

A nighttime photograph of Niagara Falls and the City of Toronto skyline. The falls are illuminated with blue and purple lights, and the city buildings are lit up against a dark blue sky. The CN Tower is visible on the right side of the image.

# CYKF

## Region of Waterloo International Airport

### Winter Operations – A mid-size perspective

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Manager, Airport Operations

**SWIFT**  
NIAGARA FALLS SEPT 22-25 2025

## ***YKF Highlights***

- **We are owned and operated by the Regional Municipality of Waterloo**
- **19<sup>th</sup> busiest airport in Canada in 2024**
- **132,057 movements**
- **Commercial air service**
- **Air Canada/Landline launch 2024**
- **Waterloo Wellington Flying Club, Chartright Air Group, Great Lakes Helicopters**
- **de Havilland Canada**
- **Aviation & Aerospace sector (Silicon Valley of the North)**

***CYKF in relation to  
airports of a  
similar size that  
experience a  
similar climate.***

**CYHM – 48 KM  
CYXU – 78 KM  
CYYZ – 66 KM**



***Runway 08 – 26,***

*7003 X 148 feet*

***Runway 14 – 32,***

*4103 X 148 feet*

***Aprons 1 through 7***

*Aprons 1-2, 4-5, GA*

*Apron 3, Terminal ramp*

*Apron 6, Rotary training*

*Apron 7, Corporate*

***Ops Centre***

***And Nav Canada***



Google Earth

Image © 2025 Airbus

800 m

N

## ***YKF Terminal***

- ***7 aircraft stands***
- ***6 departures gates***
- ***Separate international and domestic arrivals halls***



