

Cold Front Command: Mastering Winter Operations

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Toronto Pearson

SWIFT

NIAGARA FALLS SEPT 22-25 2025

Agenda

- ***YYZ Layout and Snow Removal Responsibilities***
- ***Staffing and Resources***
- ***Winter Readiness Program***
- ***Challenges and Mitigation***

Staffing and Resources

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Airside Snow and Ice Removal 2023-2024

Our fleet of specialized snow removal equipment includes a total of vehicles: **106**

40



PSB
(Plow,
Sweeper, Blower)

12



Snow blowers

14



Chemical/Sand deicing trucks

7



Front mounted sweepers

18



Multi-use snow tractors

15



Wheel loaders

Team



190

dedicated
employees in
Airfield Operations

80

contracted resources
with a combination of
crews and operators
in equipment.

Pavement deicing materials

Sodium formate and
Potassium Acetate
– a delcer and anti-Icer that
does not cause oxidation
(rust) on aircraft.



Airside snow removal areas

Runways, taxiways, aprons
total concrete and asphalt
paved area

(m2): **4,898,929**

Apron service roads (m2)
1,748,711

Perimeter road (m)
675,431

TOTAL:
15,000,000 m2

Training and maintenance

September and October are the months for training. Each year, training happens at both an individual level and as a team to prepare our highly skilled Airport Surface Maintenance team for the winter season.



Removal plan – sectors

For snow and ice removal purposes, the movement area is divided into 4 sectors. Each sector has a dedicated snow removal fleet. All fleets work simultaneously and their intersections with neighbouring fleets are stitched.



