



# AirTAP Briefings

A publication of the AirTAP program of the Center for Transportation Studies at the University of Minnesota

Following is a summary of information covered during three AirTAP-sponsored Snow and Ice Control Information Sessions held in December 2001. Jim Moriarty, fleet manager for the Minneapolis-St. Paul Metropolitan Airports Commission, shared his thoughts and experience on the responsibility of the airport operator regarding snow and ice control. Ann Johnson, Professional Engineering Services, facilitated the sessions and provided this summary information.

## Snow and ice control aid safe airport operations

Winter weather can have a serious impact on safe airport operations, often causing conditions that may lead to incidents, accidents, or delays. Consequently, snow and ice control at an airport is crucial regardless of the size of the airport or the aircraft using it. Landing or taking off on a slippery surface is much more dangerous for a plane than driving on a slippery surface is for a car, as planes are not able to brake in the same way. Snow and ice control on the last third of the runway is especially critical, as this area must offer a clear pavement if a pilot decides to abort the takeoff.

### Snow plan

Snow and ice should be removed as soon as possible during or after a weather event. To facilitate this, every airport should have a current "snow plan" that describes in detail snow and ice control and removal operations. A snow plan should be concise, accurate, practical, and specific to the Federal Aviation

Administration (FAA)/Federal Aviation Regulation (FAR) circular under which an airport operates. For example, the Metropolitan Airports Commission's (MAC) snow plan requires runways to be cleared within 30 minutes of closing the airport.

A snow plan is required for all FAR 139 certificated airports, and it must be submitted to the FAA for approval. The airport owner's legal staff should review a snow plan before it is sent to the FAA regional office.

FAA Advisory Circular 150/5200 provides a guide for creating a snow plan and suggests a list of items to include.

### NOTAMS and Airfield Condition Reports

A Notice to Airmen (NOTAM) must be issued to alert pilots to plowing operations, closed pavement surfaces, and the conditions of lighting, airfield signage, and navigational aids (NAVAIDs).

NOTAMS should also warn pilots of any hazards. For example, obstructions



such as snow piles must be listed on a NOTAM. Pin or pillow drifts are considered obstructions as well, as they can ruin an aircraft's landing gear. Pavement inspections must be repeated periodically in order to generate continuous updates on the airfield condition and to determine when and if re-plowing is needed.

At Minneapolis-St. Paul International

*Continued on back*

## Mark your calendars for upcoming symposium, research conference

The 2002 Minnesota Airport Symposium will be held April 17-19 at the Northern Inn in Bemidji, Minn. Cosponsors of the event are Mn/DOT Aeronautics and the Minnesota Council of Airports (MCOA).

For a schedule of the symposium and registration information, visit [www.dot.state.mn.us/aero/avoffice/mcoa2002.html](http://www.dot.state.mn.us/aero/avoffice/mcoa2002.html).

Airport-related issues will be featured in two sessions at the 13th Annual CTS Transportation Research Conference May 22-23 at RiverCentre, St. Paul.

On May 22, Ann Johnson of Professional Engineering Services will moderate "Airport Changes in the Face of New Security Issues." Becki Roering of the Federal Aviation Administration (FAA) will speak on the perspective of the FAA and the Minneapolis-St. Paul International Airport. The mid-sized commercial perspective will be addressed by Shaun Germolos of Duluth International Airport, while the small and border airport perspective will be addressed by

Thor Einarson of Falls International Airport. The session runs from 1:45-3:00 p.m.

"Perspectives, Changes, and Economic Impacts within Transportation Since 9-11" will be held on May 22 from 3:15 to 4:30 p.m. This presentation, moderated by Michael Marti of SRF Consulting Group, Inc., will feature speakers Tim Anderson of the Metropolitan Airports Commission, John DeCoster of Northwest Airlines, and Skip Krawczyk of Transport Distribution Services, Inc.

The CTS research conference is a forum for researchers and practitioners from Minnesota and the Upper Midwest to share their research findings in a variety of transportation-related areas. The two-day event will cover all modes of transportation including highway, transit, rail, air, water, and others. For more information, visit the CTS web site at [www.cts.umn.edu/events/index.html](http://www.cts.umn.edu/events/index.html). ✈

Airport, a NOTAM is issued any time a runway is closed regardless of the duration. MAC maintenance staff tries to give pilots at least a one-hour notice of pavement closings.

