Yellowknife
Airport I Aéroport

# Winter Maintenance Plan

## Yellowknife Airport

## (CYZF)

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## AIRPORT LAYOUT

**CYZF –** is the ICAO designator for the airport identification of the Yellowknife Regional Airport.

## WINTER MAINTENANCE PLAN DISTRIBUTION

The Manager, Operations & Maintenance (MOM) is responsible for keeping an updated copy of the Winter Maintenance Plan at the airport and distributing the plan and its amendments to the following plan holders. Any questions or comments regarding this plan should be directed to the MOM.

| | | |
|---|---|---|
| GNWT Yellowknife Airport | Airport Manager | Randy_Straker@gov.nt.ca |
| GNWT Yellowknife Airport | Manager, Operations & Maintenance | Travis_Drover@gov.nt.ca |
| GNWT Yellowknife Airport | Manager, Safety & Security | Scott_Young@gov.nt.ca |
| GNWT Yellowknife Airport | Supervisor Surface Structures | kevin_digness@gov.nt.ca |
| GNWT Infrastructure | Regional Superintendent<br>North Slave Regional Office | jason_carroll@gov.nt.ca |
| GNWT Infrastructure | Air, Marine, and Safety Division | mike_handley@gov.nt.ca |
| NAV Canada | Site Manager | Shamus.Gordon@navcanada.ca |
| NAV Canada | ATC Specialist | brendan.peters@navcanada.ca |
| NAV Canada | FSS Supervisor | Garry.Tonge@Navcanada.ca |
| Department of National Defence | DND Rep | KENNETH.MCINTYRE@forces.gc.ca<br>Or,<br>RPOpsNorthYkf@forces.gc.ca |
| RCMP | Air Division | RCMP.GAirServicesYellowknife-GServicedelairYellowknife.GRC@rcmp-grc.gc.ca |
| Glycol Recovery Contractor | Air Tindi | mgray@airtindi.com |
| Janitorial Contractor | Northern Auxiliary Services | admin@northernauxiliaryservices.com |
| Airline Operating Committee | Committee Members | |
| General Aviation Tenants | Managers, Delegates | |

## RECORD OF REVISIONS

| Revision Number | Modification | Date | Initials |
|---|---|---|---|
| | Creation Date | | |
| 09/12 | Minor Revisions | 09/12 | RS |
| 10/12 | Revision to Manual to incorporate changes to resources, schedule and inspections | 10/13 | RS |
| 09/14 | Change to hours of operation | 04/09/14 | RS |
| 10/14 | RSC Reporting Times | 23/10/14 | RS |
| 09/15 | Change to hours of operation (Personnel) / RSC Reporting Times | 23/09/15 | RS |
| 04/16 | Addition of Annual Review Sign in Sheet | 14/04/16 | RS |
| 04/16 | 2.1 Include requirement to document annual review | 14/04/16 | RS |
| 10/16 | RSC reporting times | 04/10/16 | RS |
| 09/17 | Contact Numbers | 14/09/17 | RS |
| 09/17 | RSC Reporting Times | 25/09/17 | RS |
| 09/18 | RSC Reporting Times | 26/09/18 | RS |
| 09/18 | Agenda Revision | 26/09/18 | RS |
| 09/18 | Priority 1 - remove FOL apron | 26/09/18 | RS |
| 09/18 | Change Solid De-icer to Safeway SF | 26/09/18 | RS |
| 11/18 | Change to MSS | 08/11/2018 | RS |
| 02/19 | Change to MOM cell, reword CRFI reporting time | 22/02/19 | RS |
| 09/19 | 4.2 Personnel – Hours, Start Date | 21/09/19 | RS |
| 01/21 | All Pages | 08/01/2021 | LS |
| 03/21 | Appendix A - updated to match Priority listing | 25/03/2021 | LS |
| 10-21 | 7.2 Runway 10-28 Reported in Thirds | 07/10/2021 | LS |
| 10-21 | Contact numbers - MSS | 07/10/2021 | LS |
| 10-21 | Appendix C updated with new GRF format | 07/10/2021 | LS |
| 10-21 | Appendix D updated with AGN designations | 07/10/2021 | LS |
| 12-22 | All Pages | 16/12/22 | TD |
| 09-23 | Pg. 3 update emails | 08/09/23 | TD |
| 09-23 | 1.3 update numbers | 08/09/23 | TD |
| 09-23 | 8.1 update phone number | 08/09/23 | TD |
| 09-23 | 9.2 content change | 08/09/23 | TD |
| 09-23 | 9.4 content split into 9.4 and added 9.5 | 08/09/23 | TD |
| 09-24 | Grammar and Formatting throughout | 08/10/2024 | TD |
| 9-25 | Pg. 3 Update emails and contacts | 09/28/2025 | TD |
| 9-25 | 1.3 Update numbers | 09/28/2025 | TD |
| 9-25 | 4.1 Equipment Numbers | 09/28/2025 | TD |
| 9-25 | 4.2 Hour of operation change | 09/28/2025 | TD |
| 9-25 | 6.1 product change | 09/28/2025 | TD |
| 9-25 | 6.3 Content change | 09/28/2025 | TD |
| 9-25 | 7.1 AMSCR reporting time | 09/28/2025 | TD |
| 9-26 | Throughout - Airfield Maintenance Specialist changed to Airport Operation Specialist. | 09-29-2026 | TD |
| 9-26 | Distribution list – contact information changes | 09-29-2026 | TD |
| 9-26 | 2.1 added consultation on intended level or maintenance | 09-29-2026 | TD |
| 9-26 | 6.2 Content Change | 09-29-2026 | TD |

| | | | |
|---|---|---|---|
| 9-26 | 8.1 removal on environment Canada weather number | 09-29-2026 | TD |
| 9-26 | 8.4 Content Change | 09-29-2026 | TD |
| 9-26 | 9.5 formatting | 09-29-2026 | TD |
| 9-26 | Appendix G – removed from document | 09-29-2026 | TD |
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# 1 GENERAL INFORMATION

## 1.1 Introduction

Yellowknife Airport (YZF) is owned and operated by the Government of the Northwest Territories, Department of Infrastructure – North Slave Region.

The Winter Maintenance Plan was developed in consultation with a representative sample of the air operators that use the airport and pre-plans the process for snow and ice control and the reporting of Aircraft Movement Surface Condition Reports (AMSCR) in accurate and timely manner.

The Airfield Maintenance Team at YZF maintain and monitor all runways, taxiways, aprons and airside roads to ensure safe and continuous operations of the airport during winter conditions. Winter operations at YZF require special procedures, as the weather is unpredictable and can change with little or no warning. This plan has been prepared to assist all who are involved in the airport's operation to be prepared to act when situations occur that require special attention.

The successful and effective management of snow and ice requires clear communication protocols to ensure all tenants and operational personnel understand existing / changing conditions and potential impacts to business. The airport Duty Manager is the central point of contact for daily operational issues.

All persons using YZF facilities understand that, due to the unpredictability of the weather, YZF can only implement and carry out a Winter Maintenance Plan that is reasonable in all the circumstances. Visitors to the premises shall exercise reasonable care for their own safety. It is integral that airside tenants cooperate with Airfield Maintenance by ensuring work areas are clear of equipment in order to expedite snow removal. Effective communication between tenants and the duty manager will make snow and ice management a much more efficient process.