Airfield Operations Crew Structure/Coverage

Airfield

Hours

- 24 hour coverage
- 12 hour shifts

Teams

- Runways/High-Speeds
- Roaming Taxiways

Crews

- 6 crews
- 11 specialists/crew

Apron

Hours

- 24 hour coverage
- 12 hour shifts

Teams

- North Apron
- South Apron

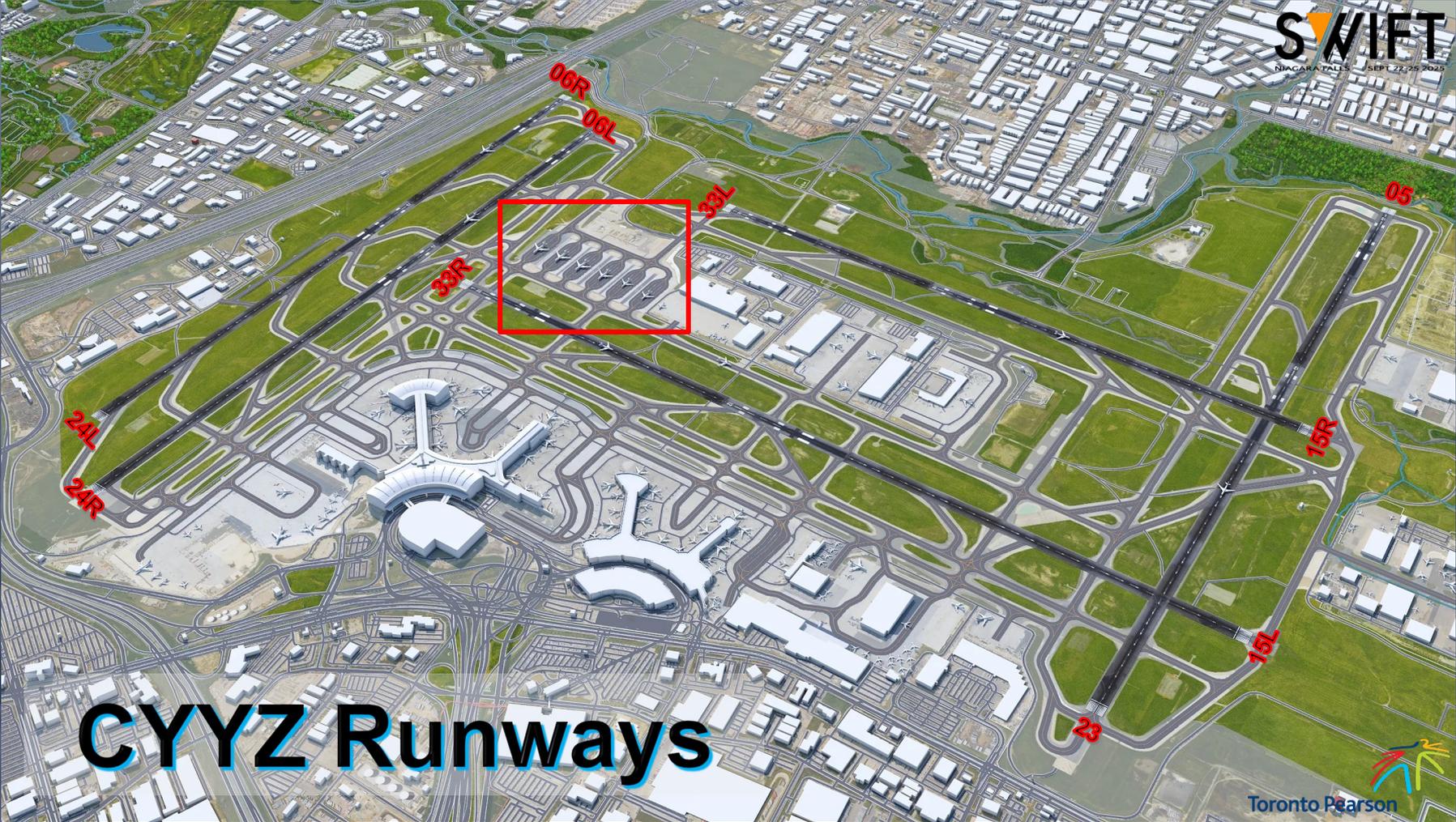
Crews

- 6 crews
- 13 specialists/crew

Yearly Preparation

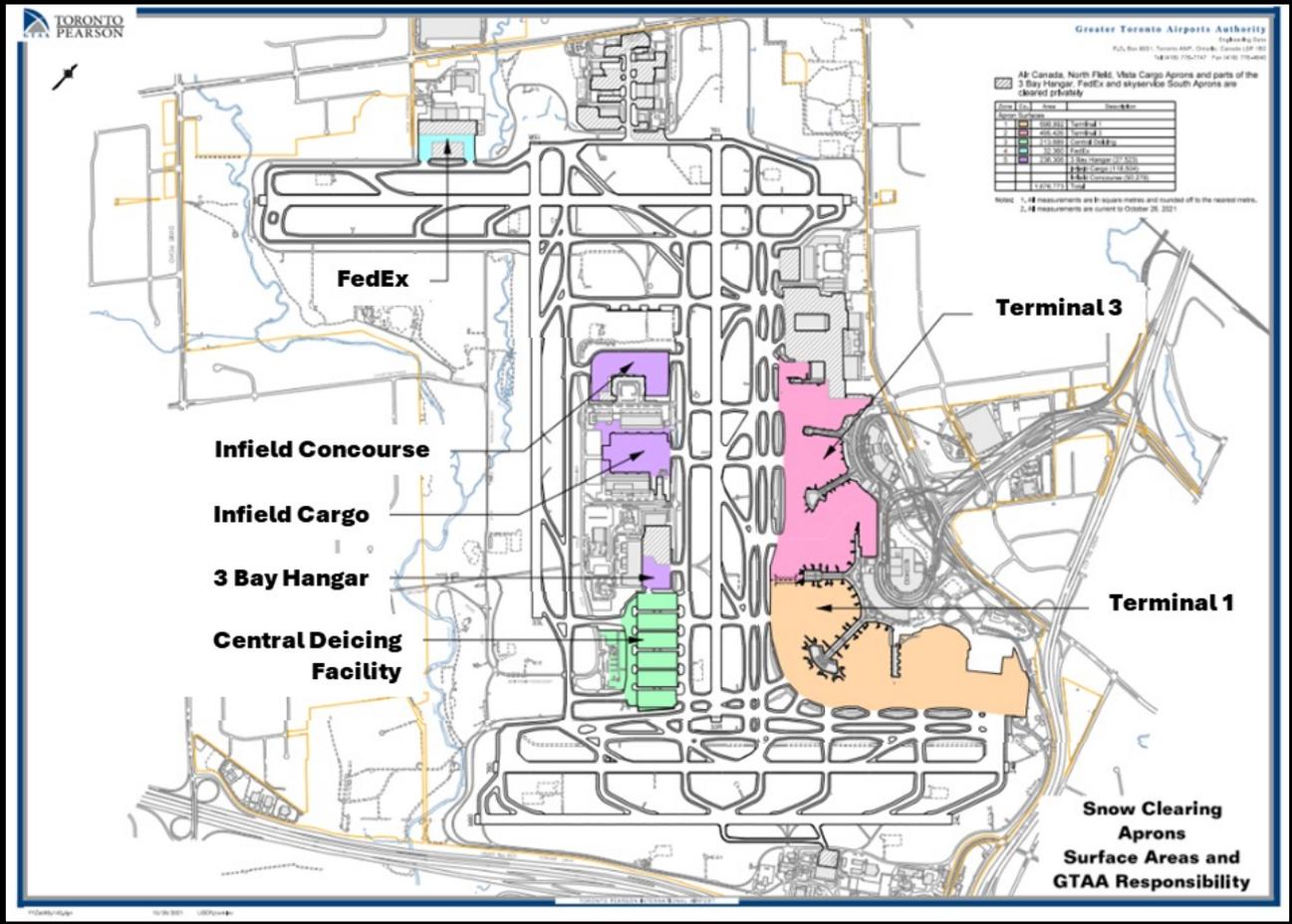
- **Winter Tabletop Exercises (Internal)**
- **YYZ Winter Ops Briefing (GTAA, Airlines, Nav Canada and Other External Stakeholder)**
- **Regulatory Winter Snow Plan Review (All Airfield Maintenance Staff)**
- **Airfield Snow Removal Exercise/Simulation**
- **Winter Equipment Readiness**

YYZ Layout and Snow Removal Responsibilities



CYYZ Runways

Apron Snow Removal Responsibilities



Runway/Taxiway Snow Removal Team

- ❖ **Runway Team → 8 PSBs + 2 Blowers + 1 to 4 Chemical/Sander**
- ❖ **Rapid Taxiway Team → 4 PSBs + 2 Blower**
- ❖ **Roving Taxiway Team → 2 to 4 PSBs + 1 Blower**
- ❖ **Airfield Inspections → 1 to 3 Inspectors**

Challenges & Mitigations

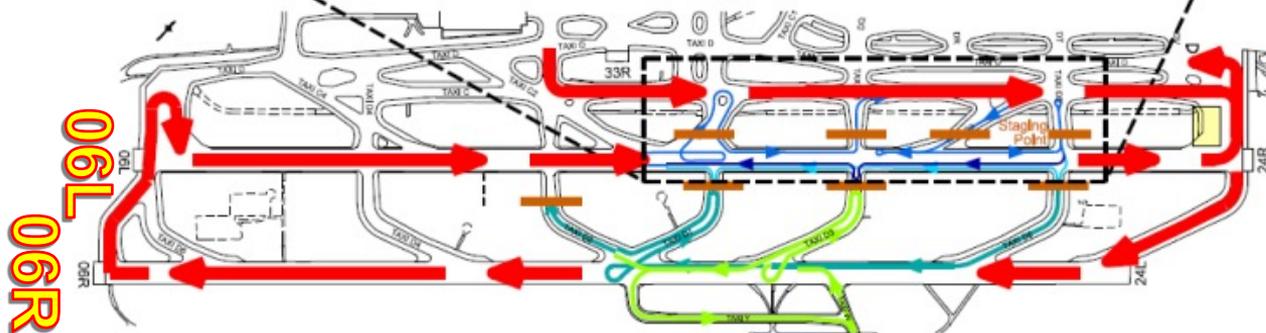
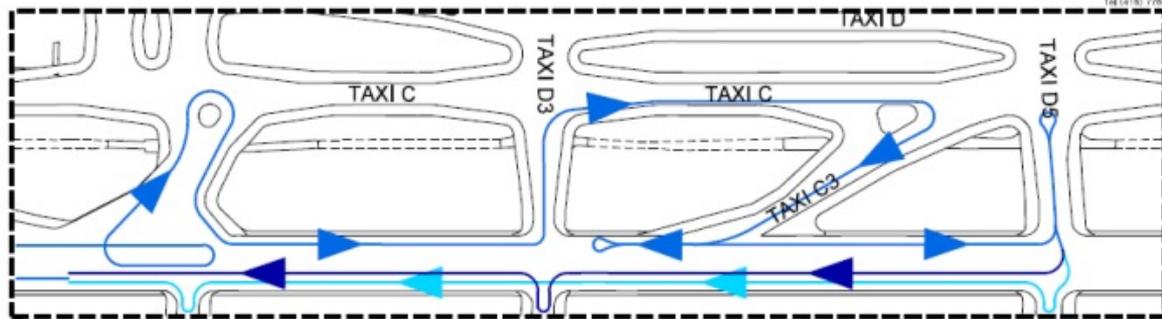
Making a Window