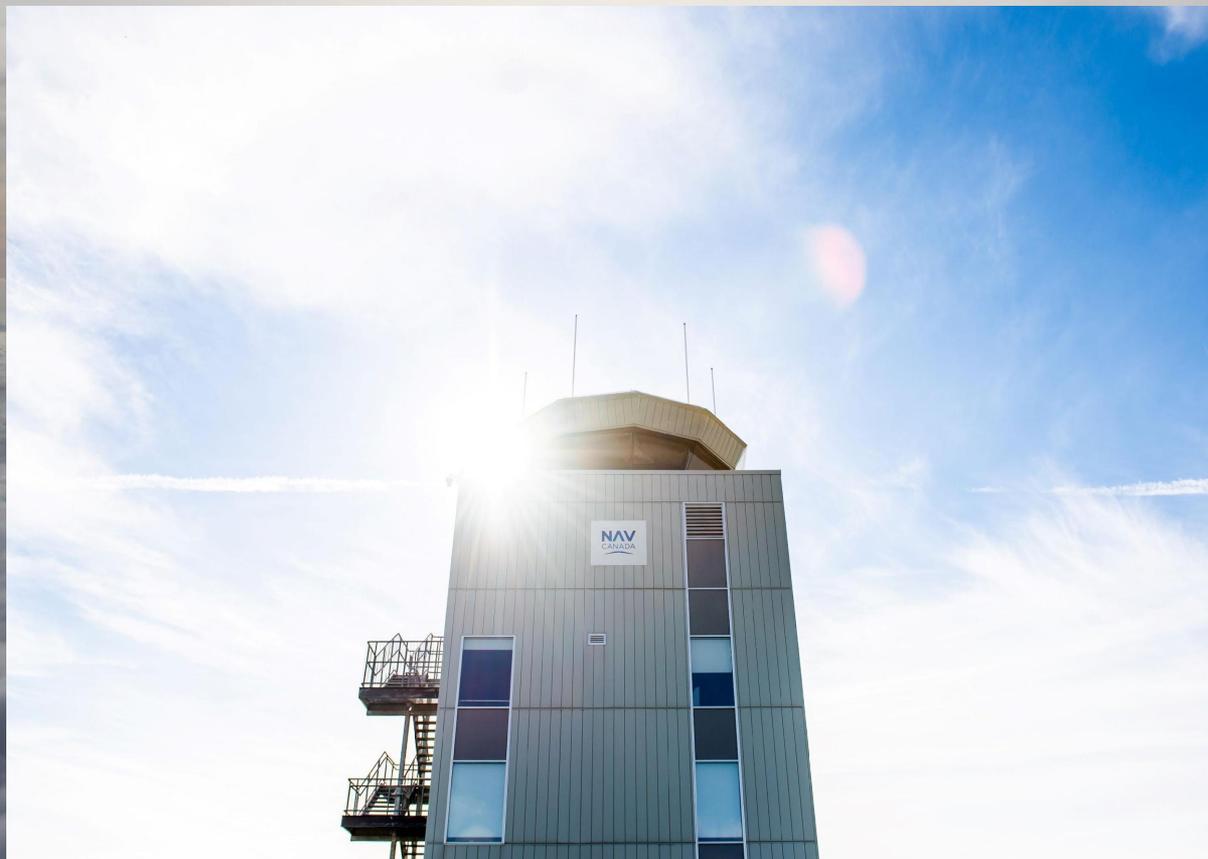
## ***YKF Airport Operations Centre***

- ***2 drive through  
ARFF bays,  
presently CAT VII  
operation***
- ***5 drive through  
maintenance bays***



## **NAV CANADA**

- *Original tower built 1969 – this facility opened 2017*



Operations  
Center & Nav  
Canada



# Staffing



## Winter Ops Staffing Responsibilities

- ***Duty Manager***
- ***Airport Operations Specialist***
  - ***Terminal Operations Specialist***

### **Duty Manager**

- Runway condition monitoring & reporting
- Staffing management (OT)
- Liaison for airlines & handlers, Nav Canada, GA tenants, contractors
- Storm strategic planning, ensures snow plan followed

### **Airport Operations Specialist**

- Equipment operation
- Chemical application
- Manual snow clearing
- Storm tactical planning

### **Terminal Operations Specialist**

- Constant ATB condition monitoring for public slip hazards
- ATB manual snow clearing
- Public first point of contact

## **Duty Manager**

- 1 duty manager 24/7
- Potential for more management presence during severe/prolonged events

## **Airport Operations Specialist**

- 4 (regular crew) for a light or moderate storm. 5-6 for a severe storm.

## **Terminal Operations Specialist**

- 1 TOS on duty 24/7
- Staffing does not increase for storm events.

## Winter Ops Staffing "Day of" head count

- *Duty Manager*
- *Airport Operations Specialist*
- *Terminal Operations Specialist*

# The Fleet





## The Fleet

- *Plows*

### 5 Plow and Sweeper Combos

- 20' blade & 18' sweeper, with high-speed air blowers

### Tactics during active snow fall

- Light to moderate event, 2 to 3 ploughs maintain continual centerline, for 120' usable width
- 1 plow focuses on taxiway and ramp accessibility
- 1 plow as hot spare
- For a severe snow fall, all 4-5 available plows to maintain centreline

### Tactics post storm

- 3 plows utilized to perform final clearing of priority 1 pavement to edges, then priority 2 and 3
- Other plows pulled to allow operators to work other equipment

## Oshkosh 3500

### Loader w/ self powered 1800 Larue

#### Tactics during active snow fall

- Blowing of windrows shortly before scheduled airline traffic
- If enough staff, blowing will be performed as ploughs make windrows

#### Tactics post storm

- Windrows and behind edge lights of runways and taxiways, for full pavement widths
- Apron edge windrows and piles

## The Fleet

- *Blowers*



## Claas tractor with wing blade

### Tactics during active snow fall

- Fast clearing of terminal gates

### Tactics post storm

- Removal of snow piles or windrows that are too heavy for ploughs to move.
- Feathering of snow banks or blown snow along runway edges



## The Fleet

- *Claas w/ blade*



## Tyler Boom Sprayer – Tractor Towed

- Application of liquid potassium acetate

## Tactics during active icing events

- Used to pre-treat surfaces before forecasted icing
- 1 pass for only centerline, 2 passes for full runway width



