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FOREWORD

GENERAL

This publication is a Military Flight Information Publication published and distributed every second publication cycle (112 days) in phase with the ICAO Aeronautical Information Regulation and Control (AIRAC) schedule. It provides a ready reference to planning and procedural information concerning IFR operations.

NEW OR CHANGED INFORMATION

A vertical line alongside an entry indicates new or revised information since the previous issue of the manual. The Table of Contents and Alphabetical Index will be similarly marked.

SPECIAL NOTICES

This space to be used to direct the attention of users to new or amended procedures, or deleted information of significance to aircraft operations.

NOTE:	This document has under gone significant revisions since the last printing to all chapters with the exception of Chapters 2 and 10. Please update yourself with the changes.

OPERATIONAL FEEDBACK

Nav Canada (Safety Management and Human Factors) operates an Operational Feedback Loop available to all DND and civilian agencies for operational safety related feedback to Nav Canada and it's units. The address is operationalsafety@navcanada.ca. Emails will be forwarded to the applicable Nav Canada unit.

CORRECTIONS/DISTRIBUTION

Corrections, suggested amendments, or changes to distribution should be forwarded to:

1 Canadian Air Division Ottawa
Air Traffic Management Coord 2
c/o NAV CANADA
4th Floor, WS 401
77 Metcalfe St
Ottawa, ON, K1P 5L6
Tel: (613) 996-1418
FAX: (613) 995-5133
+ATM Coord@1 Cdn Air Div HQ Det Ottawa@Ottawa-Hull

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CHAPTER 1

AERONAUTICAL INFORMATION AND AIR TRAFFIC SERVICES

SECTION 1 ORGANIZATION OF INFORMATION

101. GENERAL

1. Aeronautical Information can be divided into two broad categories. Firstly, pre-flight information of a reference nature, not normally required in the aircraft during flight, and not subject to frequent revision. For example, regulatory, administrative and planning information. Secondly, information which is required in-flight and is usually subject to frequent revision. For example, information concerning airport, navigation and communications facilities.

2. Within these two broad categories aeronautical information can be subdivided into information primarily of interest to pilots operating almost exclusively under VFR conditions, and information primarily of interest to pilots operating under IFR conditions.

3. In accord with the above, the concept has been adopted that aeronautical information should be made available in four packages or groups of flight information products, as outlined below:

   a. REFERENCE INFORMATION

      (1) GENERAL GROUP

      CF Flying Orders (DND)
      Designated Airspace Handbook
      RCAF Flight Operations Manual
      1 Cdn Air Div/Local Flying Orders

      (2) SPECIFIC GROUP

      Flight Planning and Procedures — Canada and North Atlantic (GPH204A)

   b. IN-FLIGHT INFORMATION

      (1) VFR GROUP
      Visual Navigation Aeronautical Charts
      (Scales 1:500,000 and 1:1,000,000)
      VFR Terminal Area Charts
      (Scale 1:250,000, selected Terminals)
      Canada Flight Supplement (GPH205)
      (related land aerodrome, facilities and enroute information)
      Water Aerodrome Supplement
      (Water aerodrome and facilities information)

      (2) IFR GROUP
      Radio Navigation Charts
      Enroute Low Altitude (GPH206) and Enroute High Altitude (GPH207)
      Instrument Approach Procedures
      Terminal Low and High Altitude Instrument Approach Procedures (GPH200),
      Canada Flight Supplement (GPH205) and Canadian Forces Flight Supplement (GPH205S) (related aerodrome,
      facilities and enroute information)

102. DISSEMINATION OF AERONAUTICAL INFORMATION

Aeronautical information is disseminated by four methods. The first and primary method is through the various series of aeronautical charts and chart supplements. The second is through the NOTAM system whereby information is distributed to certain points, usually airports and air radio stations, by teletype. The third is by Voice Advisory using ground/air communications facilities such as ATIS, tower, control units or the advisory service

provided by Flight Service Stations. The fourth method is through AIP Supplement, Information Circulars and Aviation Notices distributed through the public mail. These four systems have been designed to complement and supplement each other. For military pilots the information in this last category is examined and disseminated as necessary.

103. CHARTS AND PUBLICATIONS

The aeronautical charts and associated flight information publications, Canadian Forces Flight Supplement (GPH205S) Canada Flight Supplement (GPH205), together with GPH200 are the primary means of providing flight information to the pilot.

104. NOTAM

See Chapter 4 Section 6 Article 455 for detailed explanation of the NOTAM system.

105. AIP SUPPLEMENT, AIC'S AND AVIATION NOTICES

The AIP Supplement, Aeronautical Information Circulars and Aviation Notices give advance notice of changes to procedures and regulations.

The AIP Supplement includes temporary operational changes of long duration (three months or longer), as well as information of short duration that contains extensive text and/or graphics.

Aeronautical information circulars (AICs) provide advance notification of major changes to legislation, regulations, procedures or purely administrative matters where the text is not part of the Transport Canada Aeronautical Information Manual (TCAIM) or AIP Canada (ICAO).

An AIC shall be issued whenever it is desirable to promulgate:

a. a long-term forecast of any major change in legislation, regulations, procedures or facilities;

b. information of a purely explanatory or advisory nature liable to affect flight safety;

c. information or notification of an explanatory or advisory nature concerning technical, legislative or purely administrative matters.

106. AERONAUTICAL INFORMATION PRODUCTS

The various aeronautical information products have been designed to satisfy specific uses within the framework discussed above. An aeronautical information product intended for one purpose should only be used for its intended purpose. Since the publications in the reference category have titles that are self-evident, description of those in the in-flight IFR category only is provided below.

107. ENROUTE PRODUCTS

1. Low Altitude — The Enroute Low Altitude, Canada and North Atlantic (GPH206) consisting of 10 charts (5 sheets back to back) are intended for use up to but not including 18,000 feet ASL within Canadian Domestic Airspace and that airspace over international waters and foreign territory in which Canada accepts responsibility for the provision of Air Traffic Control services.

2. High Altitude — The Radio Navigation Charts Enroute High Altitude Canada (GPH207) consisting of 6 charts (3 sheets printed back to back) are intended for use at 18,000 feet ASL and above within Canadian Domestic Airspace and that airspace over international waters and foreign territory in which Canada accepts responsibility for the provision of Air Traffic Control services.

108. TERMINAL PRODUCTS

1. Terminal Area Charts — Nineteen Terminal Area Charts are produced on a single sheet back to back. These charts are for use up to but not including 18,000 feet ASL within Canadian Domestic Airspace and that airspace over international waters and foreign territory in which Canada accepts responsibility for the

provision of Air Traffic Control services. Charts of the Azores, Bermuda and Iceland are included for military use.

2. Low and High Altitude Instrument Approach Procedures — Noise Abatement procedures, Standard Instrument Departure procedures, low altitude Instrument Approach procedures, and high altitude Instrument Approach procedures are published in GPH200 (5 volumes. — 1. British Columbia and Northern Canada; 2. Alberta, Saskatchewan and Manitoba; 3. Ontario; 4. Quebec; 5. Atlantic).

109. CANADA FLIGHT SUPPLEMENT AND CANADIAN FORCES FLIGHT SUPPLEMENT

The Canada Flight Supplement is intended for use in conjunction with the above charts and publications. It contains an Aerodromes/Facilities Directory as well as supplementary enroute information not depicted on charts.

110. REVISION CYCLES

The Enroute Charts, Terminal Area Charts, Canada Flight Supplement (GPH205), Canadian Forces Flight Supplement (GPH205S) and GPH200 are revised and reissued every 56 days on dates that are consistent with the ICAO Aeronautical Information Regulation and Control (AIRAC) system.

111. PROCUREMENT OF FOREIGN AERONAUTICAL INFORMATION PRODUCTS

Worldwide coverage of FLIPs produced by the Air Standardization Coordinating Committee (ASCC) nations can be provided in support of stated operational requirements. A complete listing of available FLIPs and procurement procedures may be obtained from D GEO INT / DND AIS via email at: ASO@forces.gc.ca.

112. DIFFERENCES WITH ICAO STANDARDS, RECOMMENDED PRACTICES AND PROCEDURES

Differences with ICAO Standards and Recommended Practices are listed in the appropriate ICAO Annexes. A summary of these differences can be accessed by referring to art 1.7 of the NAV CANADA "AIP CANADA (ICAO) Aeronautical Information Publication" (Website: http://www.navcanada.ca/NavCanada.asp). However, differences with ICAO Procedures are listed in the A-GA-148-001/AG-000 - Manual of Instrument Flying (Chap 38) and/or TC AIM. In addition, Canada does not use ICAO's Procedures for Air Navigation Services-Aircraft Operations (PANS OPS). Instead, Canada uses TP308/GPH209, Criteria for the Development of Instrument Procedures, which is a document developed and produced jointly by DND and Transport Canada, Aerodromes and Air Navigation.

SECTION 2 AIR TRAFFIC SERVICES

113. GENERAL

1. The following air traffic control and information services are provided by Nav Canada and DND.

   a. Airport Control Service is provided by airport control towers to aircraft and vehicles on the manoeuvring area of an airport and to aircraft operating in the vicinity of an airport.

   b. Area Control Service is provided by ACCs to IFR and controlled VFR (CVFR) flights operating within specified control areas.

   c. Terminal Control Service is provided by IFR units (ACCs, TCUs or MTCUs) to IFR and CVFR flights operating within specified control areas.

   d. Terminal Radar Service is additional service provided by IFR units to VFR aircraft operating within Class C airspace.

   e. Alerting Service notifies appropriate organizations of aircraft requiring search and rescue services, or alerts crash equipment, ambulances, doctors and any other safety services.

   f. Airspace Reservation Service includes the services of the Altitude Reservation Service and ACCs in providing reserved airspace for specified air operations in controlled airspace, and in providing information concerning these reservations and military activity areas in controlled and uncontrolled airspace.

g. Aircraft Movement Information Service is provided by ACCs for the collection, processing and dissemination of aircraft movement information for use by air defence units relative to flights operating into or within the Canadian ADIZ.

h. Flight Information Service is provided by ATC units to assist pilots by supplying information concerning known hazardous flight conditions. This information will include data concerning unfavourable flight conditions and other known hazards, which may not have been available to the pilot prior to take-off or which may have developed along the route of flight.

114. VOICE ADVISORY

1. The Voice Advisory system alerts pilots to frequently revised information of a local nature. This information may also require dissemination through the other systems. This flight information service is provided by air traffic control units and Flight Service Stations to assist pilots by supplying information concerning known hazardous flight conditions. This information will include data concerning unfavourable flight conditions and other known hazards, which may not have been available to the pilot prior to take-off or which may have developed along the route of flight.

2. The air traffic control service has been established primarily for the prevention of collisions and the expediting of traffic. The provision of such service will take precedence over the provision of flight information service.