Maintaining Runway Occupancy Time (ROT)





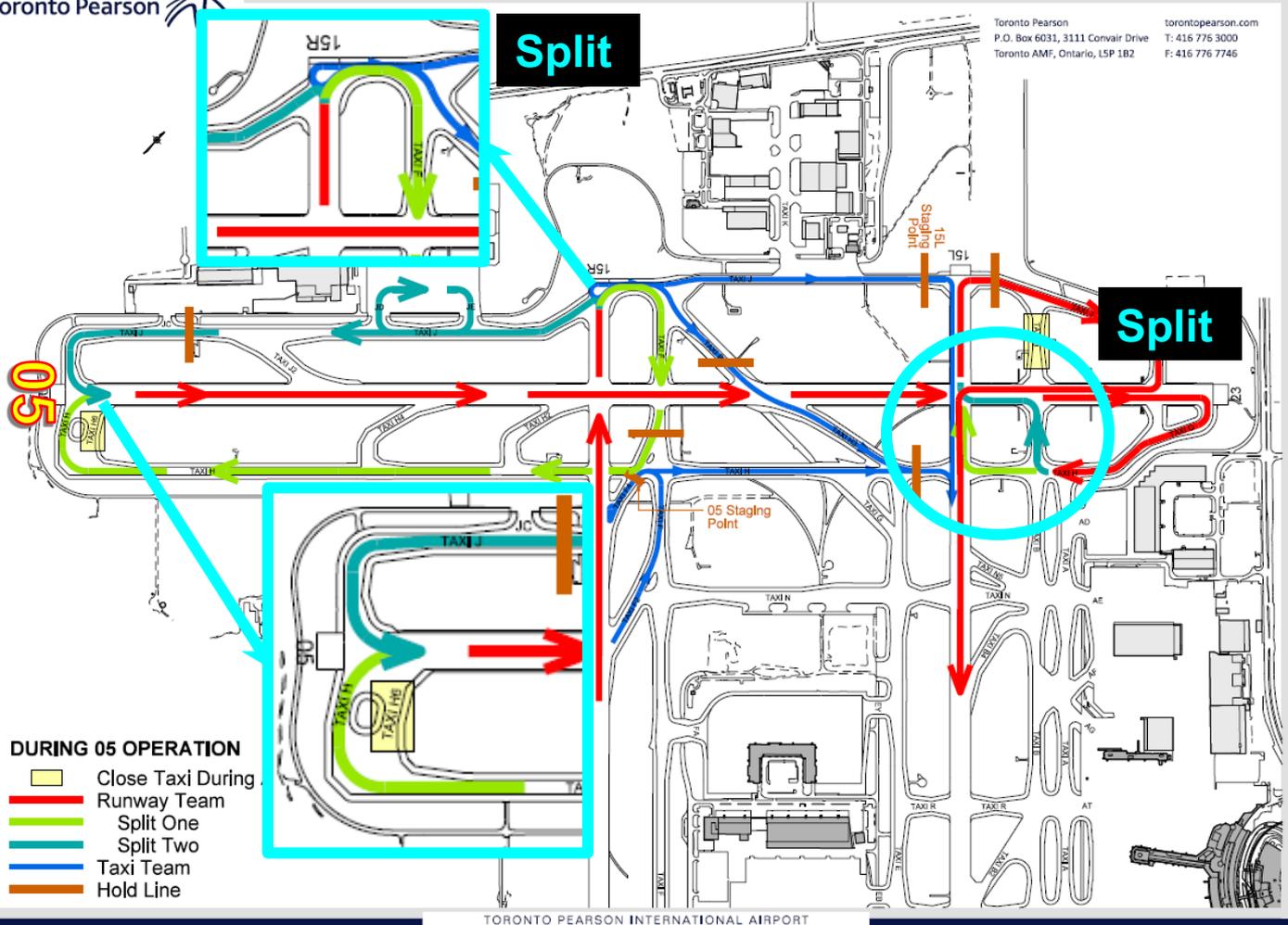
**Snow
Clearing
Map
06R/06L
During 06L/06R
Operation**



