

Winter on the Rock

It was a hundred-year storm season, that winter of 2001-2002. "On average there was a storm every four days and 21.5ft (6.5m) of snow all together. It was piling up so high at the runway intersections that we hired local bulldozers to push back and taper the piles so aircraft would not hit them with their wingtips," recalls Randy Mahon, Director of Operations at this airport located on Newfoundland's Avalon Peninsula. Fortunately though, the average annual snowfall in the southeastern part of Canada's eastern-most province, sometimes called the Rock, is more like 118-138 inches a year (300-350cm), with freezing rain and ordinary rain on top of that. The airport, which handled 1.2 million passengers in 2007, is located just 3 miles (4.8km) from the Atlantic Ocean; the penin-

Main Pic: Cleaning up the mess!
(Paul Daly)

Below: Oshkosh and MB equipment working together.
(Paul Daly)

Top Right: Front end loaders perform apron duties. (Paul Daly)

sula is nearly surrounded by water. Two great ocean currents, the Gulf Stream, which flows north toward Newfoundland, and the Labrador Current, which flows south along the province's coast, moderate the climate: winter temperatures usually swing little more than 5° Celsius above and below freezing. "A lot of snow events go from snow to ice pellets to freezing rain as the system moves through. We get the whole mix of winter weather. To counteract that we need the equipment, training and a great deal of manpower," says Mr Mahon. The three runways have a combined length of 20,525ft (6,256m). Over 37 acres (14.99 hectares) of apron space serve eight gates and GA traffic. The airport completed a 12-acre (4.86ha) central de-icing



Carroll McCormick explains how old man winter keeps crews busy at windswept St John's International Airport.



facility with glycol containment systems in 2006. It is able to de-ice three Code C aircraft simultaneously and its first operating season was 2007-2008. There are 25 acres (10.13ha) of taxiways and the airport cares for 11 miles (17.6km) of roads and 9.7 acres (3.93ha) of parking. About 30 airport-owned units are classed as heavy equipment for winter operations; in addition, the airlines and two FBOs own nine aircraft deicing trucks. Many more pieces of lighter equipment and attachments complete the inventory. In the last two years the airport has spent about C\$5 million (US\$4.1m) on new snow- and ice-clearing equipment: two Oshkosh blowers, one of which can be converted to a 22ft (6.7m) plough and two Oshkosh reversible snowploughs with 22ft wide blades, which are used in combination with two 20ft (6.1m) wide MB sweepers. "Oshkosh and MB are integrated in terms of control and operating systems. Also, the cabs and operator controls in the Oshkosh blowers and ploughs are the same. This means huge savings in operator and maintenance personnel training," says Mahon. The airport also bought one Caterpillar and three John Deere front-end loaders for apron use, plus a John Deere grader and bulldozer. A new Epoke ice control and materials spreader let the airport apply liquid de-icer for the first time. "There is a distinct advantage to being able to use liquid and solid together or just the liquid alone. The solid de-icer is less effective in windy conditions, as it gets blown off the runway surface. But when the liquid de-icer is spread in combination with the solid de-icer, there is better bonding and faster reaction time," Mahon explains.

Left: The winter in northern Canada often brings temperatures of -35° Centigrade and below.
(Charlie Wright)





The goal is always a bare pavement. (Paul Daly)

Throughout the winter a specially-equipped half-ton truck obtains a friction index reading on the runways by performing skid tests at 1,000ft (305m) intervals. They are carried out a minimum of eight times per 24 hours, and in a snow event can be done more frequently. These runway surface condition reports, which include information about contaminants on the runways and the height of snow banks alongside them, are transmitted from the truck cab to the tower and major airlines.

Every year the winter maintenance plan is reviewed and copies sent to the stakeholders. "It sets out plans and procedures for winter operations and different priorities for snow and ice removal. The Priority One section includes the minimum operations area we need to maintain in order to stay operational. Priority Two includes the secondary runway, additional taxiways and additional parking space, while the rest of the airport is classed as Priority Three. They are prioritised by sections of operational importance," Mahon explains.

The fleet and winter maintenance plan for the forthcoming season is ready by mid-November, at which point 24/7 coverage begins. Coverage usually ends by March 31, but one year winter lingered almost until the end of April.

control material spreader duties and winter ops in general. Lead hands receive airfield maintenance surface condition training and Canadian Runway Friction Index training.

Crews make plenty of practice runs, with a specific focus on the right way to remove snow from runway intersections and runway lights. The snow has to be cast to the sides in specific places and, for example, kept away from ILS-critical areas. Snow removal convoys have the less experienced drivers sandwiched between experienced heavy equipment operators, fore and aft.

There is scheduled maintenance throughout the winter, and off-season equipment maintenance begins as soon as spring arrives. "Each unit is checked top to bottom and readied for the next winter season. We minimise mid-winter breakdowns with a thorough maintenance programme," Mahon explains.

Individual units are not GPS-equipped, but the air traffic controllers identify vehicles and aircraft on the airfield with ASDE (airport surface detection equipment).

Since St John's is primarily an origin/destination airport, there would not be as many potentially stranded passengers as one might have



Each winter season's maintenance plan is ready by mid-November. (Paul Daly)

The procedure during a weather event is to start runway sweeping as soon as any contaminants are present, with the goal of keeping the pavement bare. One of the most hazardous contaminants, Mahon comments, is slush. "A quarter inch can dramatically affect the take-off performance of planes and their directional control on landing. Freezing rain or ice on the runways is also a big concern. The most effective way to deal with it is to try to prevent it in the first place with anti-icing fluids. Applied properly it prevents the formation of a hard bond with the surface."

Winter preparations include marking obstructions that can damage equipment and marking catchment basins and drains so they can be found under the snow. Crew training goes on all year round, but with a particular emphasis in November and December when winter staff are hired. Staff receive guidance from an extensive programme, starting with basic airport operations, and then 25-30 specific training modules. They include airport safety and operations, plough, sweeper and ice

at a hub. That said, Mahon adds: "We have good relations with food service providers. We can call on them anytime and they will ramp up service. We can also call the Red Cross for assistance." Passengers obtain flight information through local media and from the airport's award-winning website: it shows the real-time status of every flight, with links to summaries of local weather at each flight's origin and destination.

Every airport with a real winter is bound to close occasionally in a severe storm, which Mahon suggests is simply for the best. "It is not always a bad thing. Sometimes it is the right decision in blizzards and whiteouts. We have a standard procedure we follow in whiteout conditions: we remove the equipment from the airfield to the maintenance garages. Staff are on standby and monitor the weather. We have a great and dedicated team that is always there, ready for any emergency."