



AVIATION



HIGHWAY



MARINE



RAILROAD



PIPELINE

The Hazards of Unmarked Towers

Pilots urged to be vigilant for unmarked meteorological evaluation towers and other unmarked towers

The problem

- Meteorological evaluation towers (METs) are used to measure wind speed and direction during the development of wind energy conversion facilities. METs have 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. These and other kinds of unmarked towers, such as those used to support GPS functionality and telecommunications, are also present throughout the country and can pose hazards to aviators.

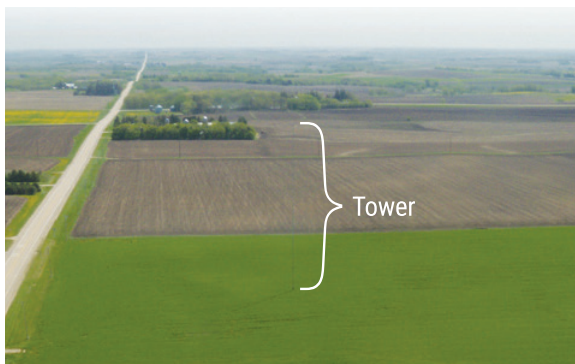


Figure 1. Photograph of an unmarked tower in a field. (Note: A larger version of this photo is available at the FAASTeam brochure link provided in the **Need more information** section.)

- Many unmarked towers fall below the 200-ft Federal Aviation Administration (FAA)-required threshold for obstruction markings (which includes lighting), and obstruction height can vary with the terrain. They can also be erected quickly and without notice to the local aviation community, depending upon their location.
- Because of their size and color, pilots have reported difficulty seeing unmarked towers from the air (figure 1 shows an example of an unmarked tower provided in an FAA Safety Team [FAASTeam] brochure). Therefore, unmarked towers could interfere with low-flying aircraft operations, including those involving helicopter emergency medical services, law enforcement, animal damage control, fish and wildlife, agriculture, and aerial fire suppression.
- The NTSB has investigated several fatal accidents involving aircraft collisions with METs and other unmarked towers less than 200 feet tall, including the following:
 - On August 8, 2011, an Air Tractor AT-602, N5123L, collided with an unmarked 80-ft-tall tower near Willcox, Arizona. ([WPR11LA375](#))

- On January 10, 2011, a Rockwell International S-2R, N4977X, collided with a MET during an aerial application in Oakley, California. ([WPR11LA094](#), see figure 2)
 - On May 19, 2005, an Air Tractor AT-602, N9017Z, collided with a MET that was erected 15 days before the accident in Ralls, Texas. ([DFW05LA126](#))
 - On December 15, 2003, an Erickson SHA Glasair, N434SW, collided with a MET near Vansycle, Oregon. ([SEA04LA027](#))
- While some states have implemented marking and reporting requirements for METs (and other types of towers) to improve the safety of low-flying aircraft, not all states have such requirements.
- The FAA published [AC 70/7460-1L](#), which recommends the marking of METs and provides marking guidance. However, the NTSB is concerned that the application of the AC is voluntary and, without mandatory application and marking requirements for METs and other kinds of towers less than 200 feet tall, many of these towers will continue to be constructed without notice to the aviation community and will fail to be marked appropriately. The NTSB addressed this concern in several recommendations that are referenced below.



Figure 2. Photograph of N4977X wreckage and MET in the background.

What can **pilots** do to avoid unmarked METs and other unmarked towers?

- **Maintain vigilance for METs and other unmarked towers, such as GPS and telecommunications towers, when conducting low-altitude flights, as they can pose a safety hazard to aircraft.**
- **Ferry above 500 feet and remember to adhere to [14 CFR 91.119, Minimum safe altitudes](#), when flight operations permit.**
- **If you locate an unmarked MET or other unmarked tower in your area, let other pilots know about the tower's location. FAASTeam members are also exploring methods of notifying pilots about the location and height of METs and are working to educate MET owners, builders, and communities on the flight-safety issues presented by METs.**
- **Encourage the marking of METs and other unmarked towers in your area.**

Interested in more information?

The NTSB issued safety recommendations to [the FAA](#); [the United States and territories](#); [the Departments of the Interior, Agriculture, and Defense](#); and [the American Wind Energy Association](#), concerning METs.

The FAA published [AC 70/7460-1L](#), which recommends the marking of METs and provides marking guidance.

FAA FAASTeam members have developed [resources](#) for pilots and created a [brochure](#) on the danger of towers.

The National Agricultural Aviation Association provides [a collection](#) of resources on METs and marking requirements, in addition to providing a fact sheet [outlining the dangers](#) of unmarked towers.

The NTSB's Aviation Information Resources web page, www.nts.gov/air, provides convenient access to NTSB aviation safety products. This Safety Alert and others can be accessed from the [Aviation Safety Alerts](#) link at www.nts.gov.

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