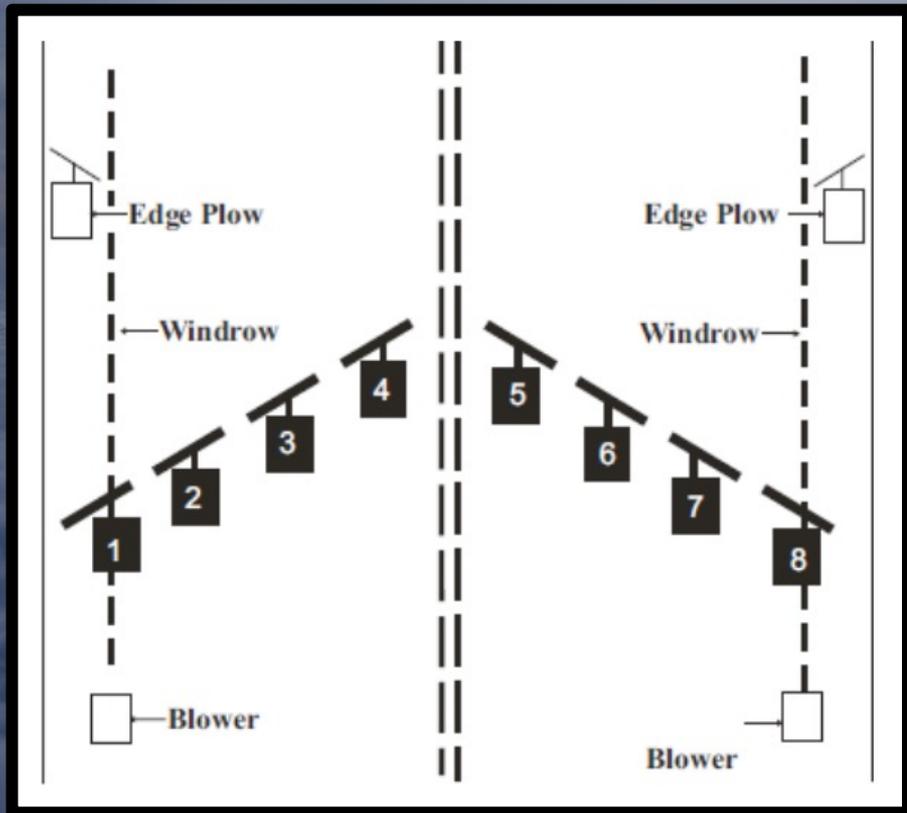
-  Close West Taxi Lane During Active Snow Event
-  Hold Line
-  Runway Team
-  Runway Team A
-  Runway Team B
-  Taxiway Team
-  Taxiway Team A
-  Taxiway Team B

DURING 06L/06R OPERATION

**Snow
Clearing
Map
05-23
During 05
Operation**



The “V” Plowing Formation



Benefits

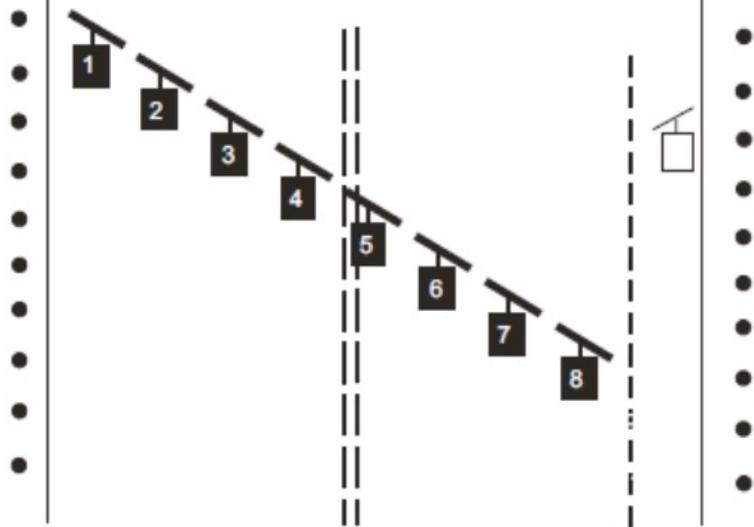
- **Splitting the overall load of snow into two piles making it expeditious snow clearance technique**
- **More evenly distributes the weight of the snow being plowed**

Challenges

- **This method works well during low or no wind conditions, which are rare during snow events.**
- **As a result, it is not used as often as the 'one-way' method**