## The Fleet

- *Anti Icing Tyler Sprayer*



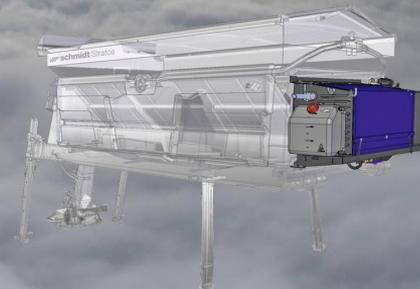


## Schmidt Solid/Liquid Chemical Spreader

- installed on a commercial tandem trailer
- Application of solid materials

### Tactics during icing recovery

- Used as de-icing, to separate and melt ice for mechanical removal, or to lower the freezing temperature of the contaminant on the runway
- To be applied at least 30 minutes before an arrival or departure for best effect
- 1 pass for only centreline, 2 passes for full runway width
- Multi-functional – solid or liquid applications or combi



## The Fleet

- *De Icing Schmidt Spreader*



## Kubota RTV Potassium Acetate Sprayer

- Application of liquids
- Anti-icing
- de-icing

## Loader With Various Blade Attachments

- For mechanical removal of snow piles, freeing airside roads and around tenant hangars



## Skidsteer w/ tracks

- For mechanical removal of snow piles, tenant snow removal, and tight spaces where other equipment can't fit (hangars)
- Clearing of edge lights
- Various attachments



## The Fleet

- ***Other Equipment***

## Pickup With Plowh and Sand Spreader

- Fast snow removal and traction application for pedestrian areas
- Clearing of edge lights

