
WINTER OPERATIONS AT REGIONAL AIRPORTS
SARAH HANCOCK & ZACH MARTON
SWIFT
VANCOUVER
SEPT 17–19 2024

Who are we: WestJet Encore

- Canadian Regional Airline, Created by WestJet, in 2013
- Headquartered in Calgary, Alberta, Canada
- Owned by the parent company WestJet Airlines, Ltd, operate feeder flights for WestJet
- Operate a fleet of 35 turboprop aircraft: De Havilland Canada Dash 8 carrying 78 guests
- Created out of competitive necessity, WestJet created Encore to serve routes with less traffic

Where we Fly

CYWG CYXT CYQU CYQQ CYLW CYBR CYQR CYCD CYYF CYYC CYXJ KPDX CYXX CYQT CYKA CYZF CYYJ CYVR CYMM KSEA CYXT KMSP CYEG CYXS

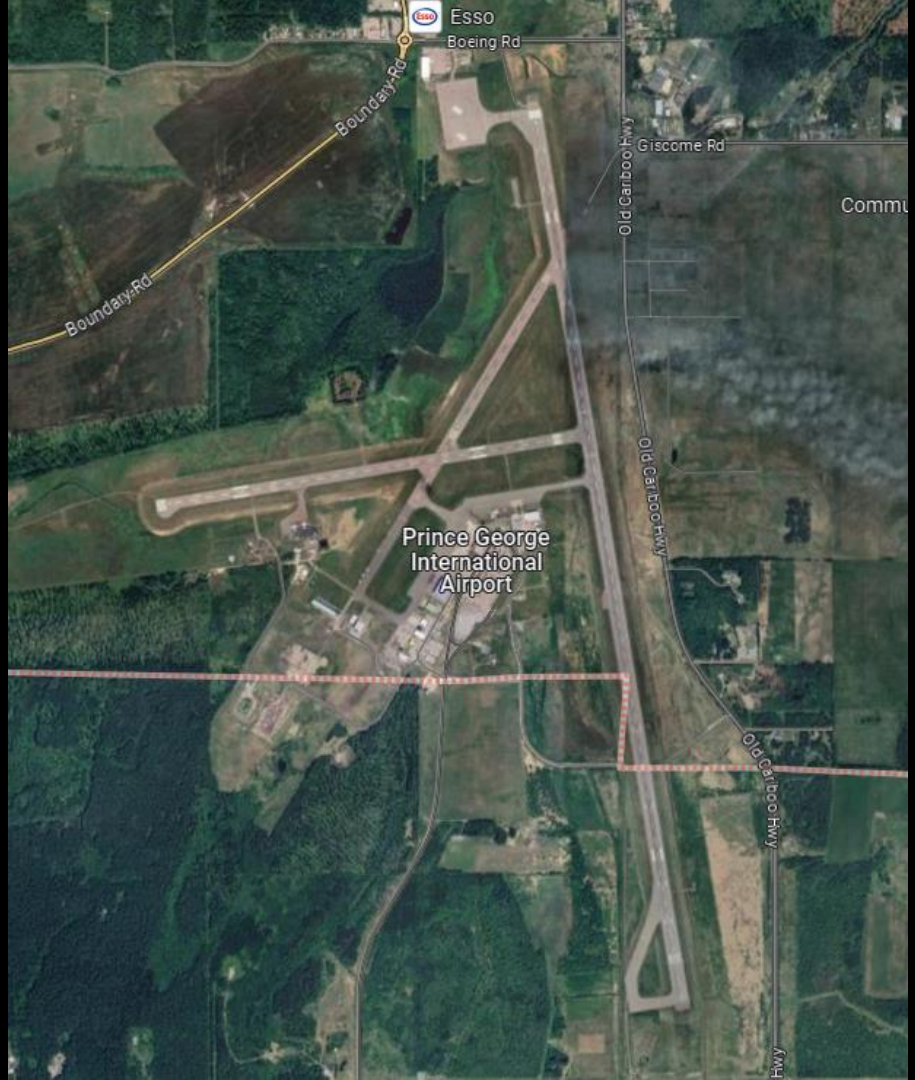
Over 25 destinations (Canada and US)