“One Way” Formation

“One Way” Formation



Windrow



Nav Canada
Tower
Supervisor &
Shift Manager

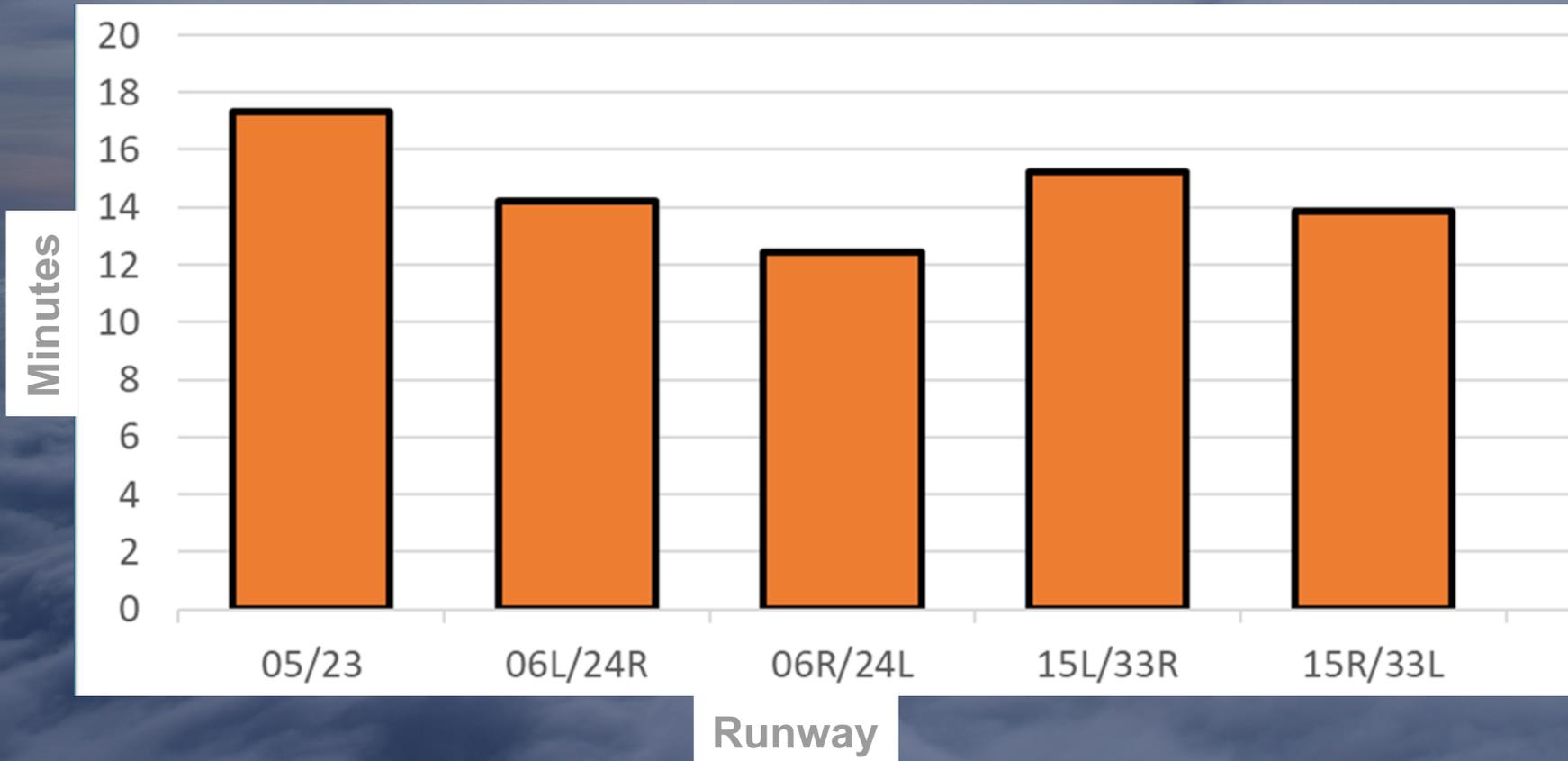
Airfield Operations Tactical Team

GTAA
Manager Operations,
Airside Ground
Operations

GTAA
Airfield Supervisors
and Technical
Inspectors



Runway Occupancy Time (ROT)



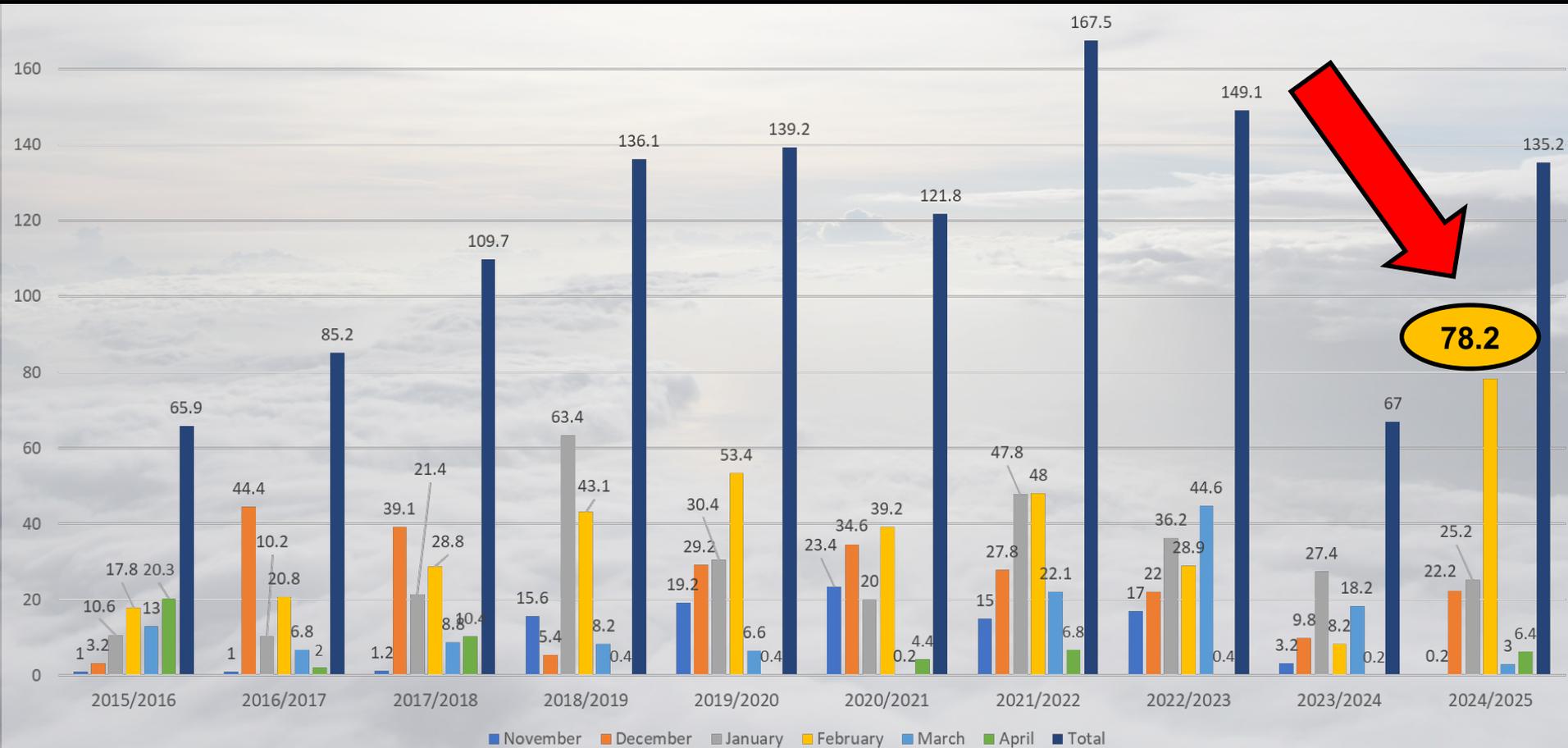
Trends are indicating larger, warmer snow events.

Tactics need to be adapted to respond to these challenging weather events.