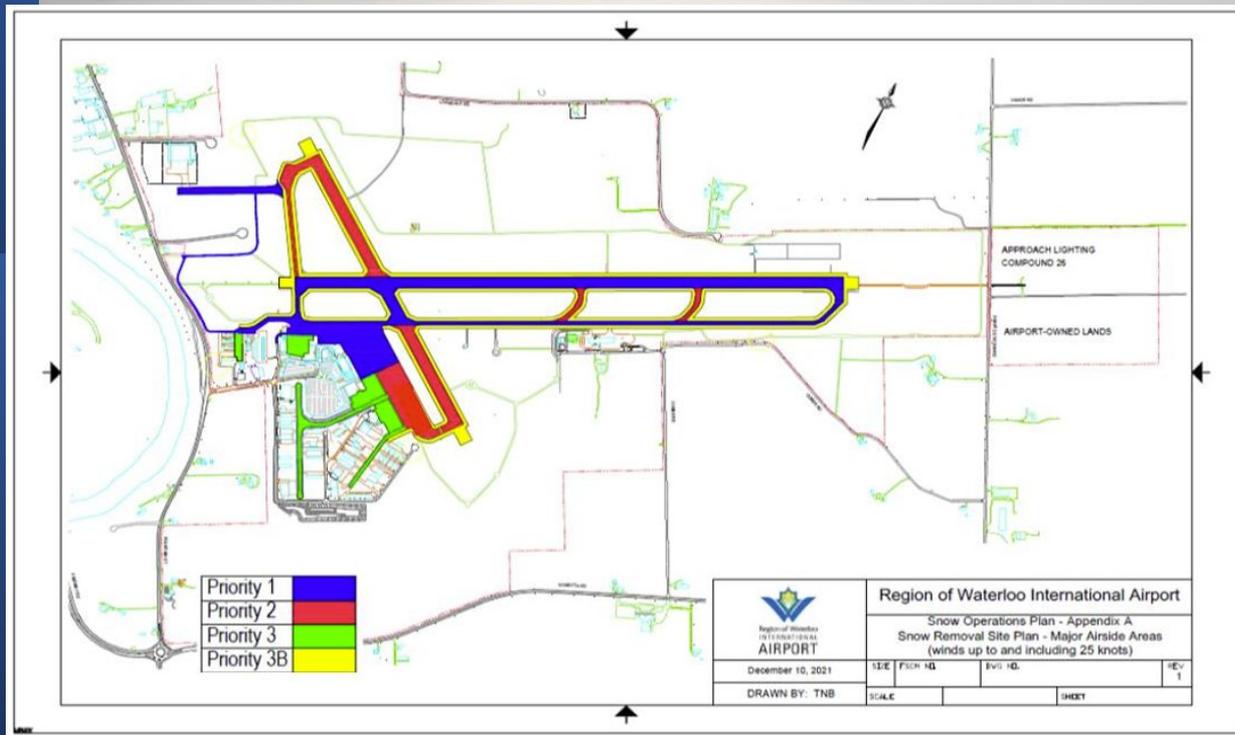


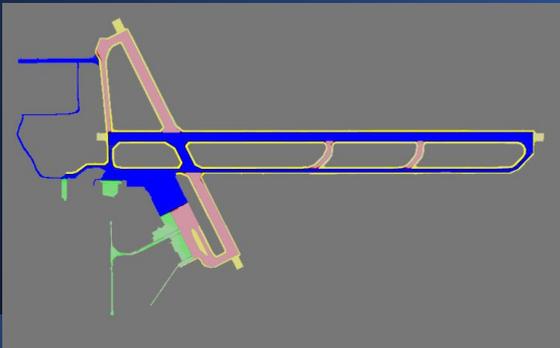
## The Plan



# The Plan

- *Priorities*





## The Plan

- ***Priority 1***
- ***During storm event***

### **Prevailing Wind Runway**

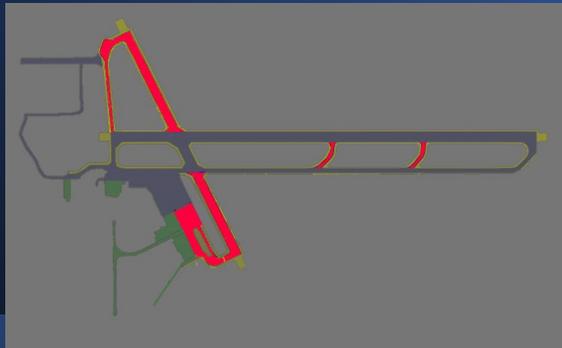
- 08-26 is the prevailing wind runway, as well as the runway capable of 737 traffic

### **Taxiway Alpha and Charlie South**

- To allow for access to Runway 08-26 from the terminal apron

### **Apron 3A (Terminal Apron)**

- To allow for scheduled airline operations
- During priority 1 aircraft stands cleared as required
- All Terminal areas are priority 1 to allow airlines to operate safely in all conditions



