGE OR SHIPMENT

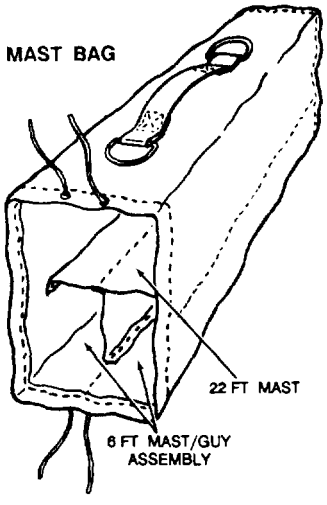
4-20. GENERAL.

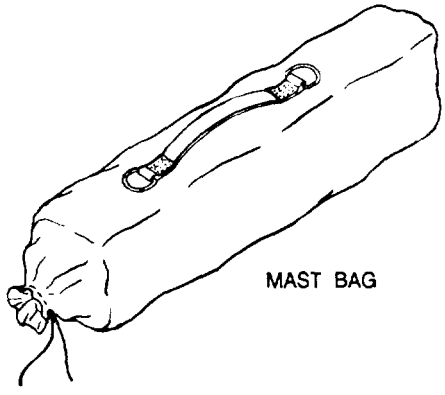
Approved packaging procedures for routine durations and conditions of SORAK storage or transport are provided in paragraph 4-21. Exceptional requirements for removal or storage of RLB battery included in the kit are provided in paragraphs 4-22 and 4-23. Additional requirements for transport preparations are provided in paragraphs 4-24 and 4-25.

4-21. PACKAGING FOR STORAGE OR SHIPMENT.

1. Make sure SORAK incomplete and components are clean and in working order.

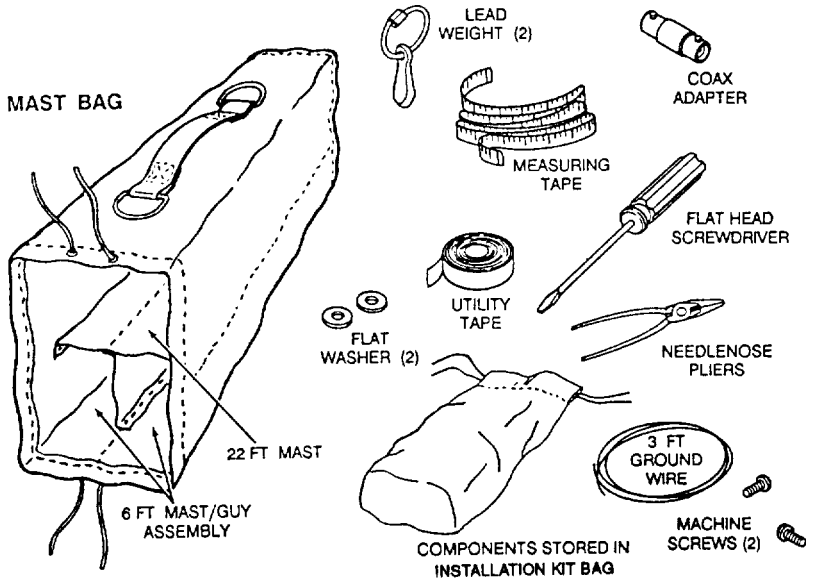
2. Pack the 6 foot mast/guy assemblies and 22 foot mast into the mast bag. Close with draw string and tie off.





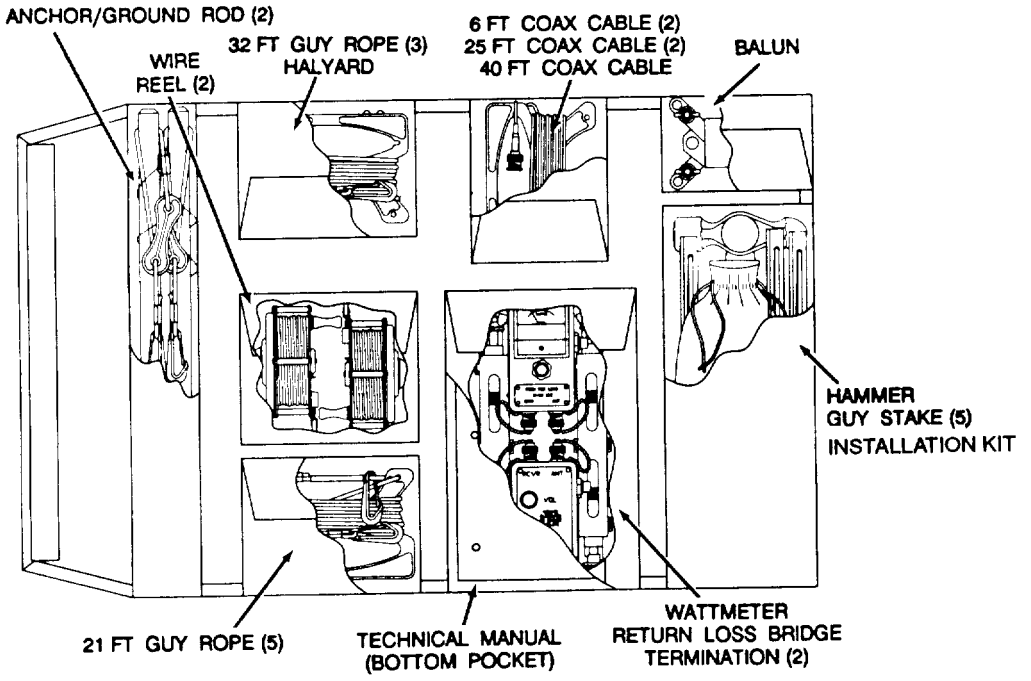
4-21. PACKAGING FOR STORAGE OR SHIPMENT (CONT).

3. Pack all small components shown in installation kit bag.



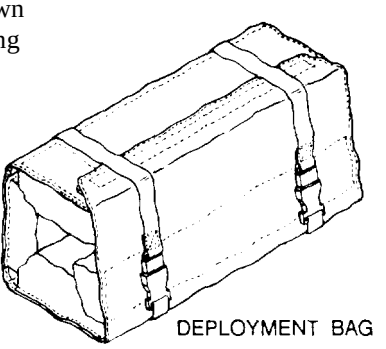
4. Pack remaining SORAK components in deployment bag as shown.

DEPLOYMENT BAG



4-21. PACKAGING FOR STORAGE OR SHIPMENT (CONT).

5. Roll up deployment bag as shown and secure with two retaining straps.



4-22. SHORT-TERM STORAGE PROCEDURES.

If SORAK kit is to be stored for less than 30 days, do not remove 9 volt battery from return loss bridge.

4-23. INTERMEDIATE STORAGE PROCEDURES.

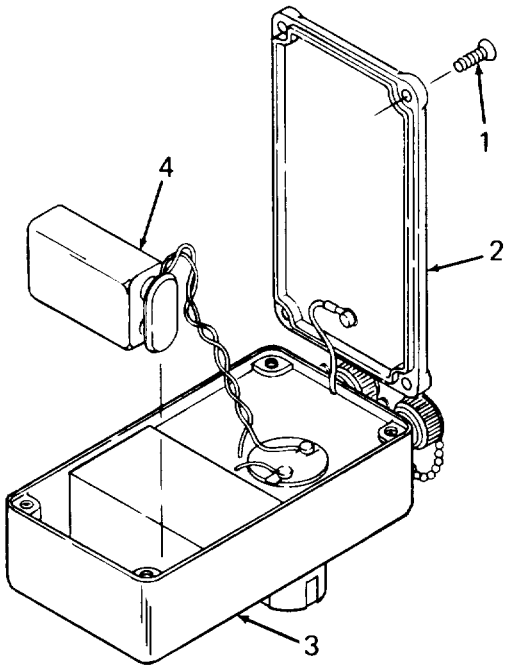
If SORAK is to be stored for more than 30 days, unscrew battery compartment cover of return loss bridge. Remove and discard 9 volt battery. Reinstall battery compartment cover and screws.

4-24. PREPARING THE SORAK FOR SHIPMENT BY GROUND.

Use best commercial packaging when preparing the packed SORAK kit for transport between facilities. The kit as packed per paragraph 4-21 is ready for ground transport to out stations.

4-25. PREPARING THE SORAK FOR DEPLOYMENT IN THE FIELD.

If SORAK is removed from intermediate storage for deployment in the field, open kit and install battery in RLB as shown.



A. Remove screws (1) from battery compartment cover (2). Lift cover from RLB unit (3).

B. Install new 9 volt battery (4) in RLB unit (3).

C. Reinstall cover (2) with screws (l).

APPENDIX A
REFERENCES

A-1. SCOPE.

This appendix lists all forms, field manuals, technical manuals and miscellaneous publications referenced in this manual.

A-2. FORMS.

Recommended Changes to Publications and Blank Forms. . . . . DA Form 2028
Recommended Changes to Equipment Publications . . . . . DA Form 2028-2
Equipment Inspection and Maintenance Worksheet. . . . . DA Form 2404
Transportation Discrepancy Report (TDR) . . . . SF 361
Report of Discrepancy (ROD) . . . . SF 364
Product Quality Deficiency Report.. . . . . .. SF 368

A-3. FIELD MANUALS.

First Aid for Soldiers . . . . FM 21-11

A-4. TECHNICAL MANUALS.