Aircraft surfaces requiring snow removal now total about 75 acres of asphalt movement area, as indicated below:

| Runway | Measurements | Square Feet | Square Metres |
|---|---|---|---|
| 16-34 | 7,500' x 150' | 1,125,000 | 104,516 |
| 10-12 | 5,000' x 150' | 750,000 | 69,677 |
| Taxiways | 11,827' x 75' | 887,025 | 82,407 |
| Apron | 1294' x 400' | 517,570 | 48,084 |
| **Total** | | **3,279,595** | **304,684** |

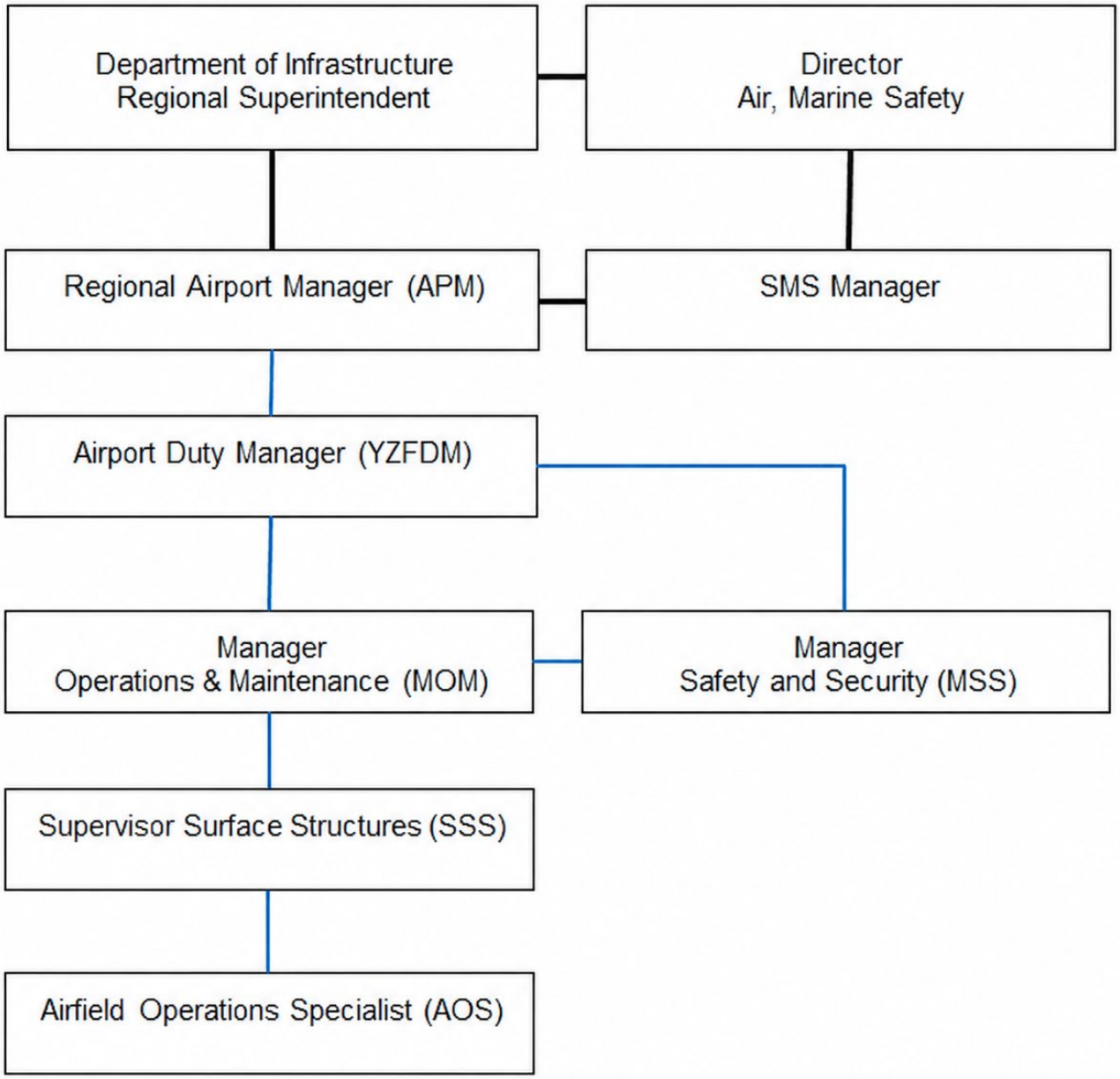
## 1.2 Regulations / Standards

This Winter Maintenance Plan has been developed in accordance with applicable Transport Canada publications and Canadian Aviation Regulations along with the historic experience at the YZF.

### 1.3 Contacts

| Title | Phone | Cell |
|---|---|---|
| Duty Manger | | 867-445-5518 |
| Airport Manager | 867-767-9091 x31235 | 867-445-6452 |
| Manager, Operations and Maintenance | 867-767-9092 x31255 | 867-445-1197 |
| Manager, Safety & Security | 867-767-9092 x31236 | 867-444-8402 |
| Supervisor, Surface Structures | 867-767-9092 x31251 | 867-445-9334 |
| SMS Manager | 867-767-9084 x31091 | 867-446-0533 |

### 1.4 Organizational Chart



# 2 WINTER OPERATIONS REVIEW

## 2.1 Plan Review and Amendment

The Manager, Operations and Maintenance (MOM) is responsible for reviewing the Winter Maintenance Plan at least once a year, as well as each time the airport does not clear a priority area in accordance with the plan.

If MOM determines, as a result of a review, that the winter maintenance plan needs to be amended, a representative sample of the air operators that use the airport will be consulted before amending the plan.

The annual review process will be utilized as a consultation with a representative sample of the air operators that use the airport about the intended level of winter maintenance prior to the start of each winter season.

MOM will keep a record of each review of the plan and all consultations with a representative sample of the air operators.

## 2.2 Winter Operations Meeting

Each year YZF will hold a meeting with a representative sample of the air operators that use the airport and other stakeholders to discuss the intended level of winter maintenance service.

The meeting typically includes the following individuals/agencies:

| | |
|---|---|
| Airport Manager (APM) | *Committee Chair* |
| Manager, Operations and Maintenance (MOM) | *Committee Secretary* |
| Supervisor, Surface Structures (SSS) | |
| NAV Canada Manager | |
| Airline Representatives | |
| Tenants of the YZF | |
| Airport Duty Managers | |

Other interested parties may be invited at the discretion of the Committee Chair.
Attendance and a record of the annual review will be documented.

# 3 TRAINING / RESPONSIBILITIES

## 3.1 Training

Personnel employed by YZF for the purpose of snow removal on the manoeuvring areas will meet certain basic qualifications. YZF training program consists of a number of modules that each operator must complete before operating airside unescorted and performing winter maintenance duties. The training program was developed based on Transport Canada's Certified Airfield Maintenance Technician Training Program and includes:

- The safe use of each piece of equipment they are to operate
- Radio communication
- Airport layout
- The inspection, storage and application of airside ice control chemicals and sand
- AMSCR procedures including observing, friction testing, recording and forwarding reports to the aeronautical information services provider; and
- Snow and ice control for airside lighting, markers and signage.