## Crosswind Runway

- 14-32 is the prevailing crosswind runway

## Taxiway Bravo, Charlie North, Echo, Fox

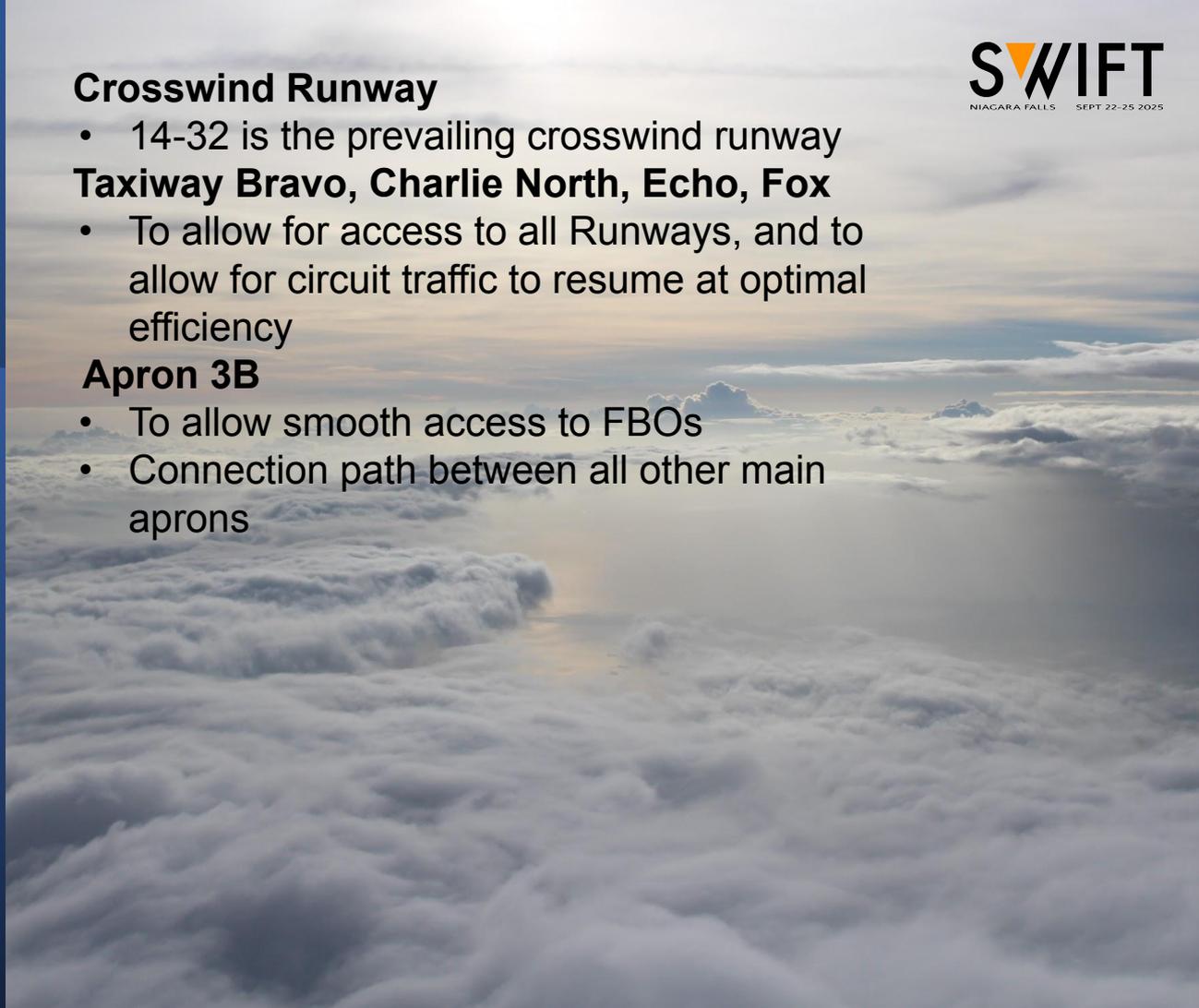
- To allow for access to all Runways, and to allow for circuit traffic to resume at optimal efficiency

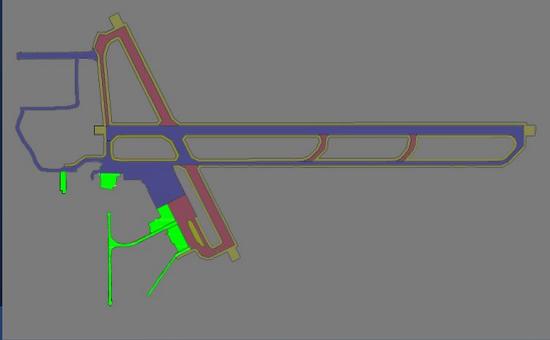
## Apron 3B

- To allow smooth access to FBOs
- Connection path between all other main aprons

## The Plan

- *Priority 2*
- *Post storm*





## The Plan

- **Priority 3**
- **Post storm**

### Remaining Aprons

- To allow GA traffic flow from hangars to taxiways

### Tenant Responsibilities

- Some tenants maintain their own leased apron space for snow removal, at this point their efforts will have linked up to our priority 2 areas

### Tenant Hangar Access

- Some tenants have agreements with YKF for snow removal of tenant ramp space.
- Priority will be set based on need. Flying now? Get cleared now!

### Perimeter Access Roads

- Everything else that may need some attention.....

## Groundside

- Groundside operations are maintained under a contract
- Full road network
- Pedestrian walkways
- Off-site value parking lot w/ shuttle
- Terminal parking lots
- Tenant access points and supporting roads
- Utilizes only Liquids for SNIC