More pushing, blowing and deicing capability is required

Winter Operations Snowfall Accumulations

180



Changing Weather

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Changing Weather

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Changing Weather Operational Readiness

Operational Preparedness

- **Airfield Operations Snow Talk** (Hosted By Manager Operations, Airside Ground Operations)
- **Winter Event Preparations** (Host by Airport Duty Manager)
- **At Large Call with External Stakeholder** (Host by Airport Duty Manager)
- **Snow Event Debrief – Airfield Maintenance Team**

Central Deicing Facility



Central Deicing Facility

2024/2025 Winter Season

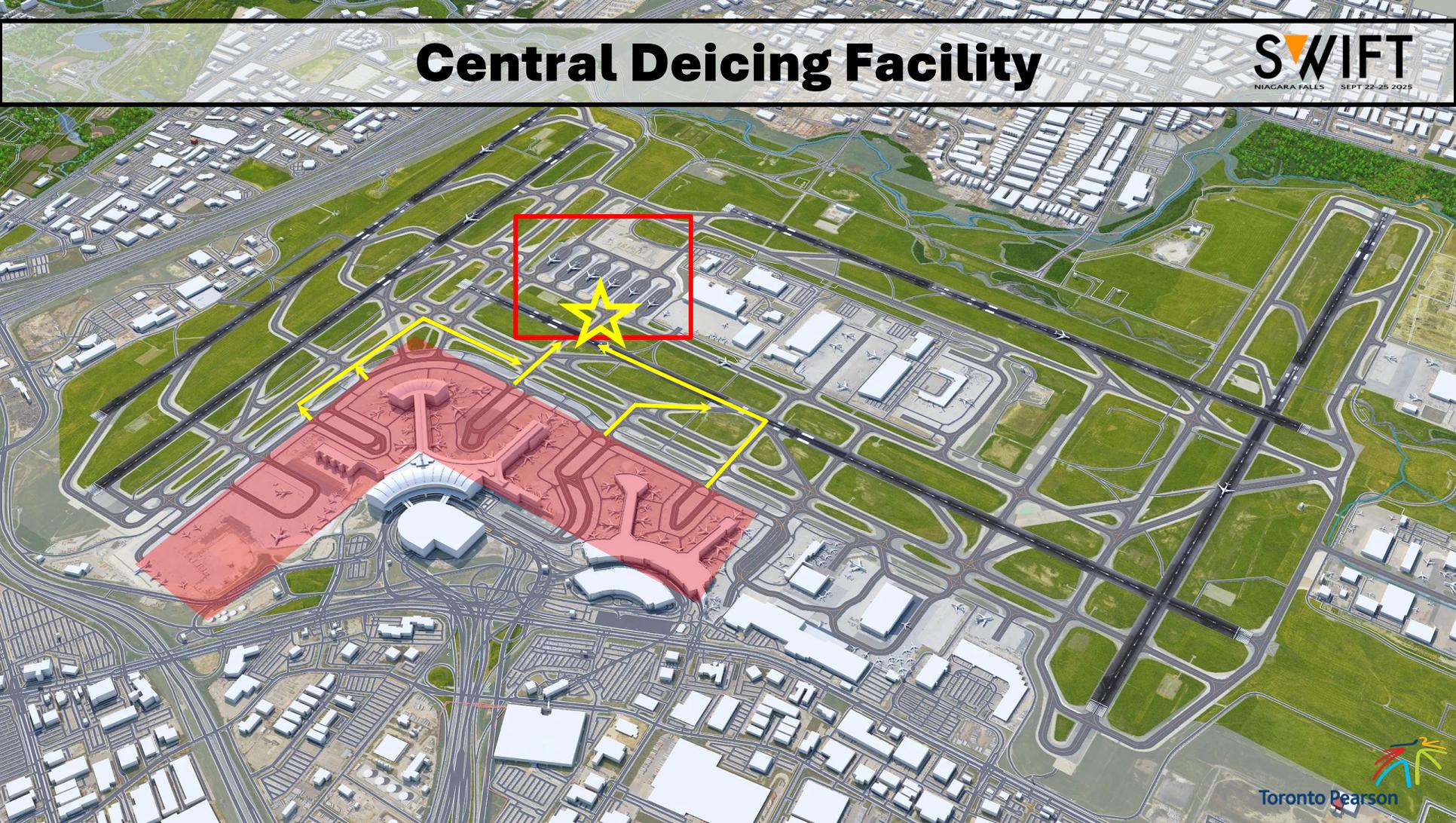
Total Aircraft Treated: 17,886

Days of Deicing Activity: 195

Deice Time (avg): 4:45 min.

Throughput Time (avg): 12:58 min.

Central Deicing Facility



2023-2024 TORONTO PEARSON WINTER OPERATIONS TARGET SERVICE LEVELS

RUNWAY PARAMETERS	(A) RWY DEP RATE		AIRCRAFT CONTAMINATION + DEICING FLUID		(B)	(C)	(D)	(E)	*EXTREME WINTER EVENTS RATE WILL BE 14			
					CDF [6-PADS]	TMI-RATE	CDF [5-PADS]	TMI-RATE	AVG DEICING TIME	AVG TAXI OUT TIME	CONTAMINATION INDEX	
		48+	CENTRAL DEICING FACILITY PARAMETERS	TYPE I	FROST	52	-	44	-	1:00 - ≤3:00	≤ 30:00	> 0.00 – 2.00
		44			VERY LIGHT	48	-	40	44	3:00 - ≤6:00	≤ 35:00	
		40			TYPE I+V	LIGHT	44	-	36	40	6:00 - ≤10:00	
		36	MODERATE	40		44	32	36	10:00 - ≤15:00	≤ 75:00		
		32	CENTRAL DEICING FACILITY PARAMETERS	TYPE I+V	HEAVY	36	40	30	34	15:00 - ≤22:00	> 2.00 – 4.00	
		28				32	36	26	30	22:00 - ≤30:00		
		24				28	32	24	28	22:00 - ≤30:00		
		20	CENTRAL DEICING FACILITY PARAMETERS	TYPE I+V	FREEZING / EXTREME WX*	22	24	18	20	22:00 - ≤30:00	> 4.00	
	16	18				20	16	18	22:00 - ≤30:00			
	12				14	16	12	14*	22:00 - ≤30:00			
CDF STAFFING			NO PRECIPITATION FORECAST [TEMPERATURE ≤ 5°C]					PRECIPITATION FORECAST, ACTIVE, AND RECOVERY STAFFING [TEMPERATURE ≤ 5°C]				
			5 PAD COVERAGE AS NECESSARY TO MEET DEMAND [MINIMUM 20 DEICING UNITS]					6 PAD COVERAGE AS NECESSARY TO MEET DEMAND 5 PAD COVERAGE AS NECESSARY TO MEET DEMAND [36 DEICING UNITS + 6 RELIEF UNITS TO SUSTAIN FULL CDF OPERATION]				

