

EFFECTIVE 0901Z **15 AUGUST 2019**
TO 0901Z 10 OCTOBER 2019

AIP CANADA (ICAO)

Part 2

Enroute (ENR)

Published by NAV CANADA in accordance with ICAO
Annexes 4 and 15 of the Convention on International Civil Aviation

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Department of Natural Resources

PART 2 – ENROUTE (ENR)**ENR 0.****ENR 0.1 Preface**

Not Applicable

ENR 0.2 Record of AIP Canada (ICAO) Amendments

Not Applicable

ENR 0.3 Record of AIP Canada (ICAO) Supplements

Not Applicable

ENR 0.4 Checklist of AIP Canada (ICAO) Pages

Not Applicable

ENR 0.5 List of Hand Amendments to AIP Canada (ICAO)

Not Applicable

ENR 0.6 Table of Contents to Part 2 (ENR)

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ENR 1. GENERAL RULES AND PROCEDURES

ENR 1.1 General Rules

For information on the general rules applied within Canada, refer to [Part VI – General Operating and Flight Rules](#) on Transport Canada's *Canadian Aviation Regulations* (CARs) website:

<<http://www.tc.gc.ca/eng/acts-regulations/regulations-sor96-433.htm>>
Part VI – General Operating and Flight Rules
Subpart 0 – General
600.01 – Interpretation

The air traffic rules and procedures applicable to air traffic in Canadian territory conform to Annex 2, "Rules of the Air," and Annex 11, "Air Traffic Services," to the Convention on International Civil Aviation and to those portions of the International Civil Aviation Organization's (ICAO) *Procedures for Air Navigation Services–Air Traffic Management* (PANS–ATM, Doc 4444) and *Air Traffic Services Planning Manual* (Doc 9426) that are applicable to aircraft and to those portions of ICAO's *Regional Supplementary Procedures* (Doc 7030) that are applicable to the Canadian region, except for the differences listed in GEN 1.7, "Differences from ICAO Standards, Recommended Practices and Procedures."

ENR 1.2 Visual Flight Rules

For information on the visual flight rules (VFR) applied within Canada, refer to the sections on Transport Canada's CARs website that are listed in Table 1.2, "Visual Flight Rules."

Table 1.2, Visual Flight Rules

Section	Title
602.114	Minimum Visual Meteorological Conditions for VFR Flight in Controlled Airspace
602.115	Minimum Visual Meteorological Conditions for VFR Flight in Uncontrolled Airspace
602.116	VFR Over the Top
602.117	Special VFR Flight

<<http://www.tc.gc.ca/eng/acts-regulations/regulations-sor96-433.htm>>
Part VI – General Operating and Flight Rules
Subpart 2 – Operating and Flight Rules
Division VI – Visual Flight Rules

ENR 1.3 Instrument Flight Rules

For information on the instrument flight rules (IFR) applied within Canada, refer to the sections on Transport Canada's CARs website that are listed in Table 1.3, "Instrument Flight Rules."

Table 1.3, Instrument Flight Rules

Section	Title
602.121	General Requirements
602.122	Alternate Aerodrome Requirements
602.123	Alternate Aerodrome Weather Minima
602.124	Minimum Altitudes to Ensure Obstacle Clearance
602.125	Enroute IFR Position Reports
602.126	Takeoff Minima
602.127	Instrument Approaches
602.128	Landing Minima
602.129	Approach Ban – General
700.10	Approach Bans – Non Precision, APV and CAT I Precision
602.130	Approach Ban – CAT III Precision
700.11	Approach Bans – CAT II and CAT III Precision

<<http://www.tc.gc.ca/eng/acts-regulations/regulations-sor96-433.htm>>

Part VI – General Operating and Flight Rules

Subpart 2 – Operating and Flight Rules

Division VII – Instrument Flight Rules

ENR 1.4 ATS Airspace Classification

Air traffic services (ATS) airspace classes in Canada conform to the ATS airspace classification table in Appendix 4 of Annex 11, “Air Traffic Services,” of the Convention on International Civil Aviation with the differences listed in GEN 1.7, “Differences from ICAO Standards, Recommended Practices and Procedures.”

ENR 1.5 Holding, Approach and Departure Procedures

1.5.1 General

The instrument procedures published in the *Canada Air Pilot* (CAP), Volumes 1–7, and *Restricted Canada Air Pilot* (RCAP) are considered to be public procedures. However, the instrument procedures contained in the RCAP do not meet Transport Canada Civil Aviation design criteria. Accordingly, the use of RCAP procedures is restricted to pilots-in-command operating aircraft pursuant to an air operator certificate or a private operator certificate, including the appropriate RCAP operations specification. Authorization is required from Transport Canada Civil Aviation prior to the use of any *Restricted Canada Air Pilot* procedure.

The intention of the global navigation satellite system (GNSS) overlay program is to allow the operator to use a global positioning system (GPS) navigation sensor to fly the conventional procedures. Therefore, only GPS area navigation (RNAV) compliant Aeronautical Radio, Incorporated (ARINC) 424 Path-Terminator leg types should be used to code any conventional instrument procedure including GNSS in the approach title, and course to fix (CF) legs will not be used.

For information concerning the criteria on which holding, approach, and departure procedures are established within Canada, refer to Transport Canada’s *Criteria for the Development of Instrument Procedures* (TP 308E).

1.5.2 Arriving Flights

For information on procedures for arriving flights, refer to the following publications:

Canada Air Pilot, Volumes 1–7, or *Restricted Canada Air Pilot*

Canada Flight Supplement or *Water Aerodrome Supplement*, Section B, “Aerodrome/Facility Directory – VFR Terminal Procedures Chart”

When air traffic control (ATC) assigns a lower altitude on a STAR procedure, pilots shall descend on the STAR profile to the assigned altitude. Charted altitude restrictions above the assigned altitude are mandatory.

When flying an open STAR procedure, pilots are not expected to commence an approach without having received an approach clearance. When an approach clearance is received, all operational altitude restrictions on the STAR profile remain mandatory, unless specifically cancelled by ATC. If an approach clearance has not been received, the pilot must continue flying the STAR and can expect vectors to the final approach course.

When important information about an aerodrome cannot be described by the aerodrome sketch or the table in the CFS, a VFR Terminal Procedures Chart is published. The chart contains information on VFR procedures for arriving flights established on the basis of airspace organization at the aerodrome.

The table for each aerodrome in *Canada Flight Supplement* and *Water Aerodrome Supplement*, Section B, “Aerodrome/Facility Directory,” may also include the subheading PRO, which contains information on regulations applicable to the traffic at the aerodrome, including circuit patterns and heights, specific VFR routes within control zones, and other similar information.

1.5.3 Departing Flights

For information on procedures for departing flights, refer to the following publications:

Canada Air Pilot, Volumes 1–7, or *Restricted Canada Air Pilot*

Canada Flight Supplement or *Water Aerodrome Supplement*, Section B, “Aerodrome/Facility Directory – VFR Terminal Procedures Chart”

When ATC assigns a higher altitude on a SID procedure, pilots shall climb on the SID profile to the assigned altitude. Charted restrictions below the assigned altitude are mandatory.

When a VFR Terminal Procedures Chart is published for an aerodrome, it contains information on conventional or area navigation procedures for departing flights established on the basis of airspace organization at the aerodrome.

The table for each aerodrome in *Canada Flight Supplement* or *Water Aerodrome Supplement*, Section B, “Aerodrome/Facility Directory,” may also include the subheading PRO, which contains information on regulations applicable to the traffic at the aerodrome, including circuit patterns and heights, specific VFR routes within control zones, and other similar information.

ENR 1.6 ATS Surveillance Services and Procedures

ATS use surveillance to increase airspace use by reducing separation between aircrafts. In addition, surveillance permits an expansion of flight information services such as traffic information and navigation assistance.

The following types of surveillance systems are currently in use: primary surveillance radar (PSR), secondary surveillance radar (SSR), automatic dependent surveillance–broadcast (ADS-B), and multilateration (MLAT).

1.6.1 Primary Radar

Primary radar is used in the following applications:

1. **Terminal Surveillance Radar**
2. **Precision Approach Radar**

Civil aircraft approach limits are published in *Canada Air Pilot* and *Restricted Canada Air Pilot, General Pages*.

3. **Airport Surface Detection Equipment**

For information on radar and radio failure procedures, refer to the following publications:

Canada Air Pilot, Volumes 1–7, or *Restricted Canada Air Pilot*

Canada Flight Supplement, Section F, “Emergency” or *Water Aerodrome Supplement*, Section E, “Emergency”

For a map of primary radar coverage in Canada, see Figure 1.6.1, “Primary Radar Coverage.”

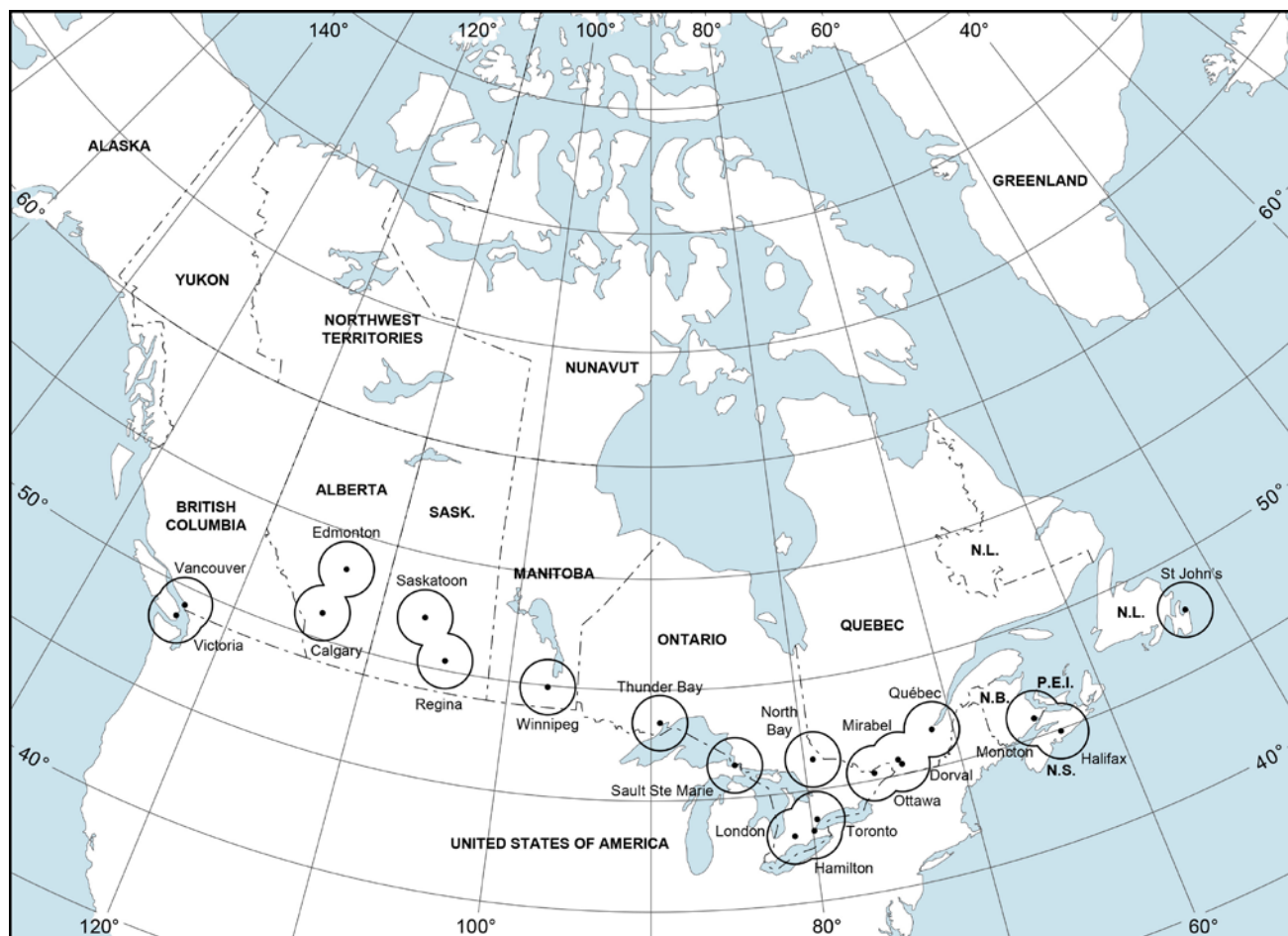


Figure 1.6.1, Primary Radar Coverage

1.6.2 Secondary Surveillance Radar

Secondary surveillance radar is used in the following applications:

1. **Enroute Control**
2. **Terminal Control**

For information on radio communications failure, unlawful interference procedures, and other emergency procedures, refer to the following publications:

Canada Air Pilot, Volumes 1–7, or *Restricted Canada Air Pilot*

Canada Flight Supplement, Section F, “Emergency” or *Water Aerodrome Supplement*, Section E, “Emergency”

In the *Canada Flight Supplement* and the *Water Aerodrome Supplement*, Section B, “Aerodrome/Facility Directory,” the table for an aerodrome may have a subheading PRO, which may contain information on the system of SSR code assignment established at the aerodrome.

For a map of SSR coverage in Canada, see Figure 1.6.2, “Secondary Surveillance Radar Coverage.”

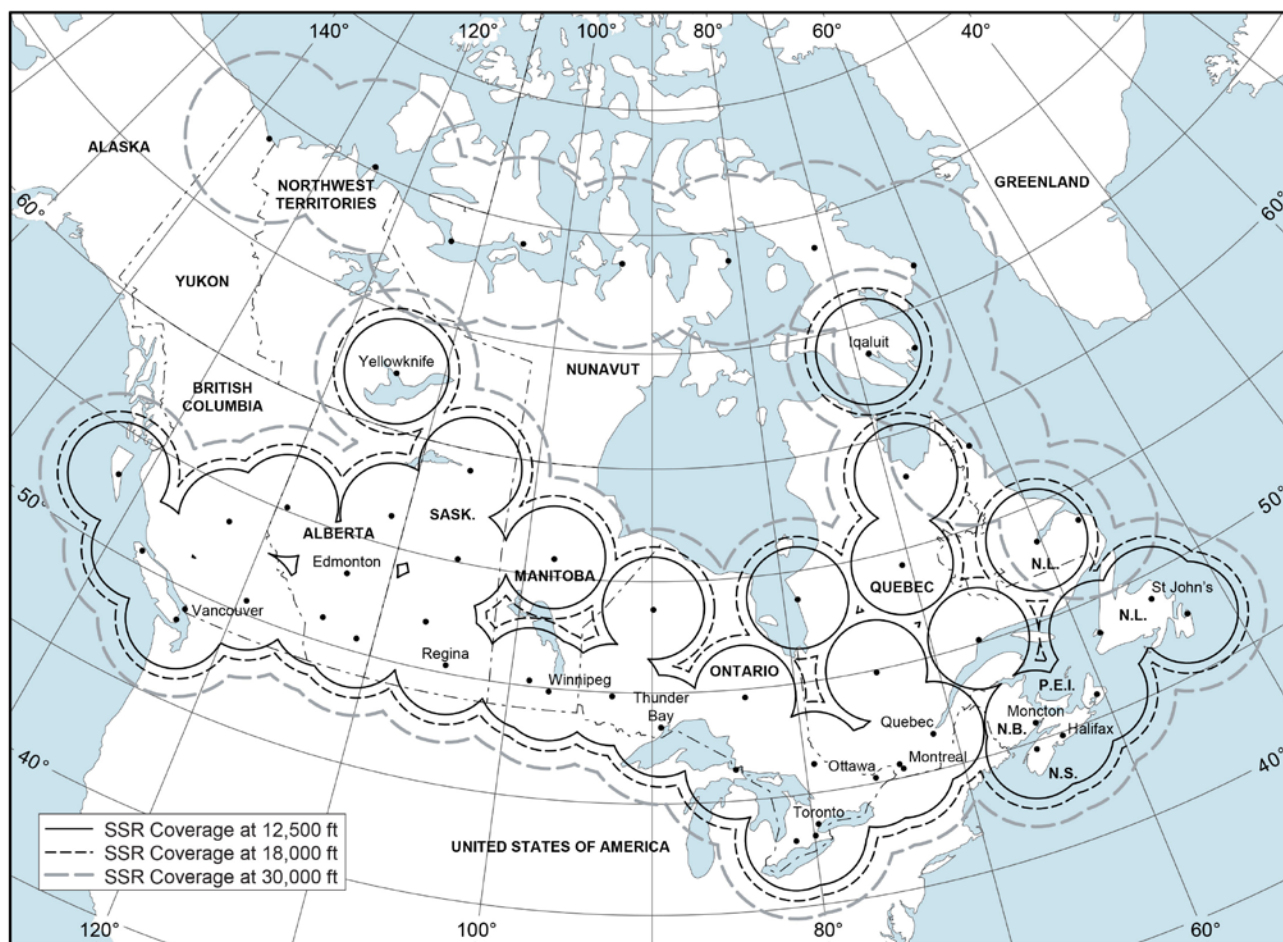


Figure 1.6.2, Secondary Surveillance Radar Coverage

1.6.3 Automatic Dependant Surveillance–Broadcast

Automatic dependent surveillance-broadcast (ADS-B) utilizes global navigation satellite system (GNSS) and aircraft avionics to accurately relay flight information to air traffic services.

