

Briefings

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Best management practices for snow and ice control

Any day now, the falling leaves will give way to falling flakes. Minnesota airport operators know that when winter weather arrives, they need to be ready to not only manage the snow and ice, but also keep airport users informed about conditions that might change quickly. As part of AirTAP's virtual education series, Kurt Claussen, deputy airport director with Rochester



International Airport, shared advice for ensuring safe winter airport operations.

Removing snow and ice

Because of the many weather variables—wind, pavement temperature, air temperature, air moisture—no two snow events are exactly alike, Claussen said; that makes it challenging to give specific advice that would cover every situation. An airport's operational needs will drive winter weather response, and each airport has different operational needs. Those operational needs are determined by the needs of air carriers, air ambulance, and 24/7 tenants, among other factors. "Higher operational needs require more resources that can be focused on the airfield," he said.

When it comes to snow-removal equipment, "Brooms are absolutely the best piece of equipment for taking off snow," Claussen said, while acknowledging that many smaller airports probably can't justify purchasing

them. "We broom probably 90 percent of the snowfalls and only supplement brooms with plows to move the heavier snow," he said. Some larger airports are also adopting multifunction types of equipment, with a plow on the front and a tow-behind broom that allows for both functions to work simultaneously.

When clearing snow, Claussen cautioned operators to be mindful of the location of signs and lights and make sure they're not buried. Operators should also ensure that emergency vehicle routes, such as gates needed for access, are kept clear.

Snow, however, is less challenging to deal with than ice, according to Claussen. He noted that the number of ice events at the Rochester airport has been increasing in recent years. The airport takes a proactive approach whenever possible, pre-applying liquid as an anti-icer before a freezing rain event to prevent ice from forming and bonding. "We feel we use less chemical if we stay ahead of it, but I know that's not going to work for everybody...again, it's all operational-need-based." When ice is present, Claussen advises first removing as much as possible with mechanical means, either a broom or a blade. Afterwards, use FAA-approved pavement deicers. These include liquids (e.g., E36 from Cryotech) and solids (e.g., New Deal). Claussen advises against using urea because of the environmental concerns and a lack of FAA approval. And salt—which is corrosive to aircraft—is never an option. "We never use salt at all inside the fence. We don't even drive trucks that have had salt in them anywhere near the airfield, and we're really careful to avoid inadvertently dropping any salt," he said.

If an airport can only afford one type of chemical, Claussen recommends a solid deicer over a liquid. Solid pellets can be applied with a sanding truck, and, if an airport operator isn't on the scene when it

rains and ice forms, the solid can still be applied and it will work through the ice to break it up; a liquid deicer "just sits on top of the ice," he said. Smaller airports might consider joining together to purchase solid pellets in bulk and then sharing, as a more cost-effective option, he added.

Reporting snow and ice

In addition to removing snow and ice, an airport operator needs to let users know what effect winter weather is having on the airport. Any precipitation can cause hazardous conditions that could contribute to aircraft incidents and accidents. Pilots rely on airport managers and operators to provide them with information by issuing NOTAMs (Notices to Airmen) so they can make safe decisions when flying.

NOTAMs are issued to report the presence of any surface contaminants—in this case, snow and ice. It's critical to note not only how much snow is present, but what *kind* of snow is present, Claussen said—dry, wet, or slush; all make a difference to pilots' expectations.

Reporting on winter conditions includes the presence of snow removal equipment. A work-in-progress NOTAM, for instance, lets users know there will be moving equipment on the airport. Another option for airport operators is to issue a "prior permission required (PPR)" NOTAM. To illustrate, Claussen explained that Rochester's tower is closed from 11 p.m. to 5 a.m., so if airport crews are plowing during that time, they issue a PPR NOTAM, similar to this:

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!RST XX/XXX RST AD AP CLSD EXC 30
MIN PPR 5072541161
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which means aircraft wanting to operate at the airport during the closed period need

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to provide 30 minutes' notice by calling the phone number listed.