- Calgary (YYC) to Edmonton (YEG)
- Edmonton (YEG) to Fort McMurray (YMM)
- Vancouver (YVR) to Prince George (YXS)
- Calgary (YYC) to Terrace (YXT)
- Kelowna (YLW) to Vancouver (YVR)
- Edmonton (YEG) to Seattle (SEA)

Types of Airports

Types of Airports

- Limited Hours of Operation
- Traffic Advisory (MF or ATF)
- Automated Weather Observation System (AWOS) or Limited Weather Information System (LWIS)
- One suitable landing option (1 suitable runway, 2 directions, 1 preferred runway in use)
- Limited service (GPU)
- Deicing on gate/apron
- Examples: Prince George (CYXS) and Terrace (CYXT)


Esso
Boeing Rd
Boundary Rd
Boundary Rd
Giscome Rd
Old Cariboo Hwy
Old Cariboo Hwy
Old Cariboo Hwy
Prince George
International
Airport


Budget Car Rental
Northwest Terrace Regional Airport (YXT)
British Columbia Highway 37
Dease Lake Hwy

Types of A

- Each airport h
- We utilize Ro … o list the specific inforr
- There are ma … nges to each location
- Not always ar … perate within, nor the

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Prince George Prince George, B.C. CANADA	CYXS / YXS UTC-8 (-7)	ROUTE & AERODROME QUALIFICATION 03 JUN 2024

GENERAL INFORMATION

AIRPORT OPERATIONS	24 HRS (TWR 14-07Z‡ O/T RDO)			
AIRPORT SERVICES	**ARFF** DESIG. CAT 7 1400-0730Z‡	**CUSTOMS** Yes	**PDC/PTC** Yes/No	**RWY MAINT** 1300-0730Z‡
GROUND SERVICES	**GPU** Yes	**GROOMING** Yes	**LAV/WATER** Yes/No	**PCA** No
COMMUNICATIONS	**ACARS** Yes	**OCC VHF** 130.57		
AIRPORT PARKING	Ground Loading at 1A and 1B			
AIRSIDE DOOR ACCESS CODES	Yes, see CATSA agent			
MAINTENANCE	No maintenance onsite, contact MCC via dispatch			
WEATHER REQUIREMENTS	**ARRIVAL** Consult Company NOTAM for airport level of service		**DEPARTURE** Consult Company NOTAM for airport level of service	
RUNWAY SLOPE	RWY 06 DOWN 0.87% RWY 15 DOWN 0.3%		RWY 24 UP 0.87% RWY 33 UP 0.3%	
UNSTABLE APPROACH DATA	None			

CAUTIONS

- ARCAL Type K lighting when TWR closed. See "Arrivals" below for ARCAL instructions.

CLIMATE

- Winter weather may be heavily influenced by local pulp mills which contribute to long episodes of fog and low ceilings.

ENROUTE (ARRIVING)

- None.

ARRIVALS

Flight Dispatch

- **75 minutes prior to departure the Flight Dispatcher creates a flight plan with all the available information. Flight Dispatch utilizes the Sabre flight planning system that is designed to supply the following information:**

  • NOTAMs
  • Meteorological information for destination and alternate airports
  • Forecasts, area and terminal, for the area of responsibility and beyond as required for weather trend analyses
  • Weather radar summaries
  • Significant changes in flight conditions

Flight Dispatch

- **In addition, Flight Dispatch has access to the following information as required by CAR 705.20 for WestJet Encore's co-authority dispatch system:**

  - Air Traffic Control (ATC)
  - Airport facilities
  - Weight and balance
  - Fuel
  - Maintenance or mechanical items (MEL / CDL)
  - Weather (NAV Can.)
  - Ground deicing

Flight Dispatch

- **Flight Dispatch predict additional fuel usage based on current and forecasted information (weather at departure, enroute, destination, runway conditions).**

Flight Dispatch

- **60 minutes prior to the estimated time of departure during normal operations, these applicable parties shall receive an operational Flight Plan:**
  - The operating Flight Crew
  - The appropriate ATC unit
  - The appropriate fuel provider

- **45 minutes prior to the estimated time of departure during normal operations, the pilots start their Pre-flight checks and review the flight plan sent by the Flight Dispatcher.**