## The Plan

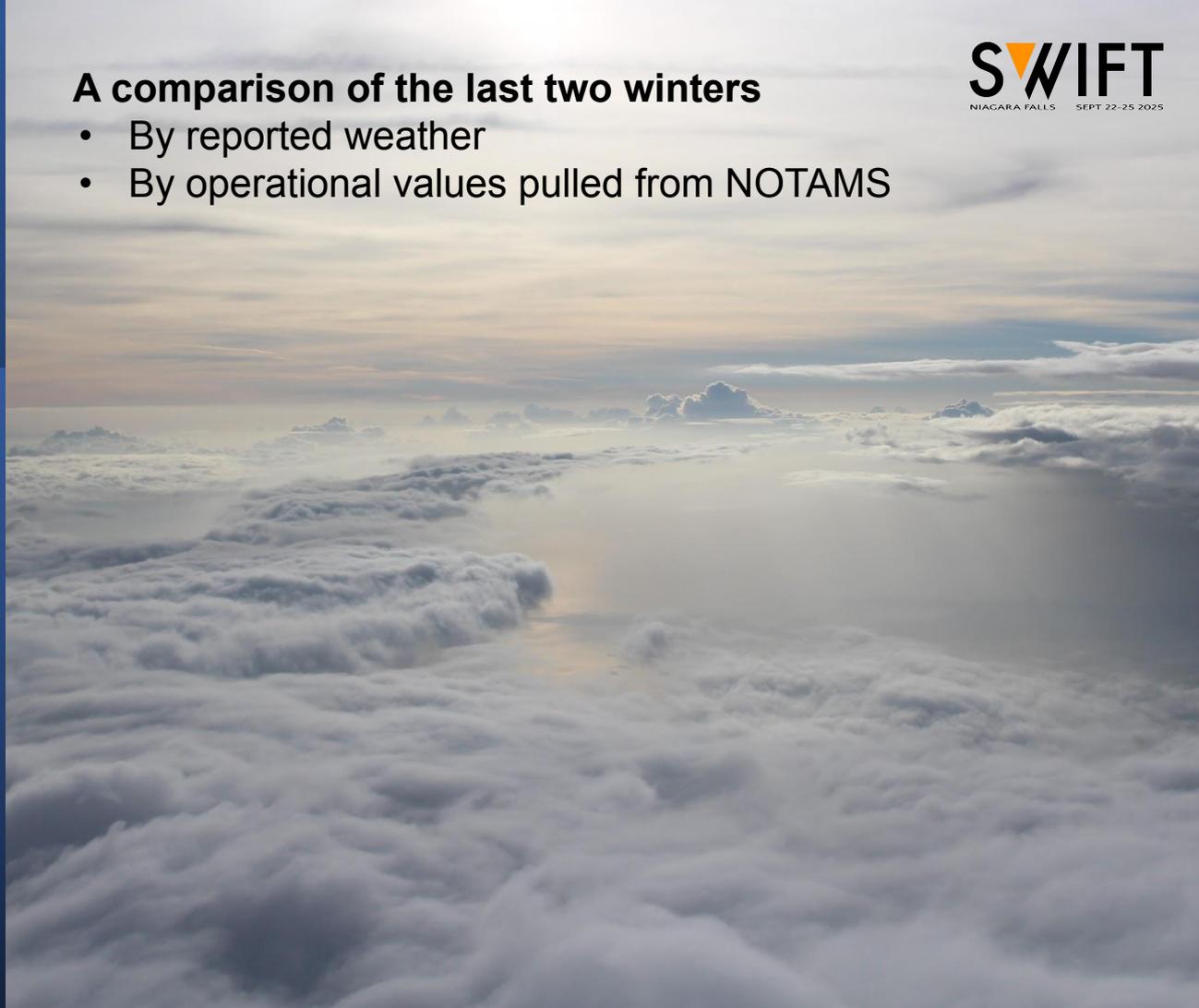
- ***Groundside***

## A comparison of the last two winters

- By reported weather
- By operational values pulled from NOTAMS

## By the Numbers

- *The story of stats*



## Total Snow Fall



## By the Numbers

- *The Weather*

Not even in the same ballpark! Total snow fall from Oct 1 to April 30

- 2023-2024 = 71 cm
- 2024-2025 = 196 cm

Annual average snow fall for the Region of Waterloo = 159 cm

- 2023-2024 = 45% less than average
- 2024-2025 = 23% more than average
- 2.8 times the snow fall from the previous season

