

[4910-13]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 77

Docket No: FAA 2010-1326

Marking Meteorological Evaluation Towers

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Policy statement.

SUMMARY: This action announces the FAA's recommended guidance for the voluntary marking of Meteorological Evaluation Towers (METs) erected in remote and rural areas that are less than 200 feet above ground level (AGL). This guidance will enhance the conspicuity of the towers for low level agricultural operations in the vicinity of these towers.

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SUPPLEMENTARY INFORMATION:

14 CFR Part 77

Title 49 of the United States Code (USC), section 40103(a)(1), provides that the "United States Government has exclusive sovereignty of airspace of the United States." Paragraph (b) of this section directs the FAA to "develop plans and policy for the use of

the navigable airspace and assign by regulation or order the use of the airspace necessary to ensure the safety of aircraft and the efficient use of the airspace.”

In recognition of the threat tall structures can pose to aviation safety, 49 U.S.C. 44718 directed the FAA to promulgate regulations requiring notice of proposed structures or alterations of existing structures when the notice will promote safety in air commerce and the efficient use and preservation of the navigable airspace and of airport traffic capacity at public-use airports. See 14 CFR part 77. The agency was further directed to study such structures and determine the extent of any adverse impacts on the safe and efficient use of the airspace, facilities or equipment.

Consistent with the above statutory and regulatory framework, the FAA has adopted policy to establish the standards for which the FAA identifies “obstructions” and “hazards” in the navigable airspace in furtherance of its responsibilities to manage the navigable airspace safely and efficiently. See 14 CFR part 77 and FAA Order 7400.2, Procedures for Handling Airspace Matters.

Part 77 specifies when notice must be filed with the FAA for the construction of a structure or alteration of (an existing) structure. In filing this notice, the proponent provides the required information and submits its marking and lighting plan for that proposal, if appropriate. Sponsors are encouraged to review the guidance in Advisory Circular No. 70/7460-1, Obstruction Marking and Lighting in devising the marking and lighting plan for the proposed structure. In conducting the aeronautical study, the FAA considers the proposed structure, including the marking and lighting plan, and determines the impact on air navigation. If the FAA issues a Determination of No Hazard to Air Navigation, the determination may be conditioned on the structure being marked and

lighted in accordance with the determination. Unless notice is required under a separate paragraph of § 77.9, the FAA does not study structures under 200 feet AGL at its site.

I. Background

The FAA has been approached by operators, associations representing agricultural operators, and state governments concerning the visibility of METs in remote and rural areas that also have low-level flight operations. METs are used by wind energy companies to determine feasible sites for wind turbines. Some of these towers are less than 200 feet AGL, usually at 198 feet or less. The structures are portable, erected in a matter of hours, installed with guyed wires and constructed from a galvanized material often making them difficult to see in certain atmospheric conditions. The METs that fall under the 200 foot AGL threshold, specified in § 77.9, are not subject to the notice requirements and do not trigger any aeronautical study by the FAA.

On January 5, 2011, the FAA published a document seeking comments on proposed guidance for the voluntary marking of METs less than 200 feet AGL (76 FR 1326). The FAA agrees that marking these structures would enhance the conspicuity of these METs, particularly for low-level agricultural operations.

The document set forth three recommendations for comment. First, the FAA recommended that the METs be painted in accordance with the criteria contained in Chapter 3, paragraphs 30-33 of AC No. 70/7460-1. In particular, paragraph 33 discusses the paint pattern used to mark structures based on size and shape. Section (d) of that paragraph specifically refers to communication towers and catenary support structures, poles, smokestacks and skeletal framework of storage tanks and similar structures. The METs addressed in this document are similar to the structures identified in this

paragraph. Therefore, the FAA proposed the guidance recommended for these structures, which is alternating bands of aviation orange and white.

Secondly, the FAA recommended spherical and/or flag markers be used in addition to the above paint pattern when additional conspicuity is necessary for aviation safety. Paragraph 34 provides recommended guidance for the use of spherical and flag markers.

Lastly, the FAA proposed high visibility sleeves and/or flags on the outer guy wires of these METs. While AC No. 70/7460-1 does not contain this type of marking, the FAA specifically sought comments as whether this type of marking would be feasible and appropriate.

II. Summary of Comments and FAA Response

The comment period closed on February 4, 2011 and the FAA received approximately 460 comments from individuals, aviation associations, industry users, aviation businesses, emergency medical services, state governments and state departments of transportation. Many comments received were in response to the January 10, 2011 fatal accident involving a Rockwell International S-2R aircraft that collided with a MET during an aerial application in Oakley, California. Most commenters supported a goal of improving the safety of certain aviation operations in the vicinity of METs that are less than 200 feet in height. Some commenters supported various forms of marking the METs not proposed in the document, and others supported marking and lighting METs. Only 3 commenters opposed the proposed guidance.

The comments covered the following general areas of the proposal: marking and lighting METS, the advantages and disadvantages of affixing sleeves and spherical

marker balls, establishing a database of METs, and making the guidance for marking mandatory.