Operational Flight Plan

RSC 12 5/5/5 80 PCT WET AND 20 PCT 1/8IN WET SNOW. 80 PCT WET
AND
20 PCT 1/8IN WET SNOW. 80 PCT WET AND 20 PCT 1/8IN WET SNOW.
120FT WIDTH. REMAINING WIDTH 1/8IN WET SNOW. CHEMICAL RESIDUE
PRESENT. VALID JAN 24 1313 - JAN 24 2113.
RSC 30 5/5/5 80 PCT WET AND 20 PCT 1/8IN WET SNOW. 80 PCT WET
AND
20 PCT 1/8IN WET SNOW. 80 PCT WET AND 20 PCT 1/8IN WET SNOW.
120FT WIDTH. REMAINING WIDTH 1/8IN WETSNOW. CHEMICAL RESIDUE
PRESENT. VALID JAN 24 1313 - JAN 24 2113.
ADDN NON-GRF/TALPA INFO.
RMK. TWY TWY ALPHA. ALPHA 1. ALPHA 2. ALPHA 3. ALPHA 4. ALPHA
CHARLIE. ALPHA DELTA. ALPHA ECHO. BRAVO. BRAVO 1. BRAVO 2.
BRAVO
4. KILO. NOVEMBER. PAPA. QUEBEC. ROMEO. SIERRA. TANGO.
UNIFORM.
WHISKEY. YANKEE. 202301241320. WET SNOW. 1/8IN.

RMK. APN APN APRON I. APRON II. APRON III. APRON IV. APRON
VI.
APRON VII. APRON VIII. 202301241320. WET SNOW. 1/8IN. SNOW
REMOVAL IN PROGRESS..

CYHQC0126/23 (23 JAN 23)

23 JAN 2023 18.16-01 JUN 2037 00.00
AMEND PUBLICATIONS.
PRO. NOISE ABATEMENT.
RWY 12 TO READ. KEKBI INSTEAD OF .LEDUC. NDB

CYQR / YQR

CYHQA1503/23 (24 JAN 23)

24 JAN 2023 10.41-24 JAN 2023 18.41
.RSC 08 5/5/5 100 PCT 1/8IN DRY SNOW. 100 PCT 1/8IN DRY SNOW.
100
PCT 1/8IN DRY SNOW. CRFI GREATER THAN .50. VALID JAN 24 1034
-
JAN 24 1834.
RSC 26 5/5/5 100 PCT 1/8IN DRY SNOW. 100 PCT 1/8IN DRY SNOW.
100
PCT 1/8IN DRY SNOW. CRFI GREATER THAN .50. VALID JAN 24 1034
-
JAN 24 1834.
RSC 13 6/6/6 10 PCT 1/8IN DRY SNOW. 10 PCT 1/8IN DRY SNOW. 10
PCT
1/8IN DRY SNOW. VALID JAN 24 1027 - JAN 24 1827.
RSC 31 6/6/6 10 PCT 1/8IN DRY SNOW. 10 PCT 1/8IN DRY SNOW. 10
PCT
1/8IN DRY SNOW. VALID JAN 24 1027 - JAN24 1827.
ADDN NON-GRF/TALPA INFO.

Operating Crew

Pilot Duties Prior to Departure

- Review Operational Flight Plan
- Review Weather for Departure, Enroute and Arrival
- Safety Checks on Aircraft
- Load and brief Flight Plan confirming fuel load
- Retrieve clarence and if required slot time and time to Deicing Facility
- After the loading of passengers and baggage and obtain counts and loads to calculate weight and balance for departure.
- Review weather again to ensure no changes in the past 30 min prior to door closure and push back


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Winter Flight Operations

The Decision to De-ice

Once the decision to de-ice has been made, airports equipped with a Central De-icing Facility (CDF) require 30 min notice prior to arrival at the facility. Therefore 30 min prior to aircraft estimated time of pushing back from the gate pilots must contact the CDF to let them know their arrival time.

For push back de-icing or spray on gate, this requires a conversation with he pilots and the ground handlers to co-ordinate the necessity to spray.