NOTAM Manager (the FAA computer program for issuing NOTAMs) makes it much easier for airport operators to manage and report the conditions of their field, Claussen said. "It's a huge responsibility [for operators]...If you don't report conditions that are less than bare and dry, [and] there's an accident at your airport...I'd hate to be in that position of trying to defend not reporting conditions."

A FICON is a Field Condition NOTAM.

FICONS are issued through the Runway Condition Assessment Matrix (RCAM). Airport assessments of runway conditions are made for each third of the runway, which standardizes the process. FICONS were previously friction-based and are now contaminant-based. Reporting conditions will result in the system providing a Runway Condition Code (RWYCC)—which pilots will use when planning their flight. RWYCC range from 0 (very slippery) to 6 (dry).

Claussen added that the airport should update FICONS as conditions change—and periodically even when they don't change. In addition, there's a NOTAM for "Condi-

tions not monitored." "We don't use that [in Rochester] because we're always monitoring. But I see that as a tool [some airports] could use...Again, it's all operational-need-based," he said.

For NOTAM Manager access, try one of the following:

- Register on the self-certification website at notams.aim.faa.gov/scert/
- Call the NISC Deployment Team at 816-329-2550
- Contact Steve Meinders at 816-329-2516 or steve.ctr.meinders@faa.gov

Click, click, click—Nothing! Pilot-controlled lighting tips and reporting



Most folks who are not involved with aviation wouldn't know that a radio pulse sequence is used to "key-up" the runway lighting system as a pilot is on approach. The average person may think that the pilot "calls" down with their radio to somebody at the tower or A/D building and instructs them to "turn on the lights." Of course, in the aero world we know this is not the case, because most airports don't have staff present around the clock. The pilot-controlled lighting (PCL) system puts the power into the pilot's hands—to control the airport lighting system on the ground from the air.

The radio receiver that controls the PCL system at each airport is constantly monitoring the radio traffic on the local airport radio frequency and watching for clicks. A click is made by simply tapping the microphone's transmit button on an air-band radio transmitter and then releasing it immediately. If tapped three times within a five-second duration, the lights should

turn on at low intensity. Five clicks activates medium airfield light intensity, and seven clicks brings up high intensity. If a pilot is flying at night and needs to decrease the intensity, they simply click the appropriate number of times for the desired intensity and the lighting system will adjust. Pilots are advised to not click too fast, though! The radio controller needs a slight window of time between clicks to interpret the input as a pulse.

Encountering a PCL problem

Have you flown into one of Minnesota's airports and had inconsistent results when keying up the airport lighting systems? Or have you tried to switch the intensity of the lights, but it seems to take more clicks of the radio than it should? This problem should be addressed as soon as possible in order to restore the system to its intended parameters. MnDOT's NavAids group asks pilots to take notice of any abnormalities and pass them along to the airport manager. When the team performs maintenance checks of the PCL radio receiver, it can use handheld equipment to test the functionality of the system. But the best testing procedure is done from the air at a longer range. For that reason, it's best if pilots report any potential problems directly to the airport's manager. Many of Minnesota's airport managers are experienced and able to correct problems in-house. Airport manager who run into

tricky outage scenarios are welcome to reach out to MnDOT's NavAids group for additional troubleshooting assistance.

Other issues that may cause outages to the PCL system:

Radio Equipment. PCL systems are generally dependable, but every component has its own inherent service life. Some potential issues:

- The PCL radio receiver can start to lose its range as components wear out. As this happens, it can drop the system out of its designed tolerances and become unreliable. *Possible solution:* Bring a precision signal generator out to the site. The signal generator plugs directly into the radio receiver and can feed precise signal feeds to determine if the radio is properly adjusted to tolerances.
- The electrical relays inside the radio assembly can weaken and may not engage firmly at the connection points. The relay points can accumulate some corrosion or charring as well. *Possible solution:* Some brands of radio receiver allow for replacing components as they begin to wear out. This isn't always an option, and sometimes the whole receiver itself must be changed.
- The radio transmitter itself can create issues. *Possible solution:* Pilots must verify