3. Flight information will be made available, whenever practicable, to any aircraft in communication with an air traffic control unit or Flight Service Stations, prior to take-off or when in flight except where such service is provided by the aircraft operator. Many factors (such as volume of traffic, controller workload, communications frequency congestion and limitations of radar equipment) may prevent a controller from providing this service.

4. VFR flights will be provided with information concerning:

   a. Severe weather conditions along the proposed route of flight;

   b. Changes in the serviceability of navigation aids;

   c. Conditions of airports and associated facilities;

   d. Other items considered pertinent to the safety of flight.

5. IFR flights will be provided with information concerning:

   a. Severe weather conditions;

   b. Weather conditions reported or forecast at destination or alternate aerodrome;

   c. Changes in the serviceability of navigation aids;

   d. Condition of airports and associated facilities;

   e. Other items considered pertinent to the safety of flight.

6. Flight information messages are intended as information only. If a specific action is suggested, the message will be prefixed by the term “ATC SUGGESTS...” or “SUGGEST YOU...” and the pilot will be informed of the purpose of the suggested action. The pilot is responsible for making the final decision concerning any suggestion.

7. Surveillance radar equipment is frequently used in the provision of information concerning severe weather conditions, chaff drops, bird activity and possible traffic conflictions. Due to limitations inherent in all radar systems, aircraft, weather disturbances, etc., cannot be detected in all cases.

8. Whenever practicable, ATC will provide flights with severe weather information pertinent to the area concerned. Pilots may assist ATC by providing pilot reports of severe weather conditions they encounter. ATC will endeavour to suggest alternate routes available in order to avoid areas experiencing severe weather.

115. FLIGHT INFORMATION SERVICE

1. Nav Canada and DND operate facilities which provide flight information services to enhance flight safety and efficiency. These facilities include:

   a. Flight Service Stations (FSS);

   b. Remote Flight Service Stations (RFSS);

   c. Remote Communication Outlets (RCO);

   d. Dial-up Remote Communication Outlet (DRCO); and

   e. Military Flight Advisory Unit (MFAU).

116. FLIGHT ADVISORY AND INFORMATION SERVICE

1. The following flight advisory and information services are provided by FICs and FSSs

2. A FIC provides:

   a. Pilot briefing service — the provision of, or consultation on, meteorological and aeronautical information to assist pilots in pre-flight planning for the safe and efficient conduct of flight. The flight service specialist adapts meteorological information, including satellite and radar imagery, to fit the needs of flight crew members and operations personnel, and provides consultation and advice on special weather problems. Flight service specialists accept flight plan information during a briefing.

   b. Flight Information Service (FISE) — the exchange on the FISE frequency of information pertinent to the en-route phase of flight. Air traffic information is not provided. Upon request from an aircraft, a FIC provides:

      1.meteorological information: SIGMET, AIRMET, PIREP, aviation routine weather report (METAR), aviation selected special weather report (SPECI), aerodrome forecast (TAF), altimeter setting, weather radar, lightning information and briefing update;

      2.aeronautical information: NOTAM, RSC, CRFI, MANOT and other information of interest for flight safety; and

      3.relay of communications with ATC: IFR clearance and SVFR authorization

      En-route aircraft may submit to a FIC: PIREPs, IFR and VFR position reports (including arrival and departure times), revised flight plan or flight itinerary information and other reports, such as vital intelligence sightings (CIRVIS), fireball (meteorite) observations or pollution reports. Fuel dumping information will be submitted to ATC for coordination with the appropriate ACC and for aeronautical broadcast needs.

   c. Aeronautical broadcast service — the broadcast on the FISE frequency, and on 126.7 MHz, of SIGMET, urgent PIREP and information concerning fuel dumping operations.

   d. VFR flight plan alerting service — the notification of RCCs and provision of communications searches when an aircraft on a VFR flight plan or flight itinerary becomes overdue and needs SAR aid

3. An FSS provides

   a. Airport Advisory Service (AAS) — the provision of information pertinent to the arrival and departure phases of flight at uncontrolled aerodromes and for transit through an MF area. AAS is provided on the MF and is normally in conjunction with Vehicle Control Service (VCS)

   b. The elements of information listed below are provided, if appropriate, by the flight service specialist during initial aerodrome advisory communications with an aircraft

      1. active or preferred runway

2. wind direction and speed

3. air traffic that warrants attention

4. vehicle traffic

5. wake turbulence cautionary

6. aerodrome conditions

7. weather conditions; and

8. additional information of interest for the safety of flight

c. The flight service specialist updates this information, when appropriate, after the initial advisory. Pilots are encouraged to indicate in initial transmissions to the FSS that information from the ATIS or voice generator module (VGM) broadcast has been obtained, or use the phrase "HAVE NUMBERS" if runway, wind and altimeter information from the previous aerodrome advisory have been received, so that the flight service specialist does not repeat the information.

Mandatory reports by aircraft on the MF are critical for the FSS to be able to provide effective air traffic information. At certain FSS locations, air traffic information may also be based on radar display. A pilot remains responsible for avoidance of traffic in Class E airspace.

Communications regarding TCAS events and displayed information should be limited to that required to inform the flight service specialist that the aircraft is responding to an RA. Discretion should be used in using the TCAS traffic display to ask questions regarding traffic in the vicinity of an aircraft. Aircraft shown on a TCAS display may not match the traffic information provided by the flight service specialist.

NOTAM, RSC and CRFI are included in advisories for a period of 12 hr for domestic traffic, and 24 hr for international traffic, after dissemination by means of telecommunication. Aerodrome conditions published prior to these time limits should have been received in the pilot briefing or can be obtained on request.

Aerodrome lighting is operated by the FSS, unless otherwise indicated in the CFS. The flight service specialist relays ATC clearances, SVFR authorizations, and routinely informs the ACC of all IFR arrival times. The specialist also relays a VFR arrival report to a FIC upon request from an aircraft.

Pilots should be aware that a flight service specialist will alert appropriate agencies for any aircraft that has received a landing advisory for an aerodrome that lies within an MF area and within radio communication range, if it fails to arrive within 5 min of its latest ETA, and communication cannot be re-established with the aircraft.

d. Vehicle Control Service (VCS) — the provision, at locations where AAS is provided, of instructions to control the movements of vehicle, equipment and pedestrians on manoeuvring areas of uncontrolled aerodromes. Flight service specialists will normally instruct vehicle traffic to leave the intended runway at least 5 min prior to the estimated time of landing or before a departing aircraft enters the manoeuvring area. The specialist will coordinate with the pilot prior to authorizing traffic to operate on the intended runway within less than 5 min of the estimated time of landing or the time an aircraft is ready for takeoff.

e. VHF Direction Finding (VDF) service — the provision of directional assistance to VFR aircraft. This service includes provision of homing, fix, track-out, and time, distance and ground speed estimates, but is not intended as a substitute for normal VFR navigation.

4. FICs and FSSs may provide

a. Remote Aerodrome Advisory Service (RAAS) — the provision, via RCO, of information pertinent to the arrival and departure phases of flight and for transit through an MF area.

RAAS consists in the issuance of the same type of information as in AAS, except that it is provided from a remote location. It is emphasized that the flight service specialist cannot observe the runways, taxiways, airspace or weather conditions in the vicinity of the aerodrome. Wind, altimeter and other weather information is usually extracted from the latest METAR or SPECI, and may not always be as representative of actual conditions as in Airport Advisory Service (AAS).

b. Vehicle Advisory Service (VAS) — the provision, via RCO, of information and advisories concerning the movements of vehicles, equipment and pedestrians on manoeuvring areas at designated uncontrolled aerodromes. VAS is provided at locations where RAAS is also provided. The flight service specialist will request vehicle traffic to leave the intended runway at least 5 min prior to the estimated time of landing, but cannot ascertain visually if the traffic has actually vacated the runway.

c. Alerting service — the notification of appropriate organizations regarding aircraft in need of SAR services or alerts of crash equipment, ambulances, doctors and any other safety services. Alerting of a responsible authority, if experiencing unlawful interference (hijack), bomb threat or inability to communicate in the clear, is also included in this service.

d. Emergency assistance service — the provision of aid to a pilot when in an emergency, or potential emergency situation, such as being lost, encountering adverse weather conditions or experiencing aircraft-related emergencies or equipment failure. At some locations, emergency navigational assistance is provided to a pilot who is lost or experiencing IMC, through the use of VDF equipment or by transferring the pilot to ATC for radar service.

e. NOTAM information service — the collection and dissemination of NOTAM, RSC and CRFI information by the flight service specialist. A pilot may report to a FIC or an FSS any hazards to the air navigation system that may need NOTAM distribution. The flight service specialist will distribute the information if it meets the criteria established in the Canadian NOTAM Procedures Manual.

f. Weather observation service — the observation, recording and dissemination of surface weather information for aviation purposes.

5. International Flight Service Station (IFSS)

An aeronautical station that provides a communications service for international air operators. Gander is the only IFSS in Canada.

117. REMOTE COMMUNICATIONS OUTLET (RCO) AND DIAL-UP REMOTE COMMUNICATIONS OUTLET (DRCO)

1. RCOs are remote VHF transmitters/receivers established where difficult communications prevail or where an extended communications capability is necessary in the interest of safety. A RCO is primarily used to provide a remote enroute flight information service, however, it may also be used to:

a. accept IFR position reports and relay ATC clearances;

b. pass company messages on behalf of air carriers subscribing to a paid service;

c. provide VHF service to supplement the international HF networks; and

d. provide a limited airport advisory service at airports where airport traffic is minimal.

2. Routine enroute information provided through the RCO includes:

a. the altimeter setting for the station at or nearest the reporting point, and the station at or nearest the next reporting point;

b. current weather under adverse weather conditions, SIGMETs, PIREPs, hourly reports, and forecasts;

c. NOTAM pertinent to the route;

d. MANOT (missing aircraft notice); and

e. other information considered useful for the safe and efficient conduct of flight.

3. Dial-up Remote Communications Outlet (DRCO) is a standard RCO which has had a dial-up unit installed to connect the pilot with an ATS unit (e.g., an FSS) via a commercial telephone line. In this manner, the line is "opened" only after the communication has been initiated by the pilot or by ATS. The radio range of the RCO is unaffected by the conversion. DRCO operation is detailed in the GPH205 section A.

4. Remote Communications Outlet (RCO) Call Signs

a. Flight Information Service En Route (FISE)

On initial contact with an FSS through an RCO to obtain FISE, pilots should state the name of the FSS controlling the RCO and the location of the RCO being used. This procedure will help FSS specialists respond on the correct frequency.

Example: **HALIFAX RADIO**, Cherokee, GOLF QUEBEC ECHO QUEBEC, **via the FREDERICTON RCO**, approximately 40 miles northeast of Fredericton, VFR flight plan to Charlottetown, requesting the latest weather for Charlottetown.