CYYC

Temperature (°C)	Precipitation	Snowfall Intensity
-10°C	Snow, Snow Grains or Snow Pellets	Light

TC 2023-2024

TYPE 1 TYPE I ALUMINUM	6 MIN - 11 MIN
TYPE 1 TYPE I COMPOSITE	5 MIN - 9 MIN
TYPE 4 DOW CHEMICAL UCAR ENDURANCE EG106	66 MIN – 120 MIN

SELECT FLUID TO ENABLE TIMER

Winter Flight Operations

Performance for Takeoff – Runway Surface Condition (RSC)

Prior to departure the NOTAM for each airport provides the pilots the current condition of the runways for departure (RSC).

NOTAM
CYLW

```
(A9192/24 NOTAMR A9163/24
A) CYLW B) 2408181417 C) 2408182217
E) RSC 16 6/6/6 DRY, DRY, DRY. VALID AUG 18 1416 - AUG 18 2216.

RSC 34 6/6/6 DRY, DRY, DRY. VALID AUG 18 1416 - AUG 18 2216.

ADDN NON-GRF/TALPA INFO:
CRFI 16 NR/NR/NR.
CRFI 34 NR/NR/NR.)
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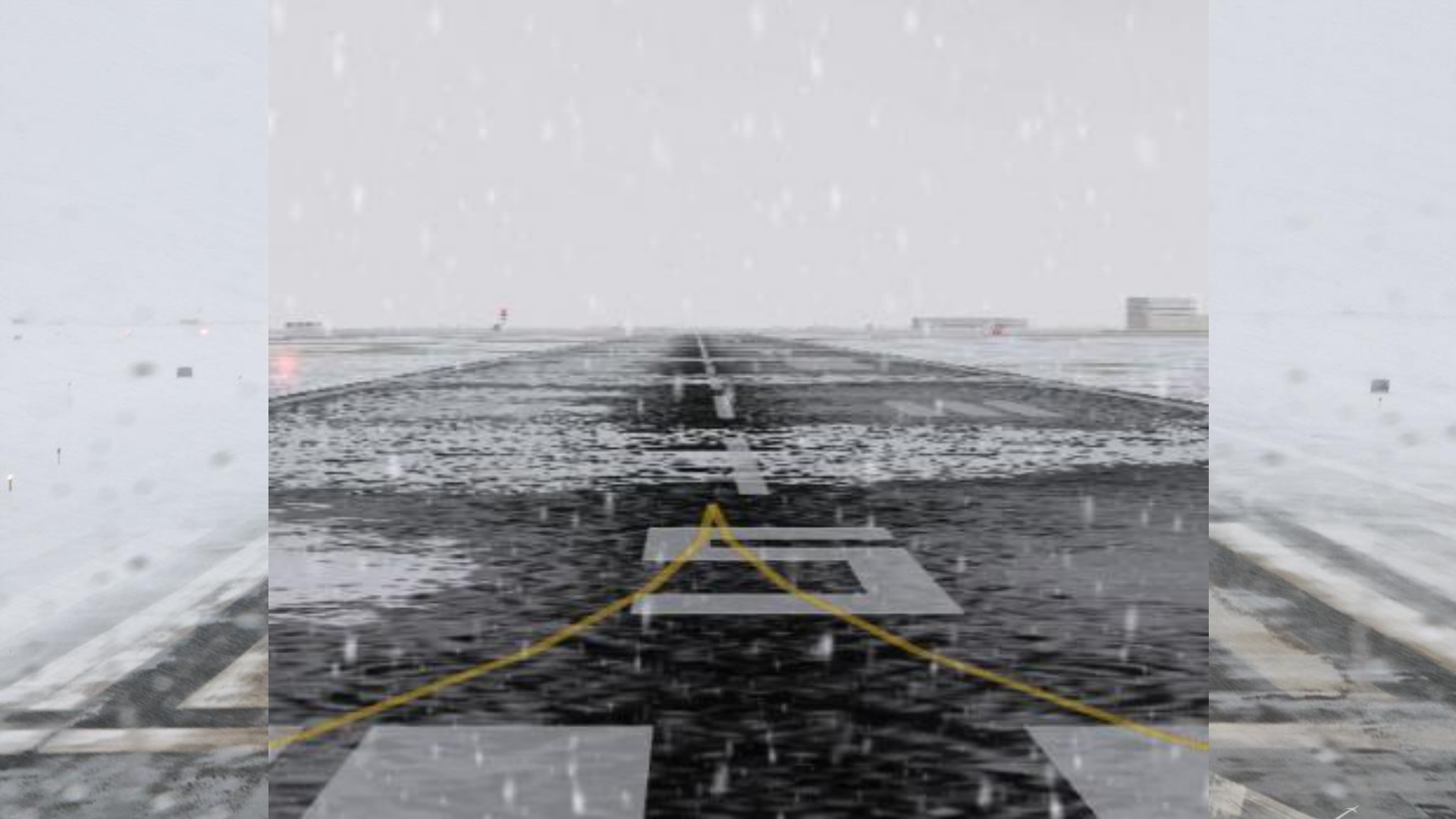



ATS -ATIS REVIEW
00:12 OPEN 01/02
EDDK ENR ATIS N
2350Z
ATIS EDDK N METAR 312350
EXPECT ILS APCH
RWY 32R 06 32L
TRL 60
34004KT
CAVOK
*PRINT
REQ>
<RETURN 00:13
ACARS BEGIN - 18/08/01 00:12:22 .N338UP
18/08/01 00:12:07 OPEN
EDDK ENR ATIS N
2350Z
ATIS EDDK N METAR 312350
EXPECT ILS APCH
RWY 32R 06 32L
TRL 60
34004KT
CAVOK
T20 DP14
QNH1020
TREND NOSIG
END OF ATIS N
ACARS END
COMM
SERV INPH
FLT INPH
L · ADF · R
ALT
NORM
PULL TO OPERATE

Winter Flight Operations

Approach Planning

Based on the information provided, the Pilot will then look at the options for usable runways.

Different airports offer different approaches down to a set minimum altitude.

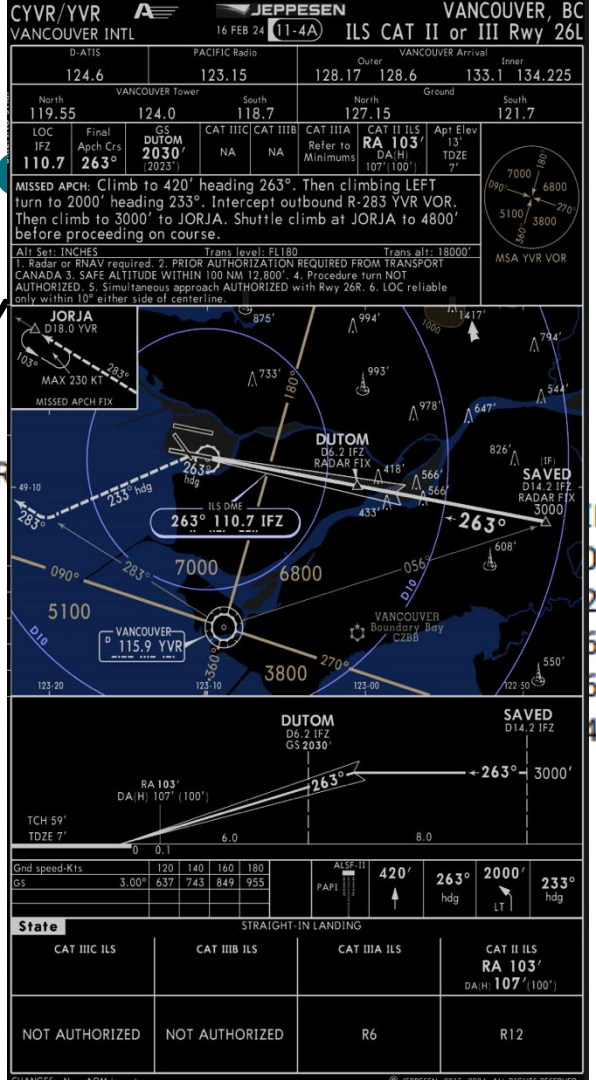
In poor weather conditions some airports offer a more suitable runway and approach for the conditions.

Winter Flight Op

Approach Planning - CY

YVR RWY 26L LEVEL OF SERVICE R
APPROACH
ILS CAT 2
ILS
RNAV LNAV
LOC DME
RNAV LNAV/VNAV

NG VALUE
) B-600
200 OR 1/4 SM
500 OR 1/2 SM
500 OR 1/2 SM
400 OR 5/8 SM

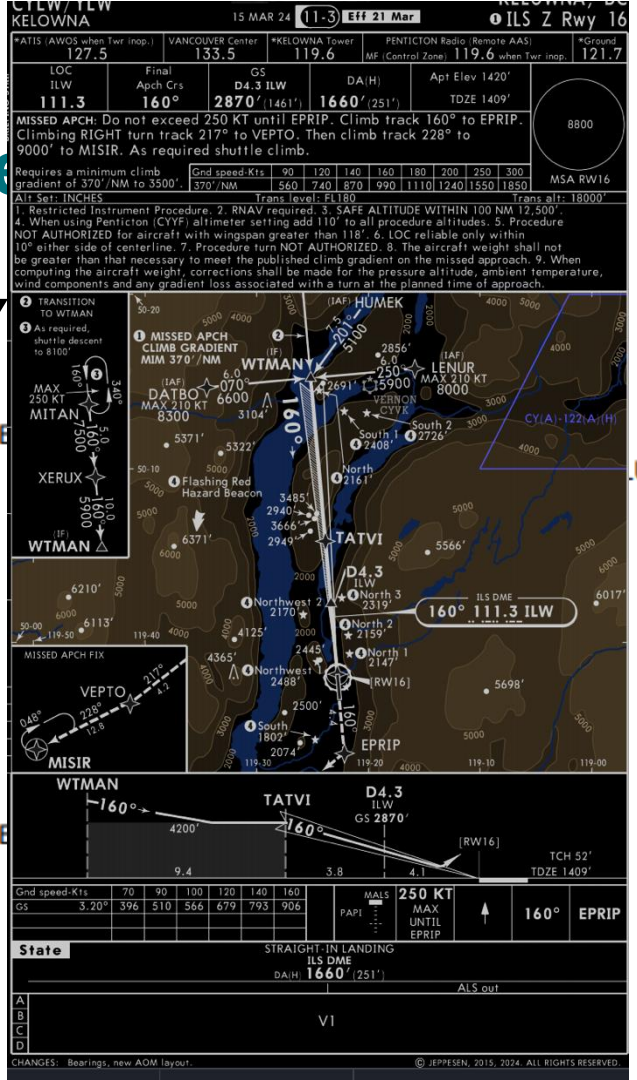


Winter Flight Ope

Approach Planning - CY

YLW RWY 16 LEVEL OF SERVICE
APPROACH
ILS DME Y
ILS DME Z
LOC DME Y
LOC DME Z
RNAV RNP X .3
RNAV V (LPV)
RNAV V (LNAV)
RNAV Y (LNAV)
RNAV Z (LPV)
VISUAL MANEUVER SEE ROUTE

LUE



Winter Flight Operations

Approach Planning – Global Reporting Format (GRF)