The Supervisor, Surface Structures (SSS) will receive additional training, prior to performing supervisory duties in respect of the airport winter maintenance plan, on those specific duties and on the content of this plan.

In addition, each year prior to the start of the winter season, individuals with assigned duties in the Winter Maintenance Plan will receive training on any amendments that have been made to the plan since the previous winter. The training

provided will be competency-based with an emphasis on performance and will include written or practical examinations.

All winter maintenance-related training records will be kept for five years after the day on which the latest training was received.

The ultimate goal of the training program is to qualify (Certified Airfield Operations Specialist) through effective training to maximize flight safety, ensure the safety of airfield maintenance employees, and to ensure economical and efficient snow removal.

### 3.2 Janitorial Service Contractor

The janitorial service contractor performs snow, ice, and debris removal from all of the entrances/exits of the Air Terminal Building for a minimum of 15 feet without delay. When necessary, sanding will be carried out to prevent slippery conditions using material supplied by YZF.

### 3.3 Airlines and Ground Handlers

Airlines and ground handlers are responsible for the preparation of their work areas prior to snow or ice conditions become prevalent. Airlines and ground handlers should be aware of current and forecasted conditions and ensure their work areas are maintained in such a manner to expedite snow and ice control by Airfield Operations Specialists. The setting up of parking stands/stalls should be done with consideration of current conditions and snow and ice management activities.

Airlines and ground handlers are also responsible for regularly inspecting all airside areas utilized by airline passengers to ensure the safe movement of their passengers to/from the aircraft and terminal. When necessary, airline personnel and ground handlers should apply sand to the pedestrian walkways using material supplied by YZF.

### 3.4 Airfield Operations Specialists (AOS)

Airfield Operations Specialists report to the Supervisor, Surface Structures and are responsible for ensuring the safe and continuous operation of airside and groundside activities during the winter season. This includes the regular monitoring and reporting of runway conditions, snow removal and ice control.

### 3.5 Supervisor, Surface Structures (SSS)

The Supervisor, Surface Structures reports to the Manager, Operations and Maintenance and is responsible for directing the daily activities of the AMS staff. The SSS will ensure that staff are trained and assigned applicable duties to ensure a safe and effective operation. The SSS is responsible for ensuring the daily and regular inspections of all aircraft movement surfaces and monitoring runway braking conditions. If conditions or situations dictate, the SSS will operate a variety of light and heavy equipment to assist AMS staff in snow and ice management at YZF.

### 3.6 Manager, Operations and Maintenance (MOM)

The Manager, Operations and Maintenance has the overall responsibility for the snow removal and ice control program both airside and groundside.

### 3.7 Manager, Safety Management System (SMS)

Is responsible for overseeing the Safety Management System by;

- Providing a safe and healthy work environment for all employees, business partners and traveling public
- Promote safety awareness, compliance and education to all
- To identify and eliminate hazardous conditions

### 3.8 Duty Manager (YZF DM)

The Duty Manager is the central contact for all operational requirements. Airlines and tenants must contact the duty manager for any issues relating to the daily operation.

# 4 RESOURCES

## 4.1 Equipment

The fleet at YZF consists of a wide variety of equipment to meet our winter operational needs. Under normal operations 3 runway sweepers, 2 ramp hogs, and 2 snow blowers will be used in addition to a number of other condition specific units. Equipment (and technology) is continually being evaluated in relation to the operation at YZF to seek ways to improve both the efficiency and effectiveness of our snow and ice management.

A detailed list of equipment is available from the Manager, Operations and Maintenance.

## 4.2 Personnel

During the winter season, October 15th through April 15th, additional Airfield Maintenance staff (winter casuals) may be hired to support operational requirements. The shift schedule for snow removal personnel has been prepared to provide for 7-day coverage from 0400 until 0124 (MST). The Manager, Operations and Maintenance is on duty Monday – Friday 0800-1630, the Supervisor, Surface Structures is on duty Monday through Friday 0700 – 1530.

Crew staffing levels may be dictated by weather conditions. Additional staffing may be made available through overtime should conditions dictate.

**After Hours Service:**
Aircraft movement surface condition report, including CRFI, is available with prior notice for outside of the published winter hours of operation. Airlines can make arrangements for these services by using the afterhours contact information and prior notice requirements published in the Canada Flight Supplement (CFS).

# 5 SNOW REMOVAL PRIORITIES

Snow removal must be carried out in a manner that will maintain the continuous and safe operation of the airport. It should not interfere with the normal airport operations unless approved by the Manager, Operations & Maintenance or Supervisor, Surface Structures in consultation with the Airport Manager. Snow removal will begin as soon as conditions warrant and continue, uninterrupted, throughout the snow event.

GAT Airline Ground Support is the sole source for glycol recovery at YZF.

## 5.1 Priorities

Priorities are determined to ensure the continuous and safe operation of the airport and meet Transport Canada's Airport Regulation requirements. Based on the size and complexity of this airport, the following airside priorities have been identified for snow clearance operations in winter storm conditions during the published hours of operations. (See Appendix A for priority areas drawing).

MOM is responsible for reviewing the Winter Maintenance Plan each time the airport does not clear a priority area in accordance with this plan. Records of the surrounding circumstances will be kept for at least two years after the day on which the Airport was required to remove the contaminants.

**Priority 1**

The following areas are cleaned on a continuous basis throughout the snowfall in order to maintain the operational capability of the airport.

- Full length of runway 16-34. Prevailing snowstorm winds usually come from the north / northwest and because

of the runway length (7500') and instrument landing system (ILS); it is preferred by pilots during storm conditions even if a crosswind exists.

- During a snow event the primary runway will be maintained to no less than 100 feet. (Cleared Width will be returned to full width of 150 feet once active snow events allow)
- Taxiway Alpha and Hotel, including entrance and exit access areas, to accommodate traffic to and from runway 16-34
- Taxiway Golf to FOL apron entrance
- Sufficient area on the main apron to allow safe manoeuvring of aircraft, passengers and cargo to and from gates/stalls, including working areas and the de-icing pad
- CSB Road from fire hall to accommodate the movement of emergency vehicles to runway 16-34, taxiway Alpha & Hotel and apron areas
- Groundside access point Idaa Rd to main security gate to allow for the movement of emergency vehicles onto the apron.
- Visibility of lights installed as visual aids
- Visibility and legibility of signs
- Areas adjacent to the approach aids, including glide path site to maintain signal integrity as agreed by YZF and requested by NAV CANADA

**Priority 2**

The Priority 2 areas will be cleared of snow when Priority 1 snow removal has been completed; and doing so does not compromise the airport's ability to keep priority 1 areas operational. The following areas are to be cleaned, starting on the runway and proceeding to the taxiways.

- Full length and width of runway 10-28
- Taxiways Bravo, Charlie and Foxtrot, including entrance and exit access areas to accommodate traffic to and from runway 10-28
- Portion of crash road required to access the GRTF glycol pond.
- Taxiways Delta and Echo
- Taxiways Juliet and Kilo
- Visibility of lights installed as visual aids
- Visibility and legibility of signs

**Priority 3**

Priority 3 areas will not be cleared until such a time as the storm has passed and all Priority 1 and 2 areas are cleaned. Priority 3 areas include:

- Remaining Apron area
- Access Road Lima
- Remaining airside signage and lights not listed in priority 1 and 2
- Pre-threshold areas
- Runways, taxiways and apron shoulder areas
- Service Roads, including access roads to approaches, emergency vehicle and personnel gates
- General Aviation Parking west of Taxiway Kilo
- Catch basins during a quick thaw

## 5.2 Allowable Accumulations

Generally, snow removal on the active (Priority 1) runway begins when snow begins to accumulate. Clearing begins on Priority 2 areas when Priority 1 areas are complete, regardless of snowfall. Priority 3 areas are cleaned after the snowfall unless immediate access is required.

