



National Transportation Safety Board

Washington, DC 20594

Safety Recommendation

Date: May 15, 2013

In reply refer to: A-13-16 and -17

The Honorable Michael P. Huerta
Administrator
Federal Aviation Administration
Washington, DC 20591

The National Transportation Safety Board (NTSB) has investigated three accidents in which airplanes inadvertently collided with meteorological evaluation towers (METs),¹ fatally injuring four people. These structures can be erected quickly and, depending on their location, without notice to the local aviation community. In addition, they are often unmarked and unlighted because their height is typically just under the 200-feet-above-ground-level (AGL) threshold that requires Federal Aviation Administration (FAA) notification,² including a marking and lighting plan. Because of these factors, pilots have reported difficulty seeing METs from the air (the following figure shows an example MET), which has led to accidents. As the following accidents demonstrate, without measures to enhance their conspicuity, such as marking and lighting these structures and maintaining a record of their locations, METs pose a continuing threat to low-altitude aviation operations, such as those involving helicopter emergency medical services, law enforcement, animal damage control, fish and wildlife surveys, agriculture applications, and aerial fire suppression.

¹ METs are temporary structures used to measure wind speed and direction during the development of wind energy conversion facilities. METs are made from galvanized tubing (or other galvanized structure) with a diameter of 6 to 8 inches and are secured with guy wires that connect at multiple heights on the MET and anchor on the ground.

² Title 14 *Code of Federal Regulations* 77.9, "Construction or alteration requiring notice" states, in part, that "If requested by the FAA, or if you propose any of the following types of construction or alteration, you must file notice with the FAA of: (a) Any construction or alteration that is more than 200 ft. AGL at its site."



Figure. A photograph showing a MET (indicated by the black arrow), as seen from an accident site (NTSB case number WPR11LA094).

Accidents

On January 10, 2011, about 1057 Pacific standard time, the left wing of a Rockwell International S-2R, N4977X, impacted an unmarked and unlighted MET during an aerial seed application flight on Webb Tract Island, Oakley, California.³ Witnesses reported that they did not see the airplane perform any evasive maneuvers before the impact, indicating that the pilot did not see the obstruction. The pilot was fatally injured, and the airplane sustained substantial damage. Visual meteorological conditions prevailed and no flight plan was filed for the 14 *Code of Federal Regulations* (CFR) Part 137 flight. The NTSB's investigation found that

³ More information about this accident, NTSB case number WPR11LA094, is available at <http://www.nts.gov/aviationquery/index.aspx>.

the county permit⁴ for the MET had expired more than a year before the accident, but the MET had not been removed as stipulated by the permit's conditions of approval.

On May 19, 2005, about 0944 central daylight time, a turbine-powered Air Tractor AT-602 agricultural airplane, N9017Z, registered to and operated by McAdoo Flying Service, Inc., of Crosbyton, Texas, impacted terrain following an in-flight collision with an unmarked and unlighted MET⁵ while maneuvering near Ralls, Texas.⁶ The commercial pilot, the sole occupant of the airplane, was fatally injured and the airplane was destroyed. Visual meteorological conditions prevailed throughout the area and a flight plan was not filed for the 14 CFR Part 137 aerial application flight. The local flight originated from Crosbyton Airport, near Crosbyton, Texas.

On December 15, 2003, about 1416 Pacific standard time, an Erickson SHA Glasair TD homebuilt aircraft, N434SW, collided with an unmarked and unlighted MET and its wires during an unknown phase of operation about 1 nautical mile north of Vansycle, Oregon.⁷ The pilot and passenger sustained fatal injuries, and the airplane was destroyed. Visual meteorological conditions prevailed and a flight plan was not filed. The personal flight originated from Yakima, Washington, about 1345, and its destination was reported to be Walla Walla, Washington.

Discussion

Currently, it is unknown how many METs are erected in the United States. Unless notice is required by other provisions in Part 77,⁸ the FAA does not conduct an aeronautical study of any structure less than 200 feet AGL⁹ at its site. If construction of a structure or alteration of an existing structure is 200 feet or greater, Part 77 requires FAA notification via Form 7460-1, "Notice of Proposed Construction or Alteration." After receiving notice, the FAA conducts an aeronautical study, during which it considers the proposed structure's impact on air navigation and the applicant's marking and lighting plan for the structure. An FAA determination that the proposed structure poses no hazard to air navigation may be conditioned on the structure being marked and lighted, as specified in the determination. In filing this notice, applicants also submit a marking and lighting plan, if appropriate, and are encouraged to use the guidance provided in Advisory Circular (AC) 70/7460-1, "Obstruction Marking and Lighting," in devising the plan.

On January 5, 2011, acknowledging that METs often fall outside of FAA regulations governing tall structures and their impact on navigable airspace, the FAA published a notice seeking comments on a proposed revision to AC 70/7460-1, "Obstruction Marking and

⁴ The permit for the MET was issued by Contra Costa County, which specified that the paint colors for the MET blend in with the surroundings and "have a reflectivity less than 55%."

⁵ The original accident report referred to the MET as an antenna tower.

⁶ More information about this accident, NTSB case number DFW05LA126, is available at <http://www.nts.gov/aviationquery/index.aspx>.

⁷ More information about this accident, NTSB case number SEA04LA027, is available at <http://www.nts.gov/aviationquery/index.aspx>.