All aircraft that emit position information using a 1090 MHz extended squitter (1090ES) may be provided surveillance separation services, provided they meet the airworthiness compliance requirements defined in:

1. European Aviation Safety Agency (EASA) AMC 20-24; or
2. European Aviation Safety Agency (EASA) CS ACNS; or
3. Federal Aviation Administration (FAA) Title 14 Code of Federal Regulations (14 CFR) section 91.227 or AC No. 20-165A (or replacement) – Airworthiness Approval of ADS-B; or
4. Configuration standards reflected in Appendix XI of Civil Aviation Order 20.18 of the Civil Aviation Safety Authority of Australia.

ADS-B Out systems that are unable to meet the above requirements must disable ADS-B transmission unless:

1. the aircraft always transmits a value of 0 (zero) for one or more of the position quality indicators (NUCp, NIC, NAC or SIL); or
2. the operator has received an exemption from NAV CANADA.

For information on radio communications failure, unlawful interference procedures, and other emergency procedures, refer to the following publications:

Canada Air Pilot, Volumes 1–7, or *Restricted Canada Air Pilot*

Canada Flight Supplement, Section F, “Emergency” or *Water Aerodrome Supplement*, Section E, “Emergency”

A Flight ID that is an exact replica of the Aircraft Identification entered in field 7 of the ICAO Flight Plan must be programmed into the transponder or flight management system (FMS) in order to receive surveillance services. Airline aircraft will use the three-letter ICAO airline code, not the two-letter IATA code. In addition, field 10 should indicate ADS-B capability on the ICAO Flight Plan.

For a map of ADS-B coverage in Canada, see Figure 1.6.3, “Automatic Dependant Surveillance–Broadcast Coverage.”



Figure 1.6.3, Automatic Dependant Surveillance–Broadcast Coverage

1.6.4 Other relevant information and procedures

1.6.4.1 Multilateration

Multilateration (MLAT) increases ATS situational awareness of aircraft and vehicles on the ground allowing them to safely manage ground movements, including in low visibility operations, by providing full surveillance coverage of runways, taxiways and terminal apron areas. In the *Canada Flight Supplement* and the *Water Aerodrome Supplement*, Section B, “Aerodrome/Facility Directory,” the table for an aerodrome may have a subheading PRO, which may contain information on special procedures for code assignment established at the aerodrome. At these aerodromes, aircraft that have a technical limitation associated with the transmission of a transponder code (weight on wheels switch deactivation) must report this condition to ATS and obtain an approval request (APREQ) before commencing ground operations.

1.6.4.2 ADS-B Service in the Gander Oceanic Control Area

ADS-B has been used to provide flight level changes over southern Greenland in scenarios where the availability of ADS-B permits identified aircraft to climb or descend though the flight level of other ADS-B equipped aircraft. In addition, Gander area control centre (ACC) has been able to consider flight level requests that would result in eligible aircraft operating with in-trail spacing of 10 nautical miles.

Because of non-homogeneous aircraft surveillance equipage, all aircraft intending to transit the southern Greenland portion of the Gander oceanic control area (OCA) are expected to continue to flight plan in accordance with procedures outlined in NAT Doc 007, North Atlantic Operations and Airspace Manual in and above the NAT, high level airspace (HLA) published by the International Civil Aviation Organization (ICAO).

As always, flight crews are encouraged to request any changes, including flight level, to optimize their flight profile.

Where it is determined, following a request from the flight crew, that a flight level change can be approved because of the availability of ADS-B, the following steps can be expected:

- A very high frequency (VHF) control frequency will be assigned to the required flights by ATC, either directly via controller-pilot data link communications (CPDLC) or via high frequency (HF) voice through the Gander international flight service station (IFSS) (Gander Radio).
- Once VHF contact has been established, the flights involved will be informed by ATC that identification has been established.
- The requested climb or descent clearance will be issued by ATC either via CPDLC or through the assigned VHF control frequency.

For climb and descend through scenarios, after the flight level change has been completed and vertical separation re-established, flight crews will normally be informed by ATC that surveillance services are terminated and they will subsequently be returned to their previously assigned frequency.

Flight crews are advised that aircraft will not normally be informed of ADS-B identification unless a specific operational advantage, such as a flight level change, can be attained.

ENR 1.7 Altimeter-setting Procedures

The altimeter setting procedures in use are based on *Criteria for the Development of Instrument Procedures* (TP 308E), a document developed and produced by Transport Canada, Aerodromes and Air Navigation Branch.

For information on basic altimeter-setting procedures and for altimeter-setting procedures applicable to operators (including pilots) within Canada, refer to the sections on Transport Canada's CARs website that are listed in Table 1.7, "Altimeter-setting Procedures."

Table 1.7, Altimeter-setting Procedures

Section	Title
602.35	Altimeter-setting and Operating Procedures in the Altimeter-Setting Region
602.36	Altimeter-setting and Operating Procedures in the Standard Pressure Region
602.37	Altimeter-setting and Operating Procedures in Transition between Regions

<<http://www.tc.gc.ca/eng/acts-regulations/regulations-sor96-433.htm>>
 Part VI – General Operating and Flight Rules
 Subpart 2 – Operating and Flight Rules
 Division I – General

The altimeter setting region is an airspace of defined dimensions below 18 000 feet above sea level (ASL). For a map of the altimeter-setting region, refer to the following publications:

Canada Flight Supplement or *Water Aerodrome Supplement*, Section C, "Planning – Altimeter Setting and Designated Mountainous Regions"

For a table of cruising levels, refer to the following publications:

Canada Flight Supplement or *Water Aerodrome Supplement*, Section C, “Planning – Characteristics of Airspace – Cruising Altitudes and Flight Levels Appropriate to Aircraft Track”

Cold dry air masses can produce barometric pressures in excess of 31.00 inches of mercury. Because barometric readings of 31.00 inches of mercury or higher rarely occur, most standard altimeters do not permit the setting of barometric pressures above that level and are not calibrated to indicate accurate aircraft altitude above 31.00 inches of mercury. As a result, most altimeters cannot be set to provide accurate altitude readouts to the pilot in these situations.

ATC will issue actual altimeter settings and will confirm with the pilot that 31.00 inches of mercury is set on the pilot's altimeters for enroute operations below 18 000 feet ASL in the affected areas.

Aerodromes that are unable to accurately measure barometric pressures above 31.00 inches of mercury will report the barometric pressure as “in excess of 31.00 inches of mercury”. Flight operations to and from those aerodromes are restricted to VFR weather conditions.

When the barometric pressure exceeds 31.00 inches of mercury, the following procedures take effect:

Altimeters of all IFR, controlled VFR flight (CVFR) and VFR aircraft are to be set to 31.00 inches of mercury for enroute operations below 18 000 feet ASL. All pilots are to maintain this setting until beyond the area affected by the extreme high pressure or until reaching the final approach segment of an instrument approach for IFR aircraft or the final approach for VFR aircraft. At the beginning of the final approach segment, the current altimeter setting will be set by those aircraft capable of such a setting. Aircraft that are unable to set altimeter settings above 31.00 inches of mercury will retain a 31.00 inches of mercury setting throughout the entire approach. Aircraft on departure or missed approach will set 31.00 inches of mercury prior to reaching any mandatory or fix crossing altitude, or 1 500 feet above ground level (AGL), whichever is lower.

For aircraft operating IFR that are unable to set the current altimeter setting, the following restrictions apply:

To determine the suitability of departure alternate aerodromes, destination aerodromes and destination alternate aerodromes, increase the ceiling requirements by 100 feet and visibility requirements by 1/4 statute mile (SM) for each 1/10 inch of mercury, or any portion thereof, over 31.00 inches of mercury. These adjusted values are then applied in accordance with the requirements of the applicable operating regulations and operations specifications.

Example: Destination altimeter setting is 31.28 inches, instrument landing system (ILS) decision height (DH) is 250 feet (200-1/2). When flight planning, add 300-3/4 to the weather requirements, which would now become 500-1 1/4.

During the instrument approach, 31.00 inches of mercury will remain set. DH or Minimum Descent Altitude (MDA) will be deemed to have been reached when the published altitude is displayed on the altimeter.

Note: Although visibility is normally the limiting factor on an approach, pilots should be aware that when reaching DH, the aircraft will be higher than indicated by the altimeter, which in some cases could be as much as 300 feet higher.

Authorized CAT II and III ILS operations are not affected by the above restrictions.

Night VFR pilots are advised that under conditions of altimeter settings above 31.00 inches of mercury and aircraft altimeters not capable of setting above 31.00 inches of mercury, the aircraft's true altitude will be higher than the indicated altitude; this must be taken into consideration. If an instrument approach procedures is to be flown, the night VFR pilot should follow the procedures described in the *Transport Canada Aeronautical Information Manual* (TC AIM) (14371E) Section RAC, “Rules of the Air and Air Traffic Services” 12.12.2(b)(ii).

For aircraft with the capability of setting the current altimeter setting and operating into aerodromes with the capability of measuring the current altimeter setting, no additional restrictions apply.

For aircraft operating VFR, no additional restrictions apply; however, extra diligence in flight planning and in operating in these conditions is essential.

ENR 1.8 Regional Supplementary Procedures

For information on regional supplementary procedures affecting the entire area of responsibility, refer to the following publications:

Canada Air Pilot, General, and Volumes 1–7, or *Restricted Canada Air Pilot*

In the *Canada Flight Supplement* and the *Water Aerodrome Supplement*, Section B, “Aerodrome/Facility Directory,” the table for an aerodrome may have a VFR Terminal Procedures Chart or a subheading PRO, or both, and these may contain information on the regional supplementary procedures affecting the entire area of responsibility.

For information on the use of English and French for aeronautical radio communications in Canada, refer to GEN 3.4.3, “Types of Service.”

1.8.1 Contingency Procedures for Oceanic Traffic in the Event of an Evacuation of Gander ACC

1. AIRCRAFT PROCEDURES – Westbound	
1.1	Aircraft not in receipt of an oceanic clearance
1.1.1	In the event that Gander ACC must be evacuated, only aircraft with received and acknowledged oceanic clearances will be permitted to transit the Gander OCA.
1.1.2	If unable to obtain or acknowledge an oceanic clearance, flights should plan to re-route around the Gander OCA or to land at an appropriate aerodrome. Request the appropriate re-clearance on the current frequency. Frequency congestion is likely.
1.2	Aircraft In receipt of an acknowledged oceanic clearance
1.2.1	Aircraft operating with a received and acknowledged oceanic clearance should proceed in accordance with the clearance. Flights should not request changes in altitude, speed or route except for reasons of flight safety.
1.2.2	Any flights involved in level changes should complete the manoeuvre as soon as possible in accordance with any restrictions provided with the clearance.
1.3	Contact Procedures
1.3.1	On receipt of an emergency evacuation message, pilots are requested to broadcast to other flights on 121.5, 243.0 and 123.45. A listening watch on these frequencies and the current frequency should be maintained until the flight exits the Gander OCA and FIR.
1.3.2	All flights within the Gander OCA should transmit position reports on any available HF or VHF frequency to Shanwick Radio either directly or through another agency or flight.
1.3.3	Flights should establish communication with the next agency at the earliest opportunity stating current position, cleared flight level, next position and estimate, and subsequent position. This also applies to flights using automated position reports (ADS/FMC) because those reports may not have been received by the next agency.

1. AIRCRAFT PROCEDURES – Westbound

1.3.4 Flights within the Gander OCA should initially establish contact with Shanwick Radio. Flights within the Gander FIR should contact Montreal Centre or Moncton Centre, depending on their oceanic exit point as described in 2.3.7. Flights about to exit the Gander OCA into the New York OCA, the Reykjavik Oceanic CTA, the Santa Maria OCA, or the Nuuk FIR should contact New York ARINC, Iceland Radio, Santa Maria Radio or Nuuk Radio as appropriate.

1.3.5 If unable to establish radio contact, flights may use SATVOICE voice or satellite telephone to provide position reports.

Oceanic Centre	Public Switched Telephone Network (PTSN) Number	Short Code
Gander Shift Manager	001 709 651 5207	N/A

1.3.6 Flights may request their flight dispatch offices to forward position reports, if sending position reports to multiple ATS Units or if otherwise unable to forward position reports.

1.3.7 Based on where they exit oceanic airspace, flights shall proceed in accordance with the following table, until communication is established with, and a re-clearance issued by the next agency.

Note: the landfall fix is the fix after the oceanic exit point.

IF flight is routed over	The flight shall then proceed:	Next control agency and frequency:
6500N 06000W or AVPUT	Via cleared route to the landfall fix or N700A	Montreal ACC 132.800
6400N 06000W or CLAVY	Via cleared route to the landfall fix or N690A	Montreal ACC 132.800
6300N 06000W or EMBOK	Via cleared route to the landfall fix or N680A	Montreal ACC 132.800
6200N 06000W or KETLA	Via cleared route to the landfall fix or N660A	Montreal ACC 134.800
6100N 06000W or MAXAR	Via cleared route to the landfall fix or N640A	Montreal ACC 134.800
6000N 06000W or PIDSO	Via cleared route to the landfall fix or N620A	Montreal ACC 135.800
5900N 06000W or SAVRY	Via cleared route to the landfall fix or N598A	Montreal ACC 132.450
URTAK or MOATT	MOATT LOMTA TEALS VANSI	Montreal ACC 132.45
AVUTI or PRAWN	PRAWN YDP YKL ROUND	Montreal ACC 132.45
CUDDY or PORGY	PORGY HO YBC ANCER*	Moncton ACC 132.95 or Montreal ACC 132.90 @ 63W
DORYY	BORUB YZV*	Moncton ACC 132.95 or Montreal ACC 132.90 @ 63W
HOIST	YYR YRI*	Moncton ACC 118.875 or Montreal ACC 132.90 @ 63W
JANJO	QUBIS*	Moncton ACC 132.52 or Montreal ACC 132.90 @ 63W

1. AIRCRAFT PROCEDURES – Westbound

LOMSI	TAFFY	Moncton ACC 132.52
NEEKO	MILLS	Moncton ACC 132.52
RIKAL	YAY DANOL	Moncton ACC 133.55
TUDEP	TOPPS	Moncton ACC 133.55
ALLRY	EBONY	Moncton ACC 133.55
ELSIR	ALLEX	Moncton ACC 132.75
JOOPY	TUSKY	Moncton ACC 132.75
NICSO	YYT BRADD	Moncton ACC 125.25
PORTI	KANNI	Moncton ACC 125.25
SUPRY	WHALE	Moncton ACC 125.25
VODOR	RAFIN NANSO VITOL*	Moncton ACC 125.25
BOBTU	JAROM LOMPI DOVEY*	Moncton ACC 125.25

* Aircraft may not be able to contact next control agency until established on this route.

2. AIRCRAFT PROCEDURES – Eastbound**2.1 Aircraft not in receipt of an oceanic clearance**

- 2.1.1 In the event that Gander ACC must be evacuated, only aircraft with received and acknowledged oceanic clearances will be permitted to transit the Gander OCA.
- 2.1.2 If unable to obtain or acknowledge an oceanic clearance, flights should plan to re-route around the Gander OCA or land at an appropriate aerodrome. Flights may be required to re-route around the Gander FIR as well. Flights should request the appropriate re-clearance from Montreal or Moncton Centre. Frequency congestion is likely.