The Global Reporting Format (GRF) was the first official initiative by the ICAO to standardize runway condition monitoring and reporting. The idea behind GRF is to harmonize the assessing, monitoring, and reporting of runway conditions across all ICAO member states. This eases the burden placed on airlines and aircraft manufacturers to develop operational procedures for flight crew training regarding runway conditions. The GRF became an industry standard on November 05, 2020.

Winter Flight Operations

Approach Planning – Global Reporting Format (GRF)

The GRF allows all airports worldwide to have the same standard runway condition reporting format, increasing the safety of airline operations on a global scale.

The GRF consists of five following elements:

- Runway Condition Assessment Matrix (RCAM)
- Standardized definitions of runway surface conditions
- Standardized definitions of runway surface descriptors
- Runway Condition Code (RCC)
- Runway Condition Report (RCR)

Winter Flight Operations

Approach Planning – Runway Condition Code (RCC)

The primary means of determining performance for landing is by using the Runway Condition Code (RCC) provided by the airport. Typically, a RCC issued by the airport operator does not require a downgrade as active conditions and other variables are factored into the report and are continually updated by the airport. However, all relevant reports Runway Surface Condition (RSC), Canadian Runway Friction Index (CRFI), and Braking Action Report (BAR) may be considered, and the RCC may be (further) downgraded by the pilots if warranted.

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Approach Planning – Runway Condition Code (RCC)

Where an airport does not provide a RCC, a valid RSC NOTAM, RSC Report, or BAR can be applied to the Runway Condition Assessment Matrix (RCAM) to determine a RCC equivalent. While a BAR may be used to derive a RCC equivalent for landing, it serves primarily as a validation tool to confirm or counter the RCAM predicted level of performance.

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Approach Planning – Pilot-Reported Braking Action Report (PBAR)

Where conditions are changing rapidly, or there are consecutive deteriorating BARs, Pilots should request an updated Runway Assessment if not already initiated by the Airport Operator. When considering BAR criteria, Pilots shall be familiar with BAR conventions as it relates to Aircraft Type characteristics. When determining Takeoff and Landing Performance, Pilots should use a conservative interpretation of BAR.

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Approach Planning – Pilot-Reported Braking Action Report (PBAR)