⁸ In addition to height considerations, section 77.9 requires that notice for proposed structures be filed with the FAA based on proximity to an airport, location, and frequencies emitted from the structure.

⁹ According to the FAA's Obstruction Evaluation office, the specification of 200 feet for required reporting was likely related to the instrument approach minimums in place when Part 77 was established.

Lighting,” that is intended to establish “a uniform and consistent scheme for voluntarily marking” METs less than 200 feet AGL (76 *Federal Register* 490). In June 2011, the FAA published a policy statement announcing its approval of the recommended guidance (76 *Federal Register* 36983). Regarding the lack of guidance for voluntary lighting of METs, the FAA stated that, although it acknowledged adding lights may make METs more visible to agricultural and other low-flying operations, it concluded that:

[I]t would not be practical to recommend lights for the METs addressed in this document.¹⁰ The remoteness of many MET locations does not allow for pre-existing power sources.... While solar lights may be a possible option, the FAA has not studied solar lighting and therefore, cannot provide recommendations for flight visibility.

The policy statement also indicates that “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.”

In the absence of a federal requirement concerning METs, 10 states have taken action to implement requirements for METs at the local level. All of these states have enacted or initiated legislation requiring that wind measurement towers 50 feet AGL and taller be marked and in some cases registered. Montana, Nebraska, North Dakota, and Wyoming require that all METs in these states be registered in a directory noting their locations and marked. Idaho, Kansas, Mississippi, and South Dakota require that METs be clearly marked, and California and Missouri have proposed similar legislation.¹¹ Regional FAA Safety Teams (FAAST) have also been educating operators about the dangers of METs through presentations, as well as through distribution of brochures highlighting the issue. According to the FAA, no further action on MET requirements is presently being considered.

Although the efforts of individual states and FAAST members should provide some benefits regionally, the NTSB believes that additional action for the required registration, marking, and lighting of METs is needed on a nationwide basis. The FAA’s 2011 policy statement approving the creation of a consistent scheme for voluntary marking of METs is a positive step. Despite the policy statement’s lack of lighting standards for METs and position that maintaining a national database for METs is not feasible, the NTSB believes that both would provide another layer of protection for low-altitude operations. While the NTSB acknowledges that the remoteness of many MET locations limits lighting capabilities, required registration of these structures with the FAA would provide an opportunity to evaluate lighting options by understanding the variety of locations where METs are constructed and the potential lighting options based on these locations.

The NTSB is encouraged by the requirement in section 219(a) of the FAA Modernization and Reform Act of 2012, Pub. L. 112-95, February 14, 2012, that calls for the FAA to conduct “a study [due no later than 1 year after the legislation’s enactment] on the feasibility of developing a

¹⁰ Elsewhere in the policy statement, the FAA indicates that the proposal was intended “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.”

¹¹ For more information, see the website for Harness Energy, a company that specializes in MET installation (<http://www.harnessre.com/map> [accessed May 10, 2013]).

publicly searchable, Internet Web-based resource that provides information regarding the height and latitudinal and longitudinal locations of guy-wire and free-standing tower obstructions.”¹² The NTSB is concerned, however, that the study will not necessarily result in the creation of a publicly searchable database for these structures. As noted in the March 2011 NTSB safety alert¹³ about METs, the speed with which they can be erected is an important aspect of this safety issue—in just a matter of hours, the navigable airspace for low-flying operations can change without notice. A widely accessible source for registering these structures and their locations would be a useful tool for pilots of low-altitude operations. In addition to providing pilots with critical information about MET locations, such a database might also assist in the timely removal of METs when their permits expire.

The NTSB notes that the deployment of METs will continue to increase in support of the wind energy industry in the United States and anticipates that, without a change in requirements, this hazard to aviation safety will increase accordingly. The NTSB concludes that, due to their rapid construction and lack of conspicuity, METs pose a threat to pilots who conduct low-altitude operations and that the required registration, marking, and—where feasible—lighting of these structures would aid pilots in avoiding them.

Therefore, the National Transportation Safety Board makes the following recommendations to the Federal Aviation Administration:

Amend 14 *Code of Federal Regulations* Part 77 to require that all meteorological evaluation towers be registered, marked, and—where feasible—lighted. (A-13-16)

Create and maintain a publicly accessible national database for the required registration of all meteorological evaluation towers. (A-13-17)

The NTSB also issued two safety recommendations to the American Wind Energy Association, one safety recommendation to the Department of the Interior, the Department of Agriculture, and the Department of Defense; and one safety recommendation to 50 US states and territories and the District of Columbia.

In response to the recommendations in this letter, please refer to Safety Recommendations A-13-16 and -17. We encourage you to submit updates electronically at the following e-mail address: correspondence@ntsb.gov. Please do not submit both an electronic copy and a hard copy of the same response.

¹² According to an FAA representative, as of March 2013, the final report is with the Administrator for review.

¹³ NTSB Safety Alert SA-016 highlights the dangers of METs and provides links to resources where pilots can find additional information; it is available at http://www.nts.gov/doclib/safetyalerts/SA_016.pdf.

Chairman HERSMAN, Vice Chairman HART, and Members SUMWALT, ROSEKIND, and WEENER concurred in these recommendations.

[Original Signed]

By: Deborah A.P. Hersman,
Chairman