2.2 Aircraft in receipt of an acknowledged oceanic clearance

- 2.2.1 Aircraft operating with a received and acknowledged ocean clearance should proceed in accordance with the clearance. Flights should not request changes in altitude, speed or route except for reasons of flight safety or to comply with the oceanic clearance.
- 2.2.2 Flights west of 50 west longitude should contact either Montreal or Moncton Centre, depending on which of those was the previous agency, using the previous assigned frequency.
- 2.2.3 The Eastbound Organized Track System will be extended to begin at fixes on or near the western boundary between the Gander FIR and the Moncton and Montreal FIRs as follows:

Contingency fix	Landfall fix	Oceanic Entry Point defined in OTS message
KENKI		AVPUT
MUSVA		CLAVY
BERUS		EMBOK
GRIBS		KETLA
MIBNO		MAXAR
PEPKI		PIDSO

2. AIRCRAFT PROCEDURES – Eastbound					
		LAKES	59/60	SAVRY	
		YKL	LOMTA	URTAK	
		YWK	YDP	AVUTI	
		MUNBO	HO	CUDDY	
		BORUB		DORYY	
		TASTI	YYR	HOIST	
		SERBO		JANJO	
		VERTU		LOMSI	
		PIKNA		NEEKO	
		NAPLO	YAY	RIKAL	
		MIGLI		TUDEP	
		LOPRO		ALLRY	
		VINSI	YQX	ELSIR	
		TAGRA		JOOPY	
		SUTKO	YYT	NICSO	
		RUBDA		PORTI	
		PEPRA		SUPRY	
		NANSO	RAFIN	VODOR	
		LOMPI	JAROM	TALGO	
		2.2.4	Flights at or east of 50 west longitude should initially contact Shanwick Radio. Flights about to exit the Gander OCA should contact New York ARINC, Santa Maria Radio, Iceland Radio or Nuuk Radio as appropriate. The following information should be provided. <div><div>(a)</div> Call sign</div> <div><div>(b)</div> Current position</div> <div><div>(c)</div> Current flight level and cleared oceanic flight level (if different from the current level)</div> <div><div>(d)</div> Assigned Mach or speed</div> <div><div>(e)</div> Next waypoint and estimate</div> <div><div>(f)</div> Subsequent waypoint</div>		
2.2.5	If a level change is required to comply with the oceanic clearance, the flight should request clearance from Montreal or Moncton Centre. If unable to obtain an ATC clearance, the flight should climb or descend so as to cross the oceanic entry point at the cleared oceanic flight level.				

2. AIRCRAFT PROCEDURES – Eastbound	
2.2.6	<p>The following communications procedures have been developed in accordance with the Traffic Information Broadcast by Aircraft (TIBA) procedures recommended by ICAO (Annex 11 – Air Traffic Services, Attachment C). These procedures should be applied, unless otherwise instructed by Moncton or Montreal Centre when completing an altitude change to comply with the oceanic clearance.</p> <p>At least 3 minutes prior to the commencement of a climb or descent the flight should broadcast on the last assigned frequency, 121.5, 243.0 and 123.45 the following:</p> <p style="padding-left: 40px;">ALL STATIONS (call sign) (direction) DIRECT FROM (landfall fix) TO (oceanic entry point) LEAVING FLIGHT LEVEL (number) FOR FLIGHT LEVEL (number) AT (distance)(direction) FROM (oceanic entry point) AT (time)</p> <p>When the level change begins, the flight should make the following broadcast</p> <p style="padding-left: 40px;">ALL STATIONS (call sign) (direction) DIRECT FROM (landfall fix) TO (oceanic entry point) LEAVING FLIGHT LEVEL (number) NOW FOR FLIGHT LEVEL (number)</p> <p>When level, the flight should make the following broadcast</p> <p style="padding-left: 40px;">ALL STATIONS (call sign) MAINTAINING FLIGHT LEVEL (number)</p>
2.2.7	<p>When ADS equipped flights are notified of a Gander evacuation they must revert to voice position reporting until clear of Gander OCA, or notified otherwise. Pilots should note that they may be asked to log-on to EGGX when within the Gander OCA; they should not initiate this action until instructed to do so.</p>

1.8.2 Strategic Lateral Offset Procedures (SLOPs) in the North Atlantic (NAT) Region

The strategic lateral offset procedure (SLOP) is now a standard operating procedure throughout the North Atlantic (NAT) region. This procedure mitigates collision risk and wake turbulence encounters. Pilots conducting oceanic flights within the NAT region with automatic offset programming capability are recommended to fly lateral offsets up to 2 NM right of centreline.

The introduction of very accurate aircraft navigation systems, along with sophisticated FMSs, has drastically reduced the number of risk-bearing lateral navigation (LNAV) errors reported in NAT airspace.

Paradoxically, the capability of aircraft to navigate to such a high level of accuracy has led to a situation where aircraft on the same track, but at different levels, are increasingly likely to be in lateral overlap. This results in an increased risk of collision if an aircraft departs from its cleared level for any reason.

SLOP reduces risk by distributing aircraft laterally. It is applicable within the New York Oceanic, Gander Oceanic, Shanwick Oceanic, Santa Maria Oceanic, Nuuk, and Reykjavik FIRs, and within the Bodø Oceanic FIR when flights are operated more than 185 km (100 NM) seaward from the shoreline. SLOP conforms to direction in the International Civil Aviation Organization's (ICAO) *Procedures for Air Navigation Services–Air Traffic Management* (PANS-ATM) (Doc 4444) and is subject to the following guidelines:

- (a) Aircraft without automatic offset programming capability must fly the route centreline.
- (b) Operators capable of programming automatic offsets may fly the centreline or an offset up to a maximum of 2 NM right of centerline.
- (c) Offsets to the left of centreline are not permitted.
- (d) An aircraft overtaking another aircraft should offset within the confines of this procedure, if capable, so as to minimize the amount of wake turbulence for the aircraft being overtaken. The pilot should take into account wind and estimated wake vortex drift and time to descend. (Nominal descent rates for wakes are 300–600 feet/min.)
- (e) Pilots should use whatever means are available (e.g., traffic alert and collision avoidance system [TCAS], communications, visual acquisition) to determine the best flight path to fly. Pilots may contact other aircraft on frequency 123.45 MHz, as necessary, to coordinate the best wake turbulence offset option.
- (f) Pilots may apply an offset outbound after the oceanic entry point and must return to the centreline before the oceanic exit point. Position reports transmitted via voice should be based on the waypoints of the current ATC clearance and not the offset positions.
- (g) There is no ATC clearance required for this procedure and it is not necessary that ATC be advised.

ENR 1.9 Air Traffic Flow Management

Air traffic flow management (ATFM) programs have been developed to ensure that national ATC systems are used to maximum capacity and that the need for excessive enroute airborne holding, especially at low altitude, is minimized. ATFM also distributes required delays more equitably among users.

ATFM initiatives in Canada include

- the publication in the *Canada Air Pilot* and the *Restricted Canada Air Pilot* of standard instrument departure (SID) and standard terminal arrival (STAR) procedures;
- the rerouting of aircraft because of sector overloading and weather avoidance;
- flow-control metering of arriving aircraft into terminal control areas (TCAs); and
- the implementation of flow-control restrictions whereby aircraft are more economically held on the ground at departure airports to partially absorb calculated arrival delays at a destination airport.

In the *Canada Flight Supplement* and the *Water Aerodrome Supplement*, Section B, “Aerodrome/Facility Directory,” the table for an aerodrome may have a subheading RESTRICTIONS that contains information affecting the flow of traffic at the aerodrome.

Additional information can be obtained by contacting NAV CANADA, National Operations Centre, at 1 866-651-9053 (Canada) or 1 866-651-9056 (US), or the shift manager or ATFM unit of the applicable area control center (ACC) through the telephone numbers provided in Table 1.9, “ACC Contact Numbers.”

Table 1.9, ACC Contact Numbers

ACC	Telephone Number
Gander ACC	+1 709-651-5207
Moncton ACC	+1 506-867-7173
Montréal ACC	+1 514-633-3028 or 3365
Toronto ACC	1-800-268-4831 (Canada)
	1-800-387-3801 (US)
	+1 905-676-3528 or 4509
Winnipeg ACC	+1 204-983-8338
Edmonton ACC	+1 780-890-4714
Vancouver ACC	+1 604-586-4510 or 4500

1.9.1 Flow Control Procedures

To minimize delays, air traffic management will use the least restrictive methods.

- Altitude
- Miles-in-trail/Minutes-in-trail
- Speed control
- Fix balancing
- Airborne holding
- Sequencing programs

Departure sequencing program assigns a departure time to achieve a constant flow of traffic over a common point. Runway and departure procedures are considered for accurate projections.

Enroute sequencing program assigns a departure time that will facilitate integration into an enroute stream. Runway configuration and departure procedures will be considered for accurate projections.

Arrival sequencing program assigns meter fix times to aircraft destined to the same airport.

Ground delay program is an air traffic management process administered by the flow manager whereby aircraft are held on the ground. The purpose of the program is to support the air traffic management mission and limit airborne holding. It is a flexible program and may be implemented in various forms depending on the needs of the air traffic system. Ground delay programs provide for equitable assignment of delays to all system users.

Ground stop is a process whereby an immediate constraint can be placed on system demand. The constraint can be total or partial. The ground stop may be used when an area, centre, sector, or airport experiences a significant reduction in capacity. The reduced capacity may be the result of weather, runway closures, major component failures, or any other event that would render a facility unable to continue providing ATS.

This list is not inclusive and does not preclude the innovation and application of other procedures that result in improved customer service.

1.9.2 Fuel Conservation High Level Airspace

The following points are brought to the attention of pilots operating in the high level airspace (HLA), to ensure that each aircraft is operated as close as possible to its optimum flight level and Mach number (M).

Pilots should request a change of flight level or M whenever this would improve the operating efficiency of the aircraft. However, in this regard, a request for a flight level not appropriate to the direction of flight will still be subject to the restrictions for use of altitudes inappropriate for direction of flight as detailed in the *Transport Canada Aeronautical Information Manual* (TC AIM) (TP14371E) Section RAC, "Rules of the Air and Air Traffic Services" 7.6.2, Note 1.

Where possible pilots should give advance warning of a request (e.g. if a westbound flight wishes to climb at 30°W, it will assist the controller if the request is made with the position report at 20°W).

When circumstances render this feasible, controllers will ask other aircraft to accept higher flight levels or changes of M in order to facilitate clearances for aircraft that would otherwise experience a significant penalty. In agreeing to such requests, pilots will contribute to the overall economy in fuel used.

ENR 1.10 Flight Planning

Amendment 1 to the 15th Edition of the *Procedures for Air Navigation Services–Air Traffic Management*, (PANS–ATM, Doc 4444), which became effective on 15 November 2012, updated the flight plan form established by the International Civil Aviation Organization (ICAO) to meet the needs of aircraft with advanced capabilities, as well as the developed requirements of the automated air traffic management (ATM) systems.

The new flight plan addresses functionalities and technologies of air navigation such as global navigation satellite system (GNSS), area navigation (RNAV), required navigation performance (RNP), performance-based navigation (PBN), data links, the automatic dependent surveillance-broadcast (ADS-B) and automatic dependent surveillance-contract (ADS-C). These changes are more substantially reflected in the content of fields 10 and 18 of the flight plan form.

Such data shall be considered by the ATM systems, in order to make the necessary air traffic planning information available for the air traffic controller. It also enables alerting, whenever there is a modification to reported data that may have an impact on control planned actions.

For information on restriction, limitation or advisory information related to flight planning within Canada, refer to the sections on Transport Canada's CARs website that are listed in Table 1.10, "Flight Planning."

Table 1.10, Flight Planning

Section	Title
602.70	Interpretation
602.73	Requirement to File a Flight Plan or a Flight Itinerary
602.74	Contents of a Flight Plan or a Flight Itinerary
602.75	Filing of a Flight Plan or a Flight Itinerary
602.76	Changes in the Flight Plan

<<http://www.tc.gc.ca/eng/acts-regulations/regulations-sor96-433.htm>>

Part VI – General Operating and Flight Rules

Subpart 2 – Operating and Flight Rules

Division III – Flight Preparation, Flight Plans and Flight Itineraries

ENR 1.11 Addressing of Flight Plan Messages

Flight plans for aircraft flying under IFR in Canada are allocated according to flight information region (FIR) to the message addresses provided in Table 1.11, “Flight Plan Message Addresses.”

Table 1.11, Flight Plan Message Addresses

FIR	Message Address
Gander	CZQXZQZX
Moncton	CZQMZQZX
Montréal	CZULZQZX
Toronto	CZYZZQZX
Winnipeg	CZWGZQZX
Edmonton	CZEGZQZX
Vancouver	CZVRZQZX

Flight plans for aircraft flying under VFR are accepted and processed by flight information centers (FICs) in Canada. In the *Canada Flight Supplement* and the *Water Aerodrome Supplement*, Section B, “Aerodrome/Facility Directory,” the table for each aerodrome has a subheading FLT PLN (Flight Planning) that may contain the appropriate FIC contact information under the entry FIC.

For more information about Canada’s FICs, refer to [Airport Advisory and Flight Information Services](#) on NAV CANADA’s website:

<www.navcanada.ca>
About Us
What We Do
Airport Advisory and Flight Information

ENR 1.12 Interception of Civil Aircraft

For information on interception procedures and visual signals, refer to the following publications:

Canada Flight Supplement, Section F, “Emergency – Interception of Civil Aircraft,” and “Interception Signals,” or *Water Aerodrome Supplement*, Section E, “Emergency – Interception of Civil Aircraft,” and “Interception Signals”

ENR 1.13 Unlawful Interference

For information on unlawful interference, refer to the following publications:

Canada Flight Supplement, Section F, “Emergency – Interception of Civil Aircraft,” and “Unlawful Interference (HIJACK)” or *Water Aerodrome Supplement*, Section E, “Emergency – Interception of Civil Aircraft,” and “Unlawful Interference (HIJACK)”

ENR 1.14 Air Traffic Incidents

The Aviation Operations Centre (AOC) (formerly known as CACO) is part of the Transport Canada Situation Centre, Emergency Preparedness Branch. It is the focal point for providing services in the areas of operational response in support of the Civil Aviation emergency response mandate. In addition, it participates

in or provides support to the aviation-related activities of NATO, the North American Aerospace Defence Command (NORAD), International Civil Aviation Organization's (ICAO), the Federal Aviation Administration (FAA) and other foreign entities responsible for rocket launches.

The Aviation Operations Centre (AOC) monitors the national civil air transportation system (NCATS) 24 hours a day, and responds to NCATS emergencies that require the attention or co-ordination of concerned functional branches, including regional offices and other departments or agencies, as per contingency plans.

The AOC is the initial contact point for all aviation-related occurrences. It receives reports on accidents and any incidents that occur within the NCATS from various sources, including NAV CANADA, airport authorities, Public Safety Canada (PSC), law enforcement agencies, other government departments, foreign governments, and the general public. These reports are continuously monitored and then distributed to the appropriate functional areas of Transport Canada Civil Aviation for review, investigation (if necessary), and final inclusion in the Civil Aviation Daily Occurrence Reporting System (CADORS).

Reports requiring regional, modal, multi-modal, inter-departmental, or an outside agency's attention are immediately forwarded to that agency for further action.

An aircraft incident, as defined in the CADORS manual (TP 4044), is any occurrence involving an aircraft where

1. An engine fails;
2. Smoke or fire occurs, other than an engine fire that is contained within the engine and does not result in engine failure or damage to other component parts of the aircraft;
3. Difficulties in controlling the aircraft in flight are encountered due to any aircraft system malfunction, weather phenomena, wake turbulence, operations outside the approved flight envelope or uncontrolled vibrations;
4. The aircraft fails to remain within the landing or takeoff area, lands with one or more landing gear retracted or drags a wing tip or engine pod;
5. Any crew member is unable to perform his or her flight duties as a result of incapacitation;
6. Decompression, explosive or otherwise, occurs that necessitates an emergency descent;
7. A fuel shortage occurs that necessitates a diversion or requires approach and landing priority at the destination of the aircraft;
8. The aircraft is refueled with the incorrect type of fuel or contaminated fuel;
9. A collision or risk of collision with any other aircraft or with any vehicle, terrain or obstacle occurs, including a collision or risk of collision that may be related to air traffic control procedures or equipment failures;
10. The aircraft receives a Traffic Alert and Collision Avoidance System (TCAS) Resolution Advisory;
11. A flight crew member declares an emergency or indicates any degree of emergency that requires priority handling by an air traffic control unit or the standing by of crash, firefighting or rescue services;
12. Toxic gases or corrosive materials leak from any area aboard the aircraft;
13. Unauthorized Incursion or operating irregularity involving vehicles, pedestrians or animals;
14. Failure of a navigational aid, approach aid, communications system, airport lighting, power failure or any other system breakdown which has an adverse effect upon flight safety or a major impact upon operations;

15. Criminal action – hijacking bomb threat, riot, sabotage, or a breach of aviation/airport security;
16. Unavailability of a runway due to snow, ice, flood, obstruction or foreign object that results in a major impact on airport operations;
17. Bird strikes, which result in aircraft damage or other operational impact;
18. Missing aircraft reports, Search and Rescue action (RCC launch and ELT activations);
19. Significant building and equipment fire or other major damage on airport property or TC remote sites;
20. Labour action affecting operational capability;
21. Item dropped from aircraft;
22. Regulatory infractions which have immediate safety implications, involve commercial carriers or may generate media attention;
23. Environment emergencies such as significant fuel spill, hazardous chemical or radioactive spill on airport property;
24. Accidental death or serious injury to employees or members of the public while on airport or TC property; or
25. Any occurrence which may generate a high degree of public interest or concern or could be of direct interest to specific foreign air authorities.