Operator's Manual: Radio Set, AN/PRC-70
(NSN 5820-01-062-8246) . . . . . TM 11-5820-553-10

Operator's and Organizational Maintenance Manual
(Including Repair Parts and Special Tools Lists):
Radio Sets, AN/PRC-74 and AN/PRC-74A (NSN 5820-00-944-8503) and
Power Supply PP-4514/PRC-74 (NSN 5820-00-942-0821). . . . . TM 11-5820-590-12

Operator's and Organizational Maintenance Manual
(Including Repair Parts and Special Tools Lists):
Radio Sets, AN/PRC-74B (5820-00-935-0030) and
AN/PRC-74C (5820-00-177-1641);
Power Supplies, PP-4514/PRC-74 (5820-00-942-0821) and
PP-4514A/PRC-74 (5820-00-177-4581);
Battery Boxes, CY-6121/PRC-74 (5820-00-908-3127), CY-6314/PRC-74
(5820-00-035-0382), and CY-6341A/PRC-74
(5820-00-156-3934) . . . . . TM 11-5820-590-l2-l

Operator's and Organizational Maintenance Manual:
Radio Set, AN/PRC-77 (NSN 5820-00-930-3724)
(Including Receiver-Transmitter, Radio,
RT-841/PRC-77) (5820-00-930-3725) . . . . . TM 11-5820-667-12

A-4. TECHNICAL MANUALS (CONT).

Operator's Manual: Radio Sets,
AN/PRC-l19 (5820-01-151-9915),
AN/VRC-87 (5820-01-151-9916),
AN/VRC-88 (5820-01-151-9917),
AN/VRC-89 (5820-01-151-9918),
AN/VRC-90 (5820-01 -151-9919),
AN/VRC-91 (5820-01-151-9920),
and AN/VRC-92 (5820-01-151-9921) . . . . . TM 11-5820-890-10-3

Operator's and Organizational Maintenance Manual:
Radio Set, AN/PRC-104(A)
(NSN 5820-01-141-7953) . . . . . .TM 11-5820-919-12

Operator's and Organizational Maintenance Manual:
Radio Set, AN/PRC-104B(V)1, (V)4
(NSN 5820-01-269-5603)
(NSN 5820-01-262-9550) . . . . . .TM 11-5820-1046-l2

Operator's and Unit Maintenance Manual:
Radio Set, AN/PRC-132 (NSN 5820-01-320-8831)
consisting of Receiver-Transmitter,
Radio RT-1648/PRC-132 (NSN 5820-01-320-3686)
and Battery Box CY-8629/PRC-132. . . . . TM 11-5820-1102-12

Organizational Repair Parts and Special Tools List:
Special Operations Radio Antenna Kit (SORAK)
Antenna Group OE-452/PRC
(NSN 5985-01-279-7942) . . . . . TM 11-5985-391-20P

Procedures for Destruction of Electronics Materiel
to Prevent Enemy Use . . . . . TM 750-244-2

A-5. MISCELLANEOUS PUBLICATIONS.

Reporting of Transportation Discrepancies in Shipments . . . . . AR 55-38

Reporting of Item and Packaging Discrepancies . . . . . AR 735-11-2

Consolidated Index of Army Publications and Blank Forms . . . . . DA Pam 25-30

The Army Maintenance Management System (TAMMS) . . . . . DA Pam 738-750

APPENDIX B
MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-1. GENERAL.

a. This section provides a general explanation of all maintenance and repair functions authorized at various maintenance levels.

b. The Maintenance Allocation Chart (MAC) in Section II designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component will be consistent with the capacities and capabilities of the designated maintenance levels.

c. Section III lists the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced in Section II.

d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

B-2. MAINTENANCE FUNCTIONS. Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g., by sight, sound, or feel).

b. Test. To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases.

d. Adjust. To maintain or regulate, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.

e. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

B-2. MAINTENANCE FUNCTIONS (CONT).

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test, measuring, and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Remove/Install. To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

h. Replace. To remove an unserviceable item and install a serviceable counterpart in its place. “Replace” is authorized by the MAC and is shown as the third position code of the SMR code.

i. Repair. The application of maintenance services, including fault location/troubleshooting, removal/installation, and disassembly/assembly procedures, and maintenance actions to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

j. Overhaul. That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications (i.e., DMWR). Overhual is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc.) considered in classifying Army equipment/components.

B-3. EXPLANATION OF COLUMNS IN THE MAC, SECTION II.

a. Column (l), Group Number. Column 1 lists functional group code numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly. End item group numbers shall be "00".

b. Column (2), Component/Assembly. Column 2 contains the names of components, assemblies, and modules for which maintenance is authorized.

c. Column (3), Maintenance Functions. Column 3 lists the functions to be performed on the items listed in Column 2. (For detailed explanation of these functions, see paragraph B-2.)

d. Column (4), Maintenance Level. Column 4 specifies, by the listing of a work time figure in the appropriate subcolumn(s), the level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate work time figures will be shown for each level. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. The symbol designations for the various maintenance levels are as follows:

C	Operator or crew
O	Organizational maintenance
F	Direct support maintenance
H.	General support maintenance
D	Depot maintenance

e. Column (5), Tools and Equipment. Column 5 specifies, by code, those common tool sets (not individual tools) and special tools, TMDE, and support equipment required to perform the designated function.

f. Column (6), Remarks. This column shall, when applicable, contain a letter code, in alphabetic order, which shall be keyed to the remarks contained in Section IV.

B-4. EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS, SECTION III.

a. Column 1, Reference Code. The tool and test equipment reference code correlates with a code used in the MAC, Section II, Column 5.

b. Column 2, Maintenance Level. The lowest level of maintenance authorized to use the tool or test equipment.

c. Column 3, Nomenclature. Name or identification of the tool or test equipment.

d. Column 4, National Stock Number. The National Stock Number of the tool or test equipment.

e. Column 5, Tool Number. The manufacturer's part number.

B-5. EXPLANATION OF COLUMNS IN REMARKS, SECTION IV.

a. Column 1, Reference Code. The code recorded in column 6, Section II.

b. Column 2, Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC, Section II.

Section II. MAINTENANCE ALLOCATION CHART FOR OE-452/PRC

(1) GROUP NO.	(2) COMPONENT /ASSEMBLY	(3) MAIN-TENANCE FUNCTION	(4) MAINTENANCE LEVEL C	O	F	H	D	(5) TOOLS AND EQPT	(6) REMARKS
00	ANTENNA GROUP OE-452/PRC	Inspect		0.2					
		Test		0.5					
		Repair		0.2					A
01	ANTENNA SYSTEM TEST SET ASSEMBLY	Inspect		0.7					
		Repair		0.2					B
02	MAST/GUY ASSEMBLY ANTENNA, 22 FT.	Inspect		0.4					
		Repair		0.2					C
0201	MAST ASSEMBLY, ANTENNA, 22 FT.	Inspect		0.5					
		Repair		0.5					D
03	ANTENNA ASSEMBLY	Inspect		1.2					
		Repair		0.3					E
04	MAST/GUY SYSTEM, ANTENNA, 6 FT.	Inspect		0.2					
		Repair		0.5					F
0401	MAST/GUY ASSEMBLY, ANTENNA, 6 FT.	Inspect		0.3					
		Repair		0.3					G

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS FOR OE-452/PRC

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMEN-CLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
	NOT APPLICABLE. REQUIRES NO TOOLS OR TEST EQUIPMENT.			

Section IV. REMARKS

REFERENCE CODE	REMARKS
A	Repair by replacement of radio frequency power test set, antenna system test set battery, deployment bag, mast bag, and/or hammer.
B	Repair by replacement of antenna system test set, knob, and/or battery cover screws.
C	Repair by replacement of 21 foot guy assemblies, 32 foot guy assemblies, 22 foot antenna mast, and/or stake assemblies.
D	Repair by replacement of base assembly, outer tube #1, middle tube #2, guy ring tube, middle tube #4, middle tube #5, middle tube #6, middle tube #7, middle tube #8, middle tube #9, middle tube #10, inner tube #11, guy rope ring, guy ring retainer, top assembly, gasket and/or flat head screws.
E	Repair by replacement of 6 foot coaxial cable assemblies, 25 foot coaxial cable/spool assemblies, 40 foot coaxial cable/spool assemblies, radio frequency radiation absorbers, ground rod assemblies, cable hand reeling machines, antenna wire assemblies, transmission line coupler, halyard assembly, lead weight assemblies and/or connector adapter.
F	Repair by replacement of mast/guy assemblies.
G	Repair by replacement of top assembly, inner tube, middle tube, outer tube, base, gasket, flat head screws and/or guy assemblies.

APPENDIX C
COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

Section I. INTRODUCTION

C-1. SCOPE.

This appendix lists the components of end item and basic issue items for the SORAK to help you inventory items required for safe and efficient operation.

C-2. GENERAL.

The Components of End Item and Basic Issue Items Lists are divided into the following sections:

a. Section II. Components of End Item. This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist you in identifying the items.

b. Section III. Basic Issue Items (BII). These are the minimum essential items required to place the SORAK in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the SORAK during operation and whenever it is transferred between property accounts. The illustrations will assist you with hard-to-identify items. This manual is your authority to request/requisition replacement BII, based on TOE/MTOE authorization of the end item.

C-3. EXPLANATION OF COLUMNS.

The following provides an explanation of columns found in the tabular listings.

a. Column (1), Illustration Number (Illus Number). This column indicates the number of the illustration in which the item is shown.

b. Column (2), National Stock Number. Indicates the national stock number assigned to the item and will be used for requisitioning purposes.