## GRF Reported Runway Condition Codes

THIRD	CODE	2023-2024	2024-2025
Touchdown	1	7h 7m	11h 49m
Touchdown	2	5h 36m	5h 38m
Touchdown	3	1h 33m	41h 50m
Touchdown	4	12h 7m	31h 52m
Touchdown	5	1058h 10m	875h 30m
Touchdown	6	1848h 41m	1934h 29m

THIRD	CODE	2023-2024	2024-2025
Midpoint	1	7h 7m	9h 2m
Midpoint	2	4h 48m	9h 23m
Midpoint	3	4h 8m	38h 17m
Midpoint	4	11h 7m	35h 47m
Midpoint	5	1086h 43m	891h 26m
Midpoint	6	1819h 21m	1917h 12m

THIRD	CODE	2023-2024	2024-2025
Rollout	1	8h 41m	10h 44m
Rollout	2	4h 43m	7h 41m
Rollout	3	5h 27m	38h 53m
Rollout	4	5h 7m	25h 33m
Rollout	5	1024h 41m	873h 56m
Rollout	6	1884h 37m	1944h 21m

### Based Off NOTAM Data

- Code 1 through 3 for 2023-2024 (average of all thirds) = almost 50 hours
- Code 1 through 3 for 2024-2025 (average of all thirds) = almost 174 hours
- A condition code of 3 or below gives aircrew pause on our 7000' runway!

## By the Numbers

- **GRF**

## Weather Events Below Optimal

**Precipitation events where the condition code of the primary runway was reported at 3 or below. In other words where a pilot might make a decision to hold or divert**

- 30 separate events in the 2024-2025 season
  - total of 77 hours for the entire season
  - average event duration was 2+ hours between initial report and recovery to a RWCC of 4 or higher
- Most events were significantly shorter
  - 10 events combined to 50 hours
- A continued runway presence & addressing any contamination as soon as it hits the ground allows for a swift recovery. Normally only heavy snow falls or icing conditions see a code of 3 or below if machines are working at onset

## By the Numbers

- ***Recovery***

## YKF's Storm Of The Season

### February 13, 2025 saw our biggest snow event

- The event had us in condition code 3 or below for 8+ hours
- The snow and winds were relentless, some areas of the airfield saw accumulations up to 50 cm
- 4 Sweepers were utilized to maintain 120 foot width
- The snowfall rates were up to 5cm/hr
- The runway would be fully covered before a single run was completed
- Constant strong winds kept re-contaminating the runway, even if the snowfall let up
- Flight cancellations across the board
- Major accumulation challenges for the Region as a whole, with road closures, transit cancellations and collisions reported throughout the storm

## The Big Fall

- ***February 13ish,  
2025***

## YKF's Storm Of The Season

### **You always get through it....just takes time!**

- The ploughs kept the cleared portion to less than 1.5 cm for the duration of the storm.
- Windrows had to be blown quickly to prevent hazards too much accumulation, allowing for quicker recovery
- As soon as snowfall rates lessened, a single run with the plow team and blower brought the 120 foot portion to a satisfactory condition code of 4.
- There was no drawn out struggle to recover, we were good as soon as the weather broke.
- 4 Scheduled turns were completed successfully, and several medevacs arrived and departed, with no cancellations or diversions at YKF

## The Big Fall

- ***February 13ish,  
2025***

# Challenges

## A few of YKF's challenges

### **Location - Southern Ontario's Lake Effect Snow**

- The lake effect engine can be very unpredictable
- Repeated snow squalls, not forecasted, driving over the airport repeatedly during an event. Often when all indications show that the pattern should be spent

### **Airport Configuration**

- 08-26 only 7003 feet
- Runways not directly into the prevailing winds. Snow from runway edges often travels over a clean runway with any winds. If the runway is sun warmed, can cause snow to stick and contaminate
- No jet bridges, leading to major slip and fall prevention efforts airside

### **Reliance on contractors**

- Groundside snow management is contracted, requiring close attention to contractor efforts, timing, their competing priorities, and quality assurance