The [Aviation Incident Report](#) form is available on Transport Canada's website:

<www.tc.gc.ca>
Air
Air Transportation
Emergencies and Incident Reporting
Report an aviation incident (CACO)

A pilot should proceed as follows regarding an incident in which he or she is or has been involved:

1. During flight, use the appropriate air-ground frequency for reporting an incident of major significance, particularly if it involves other aircraft, so as to permit the facts to be ascertained immediately; and
2. As promptly as possible after landing submit an Aviation Incident Report.

Aviation Incident Reports are used to keep senior Civil Aviation and Transport Canada management advised of critical or high-profile events on a timely basis.

To report an [aircraft accident or incident](#), individuals can contact the AOC 24 hours a day by calling 1-877-992-6853 (toll-free) or 613-992-6853; sending a fax to 1-866-993-7768 (toll-free) or 613-993-7768; or via the website, at

<www.tc.gc.ca>
Air
Air Transportation
Emergencies and Incident Reporting
Report an aviation incident (CACO)

1.14.1 ATS Reports

Under current regulation, ATS units are required to report to the Minister of Transport any aviation occurrence that may contravene the CARs.

Any investigation of the circumstances or subsequent decision on whether a breach has taken place is the responsibility of Transport Canada. Any necessary follow-up action will be conducted by Transport Canada Civil Aviation regulatory authorities.

1.14.2 Pilot Reports

Pilots are requested to make the following reports in the interests of national security, meteorite research and forest fire and pollution control.

1.14.2.1 CIRVIS Reports – Vital Intelligence Sightings

Communication Instructions for Reporting Vital Intelligence Sightings (CIRVIS) reports should be made immediately upon a vital intelligence sighting of any airborne and ground objects or activities that appear to be hostile, suspicious, unidentified or engaged in possible illegal smuggling activity. Examples of events requiring CIRVIS reports are: unidentified flying objects, submarines, or surface warships identified as being non-Canadian or non-American; violent explosions; unexplained or unusual activity, including the presence of unidentified or suspicious ground parties in Polar regions, at abandoned airstrips or other remote, sparsely populated areas.

These reports should be made to the nearest Canadian or U.S. government FIC or ATC unit.

A report via air/ground communications should include the words “CIRVIS CIRVIS CIRVIS”, followed by:

- the identification of the reporting aircraft;
- a brief description of the sighting (number, size, shape, etc.);
- the position of the sighted object or activity;
- the date and time of sighting in UTC;
- the altitude of the object;
- the direction of movement of the object;
- the speed of the object; and
- any identification.

1.14.2.2 Reports of meteors

Reports of spectacular meteors (fireballs), which may be bright enough to cast shadows, that may be accompanied by a “sonic boom”, that may trail glowing particles, and that may explode with a burst of light and a loud sound several times in flight, should be reported by radio to the nearest ATS unit or to:

Meteorites and Impacts Advisory Committee (MIAC)

<<http://miac.uqac.ca>>

Fax: 403-284-0074

1.14.2.3 Fire Detection – Northern Areas

The Department of Indian and Northern Affairs have requested the co-operation of all persons connected with aviation, in the prevention, detection and suppression of fires in the northern areas of Canada.

If smoke or other indications of fire are seen in any area, the local Forestry Warden, Game Management Officer, or member of the RCMP should be notified at once. If they are not available, the fire should be reported by collect telephone call to:

Superintendent of Forestry, Fort Smith, Northwest Territories, for fires in the Northwest Territories and Wood Buffalo National Park. [Tel. no. (867) 872-7700].

Superintendent of Forestry, Whitehorse, Yukon Territory, for fires in the Yukon Territory. [Tel. no. 1-888-798-FIRE (3473)].

Reports should give the size and location of the fire, and the name and address of the person making the report. This information will assist fire crews in getting to fires with minimum delay and with the right type of equipment.

1.14.2.4 Pollution Reports

Any aircraft in the airspace above Canadian waters, Fishing Zones or Arctic Shipping Control Zones should inform the nearest Canadian FIC upon sighting any vessel discharging pollutants (oil) in Canadian waters, Fishing Zones or Arctic Shipping Control Zones.

On the east and west coasts, the waters extend to approximately 200 nautical miles (NM) from the coast line. In the north, the area includes virtually all of the waters in the Canadian Arctic.

The FIC will relay any reported pollution incidents to the appropriate Coast Guard Centres.

ENR 2. AIR TRAFFIC SERVICES AIRSPACE

ENR 2.1 Flight Information Regions, Upper Flight Information Regions, Terminal Control Areas

2.1.1 Flight Information Regions and Upper Flight Information Regions

A FIR is an airspace of defined dimensions extending upwards from the surface of the earth, within which a flight information service (FIS) and an alerting service are provided. The Canadian Domestic Airspace (CDA) is divided into the Vancouver, Edmonton, Winnipeg, Toronto, Montréal, Moncton and Gander domestic FIRs. Gander Oceanic is an additional FIR allocated to Canada by ICAO for the provision of an FIS and an alerting service over the high seas.

Canadian FIRs are described in the [Designated Airspace Handbook](#) (TP 1820E), available in portable document format (PDF) on the Aeronautical Information Products section of the NAV CANADA website:

<www.navcanada.ca>
Products & Services
Aeronautical Information Products
Designated Airspace Handbook
Current Issue

Upper flight information regions (UIR) are not used in Canada.

2.1.2 Terminal Control Areas

A TCA is a controlled airspace of defined dimensions, normally established in the vicinity of a major aerodrome, designated to serve arriving, departing and enroute aircraft.

TCAs are described in the [Designated Airspace Handbook](#) (TP 1820E), available in PDF on the Aeronautical Information Products section of the NAV CANADA website:

<www.navcanada.ca>
Products & Services
Aeronautical Information Products
Designated Airspace Handbook
Current Issue

2.1.3 Units Providing the Service

There is an ACC providing service for each FIR. The telephone numbers for the ACCs are provided in Table 1.9, “ACC Contact Numbers.”

2.1.4 Call Sign of Aeronautical Stations

The call signs for the ACCs are as follows: Gander Centre, Moncton Centre, Montréal Centre, Toronto Centre, Winnipeg Centre, Edmonton Centre, and Vancouver Centre. For information on the language used by the aeronautical station, refer to GEN 3.4.3, “Types of Service.”

2.1.5 Frequencies Supplemented by Indications for Specific Purposes

For frequencies supplemented by indications for specific purposes, see the enroute low altitude, enroute high altitude and terminal area charts (see Figure 3.1, “Index to Low Altitude Charts,” and Figure 3.2, “Index to High Altitude Charts”).

2.1.6 Control Zones Around Military Air Bases

For information on control zones around military air bases, refer to the following publications:

Canada Flight Supplement or *Water Aerodrome Supplement*, Section B, “Aerodrome/Facility Directory,” and *Canada Flight Supplement*, Section E, “Military Flight Data and Procedures”

2.1.7 Emergency Locator Transmitter Requirements

For information on emergency locator transmitter (ELT) requirements, refer to GEN 1.5.4, “Emergency Locator Transmitter.”

ENR 2.2 Other Regulated Airspace

2.2.1 Required Navigation Performance Capability Airspace

Required navigation performance capability (RNP) airspace is defined as a controlled airspace within the Canadian Domestic Airspace (CDA) in the *Designated Airspace Handbook* (TP 1820E; see Figure 2.2.2, “RNP, CMNPS and CMNPS Transition Airspace”). RNP airspace accommodates area navigation (RNAV) operations and is contained within the Southern Domestic Airspace (SDA) and Northern Control Area (NCA). The latest version of the [Designated Airspace Handbook](#) is available in portable document format (PDF) on the Aeronautical Information Products section of the NAV CANADA website:

<www.navcanada.ca>
Products & Services
Aeronautical Information Products
Designated Airspace Handbook
Current Issue

Reduced ATC separation criteria can be applied in RNP airspace. To conduct RNAV operations (fixed or random routes) in the RNP airspace, the required aircraft navigation equipment must be certified as capable of navigating within specified tolerances. Aircraft that have the required navigation equipment for operations in Canadian minimum navigation performance specifications (CMNPS) airspace and the minimum navigation performance specifications (MNPS) authorization required in the North Atlantic (NAT) high level airspace (HLA) satisfy all requirements for RNP.

Separation in accordance with RNP may be applied for flights within those portions of the Gander Oceanic and New York Oceanic flight information regions (FIRs) that are designated as being part of the Gander Domestic or Moncton Domestic control area (CTA).

RNAV operations require the following additional certifications:

- The aircraft must be certified by the State of Registry or the State of the Operator as meeting the RNP permitted to conduct RNAV operations.
- Long-range RNAV systems must be certified and capable of navigation performance that permits position determination within ± 4 NM. Such navigation performance capability must be verified by the State of Registry or the State of the Operator, as appropriate.
- One long-range RNAV system, plus a short-range navigation system (VHF omnidirectional range (VOR)/distance measuring equipment (DME), or automatic direction finder (ADF)), must be certified to meet the minimum navigation equipment requirement for RNP operation.

2.2.2 Canadian Minimum Navigation Performance Specifications Airspace

CMNPS airspace is defined as a controlled airspace within CDA, between flight levels (FL) 330 and FL 410 in the *Designated Airspace Handbook* (TP 1820E) (see Figure 2.2.2, “RNPC, CMNPS and CMNPS Transition Airspace”). This airspace is contained for the most part in the Arctic Control Area (ACA) and the NCA, with a small portion in the Southern Control Area (SCA). The [Designated Airspace Handbook](#) is available in PDF on the Aeronautical Information Products section of the NAV CANADA website:

<www.navcanada.ca>
 Products & Services
 Aeronautical Information Products
Designated Airspace Handbook
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Reduced ATC separation criteria can be applied in the CMNPS airspace. To conduct RNAV operations in CMNPS airspace, aircraft must be certified as being capable of navigating within specified tolerances. A transition area underlying the lateral limits of CMNPS airspace exists from FL 270 to below FL 330 to permit both CMNPS-certified and non-certified aircraft to operate above FL 270.

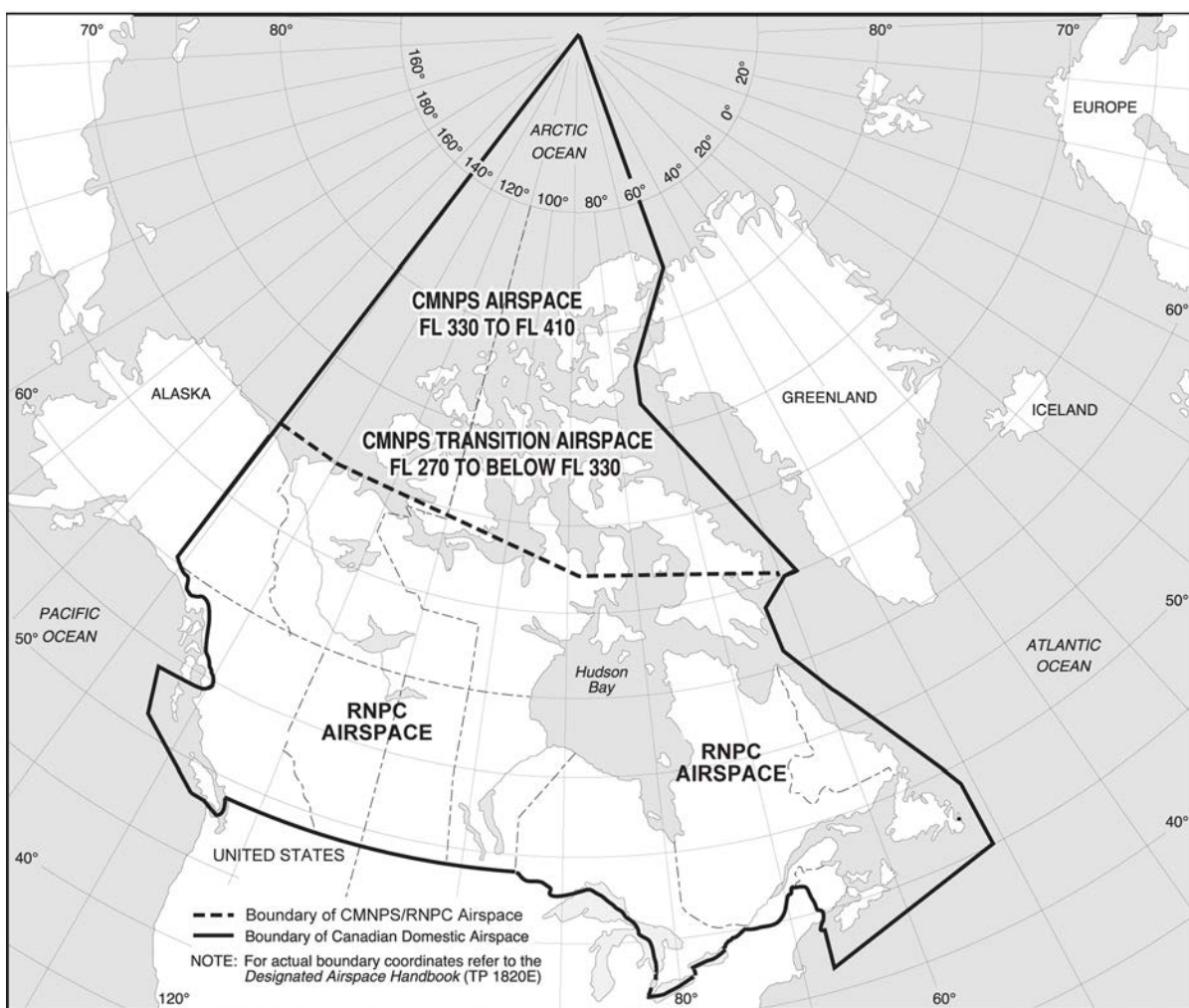


Figure 2.2.2, RNPC, CMNPS and CMNPS Transition Airspace

Aircraft navigation equipment for flights in CMNPS airspace must meet the following conditions and certifications:

- Navigation equipment must be certified by the State of Registry or the State of the Operator as meeting the MNPS of either the NAT or Canada to operate within CMNPS airspace, unless the ATC unit concerned indicates that the non-certified aircraft can be accommodated without penalty to certified aircraft.
- Required long-range RNAV systems must be certified and shown capable of navigation performance within the following specifications:
 - The standard deviation of lateral track errors is less than 6.3 NM;
 - The proportion of total flight time spent by aircraft 30 NM or more off the cleared track is less than 5.3×10^{-4} (i.e., less than 1 hr in about 2,000 flight hours); and
 - The proportion of total flight time spent by aircraft between 50 and 70 NM off the cleared track is less than 13×10^{-5} (i.e., less than 1 hr in about 8,000 flight hours).
- Navigation performance capability must be verified by the State of Registry or the State of the Operator, as appropriate. Aircraft that operate within designated airways and company-approved routes, which are completely in signal coverage of ground-based navigation aids, satisfy CMNPS requirements when operating within the protected airspace for airways and company-approved routes.
- At a minimum, aircraft are required to use the following navigation systems in the CMNPS airspace, depending on the route operated:
 - Aircraft transiting CDA to or from another continent must be equipped with two long-range RNAV systems or one navigation system using the inputs from one or more sensor systems, plus one short-range navigation system (ADF, VOR/DME).
 - Aircraft operating within North America on routes that lie within reception of ground-based navigation aids must be equipped with a single long-range RNAV system plus a short-range navigation system (ADF, VOR/DME).
 - Aircraft operating on high-level airways or company-approved routes must be equipped with dual short-range navigation systems (ADF, VOR/DME).