Maximum allowable snow accumulations during published hours of operation are:

| | |
|---|---|
| Priority 1 areas | 1.25 cm (1/2") |
| Priority 2 areas | 5.00 cm (2") |
| Priority 3 areas | Storm Accumulation |

### 5.3 Runways

Whenever possible, runways are cleared to a bare and dry surface for their full width. The Priority 1 runway is cleared through a snow event, before all other surfaces. Priority 2 Runways are also cleared throughout a snow event after all Priority 1 areas are cleared. If at any time the cleared width falls below 100' the Duty Manager, ATC, or FSS is to be notified so the information can be relayed immediately to pilots. If possible, clearing takes place in a manner that allows for continuous operation of the runway during snow removal. It is the responsibility of the AMS to monitor runway conditions and report changes. Runway Condition Reports (RCR) must be generated each time the runway conditions change.

### 5.4 Aprons

It is the responsibility of YZF to clear the apron of snow and provide a safe operating environment. Safe conduct of airline operations, including the safety of passengers is the responsibility of the airlines. In an effort to accommodate snow removal and provide a safer working environment, parking on the main apron for overnight aircraft will only be allowed between the hours of 2100 – 0700, unless approved by the APM. This will allow Airfield Maintenance staff to access the apron prior to the days primary operations begin without aircraft or equipment obstructing portions of the apron. The passenger corridor will be inspected daily at the beginning of the morning shift and swept and sanded as required.

It is critical for airlines and ground handlers to keep the apron clear, particularly during snow events, of vehicles and equipment outside of actual operating times. Equipment should be staged on the north apron until required for positioning **(a maximum of 20 minutes prior to the actual arrival)** so that, if required, snow removal equipment can work in the area. Communication and cooperation between airlines and the Airfield Maintenance staff is critical in order to manage the flow of ground vehicles during snow removal on the main apron particular near the air terminal building to ensure the safety of persons, vehicles and aircraft.

Priority of snow removal on the apron will focus first on the passenger corridors then the aircraft gates and operational areas. The de-ice bay should be cleared prior to the commencement of de-icing operations.

During snow events efforts will be made to keep sufficient apron area cleaned to allow the safe manoeuvring of aircraft to and from the gates. However, aircraft operators are responsible for the safe manoeuvring of their aircraft whether it is being towed or moving under its own power. The apron condition can be obtained from the ATC, FSS or the Automatic Terminal Information Service (ATIS), which will have the most current data available.

Snow removal equipment will not perform any winter maintenance operation closer than 10feet (3m) to any aircraft. Aircraft parked overnight during snow conditions may have windrows around them. Private Aprons; snow and ice removal on leased land is not the responsibility of the airport to remove. Snow removed from these areas must remain on the leased property. At no time may the private snow removal equipment be on an airport maneuvering surfaces, including related strips, unless in compliance with the YZF AVOP Program.

### 5.5 Edge Lights & Glide Path

These areas are cleared to Transport Canada Standards to provide for safe winter operations at YZF.

#### Glide Path Snow Removal Agreement

NAV CANADA and the GNWT have entered into an Aviation Services & Facilities Agreement (ASFA) that outlines, among others, the provision of winter maintenance services around navigation aids at the airport. Due to the size of the document, only the first page of the agreement is listed in Appendix F. A signed copy of the entire agreement can be accessed from the Airport Manager.

### 5.6 Visual Aids

Snow is removed from these areas as part of the three priority areas in order to maintain correct approach slope reading.

### 5.7 Windrows

All windrows must be blown immediately after ridging. Any exceptions will be reported on the AMSCR/CRFI including height and location. No windrows should be left overnight. Any exception will be reported to the MOM or YZF DM.

### 5.8 Snow Accumulation Adjacent to Runways and Taxiways

Snow is removed from these areas as soon as possible after every storm to ensure adequate clearance and visibility for aircraft operations. The height of snow accumulation beyond the runway and taxiway edge lights will not exceed the slope specified in Appendix E Diagram I.

### 5.9 Snow Accumulation On or Adjacent to Threshold Areas

In order to prevent interference with aircraft operations, snow will be removed from the pre-threshold areas to a minimum length of 60m (197ft) from each end of the runway, the full width of the runway plus the profile outlined in Appendix D Diagram I as soon as possible after every storm. The height of snow accumulation in the pre-threshold area will not exceed the slope specified in Appendix D Diagram II.

## 6 ICE CONTROL

Several methods are used at YZF to control ice before and after it forms. It is preferable to control the formation of ice rather than to try and remove ice that has already formed. Careful monitoring of weather and runway conditions is required. There are two forms of ice control used at YZF, chemical ice control and sanding

### 6.1 Chemical Ice Control

Ice control chemicals used on YZF movement areas meet CARs 322.415(1) specifications including SAE AMS 1431 & SAE AMS 1435. Chemical ice control is done to prevent the buildup of snow and ice on a pavement surface. Novamen NovaMax RWD and Alpine RF-11 is the primary products used for deicing or for the prevention and reduction of frost, at temperatures below that of the effective working range of Clariant Safeway SF. The effectiveness of these chemicals depends on several factors including temperature and wind conditions. Their application is at the discretion of the Manager, Operations and Maintenance. An RCR will always be reported after chemical application on the runway.

Note: Ice control chemicals lose effectiveness as they become diluted with melted water.

**Products;**

Clariant Safeway SF (Solid Granular Runway Deicer)

- Effective to -18˚C
- Primarily used as a deicer, melts snow and ice
- May also be used as an anti-icer
- Meets SAE AMS 1431
- Application

| De-icing | 0C to -5C | -5C to -10C | < -10C |
|---|---|---|---|
| Ice, Packed Snow | 20-40 kg/lnkm | 40-60 kg/lnkm | 60-80 kg/lnkm |
| Snow, Snowfall | 50-70 kg/lnkm | 70-90 kg/lnkm | 90-110 kg/lnkm |
| Ice, Freezing Rain | 60-80 kg/lnkm | 80-100 kg/lnkm | 100-120 kg/lnkm |

Cryotech E-36 (Liquid Runway Deicer)

- Freeze Point -60˚C
- Primary use as an anti-icer and best applied shortly before freezing precipitation
- May be used as a deicer on frost or thin layers of ice

- Meets SAE AMS 1435
- Application Rate
  - Anti-icing: 45 – 70 kg/lnkm
  - De-icing: 110 – 170 kg/lnkm

Novamen NovaMax (Liquid Runway Deicer)

- Freeze Point -58˚C
- Primary use as an anti-icer and best applied shortly before freezing precipitation
- May be used as a deicer on frost or thin layers of ice
- Meets SAE AMS 1435
- Application Rate
  - Anti-icing: 45 – 70 kg/lnkm
  - De-icing: 110 – 170 kg/lnkm

## 6.2 Sanding

Sand used on the aircraft movement surfaces is manufactured under very strict specifications meeting CARs 322.415(2) criteria and its use is monitored closely. Note: the Yellowknife Airport Routinely uses a more stringent sand spec to produce a better performance. Application rate as required to increase CRFI. If sand is used, it is removed when it is no longer required to provide more friction for aircraft & service vehicles and there are no higher operational priorities.