Good	This level of braking capability is typically seen on a wet runway where aggressive braking can still be achieved, and directional control is not significantly compromised.
Medium	This level of braking capability is typically seen on snow covered runways. Wheel braking forces can still be discriminated, and their effectiveness modulated but at a noticeably reduced level.
Poor	This level of braking capability is typically seen on an ice-covered runway or when hydroplaning in heavy rain. Braking and directional control is minimal. Increased brake application does not produce any increase in deceleration.

Winter Flight Operations

Approach Planning – Runway Condition Assessment Matrix (RCAM)

The RCAM is a means by which airport authorities can assess runway surface conditions. It can be used to identify factors that would affect an aircraft's takeoff and landing performance. Most importantly, it helps evaluate the braking performance of an airplane while on the runway surface. On its own, the RCAM is a table. It comprises a Runway Condition Code (RCC), the runway surface description, and downgrade assessment criteria.

RUNWAY CONDITION ASSESSMENT MATRIX (RCAM)			
Assessment criteria		Downgrade assessment criteria	
Runway condition code	*Runway surface description*	*Aeroplane deceleration or directional control observation*	*Pilot report of runway braking action*
6	• DRY	---	---
5	• FROST • WET (The runway surface is covered by any visible dampness or water up to and including 3 mm depth) ***Up to and including 3 mm depth:*** • SLUSH • DRY SNOW • WET SNOW	Braking deceleration is normal for the wheel braking effort applied AND directional control is normal.	GOOD
4	***-15°C and lower outside air temperature:*** • COMPACTED SNOW	Braking deceleration OR directional control is between Good and Medium.	GOOD TO MEDIUM
3	• WET ("slippery wet" runway) • DRY SNOW or WET SNOW (any depth) ON TOP OF COMPACTED SNOW ***More than 3 mm depth:*** • DRY SNOW • WET SNOW ***Higher than -15°C outside air temperature[1]:*** • COMPACTED SNOW	Braking deceleration is noticeably reduced for the wheel braking effort applied OR directional control is noticeably reduced.	MEDIUM
2	***More than 3 mm depth of water or slush:*** • STANDING WATER • SLUSH	Braking deceleration OR directional control is between Medium and Poor.	MEDIUM TO POOR

RUNWAY CONDITION ASSESSMENT MATRIX (RCAM)			