In the example, the RCO for FISE is operated by Halifax FSS, which has several common RCO frequencies. The pilot's use of the RCO location in the initial call enables the FSS specialist to identify which frequency to use when responding. The FSS specialist will include his/her station location on the callback to the pilots.

Example: GOLF QUEBEC ECHO QUEBEC – **HALIFAX RADIO** (Charlottetown weather at 1900Z is ...)

b. Remote Aerodrome Advisory Service (RAAS)

On initial contact with an FSS through an RCO to obtain RAAS, pilots should state the name of the FSS controlling the RCO and the location of the RCO being used. This procedure will help FSS specialists respond on the correct frequency.

Example: **WINNIPEG RADIO**, Cherokee, GOLF QUEBEC ECHO QUEBEC, **via the FLIN FLON RCO**, 20 miles east, VFR flight plan from Thompson at 4,500, inbound landing, requesting airport advisory.

In this example, Winnipeg FSS is providing RAAS. The controlling FSS is not located at Flin Flon but is directly managing airport information, ground vehicle activity, and reported known traffic. The FSS specialist will acknowledge with his/her station indicator. With the pilot stating the RCO name in the broadcast to the FSS, other pilots in the area who may be operating outside the zone but are maintaining a listening watch will be able to identify potential traffic conflicts.

Example: GOLF QUEBEC ECHO QUEBEC – **WINNIPEG RADIO** (RAAS information...

118. MILITARY FLIGHT ADVISORY UNIT (MFAU)

MFAUs are established to facilitate the safe, orderly, and expeditious movement of aerodrome traffic at CF aerodromes when VFR control is not warranted. There are similarities between an MFAU and a FSS; however, MFAUs provide both positive ground control and flight advisory service. In some cases Precision Approach Radar (PAR) control services may also be provided.

In addition to positive ground control and flight advisory service, MFAUs provide enroute flight information, field condition reports, flight planning, alerting service, navigation assistance, NOTAMs, PIREPs and weather reports. An MFAU will accept, coordinate and relay VFR and IFR position reports and ATC clearances. Outside of published hours of operation the aerodrome becomes uncontrolled, and the airspace classification may change. During published hours of operation, MFAU service is available by calling the appropriate station followed by "Advisory", "Ground", or "Radar", as appropriate (e.g. "Shearwater Advisory").

Because all manoeuvring surfaces on the aerodrome are positively controlled from a ground control perspective, pilots must advise the Flight Advisor (FA) in a timely manner of their intention to utilize a particular surface in order to provide for the deconfliction of any ground traffic. Operating restrictions may be imposed by the MFAU based upon conflicting traffic and aerodrome conditions.

If a Flight Advisor becomes aware of a potentially unsafe situation, he/she will immediately alert the pilot(s) of the situation. This does not relieve the pilot of the responsibilities described above and in higher orders.

GPH204A, Article 523 through Article 526 and GPH205 should be referred to for specific operating procedures. Wing Flying Orders and local procedures should also be consulted for specific operating procedures.

119. ARCTIC RADIO

1. Pilots operating in the vicinity of the Air Defence Identification Zone (ADIZ) should be aware of the services available from Arctic Radio on frequencies 126.7, 364.2, 121.5, 243.0 MHz and HF 2971, 4675, 8891, 11279 kHz. These services are similar to those offered by a FSS through a Remote Communication Outlet (RCO) and include the following:

    a. En Route Flight Information Service;

    b. Flight Plan Service;

    c. Radar Position Information Service (latitude and longitude, bearing and distance, altitude and groundspeed);

    d. Aviation Weather Information Service (AWBS);

    e. Aeronautical Broadcast Service;

    f. Navigation Assistance Service;

    g. Pilot Weather Reporting Service (PIREP);

    h. Fixed Telecommunication Service;

    i. VFR Alerting Service;

    j. NOTAM Service;

    k. International Air-to-Ground Communications; and.

    l. Domestic Paid Air-Ground Messaging Service (DPAG).

    The Nav Canada FSSs, Arctic Radio, operates from the DND Regional Operations Control Centre in North Bay, Ontario, through DND communications located in the ADIZ and the RCO at Resolute Bay. For information on the location of North Warning System sites with these services, consult the CFS, Section B, Arctic Radio. The telephone number for the Regional Operations Control Centre-FSS Manager is 1-800-300-8300.

120. AIRPORT RADIO/COMMUNITY AERODROME RADIO STATION

Airport radio (APRT RDO), in most cases, is provided by a community aerodrome radio station (CARS) and has been established to provide aviation weather and communication services to enhance aircraft access to certain aerodromes.

APRT RDO/CARS service is provided by observer-communicators (O/C) who are certified to conduct aviation weather observations and radio communications to facilitate aircraft arrivals and departures.

Hours of operation are listed in the *Canada Flight Supplement* (CFS) Aerodrome/Facility Directory under the subheadings COM/APRT RDO.

Services provided by APRT RDO/CARS include the following:

1. Emergency Service

The O/C will respond to all emergency calls (distress, urgency and ELT signals), incidents or accidents by alerting a designated Nav Canada FIC and appropriate local authorities.

2. Communication Service

The O/C will provide pilots with information in support of aircraft arrivals and departures, including wind, altimeter, runway and aerodrome status (including vehicle intentions and runway condition), current weather conditions, PIREPs and known aircraft traffic.

Note 1: O/Cs are authorized to provide an altimeter setting for an instrument approach.
Note 2: O/Cs provide limited traffic information. APRT RDOs/CARS are located at uncontrolled aerodromes within MF areas. Pilots must communicate on the MF as per uncontrolled aerodrome procedures.
Note 3: O/Cs do not provide ATC services. At aerodromes within controlled airspace served by APRT RDO/CARS, pilots must contact ATS via the RCO, PAL or telephone to obtain special VFR authorization or IFR clearances.

3. Weather Observation Service

The O/C will monitor, observe, record and relay surface weather data for aviation purposes (METARs or SPECIs) in accordance with Environment Canada standards. The O/C may request PIREPs from pilots to confirm weather conditions, such as height of cloud bases.

4. Flight Plan/Flight Information Service

If necessary, at most APRT RDOs/CARS, O/Cs will accept flight plans/itineraries; however, pilots are encouraged to obtain a full pre-flight briefing and then file their flight plan/itinerary with an FSS.

Note: Pilots should be aware that O/Cs are only authorized to provide NOTAMs and weather information (METARs or SPECIs) for their own aerodrome. Information for other areas/aerodromes should be obtained from an FSS.

At APRT RDO/CARS sites co-located with an RCO, pilots should open and close flight plans/itineraries, pass position reports and obtain en route flight information services directly from the FSS via the RCO. At sites with no RCO, when requested by the pilot, the APRT RDO/CARS O/C will relay messages to open and close flight plans/itineraries and position reports (IFR, VFR, DVFR) to an FSS.

5. Monitoring of Equipment/NAVAIDs

During the APRT RDO/CARS hours of operation, O/Cs will monitor the status of equipment related to aerodrome lighting, weather, communications, etc. Malfunctions will be reported to the designated Nav Canada facility, and a NOTAM will be issued as required. For site-specific NAVAID monitoring by APRT RDO/CARS, refer to the CFS and enroute low altitude and enroute high altitude charts.

CHAPTER 2

ABBREVIATIONS

AAD — Assigned Altitude Deviation

AASR — Airport and Airways Surveillance Radar

AAU — Authorized Approach UNICOM

AD — Airworthiness Directive

AES — Atmospheric Environment Service

AFS — Aeronautical Fixed Service

AFTN — Aeronautical Fixed Telecommunication Network

A/G — Air-to-Ground

ALTRV — Altitude Reservation

AM — Amplitude Modulation

AME — Aircraft Maintenance Engineer

AOE — Airport of Entry

AOM — Airport Operations Manual

APV — Approach Procedure with Vertical Guidance

ARCAL — Aircraft Radio Control of Aerodrome Lighting

ASDA — Accelerate Stop Distance Available

ASE — Altimetry-System Error

ASL — Above Sea Level

AVANA — Automatic Void if Aircraft not Airborne by _____ Z

BBS — Bulletin Board System

BC — Back Course

C — Celsius

C of A — Certificate of Airworthiness

C of G — Centre of Gravity

C of R — Certificate of Registration

CADORS — Civil Aviation Daily Occurrence System

CARAC — Canadian Aviation Regulation Advisory Council

CASRP — Confidential Aviation Safety Reporting Program

CB — Cumulonimbus

CCI — Condition and Conformity Inspection

CFB — Canadian Forces Base

CFR — Airport Crash, Fire Fighting And Rescue Services (DND)

CMA — Central Monitoring Agency

CMC — Canadian Meteorological Centre

CRC — Consolidated Regulations of Canada

CTA — Control Area

DAH — Designated Airspace Handbook (TP1820)

DRCO — Dial-up Remote Communication Outlet

DT — Daylight Saving Time

DUATS — Direct User Access Terminal System

ERS — Emergency Response Service

ETD — Estimated Time of Departure

EWH — Eye-to-Wheel Height

FAX — Facsimile

FDE— Fault Detection and Exclusion

FM — Frequency Modulation/Fan Marker

FOD — Foreign Object Damage

FPM — Feet per minute

GHz — Gigahertz

GMU — GPS Monitoring Unit

GNSS — Global Navigation Satellite System

GPI — Ground Point of Interception

GPS — Global Positioning System

H — Hour

HAI — High Altitude Indoctrination

HI — High Enroute Charts

Hg — Mercury

HIAL — High Intensity Approach Lighting

HMU — Height Monitoring Unit

hPa — Hectopascal

HSI — Horizontal Situation Indicator

Hz — Hertz

IC —Industry Canada

IMC — Instrument Meteorological Conditions

INS — Inertial Navigation System

IRS — Inertial Reference System

ISA — International Standard Atmosphere

JBI — James Brake Index

kg — Kilogram

kHz — Kilohertz

kN — Kilonewtons

KT — Knots

lb. — Pound

LO — Low Enroute Charts

M or Mag — Magnetic

MALSF — Medium Intensity Approach Lighting System with Sequenced Flashing Lights

MALSR — Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights

MASPS — Minimum Aircraft System Performance Specification

mbs — Millibars

MFAU — Military Flight Advisory Unit

MHA — Minimum Holding Altitude

Mhz — Megahertz

MNPSA — Minimum Navigation Performance Specifications Airspace

MPa — Megapascals

mph — Miles per hour

NAMEAO — Notices to Aircraft Maintenance Engineers and Aircraft Owners

NARP — North American Route Program

NASA — National Aeronautics and Space Administration (USA)