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AirTAP was developed through the joint efforts of the Minnesota Department of Transportation, the Minnesota Council of Airports, and the Center for Transportation Studies (CTS). AirTAP is housed within CTS at:

University of Minnesota
University Office Plaza, Suite 440
2221 University Avenue SE
Minneapolis, MN 55414
Web: www.airtap.umn.edu
Email: cts@umn.edu
Phone: 612-626-1077

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AirTAP Director: Mindy Carlson
AirTAP Coordinator: Katherine Stanley

Editor/writer: Amy Friebe
Designer: Angela Kronebush
Contributing writers: Casey Carlson, Mark Hagen
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An airport's story: Detroit Lakes–Becker County

During the 1920s, a pasture west of Detroit Lakes, Minnesota, was used as an informal flying field. In 1928, the City of Detroit Lakes purchased a 210-acre farm, including the field used by the pilots. Thus began a long history of flying into this beautiful lake-filled area in northwestern Minnesota.

The airport is governed by the Detroit Lakes/Becker County Airport Commission. The commission operates under a joint operating agreement between the city and Becker County.

Twenty years ago, the main runway was 4,500 feet long and 75 feet wide with a partial parallel taxiway. The airport had a number of safety concerns: US Highway 10 was located in the runway safety area, wastewater settling ponds attracted wildlife, and the airport lacked a full parallel taxiway.

The airport commission began to look at resolving these issues, along with expanding the runway to accommodate a growing list of aircraft that needed more length to be able to use the airport.

“The project was stalled for several years in the ‘purpose and need’ section of the environmental assessment process,” says Mark Hagen, current chair of the airport commission and a member since 1992.

A requirement of the environmental assessment was proof that there would be enough corporate and private aircraft traffic to warrant the project. Specifically, the airport needed to prove that jet operations would increase by at least 900 per year. The commission secured statements from several private and commercial airplane owners indicating that they would use the airport

more often if it had a longer runway.

“It is a major issue for a general aviation airport that does not have scheduled commercial operations to prove the need for a runway expansion. You have to search and find users who are currently not using the airport and ask them to write a letter which states they will use the airport if it is expanded,” Hagen explains. “This would be similar to building a motel and having the banker requiring the potential guest’s names during the loan process.”

Mead & Hunt provided the professional experience to navigate the many hurdles associated with the complex project. In 2016, the environment assessment process ended with a finding of No Significant Impact (FONSI) issued by the FAA.

The next step, designing the airfield renovations, occurred in the winter of 2016–17. In addition, the project included filling nearly 30 acres of decommissioned wastewater settling ponds to mitigate the wildlife attractants in proximity to the extended runway.

Before the construction could begin, the airport had to secure funding. The budget was estimated at \$25 million, and the FAA agreed to cover 90 percent of the cost. The State of Minnesota contributed 5 percent, Becker County kicked in 2.5 percent, and the City of Detroit Lakes matched the county’s 2.5 percent.

It was a long process, but the new Runway 13/31 opened July 30, 2020, after 17 years of planning and a four-year phased construction program. It’s now 5,200 feet long and 100 feet wide with state-of-the-art runway



lights, precision approach path indicators (PAPI), and guidance signs. A full parallel taxiway eliminates aircraft taxiing on the runway. A precision instrument approach and lighting system will help with landings during low-visibility conditions.

At the same time crews extended the runway, they also upgraded airfield lighting and signs, added supplemental wind cones, and installed PAPIs on both ends of Runway 14-32. In addition, four miles of wildlife and security fence were installed in 2021.

A ribbon cutting was held on August 13, 2021, at the airport, where family members of Duane “Doc” Wething, a driving force of the airport, performed the honors. Wething passed away in January of 2020 before the project came to final completion but with the knowledge that it would happen. He was involved with the airport for more than 70 years, serving for more than 50 on the Airport Commission. His contributions to aviation in both Minnesota and the Detroit Lakes area were recognized in 2001 with the official naming of the airport “Wething Field.”