Assessment criteria		Downgrade assessment criteria	
Runway condition code	*Runway surface description*	*Aeroplane deceleration or directional control observation*	*Pilot report of runway braking action*
1	• ICE[2]	Braking deceleration is significantly reduced for the wheel braking effort applied OR directional control is significantly reduced.	POOR
0	• WET ICE[2] • WATER ON TOP OF COMPACTED SNOW[2] • DRY SNOW or WET SNOW ON TOP OF ICE[2]	Braking deceleration is minimal to non-existent for the wheel braking effort applied OR directional control is uncertain.	LESS THAN POOR

1 Runway surface temperature should preferably be used where available.
2 The aerodrome operator may assign a higher RWYCC (but no higher than RWYCC 3) for each third of the runway, provided the procedure in PANS-Aerodromes (Doc 9981), 1.1.3.15, is followed.

RUNWAY CONDITION ASSESSMENT MATRIX

tFDP "Surface Type" Or ACARS "T/O Surface"	Runway Surface Description (RSC or RSC NOTAM)	Crosswind Limitation	CRFI Range	RCC/ ACARS Option Code	BAR
Dry	▪ DRY	32 kts	0.40 +	6	-
Wet	▪ WET ▪ SLIPPERY WHEN WET ▪ FROST ▪ SLUSH, DRY SNOW, or WET SNOW equal to or less than 1/8"	32 kts	0.40 +	5	Good
Compact Snow	▪ COMPACTED SNOW	*-15°C or colder* 20 kts *-14°C or warmer* 14 kts	0.39-0.35	4	Good to Medium
Wet Snow (Level 1-3)	▪ WET SNOW greater than 1/8" and equal to or less than ¾". ▪ WET SNOW ON TOP OF COMPACTED SNOW (Any depth equal to or less than 3/4")	14 kts	0.34-0.30	3	Medium
Dry Snow (Level 2-3)	▪ DRY SNOW greater than 1/8" and equal to or less than 2". ▪ DRY SNOW ON TOP OF COMPACTED SNOW (Any Depth equal to or less than 2")	14 kts			
Standing Water (Level 2-3)	▪ STANDING WATER greater than 1/8" and less than or equal to ½"	14 kts	0.29-0.25	2	Medium to Poor
Slush (Level 2-3)	▪ SLUSH greater than 1/8" and less than or equal to ½"	14 kts			
Ice	▪ ICE	4 kts	0.24-0.21	1	Poor
Takeoff or Landing Prohibited	▪ SLUSH ON TOP OF ICE ▪ WET SNOW ON TOP OF ICE ▪ WATER ON TOP OF COMPACTED SNOW ▪ WET ICE ▪ DRY SNOW ON TOP OF ICE ▪ SLUSH or STANDING WATER greater than ½" ▪ WET SNOW greater than ¾ " ▪ DRY SNOW equal to or greater than 2"	-	0.20-0.00	0	Nil

Winter Flight Operations

Approach Planning – Assessment of Runway with Three Contaminants

- WestJet Encore Applies these rules to each Runway Third: Where multiple contaminants are reported: if any contaminant covers more than 25% of the required runway width*, use the most restrictive contaminant covering greater than 25% as the controlling contaminant to calculate Takeoff and Landing Performance Data.
