

MICROWAVE ANTENNAS
KS-15676 HORN-REFLECTOR AND WAVEGUIDE SYSTEM
MAINTENANCE
PERIODIC TEST INTERVALS

1. GENERAL

1.01 This section outlines the procedures to be followed when inspecting the KS-15676 horn-reflector and its associated waveguide system.

1.02 This section is reissued to add requirements concerning antenna leakage repair and other maintenance instructions in the schedule of inspection procedures.

1.03 Certain work operations mentioned in this practice may in most cases be carried out by contractors or organizations which specialize in tower maintenance, although it may be desirable to have a telephone company inspector present to ensure satisfactory performance. The following warnings are directed toward the protection of both telephone company and contract personnel.

Warning 1: When it is necessary for men on the ground to be within a horizontal distance of the tower less than 1/3 its height, protective hats should be worn if any work is being performed aloft at the same time. Every effort should be made, however, to avoid exposing ground personnel to the hazards of being struck by falling objects. Tools or items of material accidentally dropped from towers can inflict serious injury on personnel. Personnel not necessary to work operations should remain a safe distance away (at least 1/3 the height of the highest operation), when operations are being conducted aloft. Similarly, motor vehicles should be kept a safe distance away from the tower in order to avoid damage from falling objects. Personnel working aloft should be instructed to exercise care

to prevent tools or materials from falling. Also, personnel working aloft should be cautioned to avoid touching air navigation obstruction light when the lamps are burning as these fixtures will be quite hot.

Warning 2: It should be remembered that climbing towers is strenuous. Personnel should not climb more than about 25 feet without stopping and resting before climbing further, in order to avoid over-exertion. Suitable safety equipment such as the tower body belt and a safety strap should be worn when climbing and working aloft on towers. Ice coated towers are much more hazardous because of the increased possibility of slipping or being struck by falling ice. Work should be postponed until the tower is free of ice.

Warning 3: When inspecting the antenna, avoid blocking the aperture (weather cover) when the system is operating. It is permissible to work in front of a transmitting antenna without radiation protective clothing if the total power input to the waveguide feeding the antenna does not exceed 60 watts. Otherwise, it is recommended that protective clothing be worn particularly if the period of exposure will be of long duration or under conditions of high temperature and humidity. If the input power exceeds 150 watts, protective clothing must be worn. See Section 010-150-002 for further information regarding radiation protection.

2. INSPECTION PROCEDURES

2.01 Each antenna and its associated waveguide system shall be inspected according to the following procedures:

SCHEDULE OF INSPECTION PROCEDURES

EQUIPMENT	INSPECTION PROCEDURE	INTERVAL
↗ Antenna Shell ↘	<p>Make a general inspection of the outside shell of the antenna for loose bolts or nuts, foreign matter, holes, loose caulking, and signs of strains or corrosion. The initial inspection shall include a tightness check with a torque wrench on a sample of about 25% of the 1/2-inch diameter bolts (not including window bolts). The bolts tested shall not show appreciably less than the specified torque in accordance with Section 402-421-201. The results of the sample check shall determine whether all bolts and nuts in the antenna should be checked. All caulked seams should be soap tested for air leaks and window bolts tightened only if the antenna leaks excessively. Refer to Section 402-421-501 if repair is necessary. Be sure water drain holes in rear of antenna are unobstructed.</p>	6 month initially, 1 year thereafter (examine caulking every 6 months)
↘ Weather Cover ↗	<p>Examine the weather cover for holes, cracks, loose bolts and erosion of resin, exposed glass fibers, and weather tightness of the seals and framing members. The inspection for holes and cracks should be made from the tower near the antenna, but if this is impractical, inspection from the ground using optical aids may be substituted. Refer to Section 402-421-502 for repair and maintenance procedures.</p>	
↗ Mounting Base and Mounting Frame Assembly ↘	<p>Check the condition of the adjustable elevation and azimuth screws, mounting base, mounting clamps, and mounting frame. Examine the screws for evidence of corrosion and lack of lubrication. Check tightness of brackets and bolts. The azimuth and elevation adjustment tools are not a permanent part of the installation on later model antennas.</p>	
↘ Feed Horn ↗	<p>Inspect the feed horn for corrosion, cracks, holes, and loose bolts.</p>	
↘ Flexible Waveguide ↗	<p>Examine the neoprene jacket for holes, cracks, crazing, dents, and deterioration between neoprene jacket and flange.</p>	

SCHEDULE OF INSPECTION PROCEDURES (Cont)

EQUIPMENT	INSPECTION PROCEDURE	INTERVAL
Rigid Circular Waveguide	The 3-inch circular waveguide with its restrainers, being exposed on the face of the tower, is susceptible to damage from falling objects, weather, and vandalism. The waveguide shall be checked for dents, holes, cracks, and misalignment. Loose or missing nuts or bolts should be reported to supervision. Rigid waveguide maintenance is covered in Section 402-421-504.	1 year
Rigid Rectangular Waveguide	Waveguide shall be checked for holes, dents, and misalignment. Loose or missing nuts or bolts should be reported to supervision. Rigid waveguide maintenance is covered in Section 402-421-504.	
Restrainers	Check visually the round and square restrainers and restrainer plate for alignment, damage, rust, loose nuts and bolts, and foreign matter. Inspect the neoprene hood over the square restrainer for punctures, tears or cracks, and for loose fasteners. Restrainer maintenance is covered in Section 402-421-504.	
Waveguide Support	Check the waveguide support for corrosion, and loose nuts and bolts.	
Transducer, Axial Ratio Compensator, Couplers, Networks, and Water Traps	Inspect the transducer, axial ratio compensator, coupler, networks, and water traps for holes, dents, corrosion, loose nuts and bolts, or other abnormalities.	

3. CORRECTIVE ACTION

3.01 Foreign matter which has accumulated on the antenna and waveguide systems shall be removed by the inspector.

3.02 The inspector shall report his findings in detail to supervision for the initiation of corrective measures if necessary.