For a description of other types of regulated airspace and airspace classification, refer to the [Designated Airspace Handbook](#) (TP 1820E), available in PDF on the Aeronautical Information Products section of the NAV CANADA website:

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ENR 3. ATS ROUTES

For route descriptions, distances are in nautical miles and tracks are magnetic, except in the Northern Domestic Airspace (NDA) where tracks are referenced to true north.

ENR 3.1 Lower ATS Routes

3.1.1 Route Descriptions

For detailed descriptions of specific lower altitude ATS routes, refer to current editions of the following publications:

The appropriate enroute low altitude chart (see Figure 3.1, “Index to Low Altitude Charts”)

[*Designated Airspace Handbook*](#) (TP 1820E), Part 4, “Designations of Low Level Airways and Fixed Area Navigation Routes,” available in PDF on the Aeronautical Information Products section of the NAV CANADA website:

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Canada Flight Supplement, Section C, “Planning”

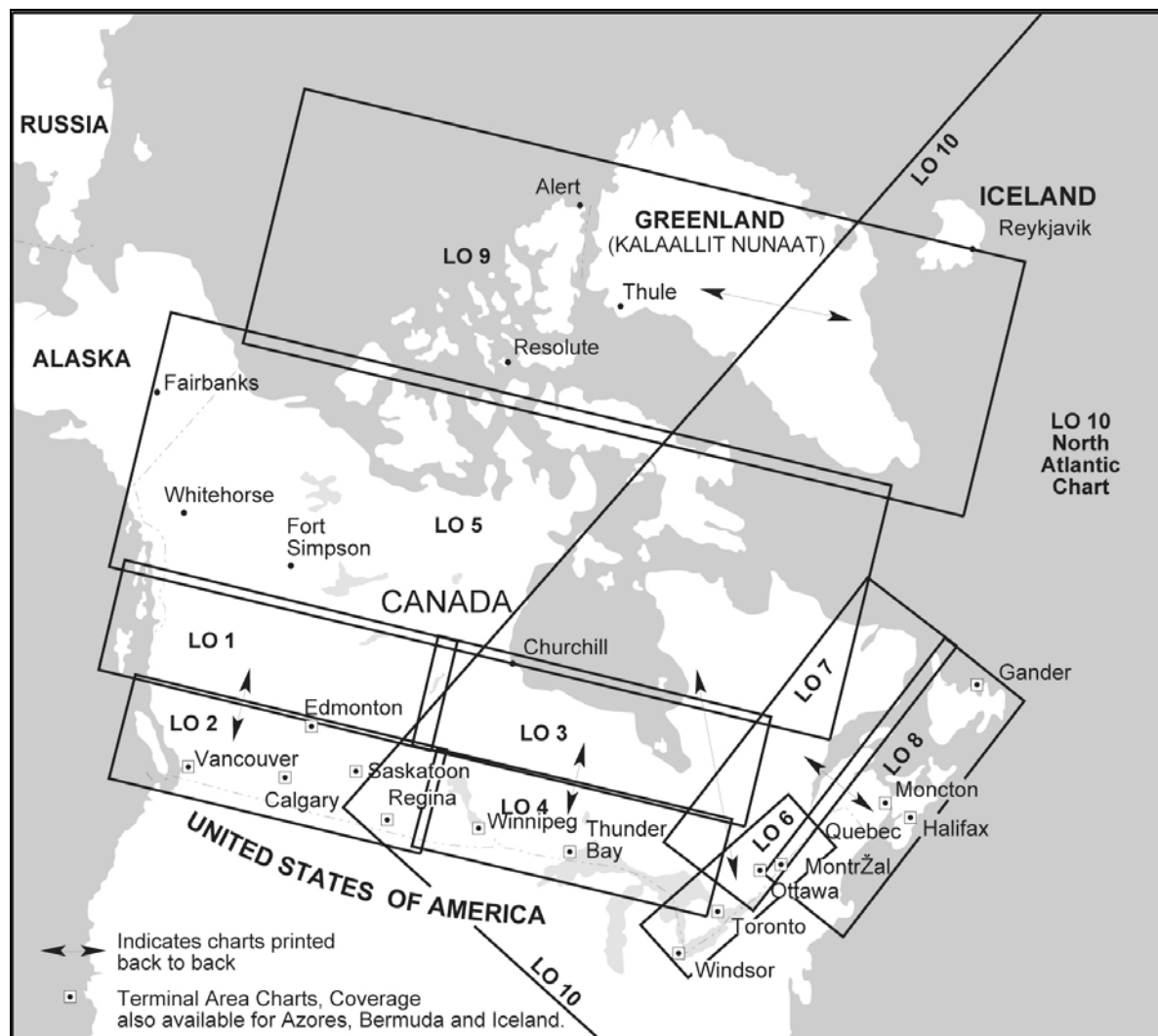


Figure 3.1, Index to Low Altitude Charts

3.1.2 Tracks or VOR Radials

For information on tracks or very high frequency (VHF) omnidirectional range (VOR) radials, including changeover points, for low altitude ATS routes, see the appropriate enroute low altitude chart.

3.1.3 Upper and Lower Limits of Routes and Airspace Classification

The airspace up to but not including 18 000 feet ASL within CDA and that airspace over international waters and foreign territory in which Canada accepts responsibility for the provision of ATC services is for use by low altitude routes.

For information on the upper and lower limits of low altitude ATS routes and airspace classification, see the appropriate enroute low altitude chart.

3.1.4 Lateral Limits

For information on the lateral limits of low altitude ATS routes, see the appropriate enroute low altitude chart.

3.1.5 Direction of Cruising Levels

For information on the direction of cruising levels for low altitude ATS routes, see the appropriate enroute low altitude chart and refer to the following publications:

Canada Flight Supplement or *Water Aerodrome Supplement*, Section C, “Planning – Characteristics of Airspace – Cruising Altitudes and Flight Levels Appropriate to Aircraft Track”

3.1.6 Controlling Unit and Operating Frequency

For further information, including an indication of the controlling unit and its operating frequency for low altitude ATS routes, see the appropriate enroute low altitude chart.

ENR 3.2 Upper ATS Routes**3.2.1 Route Descriptions**

For detailed descriptions of specific high altitude ATS routes, refer to current editions of the following publications:

The appropriate enroute high altitude chart (see Figure 3.2, “Index to High Altitude Charts”)

Canada Flight Supplement, Section C, “Planning”

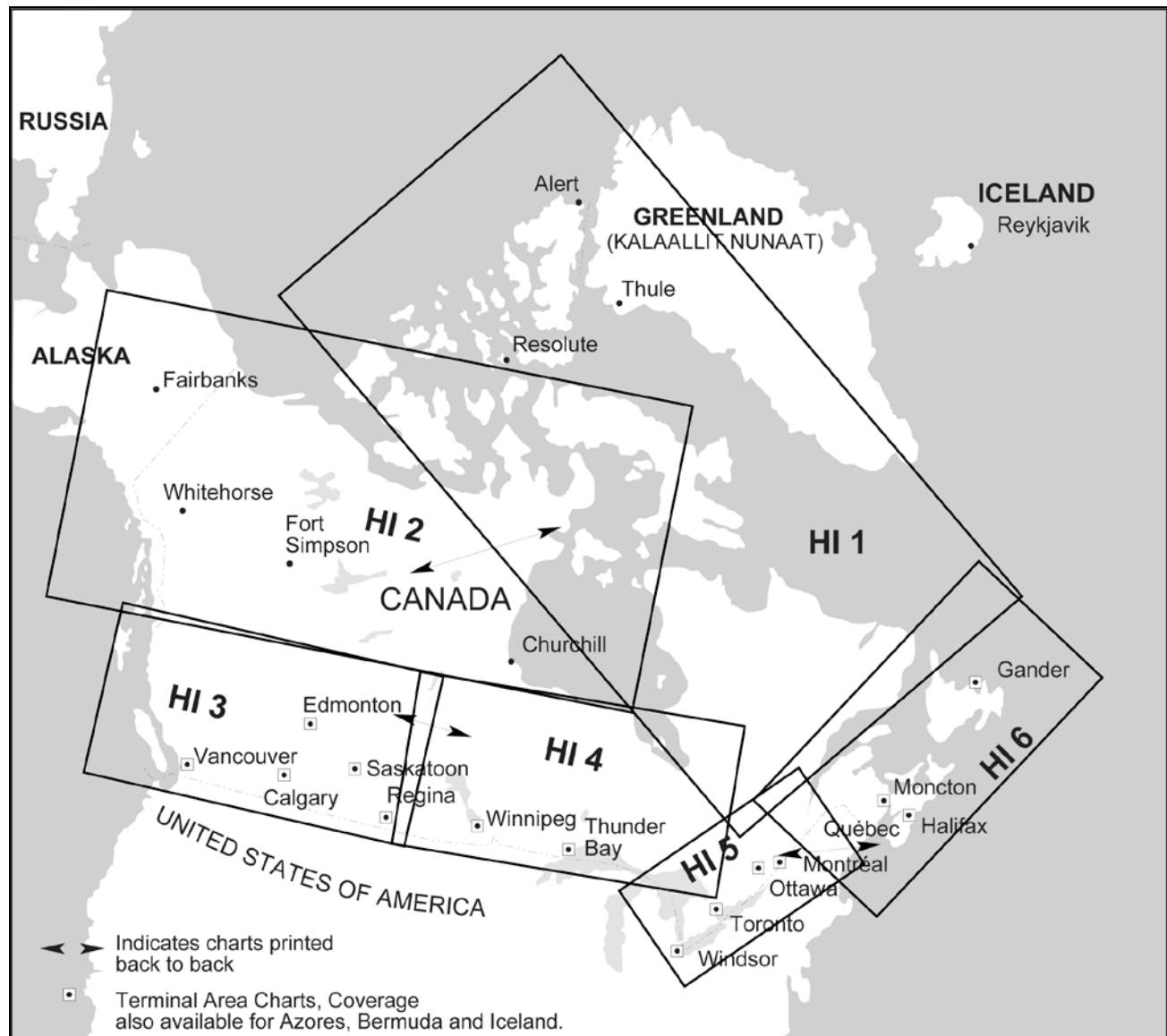


Figure 3.2, Index to High Altitude Charts

3.2.2 Tracks or VOR Radials

For information on tracks or VOR radials, including changeover points, for high altitude ATS routes, see the appropriate enroute high altitude chart.

3.2.3 Upper and Lower Limits of Routes and Airspace Classification

The airspace at 18 000 feet ASL and above within CDA and that airspace over international waters and foreign territory in which Canada accepts responsibility for the provision of ATC services is for use by high altitude routes.

For information on the upper and lower limits of high altitude ATS routes and airspace classification, see the appropriate enroute high altitude chart.

3.2.4 Lateral Limits

For information on the lateral limits of high altitude ATS routes, see the appropriate enroute high altitude chart.

3.2.5 Direction of Cruising Levels

For information on the direction of cruising levels for high altitude ATS routes, see the appropriate enroute high altitude chart and refer to the following publications:

Canada Flight Supplement or *Water Aerodrome Supplement*, Section C, “Planning – Characteristics of Airspace – Cruising Altitudes and Flight Levels Appropriate to Aircraft Track”

3.2.6 Controlling Unit and Operating Frequency

For further information, including an indication of the controlling unit and its operating frequency for high altitude ATS routes, see the appropriate enroute high altitude chart.

ENR 3.3 Area Navigation Routes

3.3.1 Description of Area Navigation Routes

For a description of area navigation (RNAV) routes, refer to the following publication:

Canada Flight Supplement, Section C, “Planning – Mandatory IFR Routes – Fixed RNAV Routes” and Section E, “Military Flight Data and Procedures”

3.3.2 Waypoints Defining VOR/DME Area Navigation Routes

For station identification of the reference VOR/distance measuring equipment (DME) defining an RNAV route, refer to the following publications:

Canada Flight Supplement, Section D, “Radio Navigation and Communications – Radio Navigation Aids by Location,” or *Canada Flight Supplement* and *Water Aerodrome Supplement*, Section D, “Radio Navigation Aids by Indicator”

For bearing and distance from the reference VOR/DME, if the waypoint defining an RNAV route is not collocated with it, refer to the following publication:

Canada Flight Supplement, Section C, “Planning – Mandatory IFR Routes – Fixed RNAV Routes”

For elevation of the transmitting antenna of the DME defining an RNAV route, refer to the following publications:

Canada Flight Supplement, Section D, “Radio Navigation and Communications – Radio Navigation Aids by Location,” or *Canada Flight Supplement* and *Water Aerodrome Supplement*, Section D, “Radio Navigation Aids by Indicator”

3.3.3 Distance Between Defined End Points and Designated Significant Points

For geodesic distance between defined end points and distance between each successive designated significant point for RNAV routes, refer to the following publication:

Canada Flight Supplement, Section C, “Planning – Mandatory IFR Routes – Fixed RNAV Routes”

3.3.4 Upper and Lower Limits of Routes and Airspace Classification

For information on the upper and lower limits of RNAV routes and airspace classification, see the appropriate enroute low altitude chart, enroute high altitude or terminal area chart (see Figure 3.1, “Index to Low Altitude Charts,” and Figure 3.2, “Index to High Altitude Charts”).

3.3.5 Direction of Cruising Levels

For information on the direction of cruising levels for RNAV routes, see the appropriate enroute low altitude chart, enroute high altitude or terminal area chart.

3.3.6 Controlling Unit and Operating Frequency

For further information, including an indication of the controlling unit and its operating frequency for RNAV routes, see the appropriate enroute low altitude chart, enroute high altitude or terminal area chart.

ENR 3.4 Helicopter Routes

There are no established helicopter routes in Canada.

ENR 3.5 Other Routes

For information on other routes in Canada, refer to current editions of the following publications:

[Designated Airspace Handbook](#) (TP 1820E), available in PDF on the Aeronautical Information Products section of the NAV CANADA website:

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Canada Flight Supplement, Section C, “Planning”

The appropriate enroute low altitude, enroute high altitude or terminal area chart (see Figure 3.1, “Index to Low Altitude Charts,” and Figure 3.2, “Index to High Altitude Charts”)

ENR 3.6 Enroute Holding

3.6.1 Holding Identification and Holding Fix

For the holding identification and the holding fix for enroute holding patterns, see current editions of the following publications:

The appropriate enroute low altitude, enroute high altitude or terminal area chart (see Figure 3.1, “Index to Low Altitude Charts,” and Figure 3.2, “Index to High Altitude Charts”)

Canada Air Pilot, Volumes 1–7, or *Restricted Canada Air Pilot*

3.6.2 Inbound Track

For the inbound track for enroute holding patterns, see current editions of the following publications:

The appropriate enroute low altitude, enroute high altitude or terminal area chart

Canada Air Pilot, Volumes 1–7, or *Restricted Canada Air Pilot*

3.6.3 Direction of Procedure Turn

For the direction of the procedure turn for enroute holding patterns, see current editions of the following publications:

The appropriate enroute low altitude, enroute high altitude or terminal area chart

Canada Air Pilot, Volumes 1–7, or *Restricted Canada Air Pilot*

3.6.4 Maximum Indicated Airspeed

The size of the airspace that must be protected for a holding pattern is directly proportional to the speed of the aircraft. In order to limit the amount of airspace that must be protected, maximum holding speeds in knots indicated airspeed (KIAS) have been designated for specific altitude ranges. Unless otherwise noted on the chart or when a climb in the hold is specified, holding patterns must be entered and flown at or below the following airspeeds:

Table 3.6.4, Maximum Indicated Airspeeds for Holding Patterns

Altitude (ASL)	Maximum Holding Airspeed (KIAS)
At or below 6000 feet	200
Above 6000 feet up to and including 14000 feet	230
Above 14000 feet	265
Shuttle climbs (all altitudes)	310 (subject to CAR 602.32)

Note 1: At Canadian Military airfields, the size of the protected airspace is for a maximum of 310 KIAS, unless otherwise noted.

Note 2: For Copter procedures, the maximum airspeed is 90 KIAS for all altitudes, unless otherwise noted.