- Where no single contaminant covers more than 25% of the required runway width, use the second most restrictive contaminant as the controlling contaminant to calculate Takeoff and Landing Performance Data.

Winter Flight Operations

Approach Planning – Assessment of Runway with Three Contaminants

EXAMPLE:

Reported RCC of 5/2/5 should be calculated using a maximum RCC of 2 (or lower in active or deteriorating conditions).

Winter Flight Operations

Final Approach – Runway Assessment – “Go Around”

During a go-around the pilots become quite task saturated. They continue to fly the plane to a planned safe altitude and location. The pilots must then decide as to whether they will try for a second approach or continue to their alternate airport. In most cases the amount of remaining fuel on board is the deciding factor.

Winter Flight Operations

Final Approach – Runway Assessment – “Go Around”

Go-arounds are completed in the interest of safety.
The costs associated with a go-around can be tremendous to the company and quickly add up:

- Additional fuel cost
- “Unplanned” airport landing: parking/gate fees, landing/departure fees, hotel accommodation for crew and guests, food vouchers.
- Air Passenger Protection Regulation (APPR)
- Current flight crew operating ability (duty out)

Winter Flight Operations

Touchdown – Landing on Contaminated Runways – What We Teach

The Pilot will use the following procedures after the main wheel's touchdown:

- Retard the Power Levers to Disc and lower the nose wheel to the runway to enhance directional control.
- Apply anti-skid brakes as required.
- Landing on slush covered surfaces, decelerate through 40KIAS to taxi speed 10 KIAS as rapidly as possible.
- Avoid use of reverse on icy, slippery, or contaminated runways. If reverse is used, though, be prepared for possible downwind drift. If the contaminant is greater than 3mm (1/8”) Water Equivalent Depth, selecting reverse may cause the contaminant to be ingested into the engines and cause a flame-out.

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Touchdown – Landing on Contaminated Runways

If braking action encountered is less than the reported value, the crew observed value must be reported to ATC as a PBAR (Pilot Braking Action Report.)

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THANK YOU