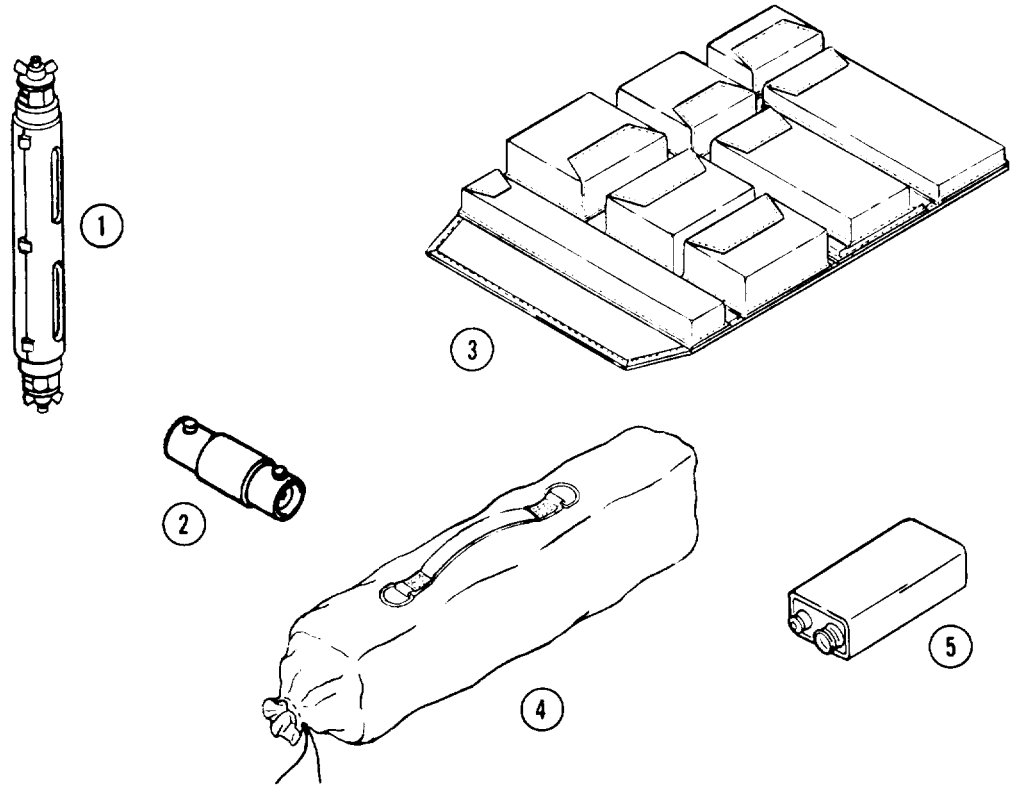
C-3. EXPLANATION OF COLUMNS (CONT).

c. Column (3), Description. Indicates the Federal item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the CAGEC (in parentheses) followed by the part number.

d. Column (4), Unit of Issue (U/I). Indicates how the item is issued for the National Stock Number shown in column two.

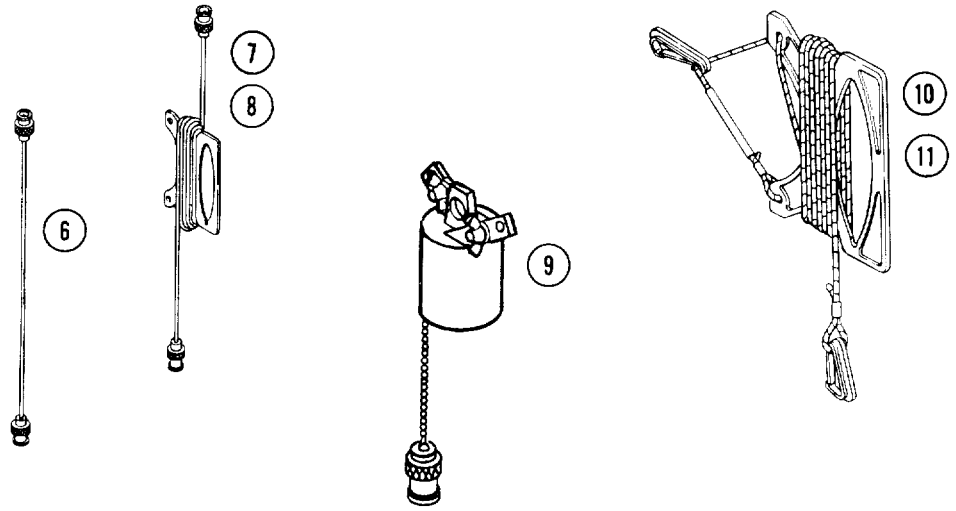
e. Column (5), Quantity Requird (Qty Reqd). Indicates the quantity of the item authorized to be used on/with the equipment.

Section II. COMPONENTS OF END ITEM



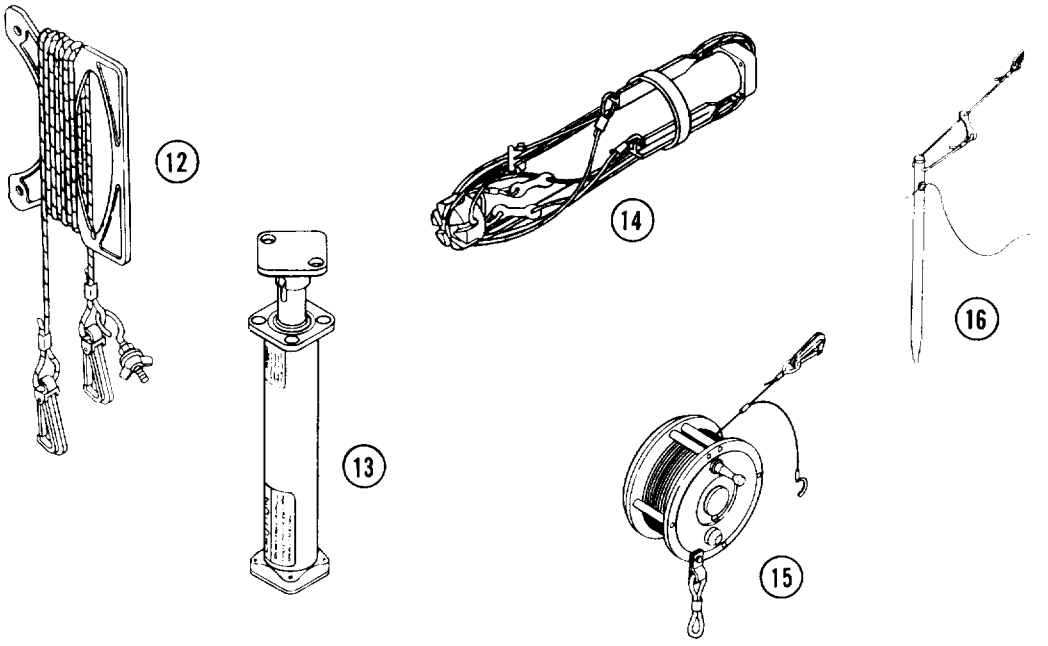
(1) Illus Number	(2) National Stock Number	(3) Description CAGEC and Part Number	(4) U/I	(5) Qty Reqd
1		ABSORBER, RF RADIATION (80063) A3158033	EA	2
2	5935–01–037–3476	ADAPTER, COAX CONNECTOR (81349) M55339/16-00914	EA	1
3		BAG, DEPLOYMENT (80063) A3158103	EA	1
4		BAG, MAST (80063) A3158082	EA	1
5	6135–00-900-2139	BATTERY, NONRECHARGEABLE (80063) A3158062	EA	1

Section II. COMPONENTS OF END ITEM (CONT)



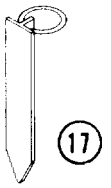
(1) Illus Number	(2) National Stock Number	(3) Description CAGEC and Part Number	(4) U/I	(5) Qty Reqd
6		CABLE ASSEMBLY COAX, 6 FT (80063) A3158035-1	EA	2
7		CABLE ASSEMBLY COAX, 25 FT (80063) A3158107-1	EA	2
8		CABLE ASSEMBLY COAX, 40 FT (80063) A3158107-2	EA	1
9		COUPLER, TRANSMISSION LINE (1L397) D8016	EA	1
10		GUY ROPE ASSEMBLY, 21 FT (80063) A3158089-1	EA	5
11		GUY ROPE ASSEMBLY, 32 FT (80063) A3158089-2	EA	3

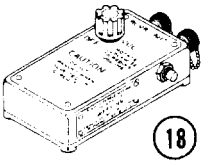
Section II. COMPONENTS OF END ITEM (CONT)

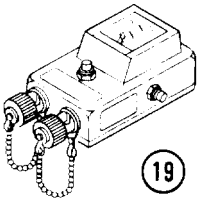


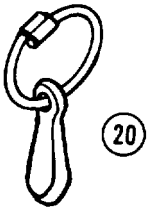
(1) Illus Number	(2) National Stock Number	(3) Description CAGEC and Part Number	(4) U/I	(5) Qty Reqd
12		HALYARD (80063) A3158034	EA	1
13		MAST ASSEMBLY, 22 FT, TELESCOPING (80063) A3158088	EA	1
14		MAST/GUY ASSEMBLY, 6 FT, TELESCOPING (80063) A3158081	EA	2
15		REEL ASSEMBLY, ANTENNA WIRE (80063) A3158030	EA	2
16		ROD ASSEMBLY, ANCHOR/ GROUND (80063) A3158032	EA	2

Section II. COMPONENTS OF END ITEM (CONT)