NATO — North Atlantic Treaty Organization

NM — Nautical Miles

NO PT — No procedure Turn

NPA — Non Precision Approach

NWS — North Warning System

OACC — Oceanic Area Control Centre

OAT — Outside Air Temperature

OCC — Obstacle Clearance Circle

ODALS — Omnidirectional Approach Lighting System

OKTAS — Eighths

PADRA — Pass to Air Defence Radar

PN — Prior notice required

PSI — Pounds per square inch

PRM — Preferred Route Messages

PSR — Primary Surveillance Radar

RASO — Regional Aviation Safety Officer

RCMP — Royal Canadian Mounted Police

RCR — Runway Condition Report

READAC — Remote Environmental Automated Data Acquisition Concept

RTF — Radiotelephony Frequencies

RVCS — Remote Vehicle Control Service

SA— Selective Availability

SARPS— Standards and Recommended Practices (ICAO)

SM — Statute Mile

SNR — Signal-to-Noise Ratio

SSALR — High Intensity Approach Lighting System with Runway Alignment Indicator Lights

SSB — Single Side Band

T — True

TMI — Track Message Identification

TODA — Takeoff Distance Available

TORA — Takeoff Run Available

TP — Transport Canada Publication

TPS — Third Party Support

TSO — Technical Standard Order (FAA)

UAV — Unmanned Aerial Vehicle

UFN — Until Further Notice

ULA — Unsupported Landing Authority

USAF — United States Air Force

USB — Upper Side Band

VMC — Visual Meteorological Conditions

VTPC — VFR Terminal Procedures Chart

CHAPTER 3

CANADIAN DOMESTIC AIRSPACE AND PROCEDURES

SECTION 1 GENERAL

301. FLIGHT INFORMATION REGIONS

1. A flight information region is an airspace of defined dimensions extending upwards from the surface of the earth, within which flight information service and alerting services are provided. The Canadian Domestic Airspace is divided into the Vancouver, Edmonton, Winnipeg, Toronto, Montreal, Moncton and Gander Domestic Flight Information Regions. Gander Oceanic is an additional FIR allocated to Canada by ICAO for the provision of flight information and alerting services over the high seas.

2. Agreements have been effected between Canada and the United States to permit reciprocal air traffic control services outside of the designated national FIR boundaries. An example is V300 and J500 between SSM and YQT. The control of aircraft in US airspace delegated to a Canadian ATC unit is effected by applying the Transport Canada rules, procedures and separation minima with the following exceptions:

   a. aircraft will not be cleared to maintain 1,000 feet on top;

   b. ATC vertical separation will not be discontinued on the basis of visual reports from the aircraft; and

   c. Canadian protected airspace criteria for track separation will not be used.

302. CANADIAN DOMESTIC AIRSPACE

1. Canadian Domestic Airspace (CDA) includes all airspace over the Canadian land mass, the Canadian Arctic, Canadian Archipelago, and those areas of the high seas within the airspace boundaries. These boundaries are depicted on Radio Navigation Charts.

2. Canadian Domestic Airspace (CDA) is divided into two geographical areas; Northern Domestic Airspace (NDA) and Southern Domestic Airspace (SDA). Cruising altitude for direction of flight of an aircraft is determined in accordance with the magnetic track in the SDA, and true track in the NDA.

3. When an aircraft is operated in level cruising flight:

   a. at more than 3 000 ft AGL, in accordance with VFR;

   b. in accordance with IFR; or

   c. during a CVFR flight;

   the pilot in command shall ensure that the aircraft is operated at an altitude or flight level appropriate to the track, unless he/she is assigned an altitude or flight level by ATC.

4. Canadian Domestic Airspace is divided into seven classes, each identified by a letter as follows:

   Class A – Controlled airspace within which only IFR flights are permitted.

   Class B – Controlled airspace within which IFR and CVFR flights are permitted.

   Class C – Controlled airspace within which IFR and VFR flights are permitted. VFR – flights require a clearance to enter.

   Class D – Controlled airspace within which IFR and VFR flights are permitted. VFR flights – must establish two way communication before entering.

   Class E – Controlled airspace that does not meet the requirements of Class A, B, C or D. – IFR and VFR are permitted.

Class F – Special use airspace.

Class G – Uncontrolled domestic airspace.

SECTION 2 HIGH AND LOW LEVEL AIRSPACE

303. CANADIAN DOMESTIC AIRSPACE MAP

The Canadian Domestic Airspace is further divided vertically into the Low Level Airspace, which consists of all of the airspace below 18,000 feet ASL; and the High Level Airspace which consists of all airspace from 18,000 feet ASL and above.

CANADIAN DOMESTIC AIRSPACE

304. AIRWAYS (HIGH AND LOW LEVEL)

1. High and low level airways are airways designated as such in the *Designated Airspace Handbook (TP1820)* and as defined in chapter 3.

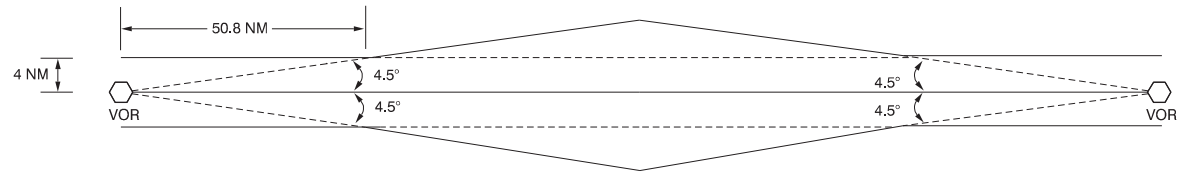
2. Low Level Airways

Controlled low level airspace extends upward from 2,200' AGL up to, but not including, 18,000' ASL, within the following specified boundaries:

a. VHF/UHF Airways

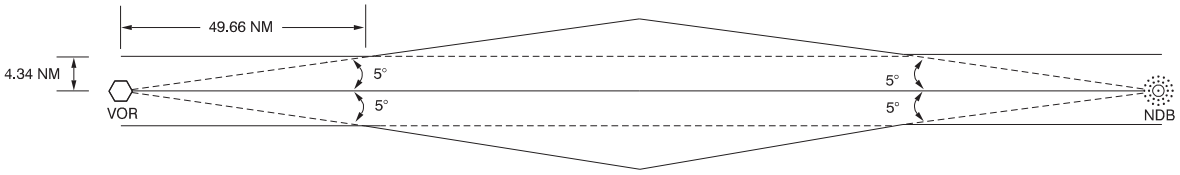
The basic VHF/UHF airway width is 4NM on each side of the centre line prescribed for such an airway. Where applicable, the airway width shall be increased between the points where lines, diverging 4.5° on each side of the centre line from the designated facility, intersect the basic width boundary; and where they meet, similar lines projected from the adjacent facility.

FIGURE 3.1(A) - VHF/UHF AIRWAY DIMENSIONS



Where a Victor airway is established based on a VOR/VORTAC and NDB, the boundaries of that airway will be those of an LF/MF airway [seeFigure 3.1(b) - VHF/UHF Airway Based on VOR and NDB].

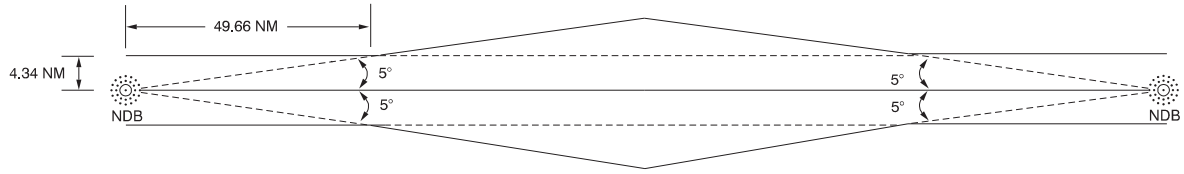
FIGURE 3.1(B) - VHF/UHF AIRWAY BASED ON VOR AND NDB



b. LF/MF Airways

The basic LF/MF airway width is 4.34NM on each side of the centre line prescribed for such an airway. Where applicable, the airway width shall be increased between the points where lines, diverging 5° on each side of the centre line from the designated facility, intersect the basic width boundary; and where they meet, similar lines projected from the adjacent facility.

FIGURE 3.2 - LF/MF AIRWAY DIMENSIONS



305. LOW LEVEL AIR ROUTE

Class G Airspace, extending upwards form the surface of the earth, within the following specified boundaries:

1. Air routes based on VORs/VORTACs

a. The primary air route width is 4 miles on each side of the centre line prescribed for such an air route.

b. Where applicable, the primary air route width shall be increased between the points where lines, diverging 4.5° on each side of the centre line from the designated facility, intersect the primary width boundary and where they meet similar lines projected from the other designated facility.

2. Air routes based on NDBs or a VOR/VORTAC and NDB

a. The primary air route width is 4.34 miles on each side of the centre line prescribed for such an air route.

b. Where applicable, the primary air route width shall be increased between the points where lines, diverging 5° on each side of the centre line from the designated facility, intersect the primary width boundary and where they meet similar lines projected from the other designated facility.

Where the changeover point is not midway between the NAVAIDS, the air route includes the airspace between the system accuracy lines which extend from the farthest facility, at angles of 4.5° for VHF/UHF air route, 5° for LF/MF air route and 5° for VHF/UHF air route based on a VOR/VORTAC and NDB, to the changeover point and are joined by lines from the nearer facility.

306. FIXED RNAV ROUTES

1. **Q-Routes** are high-level fixed RNAV routes and require an RNAV system with performance capabilities currently only met by GNSS or distance measuring equipment/inertial reference unit (DME/DME/IRU) systems. DME/DME/IRU navigation may be limited in some parts of Canada owing to navigational facility coverage. In such cases, the routes will be annotated as "GNSS only" on the chart.

2. **T-Routes** are low-level controlled fixed RNAV routes and require GNSS RNAV systems for use. The airspace associated with T-routes extends upward from 2 200 feet above the surface of the earth. The airspace associated with RNAV T-Routes is 10 NM either side of the centreline. Lateral dimensions include 4 NM of primary obstacle protection area plus 2 NM of secondary obstacle protection area on either side of centreline. Therefore, the MOCA provides obstacle protection for only 6 NM either side of the track centreline. T-Route airspace and obstacle protection areas do not splay.