The American Wind Energy Association (AWEA) and California Wind Energy Association favored enhancing pilot safety. AWEA supported painting the METs as proposed, but commented that painting the top 1/3 of the tower would be sufficient. The National Agricultural Aviation Association (NAAA) commented that the marking provisions should apply to any tower over 50 feet AGL. NAAA further contends that paint must be applied to the entire vertical length of the tower in order to be effective. Transport Canada, which recently issued an Advisory Circular¹ for marking of METs, recommend painting the entire support mast.

The FAA agrees that painting the entire structure will provide the best visibility for pilots. As aerial applicators fly close to the vegetation and well below 200 feet AGL, the MET should be visible against the terrain as well as the sky. Therefore, the most effective painting scheme would entail painting the entire structure with alternating bands of aviation orange and white paint, as described in AC No. 70/7460-1, paragraphs 30-33. These provisions also recommend that the paint should be replaced when faded or otherwise deteriorated.

The FAA received varying comments on the usage and length of sleeves on METs. Several commenters, including AWEA and Iberdrola, stated that there is a practical limit as to how much weight the guy wires can sustain and a limited percentage of wires can bear the additional weight of sheathing. AWEA also stated that sleeves could add significant stress, particularly in icing situations, and undermine the structural integrity of the tower and lead to failure.

¹ Transport Canada Advisory Circular No. 600-001, Marking of Meteorological Towers (Mar. 3, 2011).

Commenters indicated that the length of the sleeve should be determined on a case-by-case basis, and result in a sheath that is sufficient to rise above tall crops or other land cover but still remain visible to pilots. The Helicopter Association International recommended at least 16 feet of high visibility sleeves on guy wires at the anchor point to extend above any surrounding crop. Other commenters recommended sheathing in a range of 6-10 feet.

The FAA received similar comments from Iberdrola, AWEA, NAAA and other agricultural associations on the use of spherical marker balls. These commenters stated that marker balls can attract significant icing, which increase loads on the tower and can lead to tower failure, as well as interfere with instrumentation and affect accuracy of MET readings. Various agricultural associations and others supported the use of spherical marker balls painted aviation orange. EcoEnergy uses 4 high visibility cable balls on the outer guy wires. Iowa Agricultural Aviation Association recommended 8 total marker balls. Iberdrola uses 4 marker balls installed just above ground-based sheathing to enhance visibility of the furthest extent of guy wires and a second set of 4 marker balls installed approximately 45 meters AGL to enhance visibility of the painted tower segment that delineates the tallest extent of the tower. Iberdrola strongly discouraged consideration of additional marker balls (more than 8) on METs as structural integrity limits are encroached upon with further loading.

Additionally, a few comments supported the use of marker flags in conjunction with spherical marker balls. The commenters also noted that flags may be useful as a visual aid, but are subject to rapid deterioration from weather conditions such as wind, snow, and ice.

The FAA concludes that sleeves and spherical marker balls will enhance the conspicuity of METs particularly for low flying agricultural and other aviation operations. The FAA recommends one high visibility sleeve on each guy wire anchor point that will reach a height well above the crop or vegetation canopy, and another sleeve installed on each of the outer guy wires. The FAA recognizes that certain weather conditions may affect the placement and use of high visibility sleeves on guy wires, and that the length should be determined on a case-by-case basis.

Spherical markers may have different placement standards, depending on the company that manufactures them. Varying placement standards and other factors such as weather play a role in the placement of spherical markers and flexibility is needed when determining their position on the METs. As a general recommendation, that FAA recommends a total of 8 high visibility spherical marker (or cable) balls of aviation orange color attached to the guy wires; four marker balls should be attached to guy wires at the top of the tower no further than 15 feet from the top wire connection to the tower, and 4 marker balls at or below the mid point of the structure on the outer guy wires. As stated previously, the FAA recognizes that the varying factors identified above may result in the placement or number of marker balls used and should be addressed on a case-by-case basis. The use of sleeves should not impact the placement of spherical marker balls.

Existing guidance in AC 70/7460, paragraph 34(b) states that flags are used to mark certain structures or objects when it is technically impractical to use spherical markers or painting. The FAA recommends spherical markers and paint, however, the FAA did not receive sufficient data on the use of flags on the guy wires that support METs to provide recommendations on their use for these towers.

NAAA, HAI, and others submitted various recommendations for lighting METs. The comments recommended varied uses of red lights and white strobe lights. Some commenters also stated that a recommendation for lights would require a Notice to Airmen (NOTAM) to be issued when the lights were not operational.²

Lighting studies indicate that red lights are difficult to see during the day, and that the most acceptable lighting configuration would be the use of a high intensity white strobe. The FAA acknowledges that the addition of lights may make METs more visible to agricultural and other low flying operations. The FAA concludes, however, that it would not be practical to recommend lights for the METs addressed in this document. The remoteness of many MET locations does not allow for pre-existing power sources, and strobe lights require more power than red lights. While solar lights may be a possible option, the FAA has not studied solar lighting and therefore, cannot provide recommendations for flight visibility.