When a climb in the hold (shuttle climb) procedure is specified on a chart, an additional protected area has been provided to allow for greater airspeeds in the climb for those aircraft requiring them. This extra protected area is for a maximum of 310 KIAS, unless a maximum holding airspeed is noted on the chart, in which case that maximum airspeed is applicable.

In areas where turbulence is known to exist, the protected airspace is based on a maximum of 280 KIAS and will be noted on the chart.

Pilots are to advise ATC immediately if airspeeds in excess of those specified become necessary for any reason, including turbulence, or if they are unable to accomplish any part of the holding procedure.

3.6.5 Minimum and Maximum Holding Level

For minimum and maximum holding levels for enroute holding patterns, see current editions of the following publications:

The appropriate enroute low altitude, enroute high altitude or terminal area chart

3.6.6 Time and Distance Outbound

The still air time for flying the outbound leg of a holding pattern should not exceed one minute if at or below 14 000 feet ASL, or one and a half minutes if above 14 000 feet ASL. However, the pilot should make due allowance in both heading and timing to compensate for the wind effect.

After the initial circuit of the holding pattern, timing should begin abeam the holding fix or on attaining the outbound heading, whichever occurs later. The pilot should increase or decrease outbound times, in recognition of winds, to effect one minute or one and a half minutes still air time (appropriate to altitude) inbound to the holding fix.

When the pilot receives ATC clearance specifying the time of departure from the holding fix, adjustments should be made to the flight pattern within the limits of the established holding pattern to leave the holding fix as near as possible to the time specified.

3.6.7 Controlling Unit and Operating Frequency

For indication of the controlling unit and its operating frequency for enroute holding patterns, see current editions of the following publications:

The appropriate enroute low altitude, enroute high altitude or terminal area chart

ENR 4. RADIO NAVIGATION AIDS/SYSTEMS

ENR 4.1 Radio Navigation Aids — Enroute

For an alphabetical list of stations providing radio navigation services for enroute purposes in Canada, refer to the following publications:

Canada Flight Supplement, Section D, “Radio Navigation and Communications – Radio Navigation Aids by Location,” or *Canada Flight Supplement* and *Water Aerodrome Supplement*, Section D, “Radio Navigation Aids by Indicator”

Also in the *Canada Flight Supplement* and the *Water Aerodrome Supplement*, Section B, “Aerodrome/Facility Directory,” the table for each aerodrome may have a subheading NAV (navigation) that contains information on radio navigation and landing aids associated with the instrument approach and the terminal area procedures at the aerodrome.

ENR 4.2 Special Navigation Systems

There are no special navigation systems for civil aviation purposes in Canada.

ENR 4.3 Global Navigation Satellite System (GNSS)

The Global Navigation Satellite System (GNSS) indicated in Table 4.3, “Global Navigation Satellite System,” may be used for enroute, terminal and approach operations in Canada. The systems in Table 4.3 also meet the requirements of ICAO Annex 10.

Table 4.3, Global Navigation Satellite System

Element	Name	Nominal Service Area	Operating Authority	Remarks
Constellation	Global Orbiting Navigation Satellite System (GLONASS)	Canadian Domestic Airspace	Ministry of Defence of the Russian Federation	Enroute, terminal, and non-precision approaches (NPA).
Constellation	Global Positioning System (GPS)	Canadian Domestic Airspace	US Department of Defense	Enroute, terminal, and non-precision approaches (NPA).
Satellite Based Augmentation System	European Geostationary Navigation Overlay Service (EGNOS)	Eastern Canada: Thunder Bay to St. John's to approximately N50°	European Space Agency (ESA)	Augmentation to GNSS for enroute, terminal, and NPA.
Satellite Based Augmentation System	Wide Area Augmentation System (WAAS)	Canadian Domestic Airspace to approximately N70° (subject to visibility of at least one WAAS geostationary satellite (GEO))	US Federal Aviation Administration (FAA)	Augmentation to GNSS for enroute, terminal, NPA, lateral and vertical navigation (LNAV/VNAV), localizer performance (LP) and localizer performance with vertical guidance (LPV) approaches.

The acceptable GNSS equipment standards are identified in AIP Canada ENR 4.3.1 “GNSS Equipment Requirements”. The GNSS equipment installation on Canadian registered aircraft must be approved in accordance with the appropriate sections of the *Canadian Aviation Regulations* (CARs), Part V – Airworthiness, and installed for use in accordance with AC20-130A and/or AC20-138() as applicable.

Equipment and installations approved by other Aviation Authorities (AAs) to equivalent requirements are also deemed acceptable for operations within Canada.

The pilot-in-command (PIC) must also ensure that the available equipment can satisfy the requirements of CAR 605.18(j) — Power-driven Aircraft–IFR.

Aircraft using non-WAAS/SBAS based augmentation systems to support GPS installations (TSO-C129, TSO-C129a or TSO-C196 All Revisions (AR)) for navigation under IFR must be equipped with an alternate approved and operational means of navigation suitable for the proposed flight. Provided that RAIM is available, monitoring of the alternative navigation equipment is not required. Procedures must be established for use in the event that the loss of RAIM capability is predicted to occur. In situations where RAIM is predicted to be unavailable, the flight must rely on other approved navigation equipment, re-route to where RAIM is available, delay departure, or cancel the flight.

If TSO-C145/C146 equipment is used to satisfy the RNAV requirement, the pilot/operator need not perform the RAIM prediction if WAAS coverage is confirmed to be available along the entire route of flight. In areas where WAAS coverage is not available, operators using TSO-C145/C146 receivers are required to check GPS RAIM availability.

Subject to aircraft operating limitations specified in the Aircraft Flight Manual or Flight Manual Supplement, Aircraft equipped with TSO-C145 or TSO-C146 GNSS based Navigation Sensors may not need to carry a non-GNSS alternate means of navigation. However, certain operations may require dual installation as necessary to fulfill availability and/or continuity requirements.

In the event of loss of GNSS navigation performance accuracy or integrity which results in the inability to support the planned flight operation, the pilot-in-command must advise air traffic services as soon as practical, stating “unable RNAV [DUE TO (REASON, E.G. LOSS OF GNSS)]”.

GNSS-based approaches are charted as “RNAV (GNSS) RWY XX”, denoting that GNSS navigation shall be used for approach guidance, and the prefix “RNAV” is used in radio communications. Approaches flown using GNSS must be retrieved from a current navigation database. The PIC is responsible for ensuring the on-board navigation data is current, appropriate for the region of intended operation and includes the appropriate navigation aids, waypoints, and relevant coded terminal airspace procedures for the departure, arrival, and alternate airfields.

Navigation databases must be current for the duration of the flight. If the AIRAC cycle is due to change during flight, operators and pilots must have established procedures to ensure the accuracy of the navigation data, including the suitability of navigation facilities, routes and procedures for safe flight operations.

GNSS overlay approaches are identified in the *Canada Air Pilot* (CAP) with the letters GNSS in parentheses and in small capitals after the runway designation [e.g. NDB RWY 04 (GNSS)]. When conducting GNSS overlay approaches:

- if installed, the VOR, distance measuring equipment (DME), and/or NDB onboard navigation equipment does not need to be functioning; and
- the underlying approach navigation aid(s) (NAVAID[s]) do(es) not need to be functioning.

For flight within Canadian minimum navigation performance specifications (CMNPS) airspace or required navigation performance capability (RNP) airspace see AIP Part 2 Enroute section 2.2.1. GNSS equipment identified in ENR 4.3.1 “GNSS Equipment Requirements”, can serve as the long range navigation system when in CMNPS or RNP airspace.

4.3.1 GNSS Equipment Requirements

The acceptable GNSS equipment Minimum Operational Performance Specifications (MOPS) as identified by the FAA Technical Standard Orders, are defined in Table 4.3.1 “GNSS Equipment Requirements”. These TSOs are published by the U.S. Federal Aviation Administration (FAA) and adopted by reference by Transport Canada. TSOs or equipment approvals issued by other Aviation Authorities based on the same or equivalent underlying MOPS are also acceptable. For ease of readability only the FAA TSO has been referenced in this document.

Phase of Flight	Equipment Requirements ¹	
	GNSS Stand Alone	GNSS In Multi Sensor System
Enroute & Terminal	TSO-C129a ² Class A	TSO-C129(AR) ² Class B or C
	TSO-C146 (AR)	TSO-C196 All Revision (AR) ²
		TSO-C145 (AR) Class 1, 2 or 3
Approaches <i>LNAV Minima</i>	TSO-C129a Class A1	TSO-C129(AR), Class, B1, B3, C1 or C3
	TSO-C146 (AR) Class 1, 2 or 3	TSO-C196 (AR)
		TSO-C145 (AR) Class 1, 2 or 3
Approaches <i>LNAV/VNAV Minima</i>	TSO-C146 (AR) Class 2 or 3	TSO-C129(AR) ³ , Class, B1, B3, C1 or C3
		TSO-C196 (AR) ³
		TSO-C145 (AR) Class 2 or 3
Approaches <i>LP⁴ or LPV Minima</i>	TSO-C146 (AR) Class 3 or 4	TSO-C145 (AR) Class 3 or 4
		TSO-C146 (AR) Class Delta 4

Note 1: The GNSS equipment installation on Canadian registered aircraft must be approved in accordance with the appropriate sections of the *Canadian Aviation Regulations* (CARs), Part V – Airworthiness, and installed for use in accordance with AC20-130A and/or AC20-138() as applicable. Equipment and installations approved by other Aviation Authorities (AAs) to equivalent requirements are also deemed acceptable for operations within Canada.

Note 2: TSO-C129(AR) and TSO-C196(AR) GNSS equipment are supplemental Navigation systems and use aircraft based augmentation; they have performance limitations that requires other positioning and navigation systems, appropriate to the operation, to be on-board the aircraft. Per AC20-138A, TSO-129(AR) defines different classes of equipment to support different equipment configurations. These classes are defined in paragraph (a)(2) of TSO-C129(AR). Additional guidance regarding the RNAV and RNP operations that TSO-C129(AR) and TSO-C196(AR) GNSS equipment may support is provided in AC20-138(). Further guidance is provided in the ICAO PBN Manual Doc 9613.

Note 3: Acceptable when integrated with a multi-sensor flight management systems (FMS) (TSO-C115b or later) with barometric vertical navigation (BARO VNAV) capability, certified in accordance with FAA AC 20-129 or equivalent.

Note 4: WAAS receivers certified prior to TSO-C145b and TSO-C146b, even if they have LPV capability, do not contain LP capability unless the receiver has been upgraded. Receivers capable of flying LP procedures must contain a statement in the Aircraft Flight Manual (AFM), AFM Supplement, or Approved Supplemental Flight Manual stating that the receiver has LP capability, as well as the capability for the other WAAS and GNSS approach procedure types.

4.3.2 Use of GNSS in Lieu of Ground-Based Aids (GNSS Substitution)

GNSS may be used in lieu of DME during departure/enroute/terminal/approach operations; it may be used in lieu of conventional (VOR and NDB) for departure/enroute/terminal operations provided the following conditions are met:

- an integrity alert is not displayed;
- fixes that are part of a terminal instrument procedure are named, charted and retrieved from a current navigation database; and
- when ATS requests a position based on a distance from a DME facility for separation purposes, reported GNSS distance from the same DME facility may be used by stating the distance in miles and the DME facility name (e.g. “30 miles from Sumspot VOR,” vice “30 DME from Sumspot VOR”).

GNSS may not be used in lieu of ground-based aids for:

- VOR and NDB final approach segment LNAV guidance on VOR- or NDB- instrument approach procedures unless the instrument approach procedure is part of the GNSS overlay approach program (see Table 4.3.2 for GNSS substitution examples); or
- LOC LNAV guidance (see Table 4.3.2 for GNSS substitution examples).

Table 4.3.2, GNSS Substitution Examples

Approach Type	Failed Item	GNSS Substitution Allowed
NDB RWY 08R	Aircraft ADF* or approach NDB	No
NDB/DME RWY 08R	Aircraft DME or approach DME	Yes
NDB/DME RWY 08R (GNSS)	Aircraft ADF* or approach NDB	Yes
VOR RWY 09	Aircraft VHF Navigation or approach VOR	No
VOR/DME RWY 09 (GNSS)	Aircraft VHF Navigation or approach VOR	Yes
ILS Y RWY 16	Aircraft ADF*/DME or missed approach NAVAID	Yes

*ADF = automatic direction finder

4.3.3 GNSS Anomaly Reports

GNSS Anomaly reports should be submitted using the report found on the NAV CANADA website here:

[<http://www.navcanada.ca/EN/products-and-services/Pages/Post-Flight-Reports.aspx>](http://www.navcanada.ca/EN/products-and-services/Pages/Post-Flight-Reports.aspx)

ENR 4.4 Name-Code Designators for Significant Points

For an alphabetical list of name-code designators for significant points in Canada, including the geographical coordinates and province information, refer to the current issue of the CFS, section C, PLANNING, “Intersections and reporting point coordinates”.

For the name-code designators for the intersections or fixes used in low level airways and fixed area navigation routes, refer to the [Designated Airspace Handbook](#) (TP 1820E), available in PDF on the Aeronautical Information Products section of the NAV CANADA website:

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For the ATS routes where the points are located, refer to the appropriate enroute low and high altitude charts, as well as the appropriate terminal area charts.

ENR 4.5 Aeronautical Ground Lights — Enroute

Aeronautical ground lights are found in *Canada Flight Supplement* under the aerodrome they serve or on VFR navigational charts.

ENR 5. NAVIGATION WARNINGS

ENR 5.1 Prohibited, Restricted and Danger Areas

For information on prohibited, restricted and danger areas, refer to the [Designated Airspace Handbook](#) (TP 1820E), Part 5, “Designation of Class F Airspace,” available in PDF on the Aeronautical Information Products section of the NAV CANADA website:

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ENR 5.2 Military Exercise and Training Areas and Air Defence Identification Zone (ADIZ)

For information on military training areas, regular military exercises and air defence identification zones (ADIZs), refer to the [Designated Airspace Handbook](#) (TP 1820E), Map 6, “Air Defence Identification Zone (ADIZ),” available in PDF on the Aeronautical Information Products section of the NAV CANADA website:

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ENR 5.3 Other Activities of a Dangerous Nature and Other Potential Hazards

5.3.1 Other Activities of a Dangerous Nature

No permanent activities of a dangerous nature take place in CDA outside of prohibited, restricted or danger areas. The temporary occurrence of an activity of a dangerous nature will be announced by a NOTAM.

5.3.2 Other Potential Hazards

There are no other permanent potential hazards in CDA outside of prohibited, restricted or danger areas. The temporary occurrence of a potential hazard will be announced by a NOTAM.

ENR 5.4 Air Navigation Obstacles

For information on obstacles affecting air navigation in Canada, see current editions of the following publications:

The appropriate current VFR navigation chart
Canada Flight Supplement or *Water Aerodrome Supplement*, Section C, “Planning”

ENR 5.5 Aerial Sporting and Recreational Activities

For information on aerial sporting and recreational activities, refer to current editions of the following publications:

[*Designated Airspace Handbook*](#) (TP 1820E), available in PDF on the Aeronautical Information Products section of the NAV CANADA website:

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The appropriate enroute low altitude, enroute high altitude or terminal area chart (see Figure 3.1, “Index to Low Altitude Charts,” and Figure 3.2, “Index to High Altitude Charts”)

The appropriate VFR navigation chart

5.5.1 Formation Flights

Formation flight is considered to be more than one aircraft that, by prior arrangement between each of the pilots involved within the formation, operates as a single aircraft with regard to navigation and ATC procedures. Separation between aircraft within the formation is the responsibility of the flight leader and the pilots of the other aircraft within the formation. This includes transition periods when aircraft within the formation are manoeuvring to attain separation from each other to effect individual control, and during join-up and breakaway.