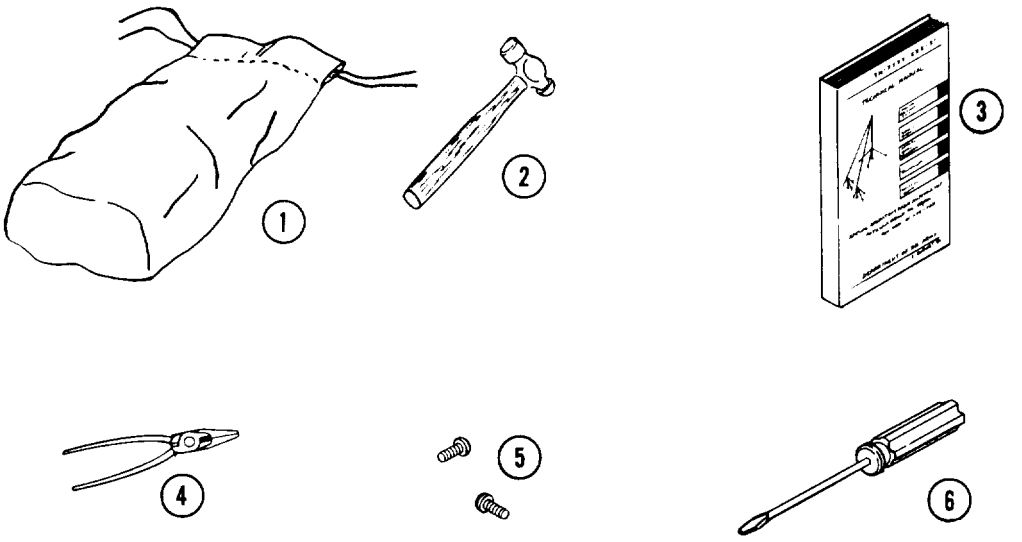






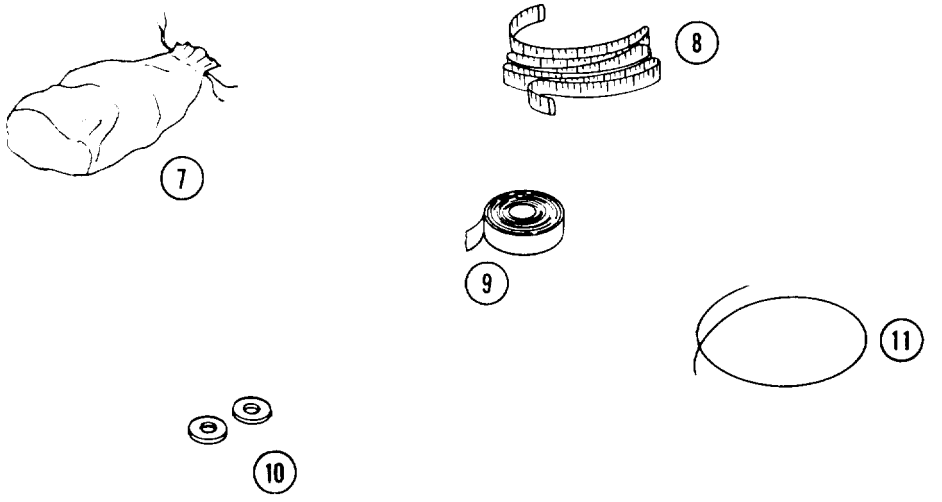
(1) Illus Number	(2) National Stock Number	(3) Description CAGEC and Part Number	(4) U/I	(5) Qty Reqd
17		STAKE ASSEMBLY, GUY (80063) A3158090	EA	5
18	6625-01-324-9273	TEST SET, ANTENNA SYSTEM (1L397) D8050	EA	1
19	6625-01-323-6267	TEST SET, RADIO FREQUENCY POWER (1L397) D8054	EA	1
20		WEIGHT ASSEMBLY, LEAD (80063) A3158061	EA	2

Section III. BASIC ISSUE ITEMS



(1) Illus Number	(2) National Stock Number	(3) Description CAGEC and Part Number	(4) U/I	(5) Qty Reqd
1		BAG, INSTALLATION KIT (80063) A3158096	EA	1
2		HAMMER, HAND (80063) A3158102	EA	1
3		MANUAL, OPERATOR'S AND UNIT MAINTENANCE TM 11-5985-391-12	EA	1
4		PLIERS, NEEDLENOSE (80063) A3158098	EA	1
5	5305-00-433-3740	SCREW, MACHINE, PANHEAD (96906) MS51958-64B	EA	2
6		SCREWDRIVER, FLAT HEAD (80063) A3158097	EA	1

Section III. BASIC ISSUE ITEMS (CONT)



(1) Illus Number	(2) National Stock Number	(3) Description CAGEC and Part Number	(4) U/I	(5) Qty Reqd
7		INSTALLATION KIT (Includes items 1, 4, 5, 6, 8, 9, 10, and 11) (80063) A3158095	EA	1
8		TAPE, MEASURING (80063) A3158100	EA	1
9		TAPE, UTILITY (80063) A3158099	EA	1
10	5310-00-160-9817	WASHER, FLAT (88044) AN960-XC10	EA	2
11		WIRE, GROUND, 3 FT (80063) A3158040-1	EA	1

APPENDIX D
ADDITIONAL AUTHORIZATION LIST

Section I. INTRODUCTION

D-1. SCOPE.

This appendix lists additional items you are authorized for the support of the SORAK.

D-2. GENERAL.

This list identifies items that do not have to accompany the SORAK and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

D-3. EXPLANATION OF LISTING.

National Stock Numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment. The items are listed in alphabetical sequence by item name.

Section II. ADDITIONAL AUTHORIZATION LIST

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION CAGEC & PART NUMBER	(3) U/I	(4) QTY RECM
6605-00-151-5337	COMPASS, MAGNETIC, UNMOUNTED, LENSATIC (81349) MIL-C-10436	EA	1

APPENDIX E
EXPENDABLE AND DURABLE ITEMS LIST

Section I. INTRODUCTION

E-1. SCOPE.

This appendix lists expendable items that you will need to operate and maintain the SORAK. This listing is for information only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-790, Expendable/Durable Items (except medical, class V, repair parts, and heraldic items), or CTA 8-100, Army Medical Department Expendable/Durable Items.

E-2. EXPLANATION OF COLUMNS.

a. Column (l), Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the item (e.g., “Use cleaning compound, item 5, App. E”).

b. Column (2), Level. This column identifies the lowest level of maintenance that requires the listed item.

c. Column (3), National Stock Number. This is the National Stock Number assigned to the item, which you can use to requisition it.

d. Column (4), Item Name, Description, Commercial and Government Entity Code (CAGEC), and Part Number. This provides the other information you need to identify the item.

e. Column (5), Unit of Measure. This code shows the physical measurement or count of an item, such as gallon, dozen, gross, etc.

Section II. EXPENDABLE AND DURABLE ITEMS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION, CAGEC, PART NUMBER	(5) U/M
1	O		ROPE, NYLON (96906) M5040-5C	FT
2	O		TAPE, UTILITY (80063) A3158099	RL
3	O		WIRE, ELECTRICAL (80063) A3158047	FT

APPENDIX F
ANTENNA DEPLOYMENT REFERENCE CARDS

F-1. SCOPE.

This appendix provides reference cards with summary illustrations for setting up the SORAK. The reference cards are intended for use only by those Special Operations Forces personnel who are experienced in the deployment and setup of the SORAK configurations shown.

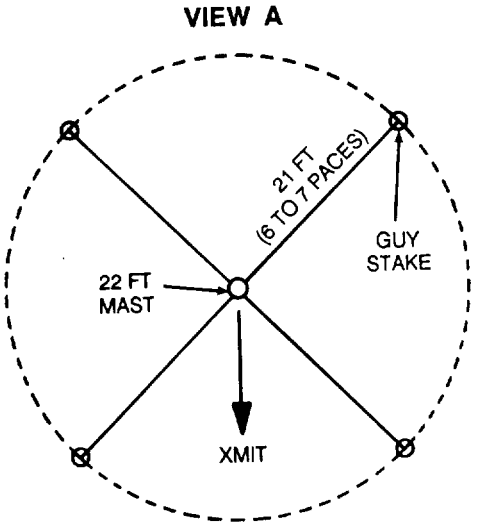
F-2. SORAK CONFIGURATIONS.

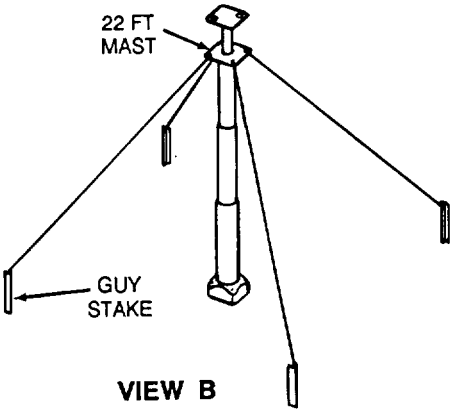
The reference cards in this appendix summarize the deployment of five SORAK configurations. The SORAK configurations are illustrated on the following pages:

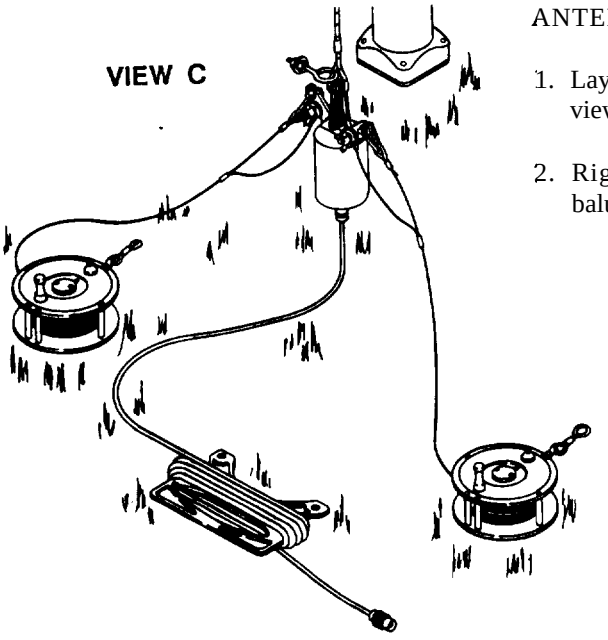
ANTENNA DEPLOYMENT -234' SLOPING VEE

WARNING

Never erect antenna directly under power lines or during an electrical storm.