**Procedures:**

- Applied by spreader at a rate to be determined by maintenance personnel.
- Liquid deicer may be applied at the same time or prior to aid in the adhesion of the sand to the ice.
- Removal of wet sand must be done as soon as possible unless freezing conditions are imminent.

## 6.3 Passenger Walkways

Passenger walkways are swept and when required, sanded, by YZF. Airline personnel should regularly inspect all airside areas utilized by airline passengers to ensure their safety when boarding or deplaning their aircraft. Sand is provided in containers located at various locations along the Terminal Building for use by tenants, contract and airline personnel. (See Appendix B for sand containers locations). The Airside passenger corridors will be treated with deicer chemicals during freezing rain events as operational resources permit.

## 6.4 Storage

Sand will be stored in a designated area out of the weather to be kept dry. If suspected not to be compliant, a representative sample will be taken and compared against the specification and sieve analysis.

Liquid and solid Deicer chemicals are stored at room temperature out of direct sunlight.

## 6.5 Prohibited Ice Control Chemicals

The use of any non-approved chemicals such as calcium chloride and sodium chloride is not permitted on any aircraft movement areas, nor stored on site at any time.

In extreme icing conditions Infrastructure Highways Division may be requested to apply a mixture of aggregate and sodium chloride to the airport entrance road. A standard operating procedure is in place whereby the application of the mixture is ceased before the intersection of the airport access road and the airside entrance road.

The SSS and maintenance staff will monitor the area to ensure the road debris is tracked off vehicles prior to entering airside. If for some reason the chemical is tracked into the proximity of the airside entrance gate, sweeping operations are carried out to remove the chemical. All mobile equipment used in this process is thoroughly washed prior to returning airside.

# 7 SURFACE CONDITION REPORTING

Airfield Operations Specialists conduct daily inspections of the movement areas at the start and as necessary in order to identify significant changes in runway surface conditions until the end of the published hours of operations.

## 7.1 Runway Surface Condition Reports

During the published winter hours of operations, Airfield Operations Specialists will complete an Aircraft Movement Surface Condition Report (AMSCR) and disseminate the report using an electronic reporting system called "TRACR NG GRF " to NAV CANADA and other stakeholders as follows (See Appendix C for a sample report):

- At the start of the published hours of operation
- A minimum of once every eight hours thereafter
- After the application of sand or chemical
- Every time the runway is cleared of snow (Only if clearing results in a significant change in the runway status. On-going clearing which merely maintains runway status does not require a report)
- Upon reasonable request by air carrier or pilot (may require cost recovery)
- Every time the cleared width of the runways falls below full width 45m (150'ft)
- When called by the YZF DM, ATC, or FSS
- Following every aircraft incident or accident at the airport

Airfield Operations Specialists will include in the remark section of the AMSCR the time of day that the report is valid to and if applicable, that the report is the final report for the day. The validity period of an AMSCR shall not exceed the published hours of operation, unless the surface conditions are being monitored.

Note: Runway surface condition reports are typically generated a minimum of 5 times a day, 7 days a week at approximately 0500, 1000, 1400, 1830, and 2330 Local. The total number of reports and exact times may be impacted by traffic, weather and/or runway conditions.

## 7.2 Friction Testing

Friction testing, when applicable, is conducted on a runway, and the Canadian Runway Friction Index (CRFI) is included in the Surface Condition Report. CRFI is provided when the area within 10m of either side of centerline, for any one-third section of the length of the runway, has more than 25% of its surface contaminated with any of the following conditions:

a) Ice
b) wet ice consisting of a thin film of water on ice
c) compacted snow
d) slush on ice
e) dry snow not exceeding 2.5cm (1 inch) in depth
f) deicing chemical solution or sand on ice; or
g) frost.

CRFI is determined using a decelerometer to obtain measurements of the rate of deceleration at intervals not greater than 300m within 10m on both sides of the runway centerline where the majority of aircraft operations take place. For runways 16-34 and 10-28, the results of the measurements are averaged to obtain and report a CRFI reading for each third of the runway length based on the direction of the runway end in use: touchdown, midpoint followed by rollout.

If significant patches of contaminants cause lower readings than the average, their distance from the threshold of one end of the runway will be reported in the remarks section of the AMSCR.

Airport maintenance staff is responsible for immediately forwarding CRFI readings of 0.40 or less to YZF DM and FSS/ATC

for prompt dissemination to aircraft operators. Higher value of CRFI readings than 0.40 will immediately be forwarded if determined necessary by air carries during the annual winter maintenance consultation process.

AMSCR reports will be provided with a completed Runway Surface Condition (RSC) data section for each CRFI measurement provided.

### 7.3 CRFI Limitations

CRFI is not valid with the following conditions and should not be included in an AMSCR when any of the following runway surface conditions are present:

a) the runway surface is wet with no other type of contaminant present;
b) there is a layer of slush on the runway surface with no other type of contamination condition present;
c) there is wet snow that, when stepped on or driven on, splatters, turns to slush or results in the presence of visible water; or
d) there is dry or wet snow on the runway surface exceeding 2.5cm (1 inch) in depth.

### 7.4 Alternating Side CRFI Testing Method

YZF does **NOT** use the Alternating Side CRFI Method.

### 7.5 Decelerometer Units and Maintenance

TES Electronic Recording Decelerometer (ERD) is used as the primary and backup device to determine CRFI. The Decelerometers are operated, maintained and calibrated in accordance with the manufacturer's instructions. The units are checked for calibration prior to the start of each winter season.

YZF has 2 vehicles equipped with the friction testing technology. The vehicles used to perform CRFI meet the criteria specified in CARs 322.416(6). See Appendix E for listing of the requirements.

## 8 COMMUNICATION

The Airport Duty Manager is the main point of contact for day to day airport operations. All communications regarding airport conditions, parking and gate assignments, and other related issues must be relayed through the Duty Manager.

The SSS is responsible for the coordination, completion and distribution of Surface Condition Reports and for the coordination of snow removal activities. Coordination of clearing activities with FSS or ATC is critical in ensuring the safe, continuous operation of the airport during the winter season. In conjunction with FSS/ATC the SSS will determine an appropriate action plan for ice/snow removal. Once the plan is formulated, it is passed to the crews. As the shift progresses and changes are required, everyone must be kept informed, so that timely decisions by affected parties can be made.

### 8.1 Important Snow Removal Numbers

Airport Duty Manager ..... 867-445-5518
Airport Management Office ..... 867-767-9091
Air Traffic Control ..... 867-873-3121
Flight Service Station (24 hours) ..... 867-873-4049

### 8.2 NOTAM Requirements

NOTAMs are published when winter conditions that might be hazardous to aircraft operations are present or affect the use of the movement areas and facilities. See the Special Procedures section of this plan for details.