IFR and VFR flight planning procedures for formation flights are essentially the same as for a single aircraft with the following exceptions:

- a single flight plan may be filed for all aircraft within the formation;
- the flight lead will file an arrival report and close the flight plan for the formation;
- the Canadian flight plan/itinerary form is to be completed as follows:
 - Item 7, AIRCRAFT IDENTIFICATION: indicate the formation call sign,
 - Item 9, NUMBER AND TYPE OF AIRCRAFT AND WAKE TURBULENCE CATEGORY: indicate the number of aircraft, followed by the type of aircraft designator or, in the case of formation flights comprising more than one type of aircraft, insert *ZZZZ*,
 - Item 10, the letter “W” is not to be used for formation flights, regardless of the reduced vertical separation minimum (RVSM) status of aircraft within the flight, and
 - Item 18, OTHER INFORMATION: if *ZZZZ* is included in Item 9, insert TYP/ followed by the number and type(s) of aircraft in the formation;
- if the formation is to be non-standard, i.e. not in accordance with the parameters listed in the *Transport Canada Aeronautical Information Manual* (TC AIM) (TP14371E) Section RAC, “Rules of the Air and Air Traffic Services” 12.13.3, the formation leader should insert the words “non standard” and should indicate the parameters to be used in the *OTHER INFORMATION* section of the Canadian flight plan/itinerary form.

ATC will clear a formation flight as if it is a single aircraft. Airspace will be protected based on the assumption that, unless otherwise indicated in the flight plan, the formation will conform to the standard formation flight criteria. It is the formation leader's responsibility to indicate in the flight plan and to coordinate with ATC if the formation will not operate in accordance with the following IFR and CVFR formation flight criteria:

- the formation leader will operate at the assigned altitude, and the other formation aircraft will be within 100 feet vertically of the altitude of the formation leader;
- the formation will occupy a maximum frontal width of 1 NM; and
- the formation will have a maximum longitudinal spacing of 1 NM between the first and the last aircraft.

The formation leader is responsible for separation between aircraft within the formation and for ensuring that all the formation aircraft remain within these parameters unless otherwise coordinated with ATC. Although IFR formation flights are expected to take off and land in formation, unforeseen conditions may preclude the formation from completing an IFR approach and landing. If it becomes necessary for a formation to break into individual elements or single aircraft, the formation leader should advise the controlling agency of the destination as soon as possible to allow ATC sufficient time to provide separation for each element or aircraft. In such instances, the formation leader will retain responsibility for separation between elements or aircraft until ATC separation has been achieved.

All formation flights will be considered as non RVSM certified flights, regardless of the RVSM certification status of the individual aircraft within the formation.

5.5.2 Photographic Survey Flights

CAR 602.34 – *Cruising Altitudes and Cruising Flight Levels*, exempts aircraft operated for the purpose of aerial survey or mapping from the cruising altitude for direction of flight requirement if certain conditions are met.

Photographic survey flights are exempt from the requirement to be RVSM certified to operate in RVSM airspace to conduct aerial survey or mapping operations. This exemption is not applicable for that portion of flight transiting to/from the area of operation.

Pilots intending to conduct aerial survey or mapping operations should refer to CAR 602.34 and obtain the publication, *Pilot Procedures Photographic Survey Flights* from:

NAV CANADA
Customer Service
77 Metcalfe Street
Ottawa, ON K1P 5L6

Tel.: 800-876-4693
Fax: 877-663-6656
E-mail: service@navcanada.ca

This publication describes flight requirements for pilots and operators conducting survey operations in Canadian airspace. It is published so that the ATC system can better accommodate the special demands and the unique operational requirements of aircraft on photographic survey missions.

ENR 5.6 Bird Migration and Areas with Sensitive Fauna

5.6.1 Wildlife Hazards

Trends indicate that there is a growing risk of collisions between wildlife and aircraft. This risk is due largely to corresponding increases in the populations of some hazardous species—such as deer, geese and gulls—and the numbers of aircraft operations across Canada.

All aviation stakeholders have a role to play in reducing the risks of wildlife strikes. Pilots can take three simple steps to help improve safety:

- Increase awareness of wildlife and the hazards they pose to aviation.
- Learn what risk-reduction and communication measures are in place at frequented airports.
- Become familiar with the bird/wildlife strike report form, and be sure to file a report in the event of any wildlife encounter.

This section provides information to help pilots gain a better appreciation of:

- measures airports must take to identify and control wildlife hazards, and to communicate with pilots about these hazards;
- bird/wildlife-strike reporting procedures; and
- migratory bird activity.

5.6.2 Airport Wildlife Management

In force since 16 May 2006, a new CAR recognizes that lands on and around airports often provide food and shelter for wildlife species that can be hazardous to air travel. Division III of CAR 302—*Airport Wildlife Planning and Management*, requires most Canadian certified airports to minimize risks, primarily by identifying and countering potentially hazardous species. Airports that are subject to the regulation must develop, implement and maintain plans for the management of these species.

The process of identifying wildlife hazards and measuring the risks they pose is called risk analysis. Under CAR 302, an airport operator must conduct a risk analysis as one of the first steps in creating an airport wildlife management plan. Pilots should be aware that these analyses must include consultations with representative samples of airport users, such as flight schools, airlines and pilots.

5.6.3 Communication of Wildlife Hazards

Provisions of CAR 302 also require airport operators to put in place effective communication and alerting procedures to quickly notify pilots of wildlife hazards.

Pilots should monitor ATIS and air-ground communications for information concerning wildlife hazards, particularly during spring and autumn migration periods when bird activity is at its peak. In unusual circumstances, a NOTAM may be used to identify these hazards.

Pilots who encounter wildlife on an airport are asked to immediately notify ATS, and take appropriate steps to minimize the risk associated with their flight.

Pilots who frequent Canadian certified airports are encouraged to ask about measures in place to ensure effective communication and to counter wildlife hazards.

5.6.4 Bird/Wildlife-Strike Reporting Procedures

To comply with CAR 302, airport wildlife management plans must be based on current wildlife-strike data, which is compiled by, and made available through, Transport Canada. Airports must report all bird/wildlife strikes to Transport Canada and keep records of these events; however, bird/wildlife strike reports can be filed by anyone, including airline personnel, ground crews and pilots.

Strike reporting is one of the most valuable contributions members of the aviation community can make in an effort to reduce wildlife risks. The data is vital to national and international airport wildlife management efforts, and one of the most important tools in tracking wildlife trends and determining hazards at locations across Canada.

Pilots are asked to report any knowledge of bird/wildlife strikes, no matter how inconsequential the event may seem. Even information about a near miss can help authorities learn more about the presence of potentially-hazardous species, and the nuances of encounters between aircraft and wildlife.

In cases of bird strikes, reports should include the species whenever possible. Species identification provides airport operators with important data that enables them to effectively focus risk mitigation efforts. If the species is unknown, but bird remains are available from the incident, pilots may consult with airport wildlife management personnel for help identifying the species. Airport personnel may also decide to submit the remains to the Smithsonian Institution, Division of Birds. Transport Canada maintains a formalized agreement with this organization for the purpose of species identification.

CAR 302 requires an airport operator to amend its wildlife management plan, and submit it to Transport Canada for review within 30 days of the amendment, if a turbine-powered aircraft:

- suffers damage as a result of a collision with wildlife other than a bird;
- collides with more than one bird; or
- ingests a bird through an engine.

This process of review and amendment helps ensure wildlife management plans are as current as possible, addressing continual fluctuations in the wildlife hazards at airports. The review-and-amendment process is also set in motion when a variation in the presence of wildlife hazards is observed in an airport's flight pattern or movement area. Pilots can help mitigate risk by reporting to Transport Canada any significant changes in the numbers or behaviour of hazardous wildlife at airports that are visited regularly.

5.6.4.1 Bird/wildlife strike report form

Hard copy forms (form number 51-0272) are available in bulk from the Transport Canada Order Desk:

<www.tc.gc.ca/transact>

Toll-free (North America only): 1-888-830-4911

Tel.: 613-991-4071

Fax: 613-991-2081

E-mail: mps@tc.gc.ca

To complete and submit a [bird/wildlife strike report online](#):

<www.tc.gc.ca>

Air

Air Transportation

Airports

Wildlife Control

Report a Bird/Wildlife Strike

Reports can also be made through a toll-free hotline: **1-888-282-BIRD (282-2473)**

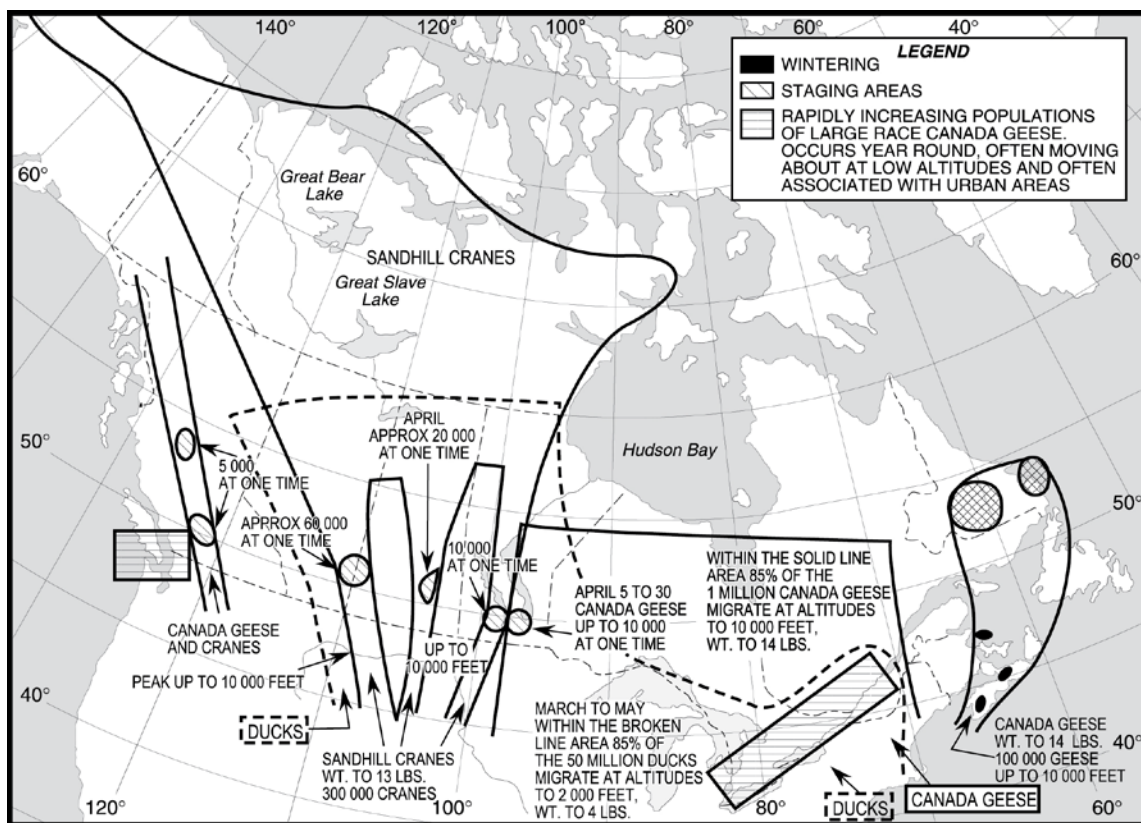


Figure 5.6.4-a: Spring Migration Routes – Cranes, Ducks and Canada Geese

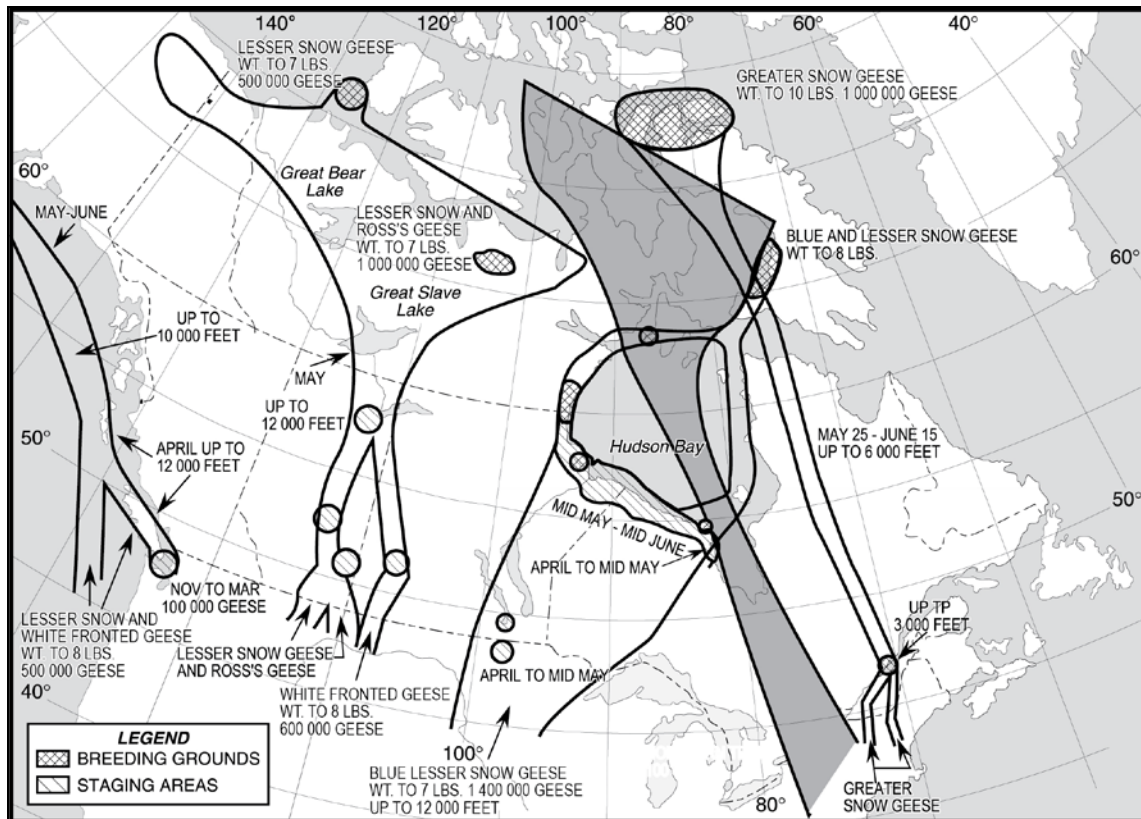


Figure 5.6.4-b: Spring Migration Routes – Other Geese

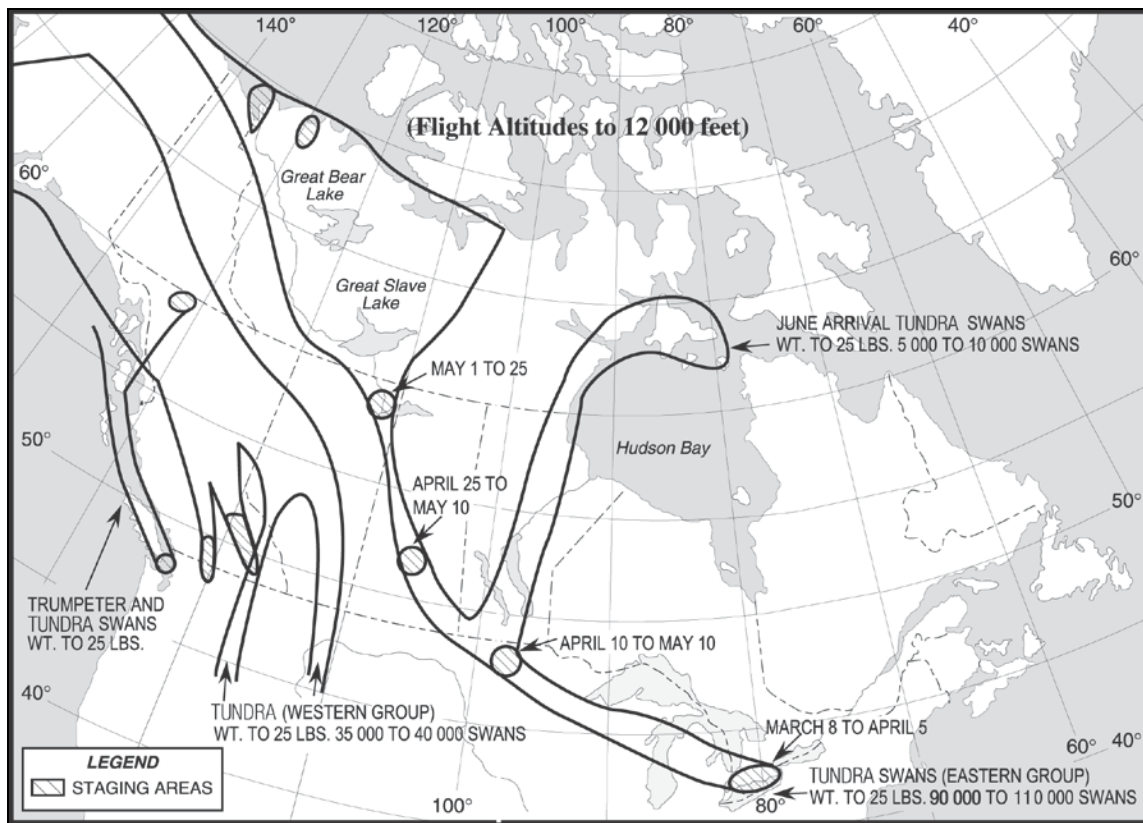


Figure 5.6.4–c: Spring Migration Routes – Swans (Flight Altitudes to 12 000 feet)