Additionally, when the FAA conducts an aeronautical study, it reviews many factors in determining whether lighting is necessary. These factors include height, location, proximity to an airport, flight activity in the area, and complexity of terrain. Without a similar evaluation process, the FAA cannot recommend lighting for METs. It is important to note that the FAA does not recommending lighting in every aeronautical study.

The State of Minnesota commented that it is important to collect and share information METs siting in a timely manner, and that recommendations to mark and light METs should not hinder any growth aspirations of the wind industry. NAAA proposed

² The FAA notes that a NOTAM is issued for light outages only for structures subject to an FAA determination that specifies lighting.

that the FAA establish a database that catalogues all tower locations, similar to the initiative by the State of Wyoming.

It is not feasible for the FAA to maintain a national database for structures that are less than 200 feet AGL and otherwise not subject to the notice requirement in part 77. The FAA does not object to a state or local jurisdiction maintaining or providing a source of information that would inform pilots as to the location or planned location of these towers or for some other zoning, planning or public welfare purpose.

Many commenters responded that marking and lighting of METs should be mandatory. The FAA also received comments from the Experimental Aircraft Association, the National Association of State Aviation Officials, and others recommending changes to part 77 so that the FAA may study different structures at heights constructed less than 200 feet. NAAA also commented that upon adoption of revised standards, any towers erected before the adoption date shall be marked within six months after the effective date.

The purpose of this proposal was to address a limited population of METs that are not studied under part 77, but are difficult to see by certain low level aircraft operations. The guidance is recommended to landowners and developers siting these towers in remote, rural agricultural areas. The guidance recommended here is not necessary for METs that are erected in urban areas and far removed from areas where rural agricultural spraying operations are conducted. Landowners and developers must exercise discretion in determining if the METs will be erected in this type area where these operations are conducted and whether the marking and painting would enhance the visibility of these structures to low-level flight operations.

The FAA received comments pertaining to environmental impact issues and vegetation management. The Marin Audubon Society supporting the inclusion of guidance for measures to reduce the risk of collision for aircraft and birds. Other commenters claimed that steady red lights attract and confuse birds and that sleeves and skeletal framework of METs should be designed to make them visible for birds.

Three commenters opposed the proposal. One commenter was concerned that the proposal would be expanded to include amateur radio antenna supports. Another commenter was concerned with light pollution and applicability regardless of terrain and other factors. The remaining commenter inaccurately referred to this notice of policy as a notice of proposed rulemaking to amend the regulations in part 77. This commenter also argued that some developers may follow the guidance and others may not, which may introduce potential for pilots to presume that all METs will be marked and could result in failure to identify and avoid unmarked towers. The commenter contends that developers that choose to voluntarily mark and light their METs would incur additional costs and time delays and this affects their ability to compete with others in the market. As stated previously, the FAA is not amending the regulations to require notice for structures less than 200 feet AGL in non-airport environments. The FAA is providing this information to enhance the visibility of structures that otherwise may be difficult to see due to the terrain and the nature of specific operations conducted around these METs. While this guidance is not mandatory, the FAA anticipates that in the interest of aviation safety, developers and landowners will consider this guidance for METs erected in the environments described in this document.

III. Policy

The FAA recommends voluntary marking of METs less than 200 feet AGL in accordance with marking guidance contained in this document and Advisory Circular 70-7460-1, Obstruction Marking and Lighting. The FAA notes that historically this guidance has not been applied to the voluntary marking of METs less than 200 feet AGL. However, the FAA recognizes the need to address safety impacts to low-level flight operations due to the construction of METs in remote and rural areas, especially as agricultural spraying season approaches. Due to the growing concerns expressed by operators, associations representing agricultural operators, and state and local governments throughout the agricultural industry, the FAA believes that voluntary marking of METs less than 200 AGL in remote and rural areas enhance the visibility of these structures to low level agricultural operations in the vicinity of these towers.

The FAA recommends that landowners and developers use guidance contained in Advisory Circular 70/7460-1, Obstruction marking and Lighting for the voluntary marking of METs less than 200 feet AGL. METs should be painted in accordance to criteria contained in Chapter 3, paragraphs 30-33 of AC No. 70/7460-1, specifically, with alternate bands of aviation orange and white paint. In addition, paragraph 34 states that all markings should be replaced when faded or otherwise deteriorated. The FAA recommends that high visibility sleeves be installed on the outer guy wires of METs as described in this document. The FAA intends, at a future date, to amend the advisory circular to include guidance on sleeves. Additionally, the FAA recommends high visibility spherical marker (or cable) balls of aviation orange color are attached to the guy wires. Spherical markers should be installed and displayed in accordance to guidance contained in this document and additional standards contained in Chapter 3, paragraph 34

of AC No. 70/70460-1. The FAA, however, recognizes various weather conditions and manufacturing placement standards may affect the placement and use of high visibility sleeves and/or spherical markers. Thus, flexibility is needed when determining sleeve length and marker placement on METs.

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Dennis E. Roberts

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