### 8.3 Communication Procedures

All mobile equipment used on the maneuvering areas shall have a functioning radio capable of maintaining two-way communication on the applicable air/ground frequency. Airport maintenance staff is required to establish communication with FSS/ATC using the radio frequency listed below prior to entering the maneuvering areas.

### 8.4 Radio Frequencies

The airport's Mandatory Frequency is 118.5.

Vehicle operators will monitor and operate on the Ground Frequency of 121.9 MHz when on maneuvering areas, and inform FSS (broadcast) of their maintenance intentions (location, activities, duration, etc.).

FSS will call crew (MF 121.9 MHz or phone 867-445-5518) if there are any known safety hazards, lighting or communication failures.

YZF condition updates available at ATIS Frequency 128.4 MHz.

### 8.5 Standard Terminology

The following standard terminology will be used when describing runway surface conditions in an AMSCR:

- compacted snow;
- dry;
- dry snow;
- dry snow on top of compacted snow;
- dry snow on top of ice;
- frost;
- ice;
- slippery when wet;
- slush;
- slush on top of ice;
- standing water;
- water on top of compacted snow;
- wet;
- wet ice;
- wet snow;
- wet snow on top of compacted snow;
- wet snow on top of ice;
- chemically treated; and
- loose sand.

## 9 Special Procedures

Special procedures are required to cover extreme situations that are beyond normal maintenance operations. As a means of ensuring maximum safety and security for passengers and aircraft during winter operations, YZF has established special procedures to be used during runway closure for maintenance. The closures will be in effect as part of the YZF Winter Maintenance Plan, and the duration of the season will be determined by the prevailing weather.

The temporary closure of a runway for winter maintenance will require close coordination with ATC or FSS. The APM or YZF DM is the only one that can close a runway for winter maintenance.

### 9.1 Criteria for temporary runway closures during winter storms

The APM or the Duty Manager may close the primary runway during winter storm conditions if one of the following

criteria prevails:

1. Impossible to operate on the runway surface due to inclement weather, in order to produce an Aircraft Movement Surface Condition Report (AMSCR);
2. Primary runway surface is not able to be cleared of loose snow for a width of at least 100 feet;
3. Windrows at the edge of the cleared runway surface are of a size that they create an operational risk to aircraft arrivals/departures;
4. The Canadian Runway Friction Index (CFRI) is below .15; and
5. The runway edge lights are not visible by someone situated in the middle of the runway due to poor visibility.

### 9.2 Closure for Airfield Movement Surface Condition Report (AMSCR)

When the Maintenance Staff cannot gain access to a runway to conduct an AMSCR, a voice NOTAM will be issued by the YZF DM closing the primary runway for a period of 15 minutes to begin within the first hour after notification. The airlines and ATS will be notified to determine which 15 minute period within that hour would be the least disruptive. The 15 minute closure is to allow the SSS/AMS staff access to the runway to complete an AMSCR.

If at any time the SSS/AMS staff believes the currently published AMSCR report is no longer accurately indicating actual conditions, and staff cannot gain access to the runway in an appropriate timeframe, the AMSCR report will be cancelled and removed from the Nav Canada NOTAM System.

### 9.3 Closure for Snow Removal

If it is determined by the YZF DM that the primary runway is to be closed for snow removal during extreme weather the procedures are as follows:

1. The SSS/AMS staff is to contact the weather office when a major storm arises to determine the expected duration of the storm, intensity, anticipated snow fall, wind condition, temperature, etc.
2. If conditions continue to deteriorate or air traffic continues to effect snow removal, the SSS/AMS staff will request that the YZF DM issue a voice NOTAM to be effective within 1 1/2 hours of closing the runway for a 20 minute period.
3. The YZF DM will check with ATS to determine the aircraft arrivals/departures schedule and adjust the NOTAM if conditions permit to ensure the runway is available for long distance flights scheduled to arrive within 20 minutes of the start or finish of the NOTAM time frame.
4. If this event takes place after office hours, the YZF DM will call out the MOM to act as coordinator during the NOTAM period. The equipment mechanic will also be called out to stand by at the maintenance garage to cover possible equipment breakdowns.
5. Maintenance staff will continue snow clearing on taxiways and aprons while waiting the effective time issued in the NOTAM. Full crew strength will then be deployed onto the primary runway and the facility returned to service at the termination of the NOTAM (20 minutes) or when operational.
6. If the runway can be returned to service before the NOTAM time expires, the SSS/AMS will contact the MOM who will in turn advise the YZF DM. The YZF DM will contact Flight Services Center immediately and cancel the NOTAM.
7. If the storm continues, the SSS/AMS will advise the MOM to have the YZF DM issue another or extend the NOTAM and in 1 or 1-1/2 hours for a 20 minute closure as per paragraph 3 and repeat this until the problem has been resolved.
8. The runway will be returned to service by following the procedure detailed in 9.4.
9. Before the runway is returned to service an AMSCR report will be completed.

### 9.4 Returning a Runway Back to Active Service Due to Winter Conditions

When a NOTAM'd runway, due to winter conditions, is returned to active service the procedures are as follows:

1. The SSS/AMS staff will complete an AMSCR inspection. An inspection must be completed before the runway

can be returned to active service.

2. When the inspection is complete, the SSS/AMS staff will notify the YZF DM that the runway can be placed back to active service.
3. The YZF DM will then notify FSS that the NOTAM can be cancelled and the runway can be put back in service.

### 9.5 Returning a Runway Back to Active Service Due to Other Reason

1. After construction work is performed, other than regular Airfield Maintenance, the YZF DM will contact the SSS/AMS staff to conduct an AMSCR before the runway is returned to active service.
2. After an incident, the YZF DM will contact the SSS/AMS staff to conduct an AMSCR before the runway is returned to active service.

   Note: An AMSCR report is only required for the surfaces that were closed during the NOTAM. Full airfield AMSCR is not required.

## 10 TENANT WINTER OPERATIONS RESPONSIBILITIES

All tenants are responsible for snow removal on their lease property. Tenants who engage in snow removal operations on their leased areas should designate a snow pile/storage area that:

- Remains on the tenants leased area;
- Does not interfere with aircraft or vehicle movement;
- meets zoning criteria (as per CAR's regulations, see appendix D);
- Is not located within 3m of an airport boundary fence; and
- Does not restrict drainage in the spring.

Extreme caution should be exercised in order to protect tenants and YZF property such as fencing, lighting, signs, landscaped areas and curbs. YZF will recover any costs it incurs as a result of damage to property, or the removal of snow due to tenant related snow removal activity.

Carriers / Tenants wishing to utilize the YZF snow dump will be required to sign a MOU which outlines the conditions of usage.