FIGURE 3.3(A) - FIXED RNAV ROUTE

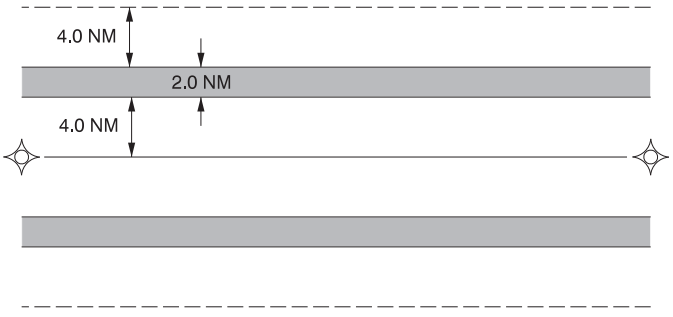
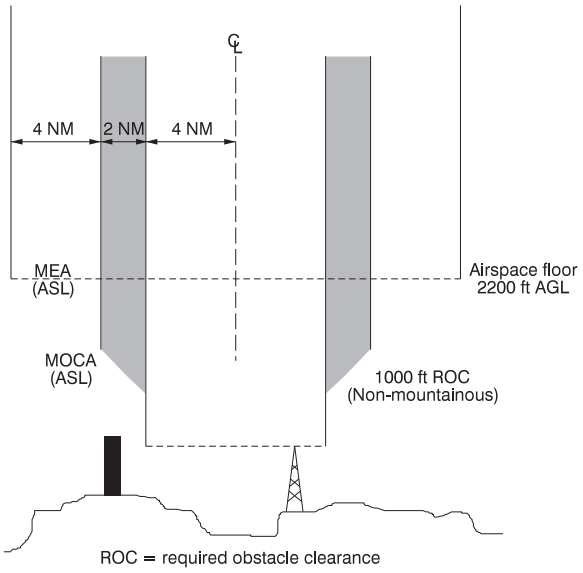


FIGURE 3.3(A) - FIXED RNAV ROUTE



3. **L-Routes** are low-level uncontrolled fixed RNAV routes and require GNSS RNAV systems for use. The MOCA provides obstacle protection for only 6 NM either side of the track centreline and does not splay.

Magnetic refererence bearing (MRB) is the published bearing between two waypoints on a fixed RNAV route and will be published within the SDA. The MRB is calculated by applying magnetic variation at the waypoint to the calculated true course between two waypoints. Pilots should use this bearing as a reference only, because RNAV systems will fly the true course between the waypoints. True reference bearings (TRB) will be published along fixed RNAV routes located in the NDA and shall be notated with the suffix "T.

307. CONTROL ZONES

Control zones are designated around certain aerodromes to keep IFR aircraft within controlled airspace during approaches and to facilitate the control of VFR and IFR traffic.

Control zones having a civil control tower within a terminal control area normally have a 7NM radius. Others have a 5NM radius with the exception of a few which have a 3NM radius. Control zones are capped at 3,000 feet AAE unless otherwise specified. Military control zones usually have a 10NM radius and are capped at 6,000 feet AAE. All control zones are depicted on VFR aeronautical charts and the Enroute Low Altitude Charts.

Control zones will be classified B, C, D or E depending on the classification of the surrounding airspace.

When weather conditions are below VFR minima, a pilot operating VFR may request special VFR (SVFR) authorization in order to enter the control zone. This authorization is normally obtained through the local tower or FSS, and must be obtained before SVFR is attempted within a control zone. ATC will issue an SVFR authorization, traffic and weather conditions permitting, only upon a request for SVFR from a pilot. SVFR will not be initiated by ATS. Once having received an SVFR authorization, the pilot continues to remain responsible for avoiding other aircraft and weather conditions beyond the pilot's own flight capabilities and the capabilities of the aircraft.

308. CONTROL AREA EXTENSIONS

1. Control area extensions are designated around aerodromes where the controlled airspace provided is insufficient to permit the required separation between IFR arrivals and departures and to contain IFR aircraft within controlled airspace. They are designated:

   a. to provide additional controlled airspace around busy aerodromes for IFR control; and

b. to connect controlled airspace, such as the control area extensions that connect the domestic airways structure with the oceanic control areas or control area extensions that connect a control zone with the enroute structure.

2. Control area extensions are based at 2200 feet AGL unless otherwise specified and extend up to, but not including 18,000 feet ASL. Some control area extensions, such as those which extend to the oceanic controlled airspace, may be based at other altitudes such as 2 000, 5 500 or 6 000 ft ASL. The outer portions of some other control area extensions may be based at higher levels.

309. TERMINAL CONTROL AREAS

Terminal control areas are established at high volume traffic airports to provide an IFR control service to arriving, departing and enroute aircraft. Aircraft operating in the TCA are subject to certain operating rules and equipment requirements. The TCA operating rules are established by the classification of the airspace within the TCA. These rules will be based on the level of ATC service that is appropriate for the number and type of aircraft using the airspace as well as the nature of the operations being conducted.

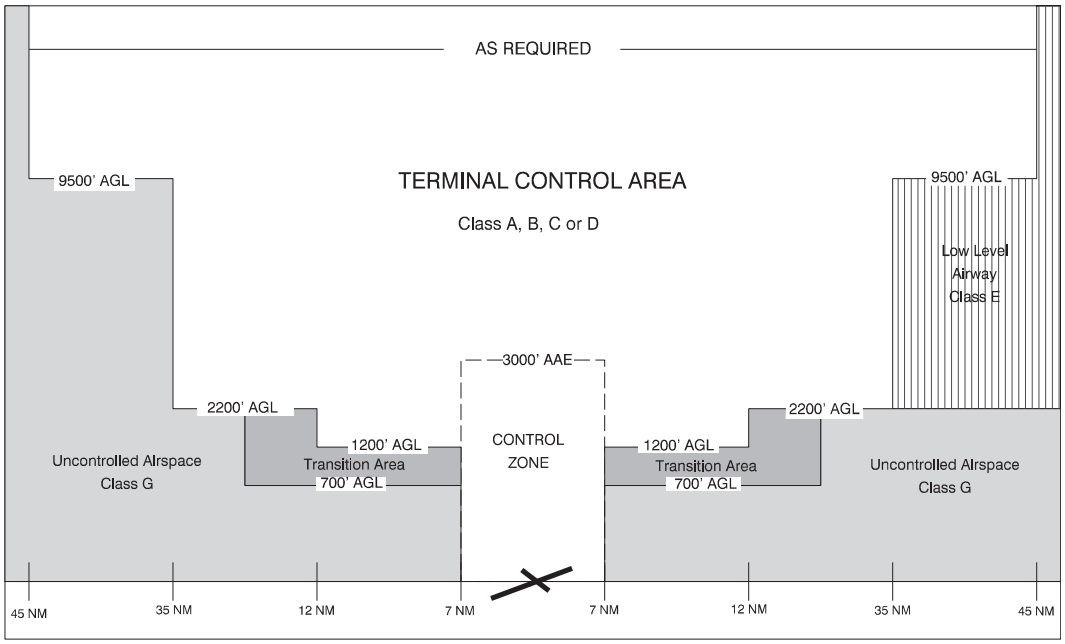
A TCA is similar to a control area extension except that:

1. A TCA may extend up into the high level airspace;

2. IFR traffic is normally controlled by a terminal control unit. The ACC will control a TCA during periods when a TCU is not in operation; and

3. TCA airspace will normally be designed in a circular configuration centred on the geographic coordinates of the primary aerodrome. The outer limit of the TCA should be a 45NM radius from the aerodrome geographic coordinates based at 9,500 feet AGL, with an intermediate circle at 35NM based at 2,200 feet AGL and an inner circle at 12NM radius based at 1,200 feet AGL. Where an operational advantage may be gained, the area may be sectorized. For publication purposes the altitudes may be rounded to the nearest appropriate increment and published as heights ASL.

   A military terminal control area is the same as a TCA, except that special provisions prevail for military aircraft while operating within the MTCA. MTCAs may be designated at selected military aerodromes where the control service will be provided by a military TCU, or by ATC, through agreement with DND.



310. MILITARY TERMINAL CONTROL AREAS (MTCA)

1. Controlled airspace of defined dimensions designated to serve arriving, departing and enroute aircraft and within which special procedures and exemptions exist for military aircraft.

2. Most Military Terminal Control Areas extend up into the high level airspace.

3. Although the airspace above 12,500 feet ASL within a Military Terminal Control Area consists of both Class A and B equivalent airspace, military aircraft are normally exempt from the IFR/CVFR only requirements and 1,000 on top prohibition. There are circumstances however in which these military exemptions cease to apply. Transient aircrew intending to operate VFR in Class A or B equivalent airspace in a Military Terminal Control Area must confirm with the applicable terminal or area control agency that normal military exemptions are in effect.

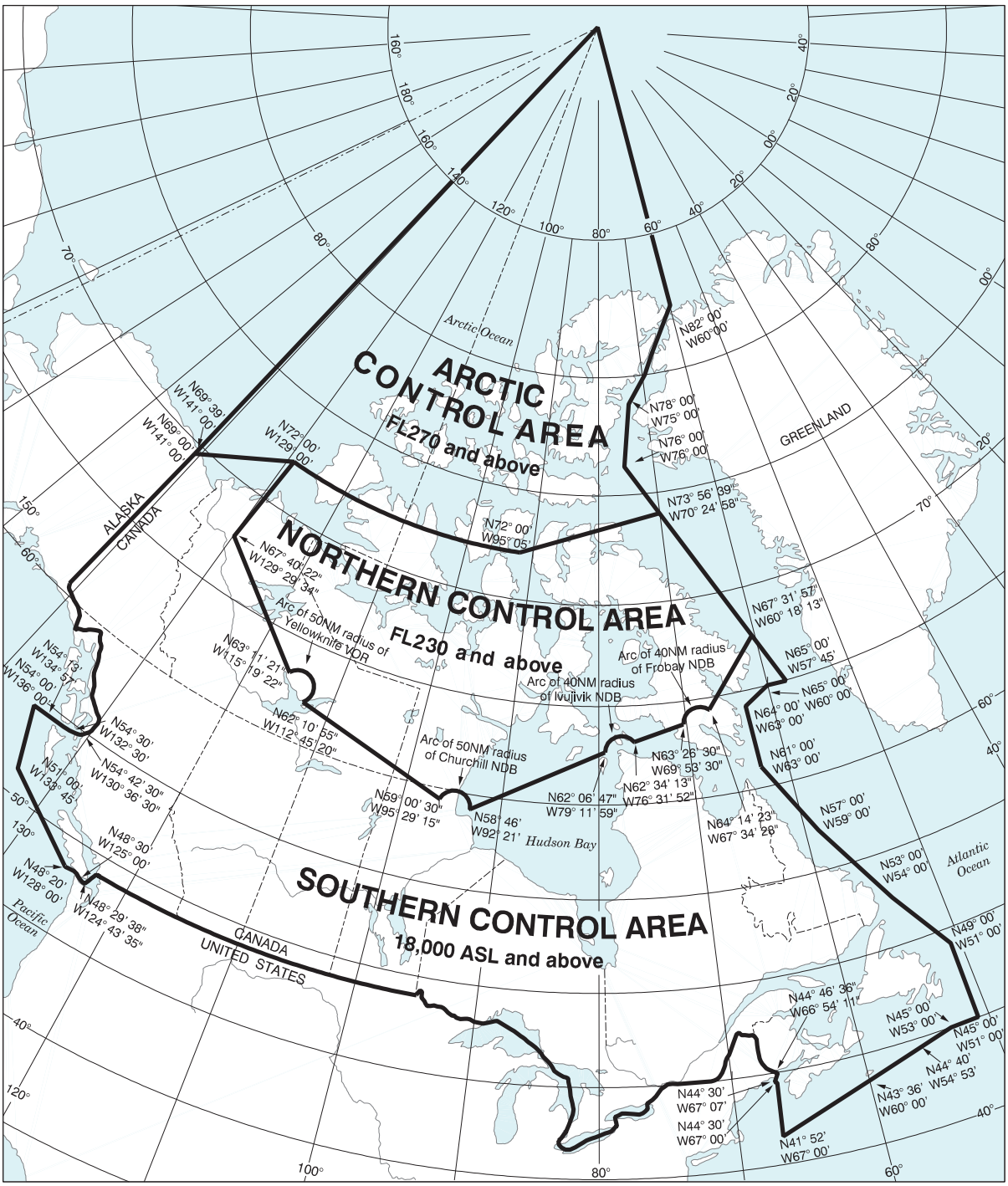
4. Civil aircraft operating in the Class A or B equivalent airspace of a military Terminal Control Area shall be afforded the same separation and rules applicable to all Class A and B airspace.