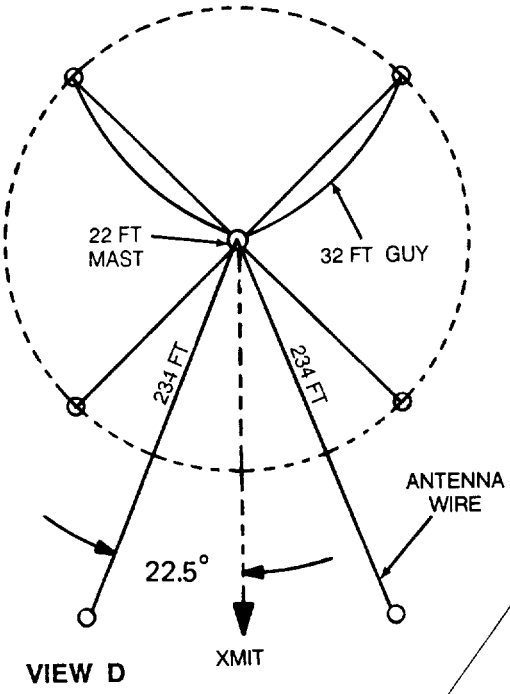
ANTENNA SETUP:

1. Lay out and set up 22' mast per views A and B.

2. Rig halyard, antenna wires, and balun per view C.

CONTINUED ON
REVERSE SIDE

ANTENNA DEPLOYMENT -234' SLOPING VEE (CONT)



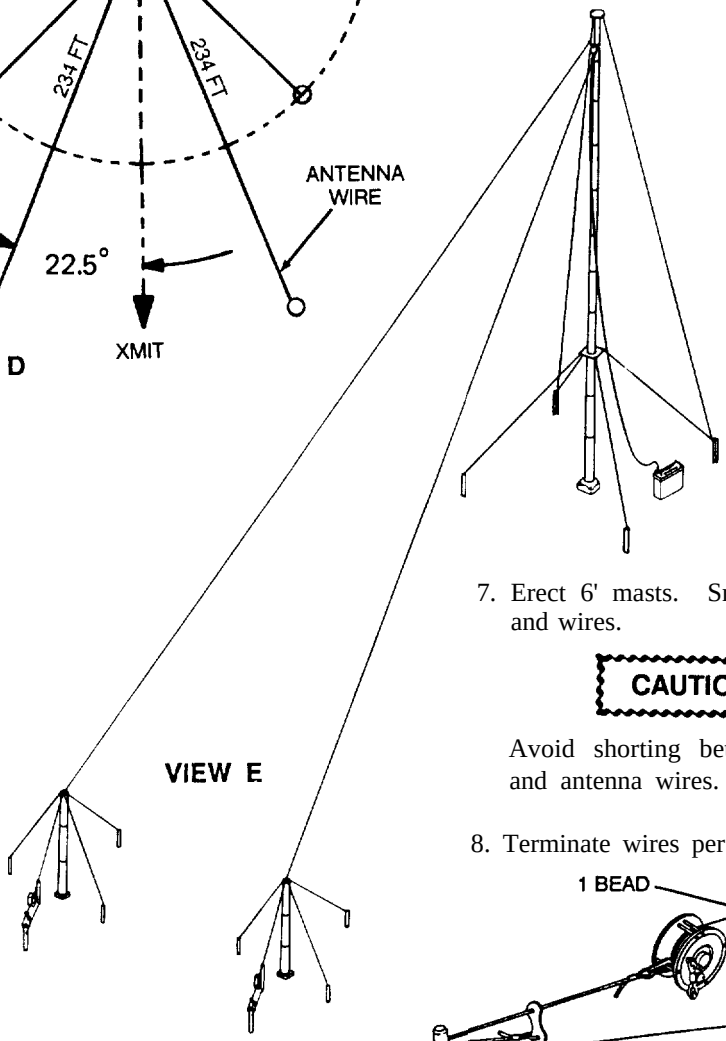
VIEW D

3. Attach 32' guy ropes per view D.

4. Raise top sections of 22' mast.

5. Hoist halyard. Avoid tangling antenna rig.

6. Deploy and anchor antenna wires per views D, E, and F.



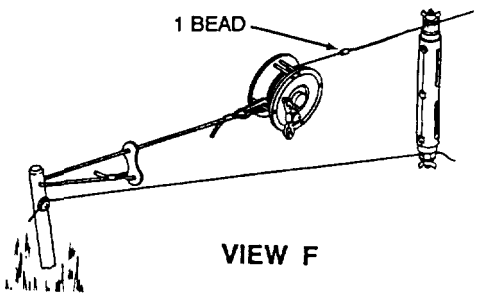
VIEW E

7. Erect 6' masts. Snug up all ropes and wires.

CAUTION

Avoid shorting between ground and antenna wires.

8. Terminate wires per view F.



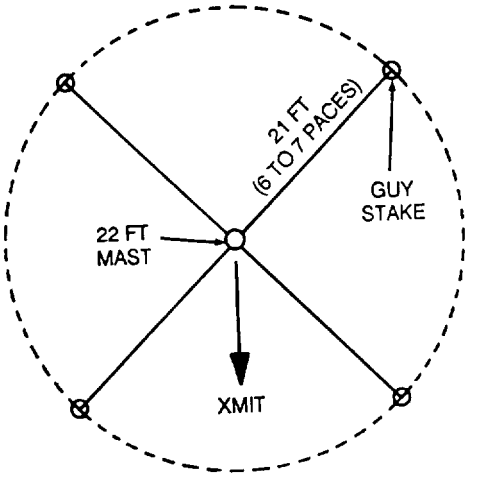
VIEW F

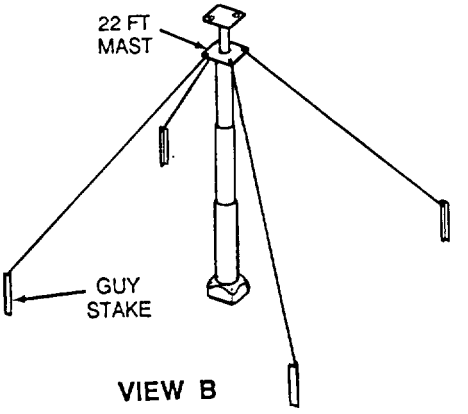
ANTENNA DEPLOYMENT - 117' SLOPING VEE

WARNING

Never erect antenna directly under power lines or during an electrical storm.

VIEW A





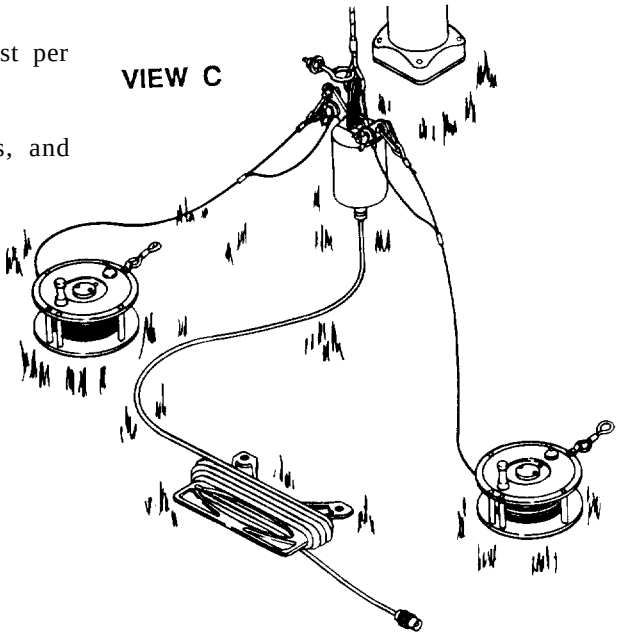
VIEW B

ANTENNA SETUP:

1. Lay out and set up 22' mast per views A and B.

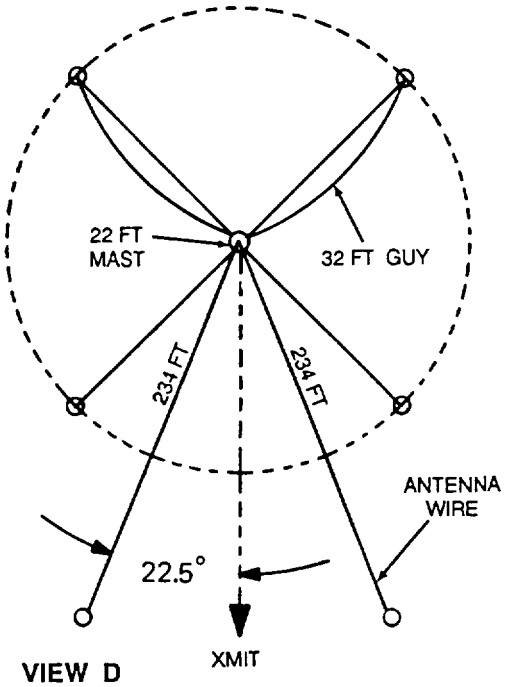
2. Rig halyard, antenna wires, and balun per view C.

VIEW C



CONTINUED ON
REVERSE SIDE

ANTENNA DEPLOYMENT - 117' SLOPING VEE (CONT)



VIEW D

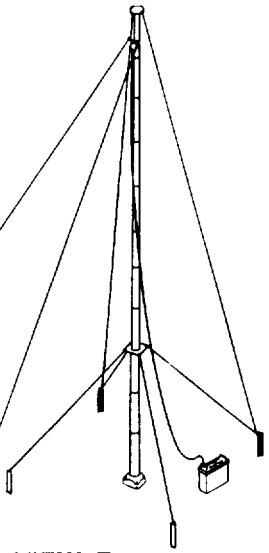
3. Attach 32' guy ropes per view D.