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that the aircraft’s radio is putting out the proper signal strength and characteristics. One simple way is to run a test with the suspect radio alongside a similar radio that is known to be working well. Do they act the same? Give the same kind of range?

Changes to the airport environment. It’s easy to focus only on the airport equipment as the source of the problem, but sometimes the signal itself can be disturbed by an outside factor, such as:

- A local AM/FM radio station unknowingly creating interference because of a problem with its own equipment.
Possible solution: The airport along with

the NavAids team should look to isolate what’s causing the disturbance and contact the appropriate party.

- A large obstruction nearby affecting the radio’s efficacy. Perhaps construction of a factory, bridge, or overpass is causing interference. *Possible solution:* Since it’s likely not possible to remove the building, a radio engineer could get involved to determine a corrective action, such as making adjustments to the antenna array or installing a different array altogether.

When pilot-controlled radio systems are not working properly, a pilot has fewer resources to assist with carrying out safe operations. Realistically, outages will occur from time to time as equipment ages. The MnDOT Aeronautics NavAids group

strives to accurately report when systems are down by using the NOTAM system. They want all pilots to be aware of any systems that are acting up or taken offline for repairs. What can you do to help ensure PCL systems are operating as they should and therefore keeping fellow pilots and their passengers safe? We are calling on you folks who travel through the skies to help us. Activate (test) those airfield lights. If you notice an issue, bring it to the airport manager’s attention. The next pilot coming in behind you might have lower visibility and may be counting on those lights.

—Writer: Casey Carlson. Carlson is the airport lighting coordinator for MnDOT Aeronautics’ NavAids group.

FAA updates

The FAA is under a continuing resolution through December 3, 2021. The agency does not anticipate awarding any Airport Improvement Program (AIP) grants during this time.

Closeouts

There are 48 FY18 grants and 4 FY17 grants that *must* close in FY22. Submit closeout reports to MnDOT/FAA so that final payments or amendments can be reviewed and completed.

Airport Rescue Grants

On August 10, the FAA sent an email requesting airports to sign the grant applications to receive the next round of COVID relief funds. These applications are due to the FAA by November 30. To date, the agency has received 40 applications—just under half of the Minnesota applications. See faa.gov/airports/airport_rescue_grants/ for more information including the FAQs of what the funding can be used for.

CertAlerts

CertAlert 21-05, “Part 139 Extinguishing Agent Requirements,” dated Oct. 4, 2021, informs Part 139 airport operators about

changes to the military specification for firefighting foam referenced in Chapter 6 of AC No. 150/5210-6D. While the performance standard remains the same, the military specification no longer requires the use of fluorinated chemicals. One acceptable means of satisfying 14 CFR Part 139 requirements is to continue to use the existing approved foam, which does contain fluorinated chemicals. However, the FAA encourages certificate holders who have identified a different foam that meets the performance standard to seek approval for such foam from the FAA.

faa.gov/airports/airport_safety/certalerts/

MnDOT updates

Grants

- The first round of state fiscal year 2022 grant offers were sent out in September, with responses due October 2. If you received a grant offer and haven’t responded yet, please contact your regional engineer as soon as possible to either accept or pass on the offer.
- Federal pre-application documentation is due to both MnDOT and the FAA by

November 15. Please verify that you have your planning and environmental documents in place (or in process) to reduce grant award delays.

Advanced Air Mobility

MnDOT’s Office of Aeronautics is incorporating AAM into statewide transportation plans and is in the early stages of public communication. Current efforts are focused on increasing public knowledge and interest while building a policy and infrastructure strategy that can be nimble in response to opportunities for deployment.

To further this effort, MnDOT Aeronautics, in cooperation with the Center for Transportation Studies, has formed the Minnesota Advanced Air Mobility Work Group. The aim of this work group is to inform the public about AAM, understand stakeholder interests, and guide the integration of AAM in a manner beneficial to Minnesota.

Airport Technical Assistance Program
University of Minnesota
University Office Plaza, Suite 440
2221 University Avenue SE
Minneapolis, MN 55414

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