311. TRANSITION AREAS

Transition areas are established when it is considered advantageous or necessary to provide additional controlled airspace for the containment of IFR operations.

Transition areas are of defined dimensions, based at 700 ft AGL unless otherwise specified, and extend upwards to the base of overlying controlled airspace. The area provided around an aerodrome will normally be 15 NM radius of the aerodrome coordinates, but shall be of sufficient size to contain all of the aerodrome published instrument approach procedures. Even if described with an ASL floor, the base of a transition area shall not extend lower than 700 ft AGL.

ARCTIC, NORTHERN AND SOUTHERN CONTROL AREAS



312. CONTROL AREAS WITHIN HIGH LEVEL AIRSPACE

1. Controlled Canadian airspace within the High Level Airspace is divided into three separate areas:

   a. Southern Control Area – airspace 18,000 feet ASL and above;

   b. Northern Control Area – airspace Flight Level 230 and above;

   c. Arctic Control Area – airspace Flight Level 270 and above.

2. All other airspace above 18,000 feet is uncontrolled airspace.

313. PROCEDURES IN HIGH LEVEL AIRSPACE

1. Within these areas, lateral separation is provided by ATC in the form of “airspace to be protected” with relation to an approved track. These areas are determined in the same way as outlined in Art 411, 412 and 413 and IAW GPH209. Therefore, it is the pilot's responsibility to remain on the approved track in order to be assured of adequate lateral separation from other air traffic. Normally, the airspace to be protected is predicated on the premise that change-over from one navigation reference to another will take place approximately midway between facilities.

2. Clearances to turbo-jet aircraft equipped with a Mach meter system may include an appropriate Mach number. The Mach number approved by ATC shall be adhered to within a tolerance of plus or minus zero decimal zero one (0.01) and ATC approval obtained by the pilot before making any change. If an immediate temporary change in Mach number is necessary (e.g. due to turbulence), ATC must be notified as soon as possible of such change. When a Mach number has been included in a clearance, the flight concerned should transmit its current Mach number with each position report.

3. The following rules apply in the Northern, Southern and Arctic Control Areas:

   a. at and below FL600 – Class A; above FL600 – Class E.

   b. altimeters must be set to Standard Pressure (29.92 inches of mercury or 1013.2 mbs).

   c. aircraft should be equipped with a serviceable radar transponder unless otherwise authorized in accordance with GPH205.

314. VFR OVER-THE-TOP (VFR OTT)

1. VFR OTT will permit, with restrictions, VFR operation to be conducted without the pilot being in constant visual contact with the surface of the earth. These restrictions and rules governing the conduct of VFR OTT are outlined in B-GA-100-001/AA-000.

SECTION 3 RULES AND PROCEDURES

315. CLASS A AIRSPACE

1. Designated where an operational need exists to exclude VFR aircraft.

2. All operations must be conducted under instrument flight rules (IFR) and are subject to ATC clearances and instructions. ATC separation is provided to all aircraft.

3. All aircraft operating in Class A airspace must be equipped with a transponder and automatic pressure altitude reporting equipment.

4. Class A airspace will be designated from the base of all high level controlled airspace up to and including FL600 inclusive.

316. CLASS B AIRSPACE

1. Designated where an operational need exists to provide Air Traffic Control Service to IFR and the control of VFR aircraft.

2. Operations may be conducted under IFR or VFR. All aircraft are subject to ATC clearances and instructions. ATC separation is provided to all aircraft.

3. All low level controlled airspace above 12,500' ASL or at and above the MEA, whichever is higher, up to but not including 18,000' ASL will be Class B airspace.

4. Control zones and associated terminal control areas may also be classified as Class B airspace.

5. No person shall operate an aircraft in Class B controlled airspace in VFR flight unless:

   a. the aircraft is equipped with:

(i) radio communication equipment capable of two-way communication with the appropriate ATS facility; and
(ii) radio navigation equipment capable of utilizing navigation facilities to enable the aircraft to be operated in accordance with the flight plan;
(iii) a transponder and automatic pressure altitude reporting equipment.

b. a continuous listening watch is maintained by a flight crew member on a radio frequency assigned by ATC;

c. except as otherwise authorized by ATC, when the aircraft is over a reporting point a position report is transmitted to the appropriate unit, or when so directed by ATC, to an FSS; and

d. the aircraft is operated in Visual Meteorological Conditions (VMC) at all times.

6. A person operating an aircraft on a VFR flight in Class B airspace shall operate the aircraft in VMC at all times. When it becomes evident that flight in VMC will not be possible, the pilot shall:

a. request an ATC clearance which will enable the aircraft to be operated in VMC to the filed destination or to another aerodrome;

b. where the person is the holder of a valid instrument rating, request an IFR clearance for flight under instrument flight rules; or

c. where the Class B airspace is a control zone, request an authorization for special VFR flight.

7. A person operating an aircraft in Class B controlled airspace in VFR flight who is unable to comply with the requirements of the preceding paragraphs shall ensure that:

a. the aircraft is operated in VMC at all times;

b. the aircraft leaves Class B controlled airspace:

(i) by the safest and shortest route, either exiting horizontally or descending; or
(ii) when that airspace is a control zone, by landing at the aerodrome on which the control zone is based; and

c. an ATC unit is informed as soon as possible of the actions taken pursuant to para (b).

317. CLASS C AIRSPACE

1. Controlled airspace within which both IFR and VFR flights are permitted, but VFR flights require a clearance from ATC to enter. ATC separation is provided between all aircraft operating under IFR and, as necessary to resolve possible conflicts, between VFR and IFR aircraft. Aircraft will be provided with traffic information. Conflict resolution will be provided, upon request, after VFR aircraft are provided with traffic information. Conflict resolution is defined as the resolution of potential conflicts between IFR/VFR and VFR/VFR aircraft that are radar identified and in communication with ATC.

2. Airspace classified as Class C becomes Class E airspace when the appropriate ATC unit is not in operation.

3. Terminal control areas and associated control zones may be classified as Class C airspace.

4. A person operating an aircraft in VFR flight in Class C airspace shall ensure that:

a. the aircraft is equipped with radio communication equipment capable of two-way communication with the appropriate ATC unit, a transponder and automatic pressure altitude reporting equipment; and

b. a continuous listening watch is maintained by a flight crew member on a radio frequency assigned by ATC.

5. A person wishing to operate an aircraft that is not equipped with functioning communication and transponder equipment for VFR flight in Class C airspace may, during daylight hours and in VMC, enter

Class C airspace, provided that permission to enter and to operate within the airspace is obtained from ATC prior to the operation being conducted.

318. CLASS D AIRSPACE

1. Controlled airspace within which both IFR and VFR flights are permitted, but VFR flights must establish two way communication with the appropriate ATC agency prior to entering the airspace. ATC separation is provided only to IFR aircraft. Aircraft will be provided with traffic information. Conflict resolution may be provided, equipment and workload permitting.

2. Airspace classified as Class D becomes Class E airspace when the appropriate ATC unit is not in operation.

3. A terminal control area and associated control zone could be classified as Class D airspace.

4. A person operating an aircraft in VFR flight in Class D airspace shall ensure that:

   a. the aircraft is equipped with radio communications equipment capable of two-way communication with the appropriate ATC unit and where the class D airspace is specified transponder airspace, a transponder and automatic pressure altitude reporting equipment; and

   b. a continuous listening watch is maintained by a flight crew member on a radio frequency assigned by ATC.

5. A person operating an aircraft in VFR flight that is not equipped with the required radio communication equipment may, during daylight hours in VMC, enter Class D airspace provided that permission to enter is obtained from the appropriate ATC unit prior to operating within the airspace.

319. CLASS E AIRSPACE

1. Designated where an operational need exists for controlled airspace but does not meet the requirements for Class A, B, C, or D.

2. Operations may be conducted under IFR or VFR. ATC separation is provided only to aircraft operating under IFR. There are no special requirements for VFR.

3. Aircraft are required to be equipped with a transponder and automatic pressure altitude reporting equipment to operate in class E airspace that is specified as transponder airspace.

4. Low level airways, control area extensions, transition areas, or control zones established without an operating control tower may be classified as Class E airspace.

320. CLASS F AIRSPACE

1. Airspace of defined dimensions within which activities must be confined because of their nature and/or within which limitations may be imposed upon aircraft operations that are not a part of those activities.

2. Special Use Airspace may be classified as Class F Advisory or as Class F Restricted and may be controlled airspace, uncontrolled airspace, or a combination of both. An advisory area, for example, may have its base in uncontrolled airspace and its cap in controlled airspace. The significance here is that the weather minima would be different in the controlled and uncontrolled portions.

3. Unless otherwise specified, the rules for the appropriate airspace apply in areas of Class F airspace, no matter if they are active or inactive.

4. Class F airspace shall be designated in the *Designated Airspace Handbook (TP1820)* in accordance with the Airspace Regulations, and shall be published on the appropriate aeronautical charts.

Note 1: All requests for CF and foreign military Unmanned Aerial Vehicles (UAVs), as well as civilian UAVs, in CF controlled/scheduled CLASS F Airspace must be coordinated with 1 Canadian Air Division/ SO UA to ensure that the required airworthiness certification has been granted by the appropriate regulatory authority (DND, Transport Canada, or foreign government). Requests shall be staffed a minimum of 30 days prior to the commencement of planned flight operations.

A3 UAV may be contacted on the DIN at +Fleet Rdns UAV@Fleet Rdns@Winnipeg or via SMTP at A3UAV@forces.gc.ca

321. CLASS G AIRSPACE

1. Airspace that has not been designated Class A, B, C, D, E, or F and within which ATC has neither the authority nor the responsibility for exercising control over air traffic.

2. ATS units do, however, provide flight information and alerting services. The alerting service will automatically alert search and rescue authorities once an aircraft becomes overdue, which is normally determined from data contained in the flight plan or flight itinerary.