4. Raise top sections of 22' mast.

5. Hoist halyard. Avoid tangling antenna rig.

6. Deploy and anchor wires per views D, E, and F.

7. Erect 6' masts. Snug up all ropes and wires.

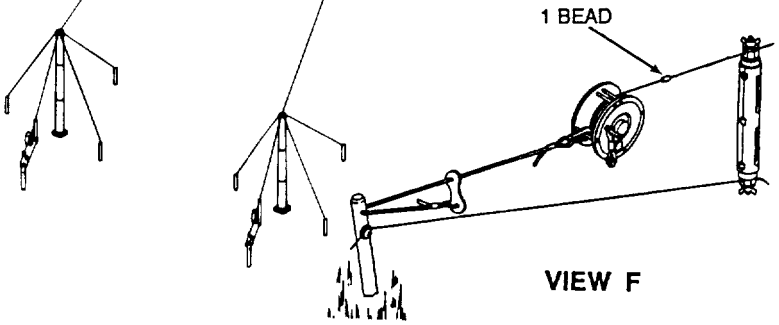


VIEW E

CAUTION

Avoid shorting between ground and antenna wires.

8. Terminate wires per view F.



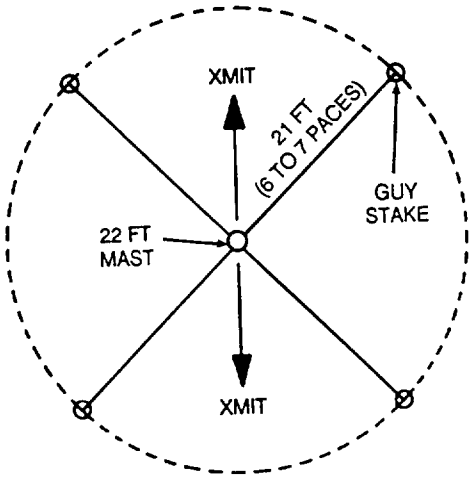
VIEW F

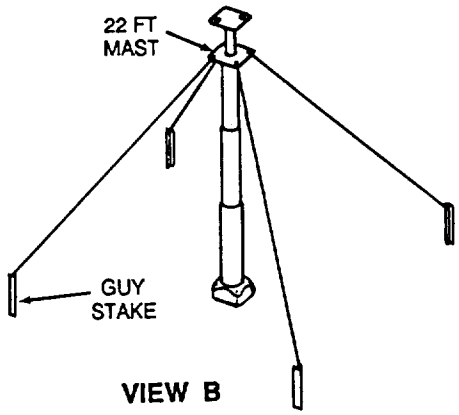
ANTENNA DEPLOYMENT -117' SLOPING DIPOLE

WARNING

Never erect antenna directly under power lines or during an electrical storm.

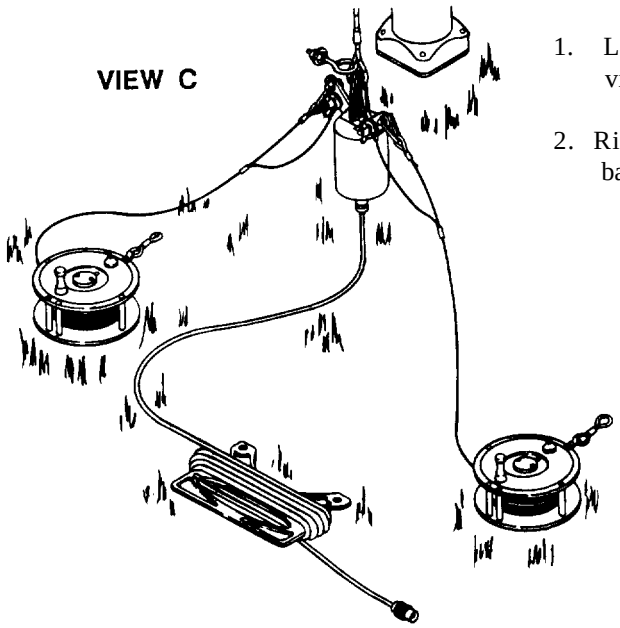
VIEW A





VIEW B

VIEW C



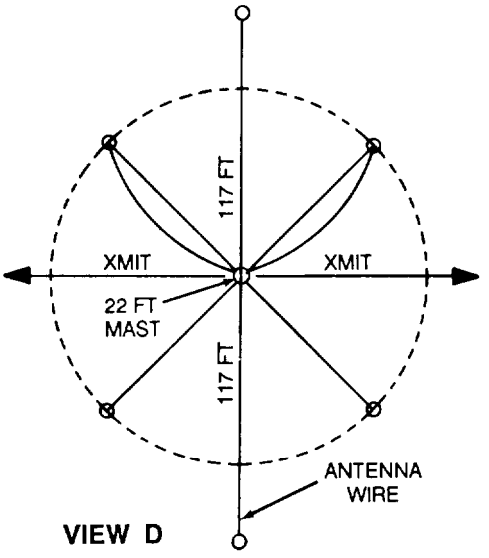
ANTENNA SETUP:

1. Lay out and set up 22' mast per views A and B.

2. Rig halyard, antenna wires, and balun per view C.

CONTINUED ON
REVERSE SIDE

ANTENNA DEPLOYMENT - 117' SLOPING DIPOLE (CONT)



VIEW D

3. Attach 32' guy ropes per view D.

4. Raise top sections of 22' mast.

5. Hoist halyard. Avoid tangling antenna rig.

CAUTION

Deploy first antenna wire against pull of 32' guy ropes.

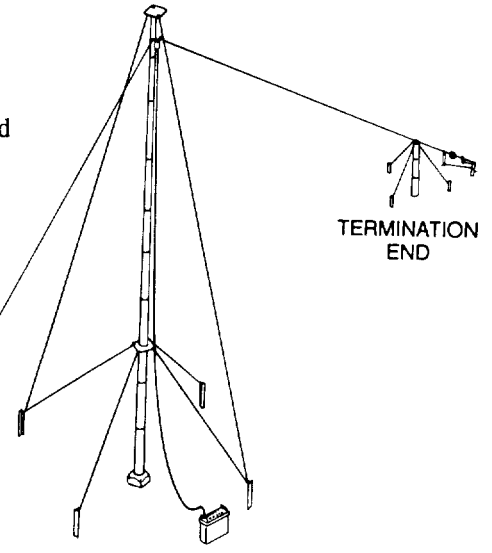
6. Deploy and anchor wires per views D, E, and F.

7. Erect 6' masts. Snug up all ropes and wires.

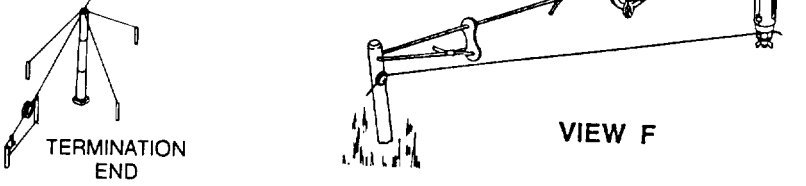
CAUTION

Avoid shorting between ground and antenna wires.

8. Terminate wires per view F.



VIEW E



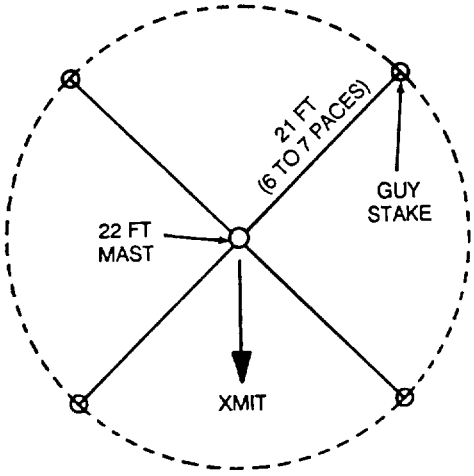
VIEW F

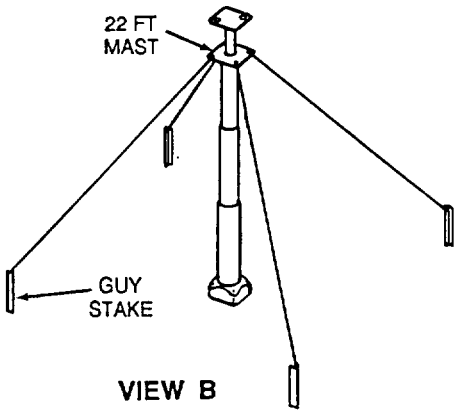
ANTENNA DEPLOYMENT - 488' BENT LONGWIRE

WARNING

Never erect antenna directly under power lines or during an electrical storm.

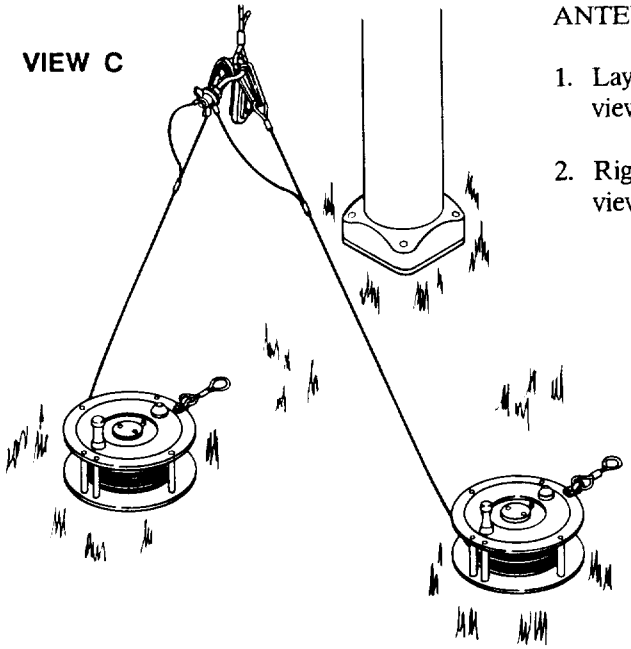
VIEW A





VIEW B

VIEW C

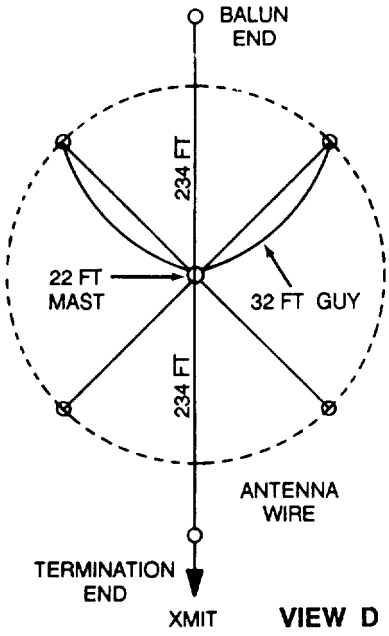


ANTENNA SETUP:

1. Lay out and set up 22' mast per views A and B.
2. Rig halyard, and antenna wires per view C.

CONTINUED ON
REVERSE SIDE

ANTENNA DEPLOYMENT - 468' BENT LONGWIRE (CONT)



VIEW D

3. Attach 32' guy ropes per view D.

4. Raise top sections of 22' mast.

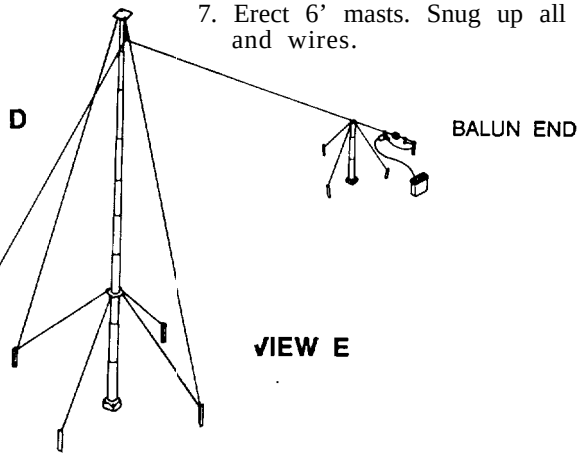
5. Hoist halyard. Avoid tangling antenna rig.

CAUTION

Deploy first antenna wire against pull of 32' guy ropes.

6. Deploy and anchor wires per views D, E, and F.

7. Erect 6' masts. Snug up all ropes and wires.

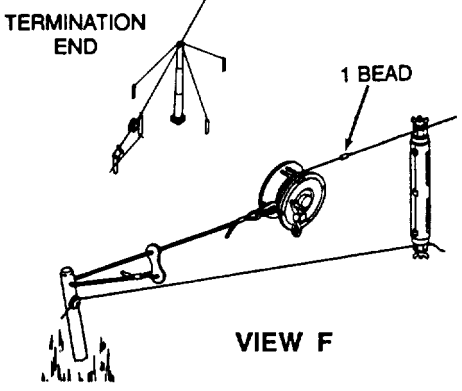


VIEW E

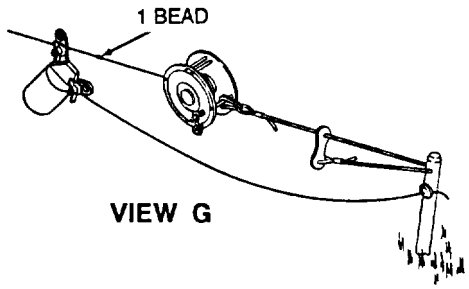
CAUTION

Avoid shorting across balun terminals.

8. Terminate wires per view F and G.



VIEW F

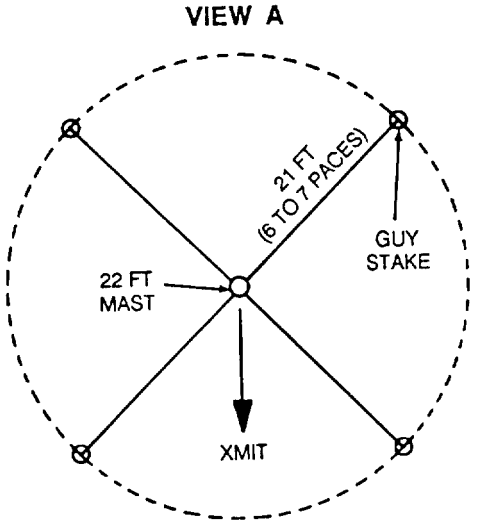


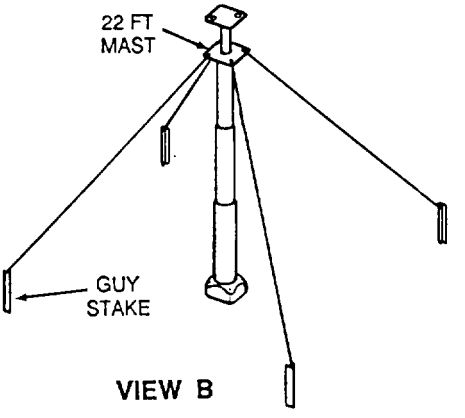
VIEW G

ANTENNA DEPLOYMENT - 175' BENT LONGWIRE

WARNING

Never erect antenna directly under power lines or during an electrical storm.

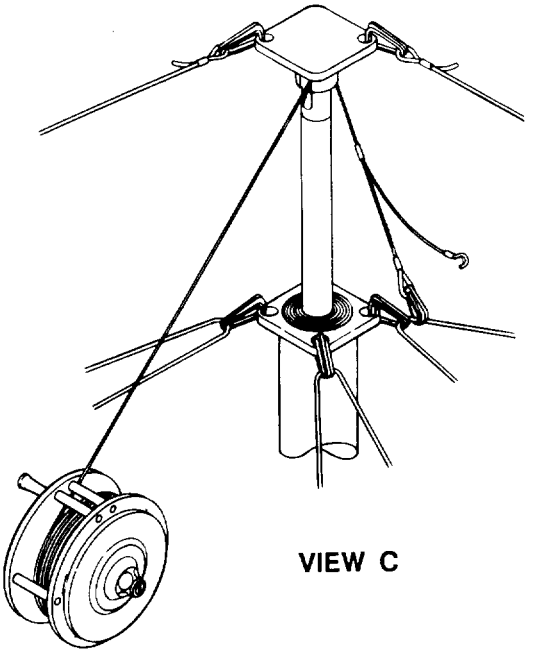




ANTENNA SETUP:

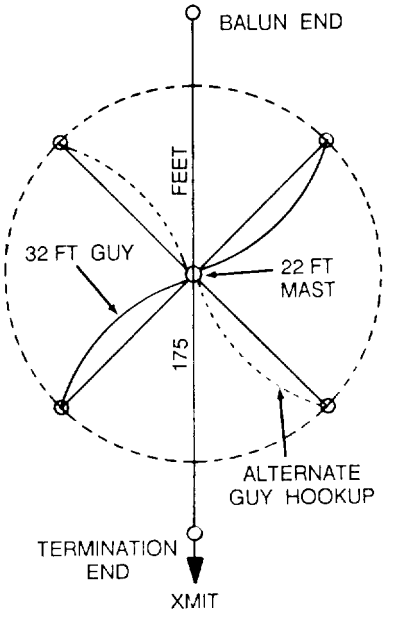
1. Lay out and set up 22' mast per views A and B.

2. With wire reel facing direction of transmit, feed loose end of antenna wire through mast eyelet. Fasten loose end per view C.



CONTINUED ON
REVERSE SIDE

ANTENNA DEPLOYMENT - 175' BENT LONGWIRE (CONT)



VIEW D

3. Attach 32' guy ropes per view C and D.

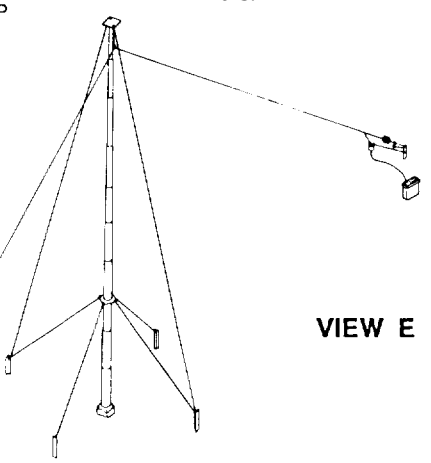
4. Raise top sections of 22' mast.

5. Deploy and anchor antenna wires per views D, E, and F.

6. Snug up all ropes and wire.

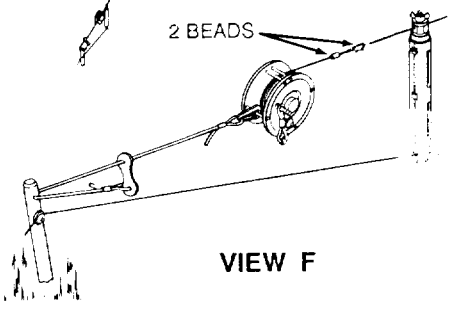
CAUTION

Avoid shorting across balun terminals.

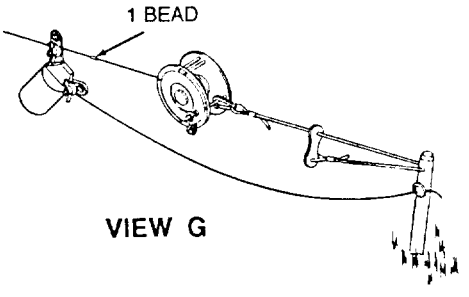


VIEW E

7. Terminate wires per views F and G.



VIEW F



VIEW G

GLOSSARY

ABBREVIATIONS

ANT . . . . . .Antenna Input
App . . . . . Appendix
comm . . . . . .Communication
coax . . . . Coaxial
FWD . . . . . Forward
HF . . . . . High Frequency
INT . . . . . .Internal
misc . . . . . Misellaneous
MTOE . . . . . .Modified Table of Organization and Equipment
PMCS . . . . . .Preventive Maintenance Checks and Services
REF . . . . . Reflected
RLB . . . . . .Return Loss Bridge
SOF . . . . . .Special Operations Forces
SORAK . . . . . Special Operations Radio Antenna Kit
TMDE . . . . . .Test, Maintenance, and Diagnostic Equipment
VHF . . . . . Very High Frequency
VOL . . . .Volume
VSWR . . . . . .Voltage Standiong Wave Ratio
XMIT . . . . . Transmit
xmtr . . . . . Transmitter

INDEX

INDEX (CONT)

E

G

H

M

INDEX (CONT)

O

P

R

INDEX (CONT)

S

T

V

W

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

SOMETHING WRONG WITH THIS PUBLICATION?