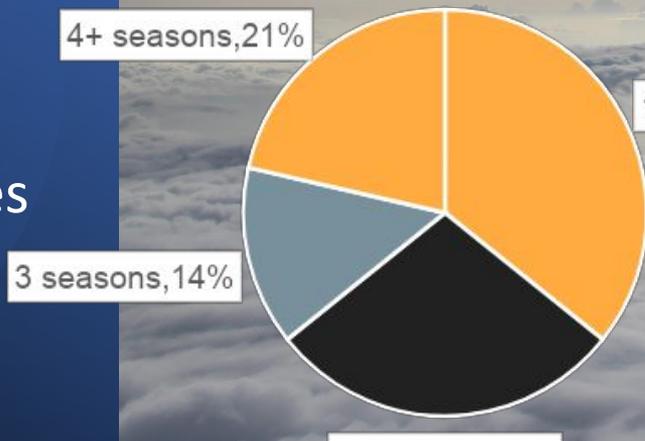
## YKF's Challenges

### Training

- Inexperienced crews – certain percentage always first season
- Hard to demonstrate and learn without real snow

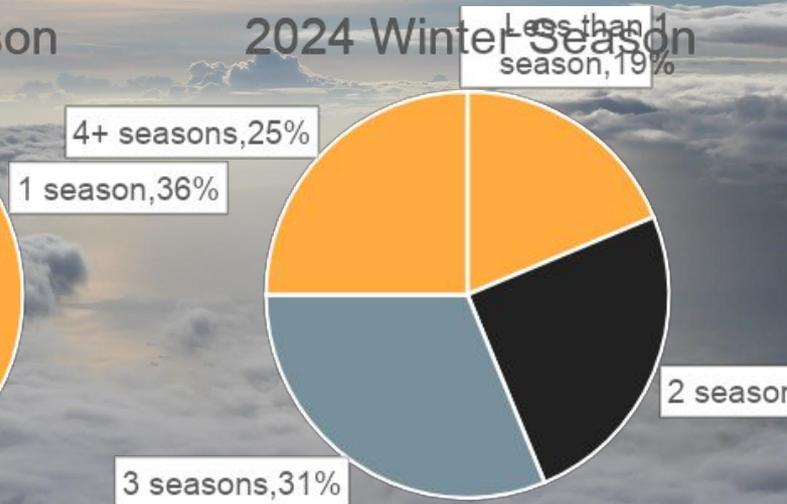
## Challenges

2023 Winter Season



Average Experience  
= 1.75 seasons

2024 Winter Season



Average Experience  
= 1.9 seasons

## YKF's Challenges

### Cost of snow removal

- Less economies of scale with infrequent schedule service
- If going the chemical route – liquids are big \$\$\$
- Costs upwards of \$8000 to treat the runway.....how much revenue does a flight produce?

### Staffing

- Schedule reductions require budget cuts to staffing
- Equipment operators also ARFF personnel. Two operators need to staff Firehall during scheduled flights, leaving the snow removal efforts short during critical times
- Limits to overtime – subsection 171(1) of the Canada Labour Code, Part III

Challenges

# Training, Planning, Preparedness

## Training, Planning, Risk Mitigation

### Training

- Compliance vs. competence
- Time spent before each season to refresh, recurrent practice
- Group meetings to tabletop events and procedures
- Everyone gets a chance to lead a conga line

### Planning

- Lessons learned hotwash after each event, and incorporated in training and preparedness
- Yearly review and revision of the plan released to community
- Study of stats to see what works and what doesn't

### Preparedness

- Early purchase of de-icing materials
- Full pre-winter fleet inspection in late summer / early fall
- Airport community engagement in winter plan refinements and priorities
- Continually engage the Team on how things can be done better and more efficiently

## Conclusion

### Conclusion

- CYKF continues to grow as a key regional airport – we must balance regular increases/decreases in traffic with SW Ontario's challenging winter conditions
- Winter operations demand strategic planning, and most importantly.....Teamwork
- Our fleet, staffing model, and ongoing training systems allow us to maintain safety and operational resilience
- Challenges will always remain – weather unpredictability, staffing, and costs. **Training, Flexibility, and Preparedness keeps us ready!**

### What now?

- continuous improvement through lessons learned
- Out of the box thinking is key
- Open collaboration with other airports, airport partners, and other stakeholders