Airfield Condition Reports, issued by airports to give pilots information on pavement conditions, must be specific, accurate, timely, and use approved FAA phraseology. These reports might document any deicer used, the locations of ice patches, friction numbers for each third of the runway, and specific information about drifting snow height and location.

### Lighting, markings, signage, and NAVAIDS

Keeping signs, markings, and lighting clear is important for safe operations at an airport. FAA regulations state that all lights must be clear of snow. Lights should be kept free of ice as well or they may freeze solid.

NAVAIDs and light couplings must be checked after plowing to ensure that they were not damaged and are operating correctly.

The windsock, another important tool for pilots, should be checked frequently by airport owners or maintenance staff; alternatively, local police could be charged with checking that the windsock is lighted during periodic airport inspections, but the airport owner must take overall responsibility for the windsock's condition.

According to FAA Part 139, an airport with three burned-out runway or taxiway lights in a row must issue a NOTAM to that effect, or close that portion of the airfield. For unlighted pavements, three consecutive non-functioning pavement delineators also dictate that the airport issue a NOTAM and/or close that portion of the airfield to operations.

### Snow and ice control techniques

**Canadian snow fence.** One technique that can be used to control drifting snow is a Canadian snow fence. This is created by using a snow blower to blow a trench parallel to the runway, taxiway, or road pavement once the ground is frozen. Because this trench is an area of low pressure, it attracts blowing snow and thus prevents the snow from blowing onto the pavement.



Session participants listen to discussion on snow and ice control and view equipment at the Duluth airport.

Although the width of the trench is usually determined by the width of the blower, ten feet is typical.

**Chemical and sand usage.** The application of chemicals and sand is often needed to improve the surface friction on airport pavements. FAA-approved chemicals are sodium formate (NAC) and potassium acetate. NAC can be purchased in bulk, but since it cakes with humidity, storage is sometimes a problem. Upon application, operators must wear a breathing apparatus to protect themselves from the cloud of airborne dust that is released from the material. NAC works at low temperatures (below 15° F). It doesn't penetrate snow or ice as well as urea and is slow to work.

Potassium acetate should not be applied before the start of a freezing rain event, since it is greasy when applied to a dry surface and will necessitate sanding if no rain occurs. Potassium acetate also conducts electricity, making old wiring and

poor electrical connections vulnerable in areas where it is used. For that reason, seals on surface lights should be checked before application.

Sand should always be used sparingly and with a chemical to decrease slipperiness. The type of sand used must be approved by the FAA, which certifies that the additives in it do not cause corrosion to airplane parts. After a significant snow event, pavement should be swept to prevent excess sand from causing prop blasting. Sand must be loose when applied to surfaces in order to eliminate any chunks that could cause a foreign object damage (F.O.D.) problem. Storing sand in a heated facility will reduce chunking of the sand when it is applied.

Urea can be a good tool for controlling ice due to its ease of use and low cost. However, its use has been banned at MSP for environmental reasons. Airports using urea should confirm that the product is acceptable according to FAA standards. Airports should also keep records of the products used, noting FAA approvals.

### Friction measurement

A decelerometer is an instrument that measures the friction between a test vehicle's tire and the pavement. A decelerometer is recommended for all 139 certificated airports. Although one is not required for friction testing, it offers more credibility than do subjective pavement condition reports such as poor, fair, and good. A decelerometer costs about \$1,300, with an additional \$600 each year for calibration.

If issuing braking reports based on using a wheeled vehicle only, follow the FAA advisory circular and disable the anti-lock brake system. ✈

AirTAP was developed through the joint efforts of the Minnesota Department of Transportation (Mn/DOT), the Minnesota Council of Airports (MCOA), and the Center for Transportation Studies (CTS).

Briefings is published as a quarterly insert of the MCOA Newsletter. Please direct comments to:

Amy Friebe,  
Briefings Editor  
Cheri Marti,  
AirTAP Program Director  
Jim Grothaus, AirTAP  
Engineer  
Center for Transportation Studies  
University of Minnesota  
200 Transportation & Safety Bldg.  
511 Washington Avenue S.E.  
Minneapolis, MN 55455

Phone: 612-626-1077  
Fax: 612-625-6381  
E-mail: cmarti@cts.umn.edu  
or jgrothaus@cts.umn.edu

The University of Minnesota is an equal opportunity educator and employer. This publication is available in alternative formats upon request. Printed on recycled paper with 15% postconsumer waste.