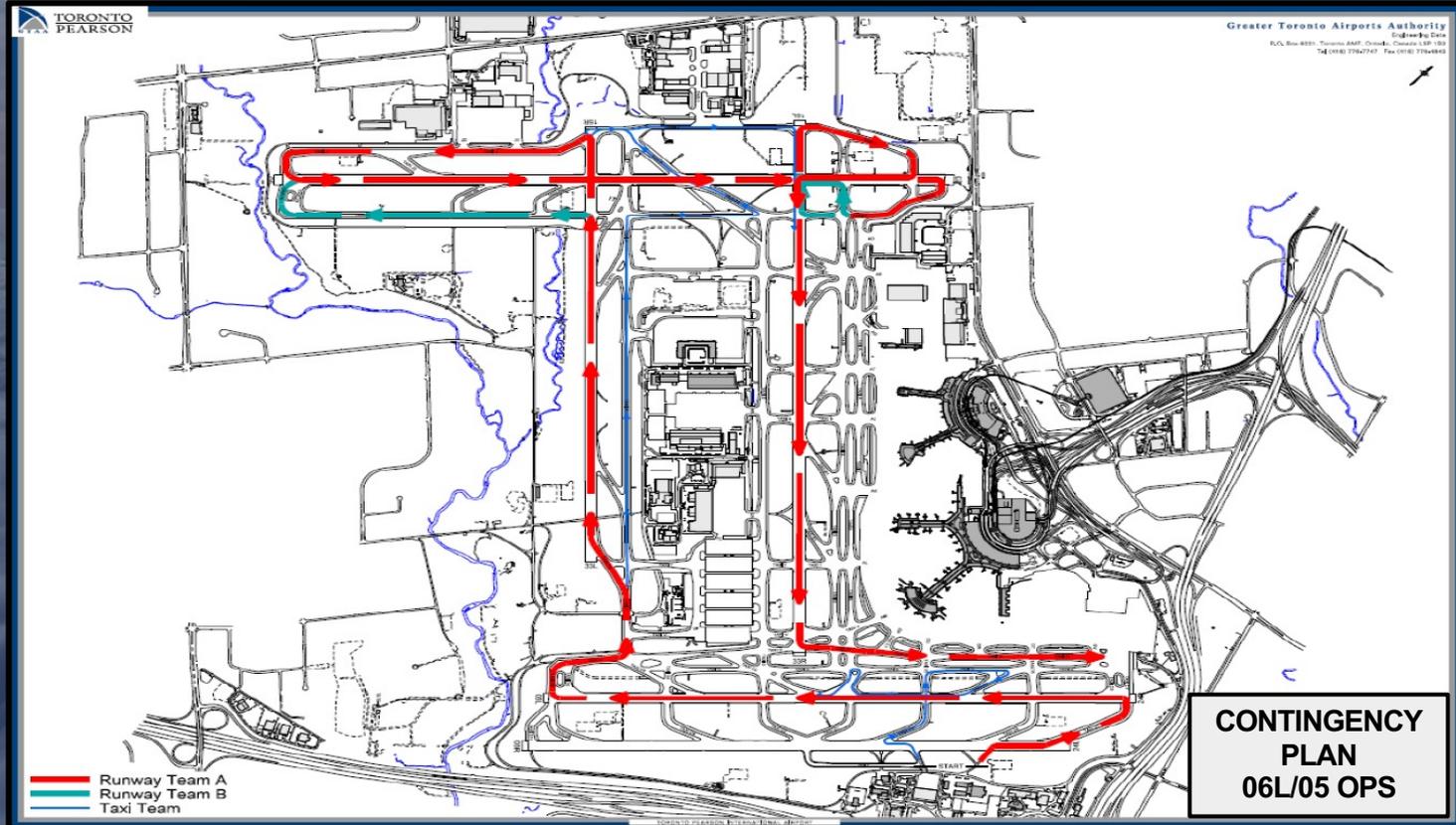
CONTINGENCY TACTICS FOR EXTREME WINTER CONDITIONS

Changing runway configurations, or periods of intense snow or ice accumulation may drive ad-hoc changes to the plan to accommodate ground operations. If the airfield conditions deteriorate during intense or prolonged periods of precipitation, a contingency plan may be implemented to only maintain the active surfaces that are planned for use.

Example Criteria for implementation of Extreme Winter condition contingency plan;

- **Intense rate per hour of freezing precipitation (5+ mm per hour)**
- **Total snowfall accumulation of 20+ cm in a 24-hour period**
- **Extended Freezing rain or drizzle (5+ mm – 3 - 4 hours duration)**
- **Extended Low visibility conditions rendering execution of the snow plan unsafe (RVR >200')**
- **A combination of the conditions above**