3. In effect, Class G is all uncontrolled domestic airspace.

4. Low level air routes are contained within Class G airspace. They are basically the same as a low level airway except that they extend upwards from the surface of the earth and are not controlled. The lateral dimensions are identical to that for a low level airway.

SECTION 4 TYPES OF SPECIAL USE (CLASS F) AIRSPACE

322. GENERAL

This section describes the types, identification, location and agencies controlling military special use airspace.

323. ADVISORY AIRSPACE

Airspace may be classified as Class F advisory airspace if it is airspace within which activity occurs that, for flight safety purposes, non-participating pilots should be aware of, such as training areas, parachute areas, hang gliding areas, military operations areas, etc.

There are no specific restrictions which apply to the use of advisory airspace. VFR aircraft are, however, encouraged to avoid flight in advisory airspace unless participating in the activity taking place therein. If necessary, pilots of non-participating flights may enter advisory areas at their own discretion; however, due to the nature of the aerial activity, extra vigilance is recommended. Pilots of participating aircraft, as well as pilots flying through the area, are equally responsible for collision avoidance.

ATC will not clear IFR aircraft through Class F airspace except if:

1. The pilot states that he/she has obtained permission from the user agency to enter the airspace;

2. The aircraft is operating on an Altitude Reservation Approval (ALTRV APVL); or

3. The aircraft has been cleared for a contact or visual approach.

IFR aircraft shall be provided 500 feet vertical separation from an active Class F advisory airspace, unless wake turbulence minima is applicable, in which case 1,000 feet vertical separation shall be applied.

Pilots intending to fly in Class F advisory airspace are encouraged to monitor an appropriate frequency, to broadcast their intentions when entering and leaving the area, and to communicate, as necessary, with other users, to ensure flight safety in the airspace. In a Class F advisory uncontrolled airspace area, 126.7 MHz would be an appropriate frequency.

Note: Military operations in a Class F airspace may be UHF only.

324. RESTRICTED AIRSPACE

A restricted area is an airspace of defined dimensions above the land areas or territorial waters within which the flight of aircraft is restricted in accordance with certain specified conditions. Restricted airspace is designated for safety purposes when the level or type of aerial activity, surface activity, or the protection of a ground installation requires the application of restrictions within that airspace.

No person may conduct aerial activities within active Class F restricted airspace unless permission has been obtained from the user agency. In some instances, the user agency may delegate the appropriate, controlling

agency the authority to approve access. IFR flights will not be cleared through active restricted areas unless the pilot states that permission has been obtained.

The User Agency is the civil or military agency or organization responsible for the activity for which the Class F airspace has been provided. It has the jurisdiction to authorize access to the airspace when it is classified restricted. The User Agency must be identified for Class F restricted airspace, and where possible, it should be identified for Class F advisory airspace. Any restricted area which may be established over international waters, but controlled by Canadian ATC, will be published as a “Danger Area” in accordance with ICAO requirements.

325. IDENTIFICATION OF ADVISORY, DANGER AND RESTRICTED AIRSPACE

1. Advisory, Danger and Restricted Airspace within Canada has been assigned an identification code group which consists of three parts (four parts in the case of Advisory airspace) as follows:

   a. Part (a) will consist of the nationality letters “CY”.

   b. Part (b) will consist of the letter “R” for Restricted Airspace or the letter “A” for Advisory Airspace. The letter “D” for danger area will be used if a restricted area is established over international waters.

   c. Part (c) will consist of a three digit number which will identify the area. This number will also indicate the region of Canada within which the area lies according to the following table:

      101 to 199 – British Columbia
      201 to 299 – Alberta
      301 to 399 – Saskatchewan
      401 to 499 – Manitoba
      501 to 599 – Ontario
      601 to 699 – Quebec
      701 to 799 – New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland
      801 to 899 – Yukon Territory
      901 to 999 – Northwest Territories and Nunavut (including the Arctic Islands)

   d. Part (d) will in the case of Advisory Airspace, consist of the letter A, F, H, M, P, S, or T in brackets after the three digit number to indicate the type of activity within the Area as follows:

      A – Aerobatics
      F – Aircraft Testing
      H – Hang Gliding
      M – Military Operations Area (MOA)
      P – Parachuting
      S – Soaring
      T – Training

      e.g. A Breakdown of the code group CYA 113(A) is as follows:
      CY indicates Canada
      A indicates Advisory
      113 indicates the number of the Area in British Columbia.
      (A) indicates the aerobatic activity takes place within the Area.

      The whole code group would be deciphered to read:

      Aerobatic activity in Advisory Area 113 in British Columbia, Canada.

326. MILITARY ADVISORY AREAS

The following lists Military Advisory Areas in Canada, their restrictions, user/controlling agency and phone numbers. Operating rules within these airspaces will be in accordance with the *Designated Airspace Handbook (TP1820)*.

CYA102(M) – Surface to 10,000', Ocsl by NOTAM
User Agency: JTF(P) J3 AIR Esquimalt (250) 363-1050 CSN 333-1050 Mon-Fri 0800-1600 lcl.
After hours (250) 889-0073
Controlling Agency: Vancouver ACC (604) 586-4500

CYA124(M) – Surface to 1000', continuous;

Surface to 5000', Ocsl by NOTAM
User Agency: 19 Wing Operations, CFB Comox (250) 339-8231 CSN 252-8231
Controlling Agency: Comox IFRCC (250) 339-8115 CSN 252-8115

CYA131(M) – 10,000' to below 18,000', Ocsl by NOTAM
User Agency: JTF(P) J3 AIR Esquimalt (250) 363-1050 CSN 333-1050 Mon-Fri 0800-1600 lcl. After hours (250) 889-0073

CYA214(M) – Surface to 3200', continuous
User/Controlling Agency: 408 Tac Hel Sqn (780) 973-4108 CSN 528-4108

CYA304(M) – 6,000´ to below FL190, 1400-0030Z Mon-Fri when MJ Terminal is open. O/T Ocsl by NOTAM
User/Controlling Agency: Moose Jaw Terminal, 15 Wing Moose Jaw, (306) 694-2222, Ext 5572 CSN 826-5572

CYA305(M) – 6,000´ to below FL190, 1400-0030Z Mon-Fri when MJ Terminal is open. O/T Ocsl by NOTAM
User/Controlling Agency: Moose Jaw Terminal, 15 Wing Moose Jaw, (306) 694-2222, Ext 5572 CSN 826-5572

CYA307(M) – 6,000´ to below FL190, 1400-0030Z Mon-Fri when MJ Terminal is open. O/T Ocsl by NOTAM
User/Controlling Agency: Moose Jaw Terminal, 15 Wing Moose Jaw, (306) 694-2222, Ext 5572 CSN 826-5572

CYA310(M) – 6,000´ to below FL300, 1400-0030Z Mon-Fri when MJ Terminal is open. O/T Ocsl by NOTAM
User/Controlling Agency: Moose Jaw Terminal, 15 Wing Moose Jaw, (306) 694-2222, Ext 5572 CSN 826-5572

CYA311(M) – 6,000´ to below FL300, 1400-0030Z Mon-Fri when MJ Terminal is open. O/T Ocsl by NOTAM
User/Controlling Agency: Moose Jaw Terminal, 15 Wing Moose Jaw, (306) 694-2222, Ext 5572 CSN 826-5572

CYA315(M) – 6,000´ to below FL300, 1400-0030Z Mon-Fri when MJ Terminal is open. O/T Ocsl by NOTAM
User/Controlling Agency: Moose Jaw Terminal, 15 Wing Moose Jaw, (306) 694-2222, Ext 5572 CSN 826-5572

CYA316(M) – 6,000´ to below FL300, 1400-0030Z Mon-Fri when MJ Terminal is open. O/T Ocsl by NOTAM
User/Controlling Agency: Moose Jaw Terminal, 15 Wing Moose Jaw, (306) 694-2222, Ext 5572 CSN 826-5572

CYA407(M) – Surface to 8000', 1400-2300Z (DT 1300-2200Z) Mon-Fri excluding holidays, O/T by NOTAM
User/Controlling Agency: Southport Tower Manager (204) 428-2467

CYA413(M) – 5000' to 8000', 1400-2300Z (DT 1300-2200Z) Mon-Fri excluding holidays, O/T by NOTAM
User/Controlling Agency: Southport Tower Manager (204) 428-2467

CYA521(M) – 7000' to FL250, Ocsl by NOTAM
User Agency: Canadian Air Defence Sector, Senior Director (705) 494-2011 Ext 6480 CSN 628-6480
Controlling Agency: Toronto ACC (905) 676-4509

CYA530(M) – 3000' to FL500, Ocsl daylight by NOTAM
User Agency: Canadian Air Defence Sector, Senior Director (705) 494-2011 Ext 6480 CSN 628-6480
Controlling Agency: Toronto ACC (905) 676-4509

CYA640(M) – Surface to below 6000', Ocsl by NOTAM
User Agency: 3 Wing Operations, CFB Bagotville (418) 667-4000 Ext 7283 CSN 661-7283
Controlling Agency: Montreal ACC (514) 633-3365

CYA641(M) – Surface to below 8000', Ocsl by NOTAM
User Agency: 3 Wing Operations, CFB Bagotville (418) 667-4000 Ext 7283 CSN 661-7283

Controlling Agency: Montreal ACC (514) 633-3365

CYA642(M) – Surface to below 6000', 1400-0600Z (DT 1300-0500Z) Mon-Fri excluding hols, O/T by NOTAM
User Agency: 3 Wing Operations, CFB Bagotville (418) 667-4000 Ext 7283 CSN 661-7283
Controlling Agency: Montreal ACC (514) 633-3365

CYA643(M) – Surface to below 6000', 1400-0600Z (DT 1300-0500Z) Mon-Fri, 1400-2300Z (DT 1300-2200Z) Sat, Sun and hols, O/T by NOTAM
User Agency: 3 Wing Operations, CFB Bagotville (418) 667-4000 Ext 7283 CSN 661-7283
Controlling Agency: Montreal ACC (514) 633-3365

CYA731(M) – Surface to 5000', Ocsl by NOTAM
User/Controlling Agency: Military Coordination Centre, 5 Wing Goose Bay (709) 896-6900 Ext 7331 CSN 555-7331, 1-800-563-2390

CYA732(M) – Above 5000' to FL280 excluding CYR701, Ocsl by NOTAM;
Above 5000' to FL600 excluding CYR701, Ocsl by NOTAM
User/Controlling Agency: Military Coordination Centre, 5 Wing Goose Bay (709) 896-6900 Ext 7331 CSN 555-7331, 1-800-563-2390.