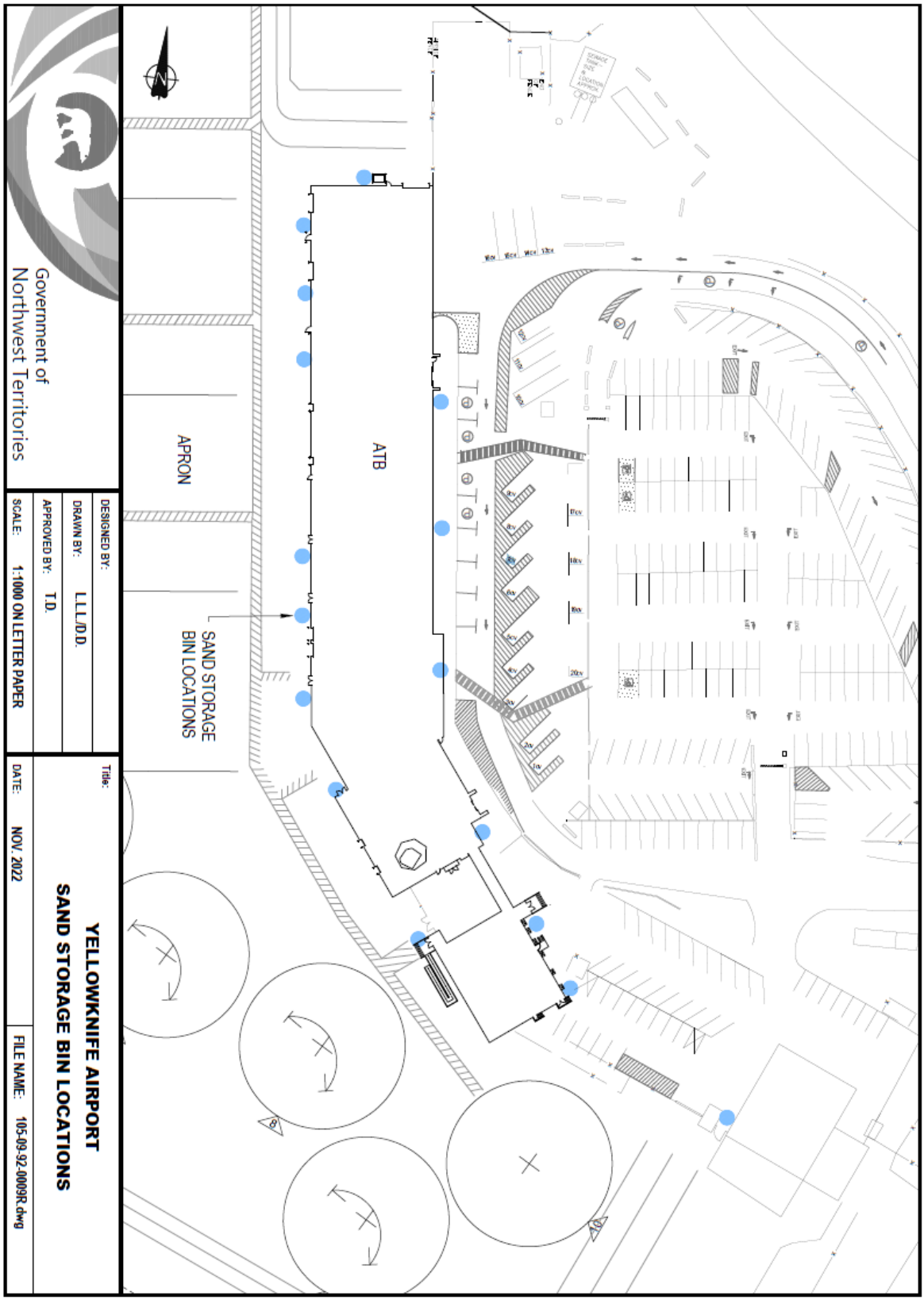
Tenants are responsible for providing visitors escorts on the main apron between their aircraft and the Air Terminal Building (ATB). Information concerning the condition of the walkways and the route to follow should be relayed to their visitors as required.

**Apron users must remove all baggage carts, mules and aircraft servicing equipment to designated storage locations after all scheduled flights so the apron is left empty.** This will ensure the apron is accessible for snow removal or ice control procedures.

Aircraft operators are responsible for de-icing/anti-icing and ensuring their aircraft are sequenced as needed. YZF is responsible for providing an adequate de-icing location and for disseminating airline schedule information and General Aviation departure information to airlines and ATS.

# APPENDIX A - SNOW REMOVAL PRIORITIES

# APPENDIX B - SAND BARREL LOCATIONS



# APPENDIX C – AMSCR / CRFI

## TRACR-NG GRF - Runway Condition Report

Airport Name: **Yellowknife Airport**
Airport Code: **CYZF**
Report #: **ed7200e6**
Operator: **Curtis Mercredi (cm01)**
Date: **2021-10-15 14:33:42Z**

**Condition Report**

| Surface | Summary | Submitted |
|---|---|---|
| 10-28 | Reported Width 150' (Full); Air Temp. 1.00°C Section A: Contaminants: 100% FROST, CRFI 0.33, RWYCC 3 (CRFI Range) Section B: Contaminants: 100% FROST, CRFI 0.35, RWYCC 3 (CRFI Range) Section C: Contaminants: 100% FROST, CRFI 0.31, RWYCC 3 (CRFI Range) | 2021-10-15 14:30:38Z |
| 16-34 | Reported Width 150' (Full); Air Temp. 1.00°C Section A: Contaminants: 100% FROST, CRFI 0.3, RWYCC 3 (CRFI Range) Section B: Contaminants: 100% FROST, CRFI 0.32, RWYCC 3 (CRFI Range) Section C: Contaminants: 100% FROST, CRFI 0.3, RWYCC 3 (CRFI Range) | 2021-10-15 13:57:52Z |
| ALPHA | Contaminants: FROST | 2021-10-15 14:32:32Z |
| BRAVO | Contaminants: FROST | 2021-10-15 14:32:32Z |
| CHARLIE | Contaminants: FROST | 2021-10-15 14:32:32Z |
| DELTA | Contaminants: FROST | 2021-10-15 14:32:32Z |
| ECHO | Contaminants: FROST | 2021-10-15 14:32:32Z |
| FOXTROT | Contaminants: FROST | 2021-10-15 14:32:32Z |
| GOLF | Contaminants: FROST | 2021-10-15 14:32:32Z |
| HOTEL | Contaminants: FROST | 2021-10-15 14:32:32Z |
| JULIET | Contaminants: FROST | 2021-10-15 14:32:32Z |
| KILO | Contaminants: FROST | 2021-10-15 14:32:32Z |
| APRON I | Contaminants: FROST | 2021-10-15 14:32:44Z |
| APRON II | Contaminants: FROST | 2021-10-15 14:32:44Z |

Private and Confidential

Powered by Tradewind Scientific

Tradewind Scientific

p.1/1 *2021-10-19 22:27:18Z*

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RSC 10 3/3/3 100 PCT FROST, 100 PCT FROST, 100 PCT FROST. RWYCC DOWNGRADED. VALID OCT 15 1430 -
OCT 15 2230.

RSC 28 3/3/3 100 PCT FROST, 100 PCT FROST, 100 PCT FROST. RWYCC DOWNGRADED. VALID OCT 15 1430 -
OCT 15 2230.

RSC 16 3/3/3 100 PCT FROST, 100 PCT FROST, 100 PCT FROST. RWYCC DOWNGRADED. VALID OCT 15 1357 -
OCT 15 2157.

RSC 34 3/3/3 100 PCT FROST, 100 PCT FROST, 100 PCT FROST. RWYCC DOWNGRADED. VALID OCT 15 1357 -
OCT 15 2157.

ADDN NON-GRF/TALPA INFO:
CRFI 10 1C .33/.35/.31 OBS AT 2110151430.
CRFI 28 1C .31/.35/.33 OBS AT 2110151430.
CRFI 16 1C .30/.32/.30 OBS AT 2110151357.
CRFI 34 1C .30/.32/.30 OBS AT 2110151357.