FROM (PRINT YOUR UNIT'S COMPLETE ADDRESS)
Commander
Stateside Army Depot
ATTN: AMSTA-US
Stateside, N.J. 07703

DATE SENT
10 July 1975

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 11-5840-340-12	23 Jan 74	Radar Set AN/PRC-76

BE EXACT PIN-POINT WHERE IT IS

PAGE NO	PARAGRAPH	FIGURE NO	TABLE NO	IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
2-25	2-28			Recommend that the installation antenna alignment procedure be changed throughout to specify a 2° IFF antenna lag rather than 1°. REASON: Experience has shown that with only a 1° lag, the antenna servo system is too sensitive to wind gusting in excess of 25 knots, and has a tendency to rapidly accelerate and decelerate as it hunts, causing strain to the drive train. Hunting is minimized by adjusting the lag to 2° without degradation of operation.
3-10	3-3		3-1	Item 5, Function column. Change "2 db" to "3db." REASON: The adjustment procedure for the TRANS POWER FAULT indicator calls for a 3 db (500 watts) adjustment to light the TRANS POWER FAULT indicator.
5-6	5-8			Add new step f.1 to read, "Replace cover plate removed in step e.1, above." REASON: To replace the cover plate.
		F03		Zone C 3. On J1-2, change "+24 VDC to "+5 VDC." REASON: This is the output line of the 5 VDC power supply. +24 VDC is the input voltage.

SAMPLE

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER
SSG I. M. DeSpiritof 999-1776

SIGN HERE
I. M. DeSpiritof

DA FORM 1 JUL 79 2028-2 PREVIOUS EDITIONS ARE OBSOLETE.

P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

TEAR ALONG PERFORATED LINE

TEAR ALONG PERFORATED LINE

FILL IN YOUR UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

OFFICIAL BUSINESS

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 144 RED BANK, NJ

POSTAGE WILL BE PAID BY

Commander
US Army Communications–Electronics Command
and Fort Monmouth
ATTN: AMSEL–LC–LM–LT
Fort Monmouth, New Jersey 07703–5000

SAMPLE

FOLD BACK

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

SOMETHING WRONG WITH THIS PUBLICATION?

FROM (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 11-5985-391-12	7 Jan 1991	ANTENNA OE-452/PRC

BE EXACT . PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

PRINTED NAME GRADE OR TITLE AND TELEPHONE NUMBER

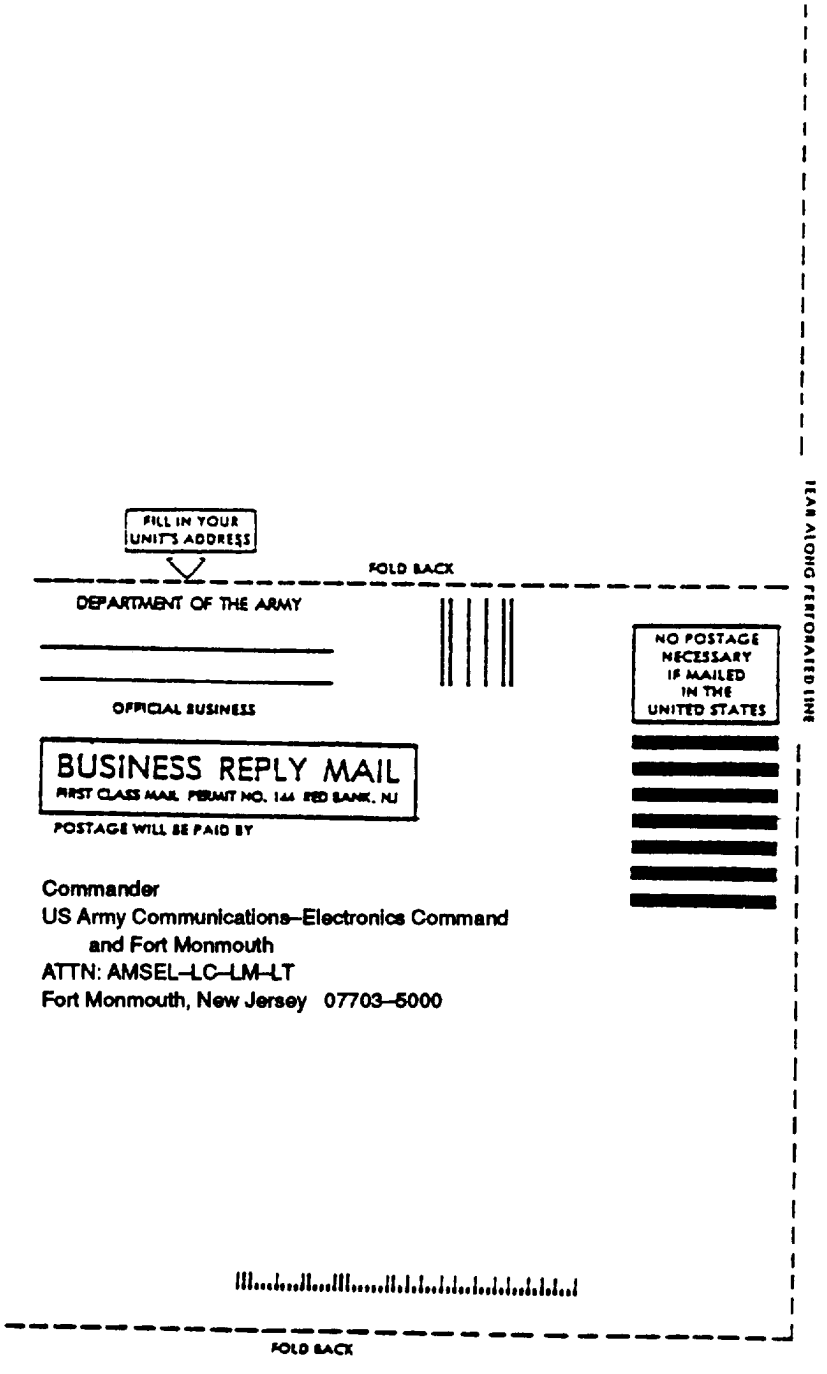
SIGN HERE

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE.

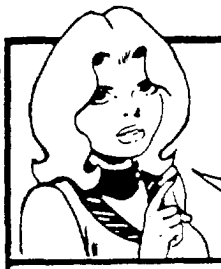
P.S. ..IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS

TEAR ALONG PERFORATED LINE


TEAR ALONG PERFORATED LINE
FILL IN YOUR UNIT'S ADDRESS
FOLD BACK
DEPARTMENT OF THE ARMY
OFFICIAL BUSINESS
NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES
BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 144 RED BANK, NJ
POSTAGE WILL BE PAID BY
Commander
US Army Communications–Electronics Command
and Fort Monmouth
ATTN: AMSEL–LC–LM–LT
Fort Monmouth, New Jersey 07703–5000
FOLD BACK

TEAR ALONG PERFORATED LINE

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



SOMETHING WRONG WITH THIS PUBLICATION?

FROM (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 11-5985-391-12	7 Jan 1991	ANTENNA OE-452/PRC

BE EXACT . PIN POINT WHERE IT IS

PAGE NO	PARA GRAPH	FIGURE NO	TABLE NO

IN THIS SPACE TELL WHAT IS WRONG
AND WHAT SHOULD BE DONE ABOUT IT:

PRINTED NAME GRADE OR TITLE AND TELEPHONE NUMBER

SIGN HERE

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE

P.S. - IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS

TEAR ALONG PERFORATED LINE

FILL IN YOUR UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

OFFICIAL BUSINESS

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 144 RED BANK, NJ

POSTAGE WILL BE PAID BY

Commander
US Army Communications–Electronics Command
and Fort Monmouth
ATTN: AMSEL–LC–LM–LT
Fort Monmouth, New Jersey 07703–5000

FOLD BACK

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

THEN. . . JOT DOWN THE DOPE ABOUT IT ON THIS FORM, CAREFULLY TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL!

SOMETHING WRONG WITH THIS PUBLICATION?

FROM (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 11-5985-391-12	7 Jan 1991	ANTENNA OE-452/PRC

BE EXACT . PIN-POINT WHERE IT IS

PAGE NO	PARAGRAPH	FIGURE NO	TABLE NO

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

PRINTED NAME GRADE OR TITLE AND TELEPHONE NUMBER

SIGN HERE

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE.

P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS

TEAR ALONG PERFORATED LINE

TEAR ALONG PERFORATED LINE

FILL IN YOUR UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

OFFICIAL BUSINESS

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 144 RED BANK, NJ

POSTAGE WILL BE PAID BY

Commander
US Army Communications–Electronics Command
and Fort Monmouth
ATTN: AMSEL–LC–LM–LT
Fort Monmouth, New Jersey 07703–5000

FOLD BACK

By Order of the Secretary of the Army:

CARL E. VUONO
General, United States Army
Chief of Staff

Official:

PATRICIA P. HICKERSON
Colonel, United States Army
The Adjutant General

DISTRIBUTION:

To be distributed in accordance with DA Form 12–36–E, block 9069, Operator and Unit Maintenance requirements for TM 11–5895–391–12.

★ U.S. Government Printing Office: 1991 — 512-085/40144

PIN: 057723-000