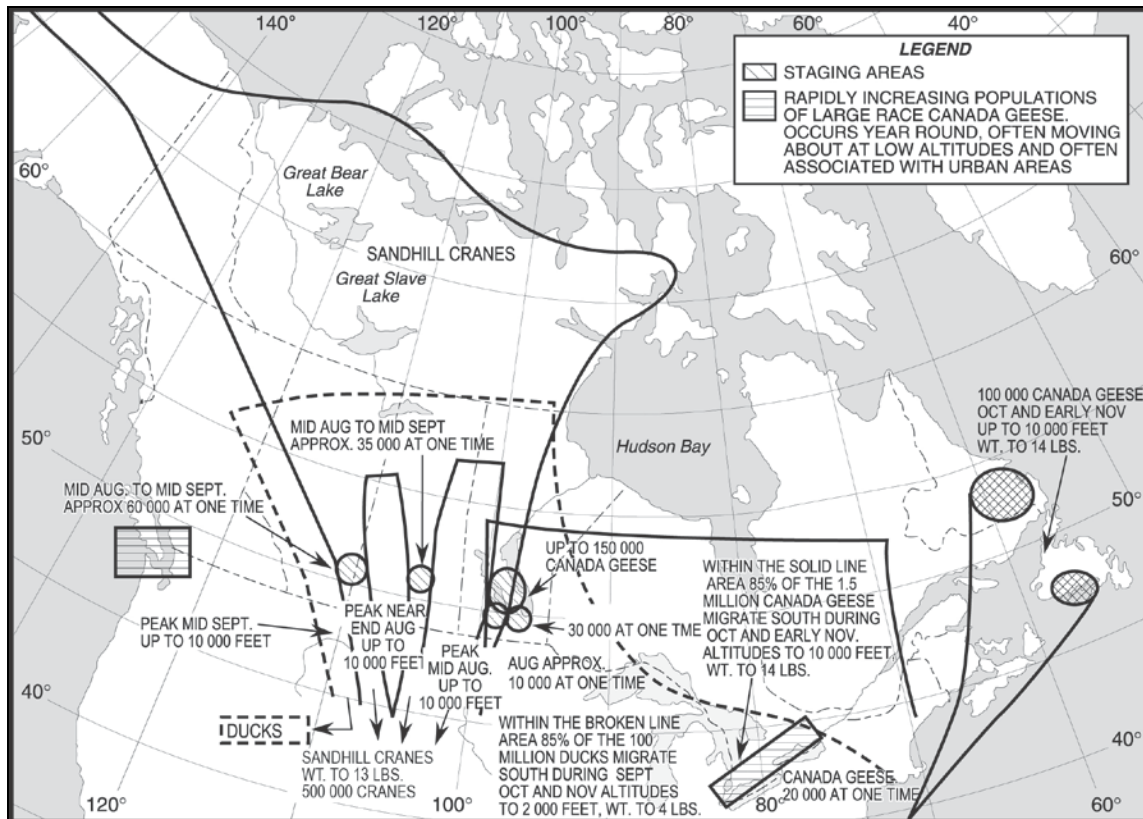


Figure 5.6.4–d: Autumn Migration Routes – Cranes, Ducks and Canada Geese)

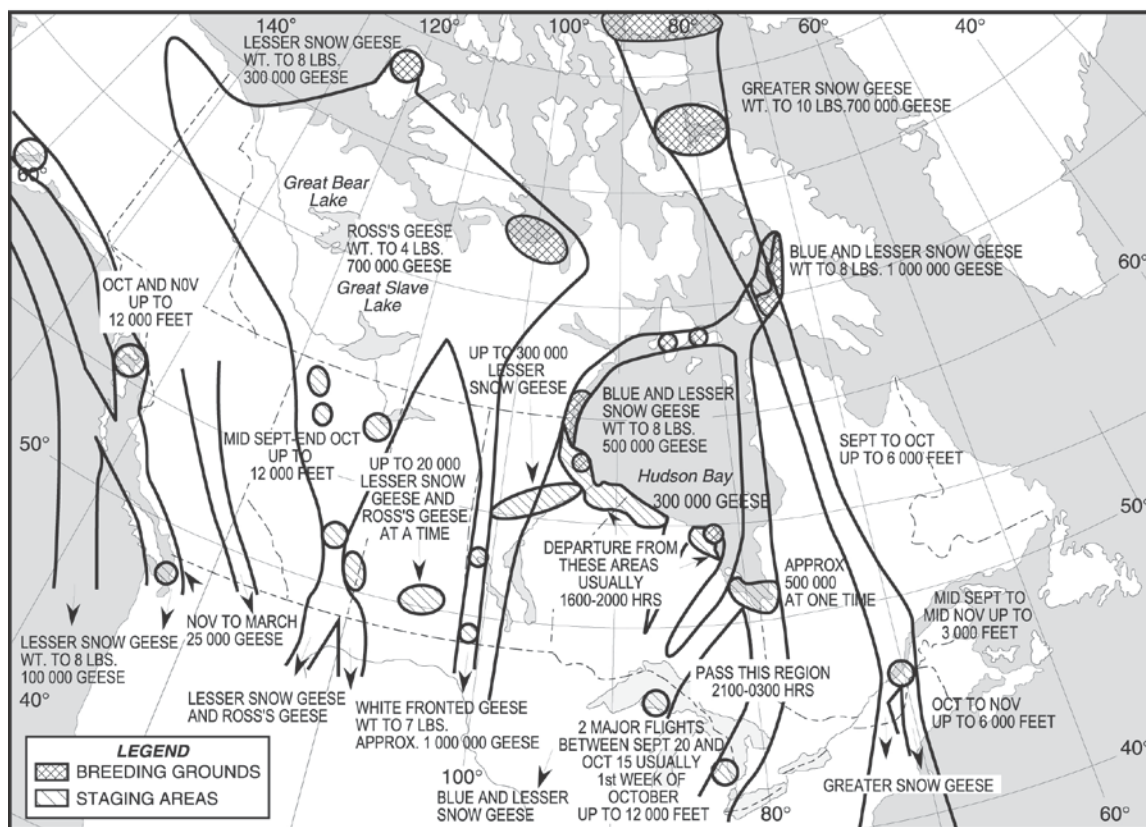


Figure 5.6.4–e: Autumn Migration Routes – Other Geese)

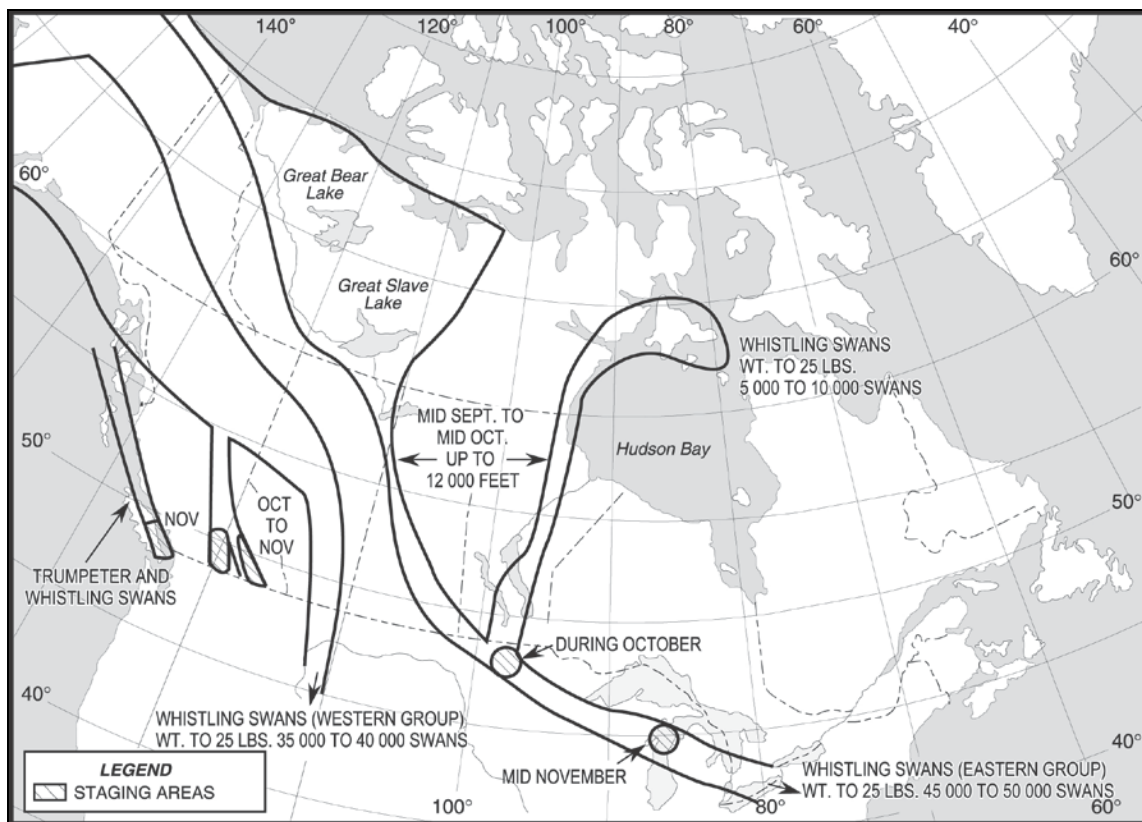


Figure 5.6.4–f : Autumn Migration Routes – Swans

5.6.5 Fur and Poultry Farms

Experience has shown that aviation noise caused by rotary wing and fixed wing aircraft flying at low altitudes can cause serious economic losses to the farming industry. The classes of livestock particularly sensitive are poultry (including ostriches and emus), because of the crowding syndrome and stampeding behaviour they exhibit when irritated and frightened, and foxes who, when excited, will eat or abandon their young. Avoid overflying these farms below 2 000 feet AGL.

Fur farms display watch towers or 20 foot high pylons painted chrome yellow and black, with a red flag flying from a low mast during the months of February, March, April and May, that should be avoided below 2,000 feet AGL.

Pilots are, therefore, warned that any locations so marked should be avoided and that during the months of February, March, April and May, special vigilance should be maintained.

5.6.6 Protection of Wildlife

It is desired to impress on all pilots the importance of wildlife conservation; to urge them to become familiar with the game laws in force in the various provinces; and to encourage them to co-operate with all game officers to see that violations of game laws do not occur.

The following is a list of addresses where provincial and territorial game officers may be contacted in Canada. To obtain information with regard to the preservation of wildlife within the various provinces, please contact a game officer at one of the locations shown below. Information pertaining to migratory bird regulations may be obtained directly from the Director General, Canadian Wildlife Service, Environment Canada, Ottawa ON K1A 0H3.

Fish and Wildlife Division Alberta Environment and Sustainable Resource Development Main Floor, Great West Life Building 9920 108 Street Edmonton AB T5K 2M4 Tel.: 780-944-0313 Fax: 780-427-4407	Fish and Wildlife Branch Dept. of Natural Resources Province of New Brunswick P.O. Box 6000 Fredericton NB E3B 5H1 Tel.: 506-453-3826 Fax: 506-453-6699
Wildlife Division Environment and Natural Resources Government of the Northwest Territories P.O. Box 1320 Yellowknife NT X1A 2L9 Tel.: 867-920-8046 Fax: 867-873-0293	Fish and Wildlife Branch Ministry of Forests, Lands and Natural Resources Operations Province of British Columbia P.O. Box 9391, STN PROV GOVT Victoria BC V8W 9M8 Tel.: 250-387-9771 Fax: 250-387-0239
Wildlife Branch Conservation and Water Stewardship Province of Manitoba P.O. Box 24 200 Saulteaux Crescent Winnipeg MB R3J 3W3 Tel.: 204-945-7775 Fax: 204-945-3077	Wildlife Division Department of Environment and Conservation Province of Newfoundland and Labrador 117 Riverside Drive Corner Brook NL A2H 7S1 Tel.: 709-637-2025 Fax: 709-637-2032

Wildlife Division Department of Natural Resources Province of Nova Scotia 136 Exhibition Street Kentville NS B4N 4E5 Tel.: 902-679-6091 Fax: 902-679-6176	Fish and Wildlife Ministry of Natural Resources Province of Ontario 300 Water Street Peterborough ON K9J 8M5 Tel.: 705-755-2000 Fax: 705-755-1677
Forests, Fish and Wildlife Division Department of Agriculture and Forestry Province of Prince Edward Island P.O. Box 2000 183 Upton Road Charlottetown PE C1A 7N8 Tel: 902-368-4700 Fax: 902-368-4713	Société de la faune et des parcs du Québec Ressources naturelles Province de Québec 880, chemin Sainte-Foy, RC-80 Québec QC G1S 4X4 Tel.: 418-627-8688 Fax: 418-646-4223
Customer Service 880, chemin Sainte-Foy, RC 120-C Québec QC G1S 4X4 Tel.: 418-627-8600 Fax: 418-644-6513 Toll free: 1-866-248-6936 E-mail: services.clientele@mrnf.gouv.qc.ca	Fish and Wildlife Branch Ministry of Natural Resources Government of Saskatchewan 3211 Albert Street Regina SK S4S 5W6 Tel.: 306-787-7196 Fax: 306-787-9544
Fish and Wildlife Branch Department of Environment Government of Yukon P.O. Box 2703 10 Burns Road Whitehorse YT Y1A 2C6 Tel.: 877-667-5652 Toll free (in Yukon): 1-800-661-0408, ext. 5652 Fax: 867-393-7197	Wildlife Management Department of Environment Government of Nunavut Igloolik NU X0A 0L0 Tel.: 867-934-2183 Fax: 867-934-2190

Pilots should be aware that flying low over herds of wild animals such as reindeer, caribou, moose or muskoxen may result in reducing the animal population. Accidents resulting in broken bones may increase. Exhausted and disorganized animals are more susceptible to be attacked by wolves; feeding is interrupted; and normal herd movement and reproductive functions may be seriously disrupted.

Serious damage can also be done to migratory birds due to low flying aircraft. The migratory bird regulations prohibit the killing of game birds through the use of an aircraft. Geese particularly are in great fear of aircraft; and their movements may be seriously disorganized by such interference. These geese are a valuable asset to Canada. As several species are nearing extinction, it is felt that every effort should be made to preserve them.

In the interest of conserving wildlife, pilots must not fly at an altitude less than 2,000 feet AGL unless otherwise indicated, when in the vicinity of herds of wild animals or above wildlife refuges/bird sanctuaries depicted on affected aeronautical charts.

The landing or takeoff of aircraft in areas designated as bird sanctuaries may require a permit. Additional information can be found on the Environment and Climate Change Canada website here:
[<https://www.ec.gc.ca/>](https://www.ec.gc.ca/).

5.6.7 National, Provincial and Municipal Parks, Reserves and Refuges

To preserve the natural environment of parks, reserves and refuges and to minimize the disturbance to the natural habitat, overflights should not be conducted below 2,000 feet AGL. To assist pilots in observing this, boundaries are depicted on the affected charts.

The landing or takeoff of aircraft in the national parks and national park reserves may take place at prescribed locations. Contact information for each location can be found on the Parks Canada website here: <<http://www.pc.gc.ca>>.

Additional details can be found in the *National Parks Aircraft Access Regulations* available here: <<http://laws-lois.justice.gc.ca/eng/regulations/SOR-97-150/page-1.html>>.

ENR 6. ENROUTE CHARTS

Figure 3.1, “Index to Low Altitude Charts,” and Figure 3.2, “Index to High Altitude Charts,” are indices for Canadian enroute charts. For information about enroute charts, refer to [Aeronautical Charts – Enroute Charts](#) on NAV CANADA’s website:

<www.navcanada.ca>
Products & Services
Aeronautical Information Products
Aeronautical Charts
Enroute Charts

For further information about enroute charts, contact NAV CANADA, Aeronautical Information Services (see GEN 3.1.1, “Responsible Service”).