RMK: TWY ALPHA, BRAVO, CHARLIE, DELTA, ECHO, FOXTROT, GOLF, HOTEL, JULIET, KILO, 202110151432,
FROST.
RMK: APN APRON I, APRON II, 202110151432, FROST.
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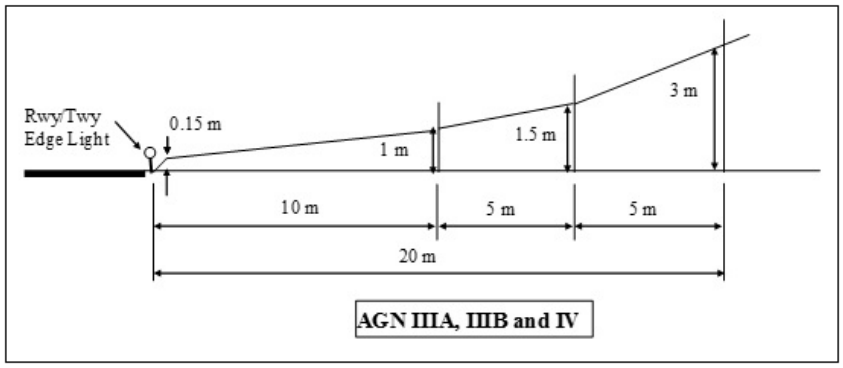
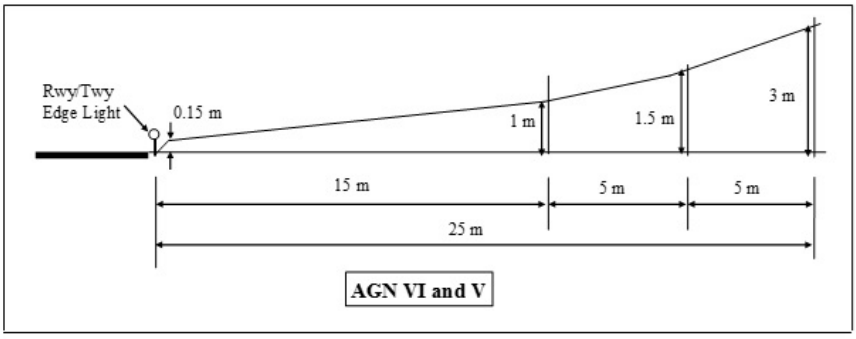
# APPENDIX D – SNOW PROFILE

**Diagram I - Maximum Height of Snow Profile beyond Runway & Taxiway Edge Lights**

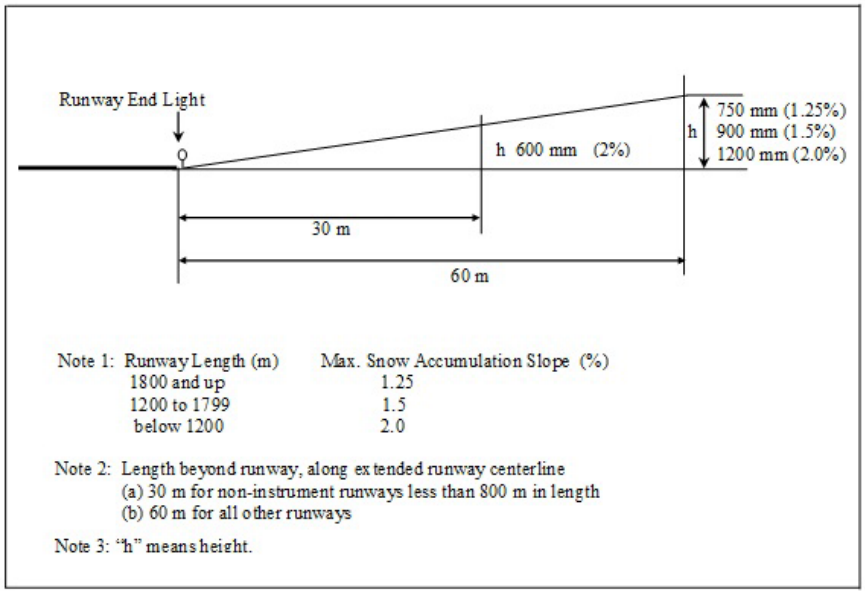



Runway 10-28 **AGN IIIB**
Taxiways B,C,D,E,F,G,H,J,K **AGN IIIB**




Runway 16-34 **AGN V**
Taxiways A, **AGN V**

**Diagram II – Maximum Snow Accumulation beyond Runway End Lights on the Pre-threshold Area**



# APPENDIX E - CRFI VEHICLES CRITERIA

The vehicles used to perform CRFI shall meet the following criteria:

1. The friction test instrument used to establish the CRFI shall be mounted on the following vehicle types only:
   - sedans, station wagons, intermediate or full-size automobiles
   - utility and passenger/cargo pick-up trucks, or
   - mini-vans
2. The vehicle's four-wheel traction or anti-lock braking system (ABS), if any, shall be disengaged while friction measurements are being taken
3. In order to consistently provide accurate decelerometer readings, only vehicles that are equipped as follows shall be used:
   - All four tires are of the same type of construction,
   - Both front tires have matching tread configurations and both rear tires shall have matching tread configurations,
   - Tires are replaced when the tread wear exceeds 75%,
   - Wear on all four tires are the same,
   - Tires are inflated to the tire manufacturer's specification,
   - Shock absorbers are of heavy duty type and in good condition,
   - Brakes are tested frequently to ensure operation in accordance with manufacturer's specifications, and
   - All four tires are non-studded tires.

# APPENDIX F – GNWT & NAV CANADA AGREEMENT

## AVIATION SERVICES & FACILITIES AGREEMENT YELLOWKNIFE

**This Agreement made** this 30th day of March 1999.

**BETWEEN:**

**THE GOVERNMENT OF THE NORTHWEST TERRITORIES**
(hereinafter call the "GNWT"),
represented by the Minister of Transportation

OF THE FIRST PART

AND

**NAV CANADA**
incorporated under the provision of Part II of the *Canada Corporations Act*

OF THE SECOND PART

**WHEREAS** Her Majesty the Queen in right of Canada and the GNWT entered into an Agreement to transfer the Arctic A Airports to the Northwest Territories on the 1st day of July, 1995 (the"Transfer Agreement");

**AND WHEREAS** pursuant to Article 6 of the Transfer Agreement Her Majesty the Queen in right of Canada and the GNWT entered into an Aviation Services and Facilities Agreement as Schedule E to the Transfer Agreement (the "Arctic A ASFA");

**AND WHEREAS** Her Majesty the Queen in right of Canada assigned to NAV CANADA all her right, title, interest in and obligations with respect to the provision of Civil Air Navigation Services in the Northwest Territories, and in particular the Arctic A ASFA;

**AND WHEREAS** the GNWT consented to said assignment on the condition that NAV CANADA would enter into good faith negotiations with the intent of entering into a new lease;

# APPENDIX G - ANNUAL WMP REVIEW ATTENDEE SIGN-IN

| Winter Maintenance Plan Annual Review | | | |
|---|---|---|---|
| Date: | | Location: | |
| Chairperson: | | | |

| Name | Company |
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