

System Requirement

5/14/68

PROVIDE DAY AND NIGHT OBSTRUCTION MARKING
SUBJ: AND LIGHTING FOR TALL TOWER GUY WIRES

1. REFERENCES. FAA Advisory Circular 70/7460-1, Obstruction Marking and Lighting, dated February 29, 1968; FAA Form 9550-1, AT-200-1, Improved Day and Night Conspicuity of Surface Obstructions to Air Navigation, dated October 25, 1967; SRDS Final Report, Contract ARDS-431, Conspicuity of Tall Radio and Television Towers in Marginal Visual Flight Rules Weather, dated January 1963; SRDS Report No. RD-66-4, Obstruction Light System, dated April 1966; Contract FA 65-WA-1365, Installation and Test of Tall Tower Lighting System, Dated June 30, 1965; Contract FA 67-WA-1718, Investigate Concepts to Inform Pilots of Presence of Wire Obstructions, dated February 28, 1967; and Air Coordinating Committee Final Action ACC 59/10.12C, dated May 15, 1956.
2. BACKGROUND. Until a few years ago television towers more than 1,000 feet in overall height above ground level (AGL) were rare. Today, TV towers in excess of 2,000 feet are in existence; notification of the intent to erect towers, approximating 2,000 AGL, are becoming quite common.

The ground anchor of each of the three top guys of a 2,000-foot tower is located almost 2,000 feet from the base. At this ratio, at 200 feet AGL the wire would be approximately 1,800 feet from the tower; at 500 feet, 1,500 feet from the tower; and at 1,000 feet, 1,000 feet from the tower. Additional guys, supporting the structure at a number of points on the tower and anchored where the top guy is anchored, make it almost impossible to fly between the tower and the highest guy.

Guys are virtually invisible in good visibility; under restricted visibility they become impossible to see. In addition, the lower the pilot flies, such as a pilot might do with a low ceiling or restricted visibility, the farther he must remain from the tower to avoid the guys.

Hardware or system(s), capable of satisfying current agency standards, and which are also acceptable to sponsors of tall towers, for marking

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5/14/68

and lighting guys are neither adequate nor readily available. The problem with equipment available on the market today lies in the frequent or involved maintenance procedures required to provide a continuous operating warning system; the excess weight and size of equipment; and the possible adverse effect that strong winds and ice accumulating on the warning system could have on the guys by overstressing them. For these reasons, sponsors are reluctant to mark and light guys; therefore, hardware that will meet current agency standards and also be acceptable to sponsors is urgently needed.

The advent of taller towers, faster aircraft, more pilots and increased flight activity makes it imperative that effective warning devices be made available for installation at the earliest moment possible.

This requirement will cancel and supersede FAA Form 9550-1, AT-200-1, Improved Day and Night Conspicuity of Surface Obstructions to Air Navigation, dated October 25, 1967.

3. PERFORMANCE CRITERIA. The following criteria shall apply:
- a. Primary Requirement. The system for marking and lighting guys shall make them visible, or their location apparent, by attracting the pilot's attention, at a distance of three miles in a minimum of three miles meteorological visibility conditions during day and night.
 - b. Alternate Requirement. The above requirement may be reduced to one mile in one mile meteorological visibility if the time required to develop the system, or the associated cost factor, become unreasonable. However, the primary requirement remains as the ultimate goal.
 - c. General Requirements.
 - (1) The system shall make the pilot aware of the location of the guys from any normal flight path from which he may approach them up to a minimum of 1,000 feet above their highest portion.
 - (2) If feasible, the identification system should also indicate which way the aircraft should be maneuvered to avoid other portions of the obstruction.

- (3) The lighting and marking characteristics shall be identifiable with the object and not be subject to misidentification with other lighting aids used to identify landing areas.
4. SUGGESTED IMPLEMENTATION CRITERIA. The systems should be provided for existing and new obstructions as applicable. Implementation will be made in accordance with the requirements of FAA Advisory Circular 70/7460-1, and amended FCC regulations as applicable.
5. ALTERNATIVES. Equipment for the marking and lighting of guys is neither readily available nor entirely satisfactory. There are three possible solutions:
- a. Develop hardware and/or a system that will satisfy agency standards for the marking and lighting of tall tower guys, and be acceptable to the user;
 - b. Await the development of a day and night marking and lighting system(s) for tall towers. If adequate, marking and lighting of tall tower guys may not be necessary; and
 - c. Continue to work with and encourage outside interests to promote the development of up-to-date hardware that will satisfy or exceed current agency standards.
6. PRIORITY. This system is urgently required. The system should be made available at the earliest practical date.
7. COST FACTORS. The estimated cost for the development of the end product item(s) are considered to be variable. A review will be made of the development project plan to determine an acceptable dollar limitation. The cost of the installation and maintenance of the conspicuity systems will be the responsibility of the owners.

APPROVED:

Rep

E. W. Walker
Associate Administrator for Operations

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Date