CONTINGENCY TACTICS FOR EXTREME WINTER CONDITIONS



Dealing with Snowbanks



Dealing with Snowbanks



Snow Groomer



Buried Airfield Lighting

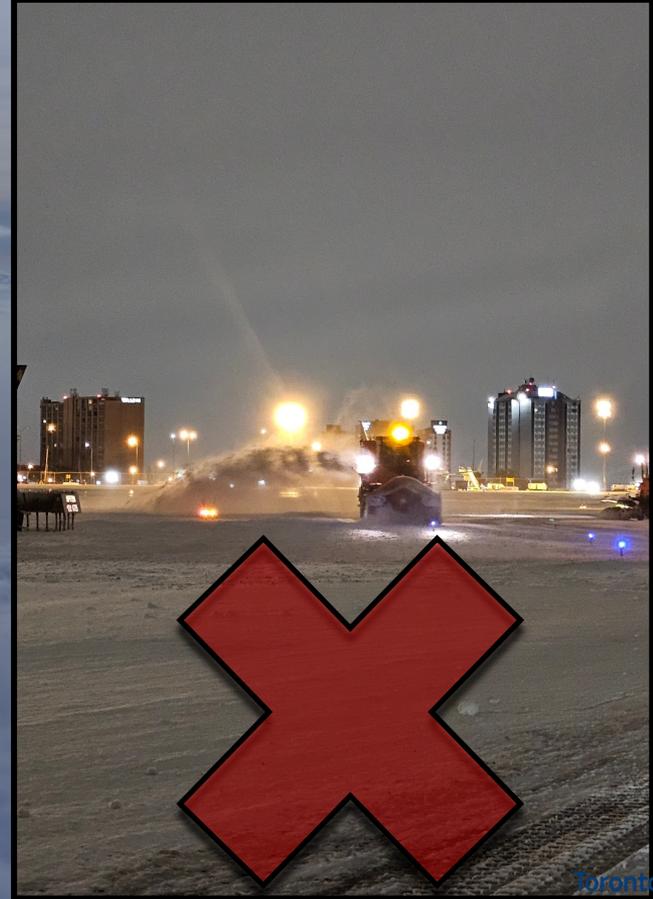


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Buried Airfield Lighting



Buried Airfield Lighting



Buried Airfield Lighting

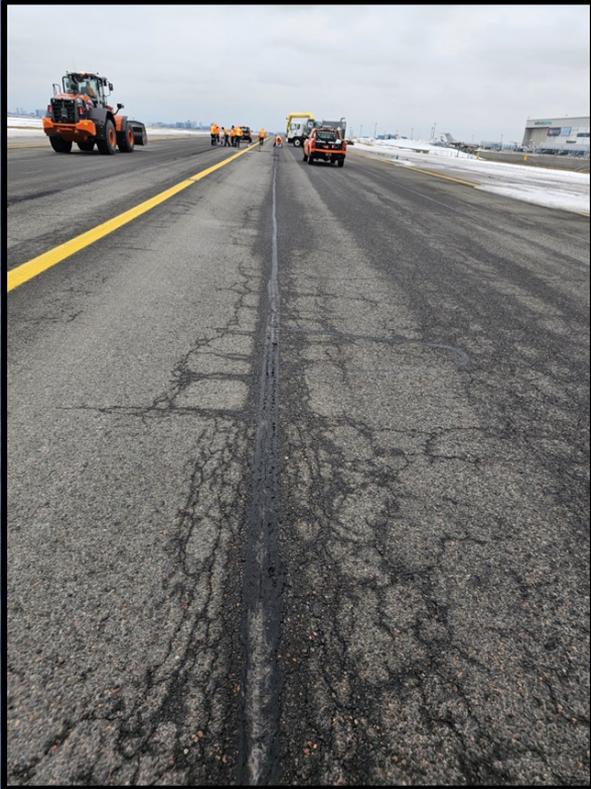


Buried Airfield Lighting

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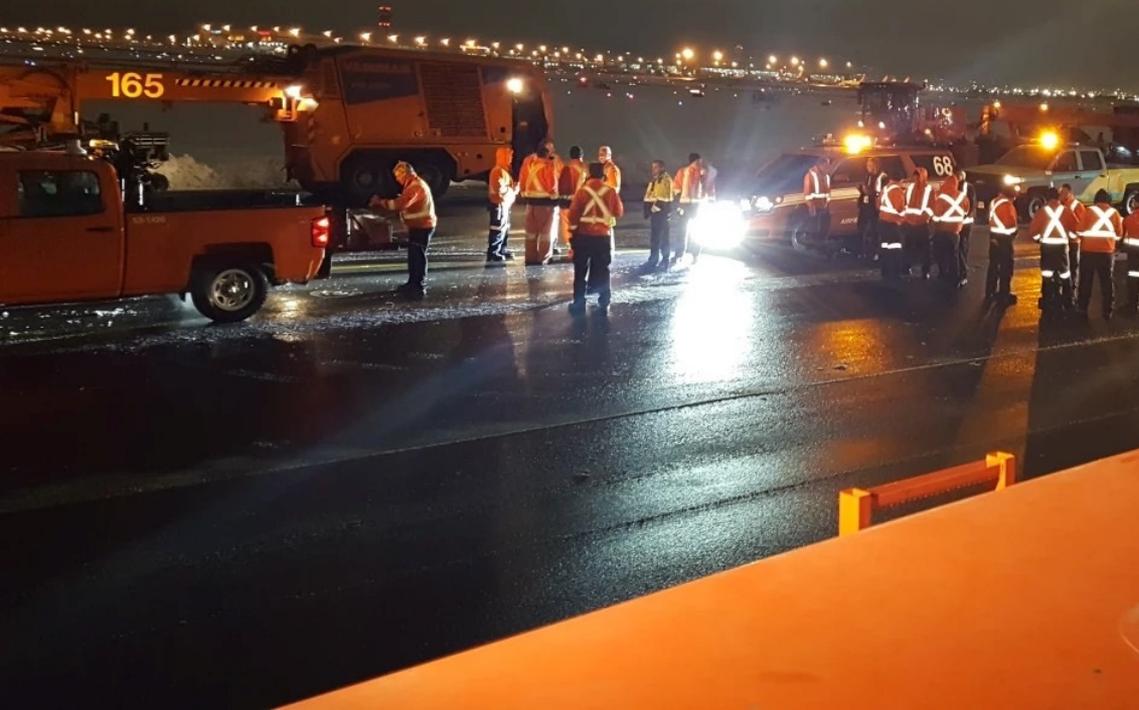
Surface Repairs



Feb 27, 2025 3:34:18 p.m.
2570 Britannia Road East
Mississauga
Regional Municipality of Peel
Ontario
YYZ
Index number: 257



Feb 27, 2025 3:28:26 p.m.
2570 Britannia Road East
Mississauga
Regional Municipality of Peel
Ontario
YYZ
Index number: 255



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Thank you