CYA733(M) – Above 5000' to FL280 excluding CYR727 and CYR750, Ocsl by NOTAM;
Above 5000' to FL600 excluding CYR727 and CYR750, Ocsl by NOTAM
User/Controlling Agency: Military Coordination Centre, 5 Wing Goose Bay (709) 896-6900 Ext 7331 CSN 555-7331, 1-800-563-2390

CYA755 (M) – Above 5000' to 17,000', Ocsl by NOTAM;
Above 5000' to FL600, Ocsl by NOTAM
User/Controlling Agency: Military Coordination Centre, 5 Wing Goose Bay (709) 896-6900 Ext 7331 CSN 555-7331, 1-800-563-2390

327. MILITARY DANGER AREAS

The following lists Military Danger Areas, their restrictions, user/controlling agency and phone numbers. This airspace lies within international waters, but is controlled by Canadian ATC, therefore is published as a Danger Area in accordance with ICAO requirements.

CYD101 – FL230 to FL600, Ocsl by NOTAM 36 hr PN
User Agency: JTF(P) J3 AIR Esquimalt (250) 363-1050 CSN 333-1050 Mon-Fri 0800-1600 lcl.
After hours (250) 889-0073
Controlling Agency: Vancouver ACC (604) 586-4500

CYD106 – Surface to FL230, continuous
User/Controlling Agency: JTF(P) J3 AIR Esquimalt (250) 363-1050 CSN 333-1050 Mon-Fri 0800-1600 lcl. After hours (250) 889-0073

CYD111 – FL230 to FL310, Ocsl by NOTAM 45 days PN
User Agency: JTF(P) J3 AIR Esquimalt (250) 363-1050 CSN 333-1050 Mon-Fri 0800-1600 lcl.
After hours (250) 889-0073
Controlling Agency: Vancouver ACC (604) 586-4500.

CYD703 – Surface to FL300, Ocsl by NOTAM 48 hr PN
User Agency: RJOC(A) (902) 427-0550 Ext 6081/2502 CSN 427-6081/2502
Controlling Agency: Moncton ACC (506) 867-7178/7173.

CYD734, CYD735, CYD736, CYD737 and CYD738
– Surface to FL200, continuous;
Ocsl higher by NOTAM
User Agency: RJOC(A) (902) 427-0550 Ext 6081/2502 CSN 427-6081/2502
Controlling Agency: Moncton ACC (506) 867-7178/7173

CYD739, CYD740, CYD741, CYD742, CYD743, CYD744, CYD745 and CYD746
– Surface to FL300, Ocsl by NOTAM;
Ocsl higher by NOTAM
User Agency: RJOC(A) (902) 427-0550 Ext 6081/2502 CSN 427-6081/2502
Controlling Agency: Moncton ACC (506) 867-7178/7173

CYD751, CYD752
– Surface to 5000, continuous
User Agency: RJOC(A) (902) 427-0550 Ext 6081/2502 CSN 427-6081/2502
Controlling Agency: Moncton ACC (506) 867-7178/7173

328. MILITARY RESTRICTED AREAS

The following lists Military Restricted Areas, their restrictions, user/controlling agency and phone numbers.

Note: No person shall operate an aircraft in the airspace over the following Military Restricted Areas unless the flight has been authorized by the user/controlling agency. Unless otherwise specified the rules for Class F Restricted airspace apply when these areas are active.

CYR103 – Surface to 1500', continuous;
Above 1500' to 3000', Ocsl by NOTAM
User Agency: Range Control, Base Operations, CFB Esquimalt (250) 391-4164/4162
CSN 255-2000 (ask operator for 391-4164/4162)
Controlling Agency: Vancouver ACC (604) 586-4500

CYR104 – Surface to 2000', Ocsl by NOTAM
User Agency: MOC, CFB Esquimalt (250) 363-2425/5848 CSN 255-2425
Controlling Agency: Vancouver ACC (604) 586-4500

CYR107 – Surface to 1000', continuous;
Above 1000' to 13,500', Ocsl by NOTAM
User Agency: JTF(P) J3 AIR Esquimalt (250) 363-1050 CSN 333-1050 Mon-Fri 0800-1600 lcl.
After hours (250) 889-0073
Controlling Agency: Vancouver ACC (604) 586-4500

CYR108 – Surface to 3000', Ocsl by NOTAM
User Agency: Range Control, Base Operations, CFB Esquimalt (250) 391-4164/4162
CSN 255-2000 (ask operator for 391-4164/4162)
Controlling Agency: Vancouver ACC (604) 586-4500

CYR109 – Surface to unlimited, Ocsl by NOTAM, 48 hr PN
User Agency: JTF(P) J3 AIR Esquimalt (250) 363-1050 CSN 333-1050 Mon-Fri 0800-1600 lcl.
After hours (250) 889-0073
Controlling Agency: Vancouver ACC (604) 586-4500

CYR130 – 18,000' to FL230, Ocsl by NOTAM
User Agency: JTF(P) J3 AIR Esquimalt (250) 363-1050 CSN 333-1050 Mon-Fri 0800-1600 lcl. After hours (250) 889-0073
Controlling Agency: Vancouver ACC (604) 586-4500

CYR156 – Surface to 3000', Ocsl by NOTAM
User Agency: Range Control, Base Operations, CFB Esquimalt (250) 391-4164/4162 CSN 255-2000 (ask operator for 391-4164/4162
Controlling Agency: Vancouver ACC (604) 586-4500

CYR157 – 7000' to 17,000', Ocsl by NOTAM
User Agency: 19 Wing Operations, Comox (250) 339-8231 CSN 252-8231
Controlling Agency: Vancouver ACC (604) 586-4500

CYR160 – Surface to 10,000', Ocsl by NOTAM
User Agency: Base operations, CFB Chilliwack (604) 858-1003 CSN 252-1003

Controlling Agency: Vancouver ACC (604) 586-4500

CYR163 – 18,000' and above, Ocsl by NOTAM
User Agency: 19 Wing Operations, Comox (250) 339-8231 CSN 252-8231
Controlling Agency: Vancouver ACC (604) 586-4500

CYR164 – 18,000’ and above, Ocsl by NOTAM
User Agency: 19 Wing Operations, Comox (250) 339-8231 CSN 252-8231
Controlling Agency: Vancouver ACC (604) 586-4500

CYR165 – Surface to 4000', continuous
User/Controlling Agency: Area Support Unit, DND (604) 858-1123

CYR166 – 18,000' and above, Ocsl by NOTAM
User Agency: 19 Wing Operations, Comox (250) 339-8231 CSN 252-8231
Controlling Agency: Vancouver ACC (604) 586-4500

CYR203 – Surface to 17,000', Ocsl higher by NOTAM, continuous
User Agency: Base operations, Camp Wainwright (780) 842-1363 Ext 1202 CSN 530-1202
Controlling Agency: Edmonton ACC (780) 890-8397

CYR204 – Surface to unlimited, continuous
User Agency: 4 Wing Operations, CFB Cold Lake (780) 840-8000 Ext 8595 CSN 690-8595
Controlling Agency: Cold Lake Terminal (780) 840-8594 CSN 690-8594

CYR207 – Surface to 7000', 0000Z 1 Oct - 2359Z 31 Oct, 0000Z 21 Apr - 2359Z 31 May, O/T by NOTAM
User Agency: Base Operations, Camp Wainwright (780) 842-1363 Ext 1202, CSN 530-1202
Controlling Agency: Edmonton ACC (780) 890-8397

CYR221 – 7000' to unlimited, continuous 1400Z Mon to 0100Z Sat, O/T by NOTAM
User Agency: 4 Wing Operations, CFB Cold Lake (780) 840-8000 Ext 8595 CSN 690-8595
Controlling Agency: Cold Lake ATC (780) 840-8594 CSN 690-8594

CYR222 – 18,000' to unlimited, continuous 1400Z Mon to 0100Z Sat, O/T by NOTAM
User Agency: 4 Wing Operations, CFB Cold Lake (780) 840-8000 Ext 8595 CSN 690-8595
Controlling Agency: Cold Lake ATC (780) 840-8594 CSN 690-8594

CYR223 – 7000' to below 18,000', Ocsl by NOTAM
User Agency: 4 Wing Operations, CFB Cold Lake (780) 840-8000 Ext 8595 CSN 690-8595
Controlling Agency: Cold Lake ATC (780) 840-8594 CSN 690-8594

CYR224 – Above 12,500' to FL290, Ocsl by NOTAM
User Agency: 4 Wing Operations, CFB Cold Lake (780) 840-8000 Ext 8595 CSN 690-8595
Controlling Agency: Cold Lake ATC (780) 840-8594 CSN 690-8594

CYR225 – 18,000' to FL290, Ocsl by NOTAM
User Agency: 4 Wing Operations, CFB Cold Lake (780) 840-8000 Ext 8595 CSN 690-8595
Controlling Agency: Cold Lake ATC (780) 840-8594 CSN 690-8594

CYR229 – Surface to unlimited, continuous 0000Z (DT 2300Z) 1 Apr - 0700Z (DT 0600Z) 1 Dec;
Surface to 15,000' or as specified by NOTAM, continuous 0701Z (DT 0601Z) 1 Dec - 2359Z(DT 2259Z) 31 Mar
User/Controlling Agency: Operations Officer, CFB Suffield (403) 544-4310/4313, CSN 520-4310/4313

CYR230 – Surface to unlimited or as specified by NOTAM, continuous
User/Controlling Agency: Operations Officer, CFB Suffield (403) 544-4310/4313, CSN 520-4310/4313

CYR231 – Surface to 6000', continuous
User/Controlling Agency: Operations Officer, CFB Suffield (403) 544-4310/4313,

CSN 520-4310/4313

CYR232 – Surface to below 3000', continuous;
Surface to below 3400', Ocsl by NOTAM
User Agency: 408 THS Ops, CFB Edmonton (780) 973-4011 Ext 4163 CSN 528-4163
Controlling Agency: SATCO, 408 Sqn Edmonton (780) 973-4011 Ext 4108 CSN 528-4108

CYR233 – Surface to below 3400', continuous
User Agency: Garrison Ops, CFB Edmonton (780) 973-1624 CSN 528-4108
Controlling Agency: SATCO, 408 Sqn Edmonton (780) 973-4011 Ext 4108

CYR268 – 7000' to FL260, 1500-0100Z (DT 1400-2359Z) Mon-Fri, O/T Ocsl by NOTAM
User Agency: 4 Wing Operations, CFB Cold Lake (780) 840-8000 Ext 8595 CSN 690-8595
Controlling Agency: Cold Lake Terminal Control (780) 840-8594 CSN 690-8594

CYR269 – 7000' to FL260, 1500-0100Z (DT 1400-2359Z) Mon-Fri, O/T Ocsl by NOTAM
User Agency: 4 Wing Operations, CFB Cold Lake (780) 840-8000 Ext 8595 CSN 690-8595
Controlling Agency: Cold Lake Terminal Control (780) 840-8594 CSN 690-8594

CYR270 – 7000' to FL260, 1500-0100Z (DT 1400-2359Z) Mon-Fri, O/T Ocsl by NOTAM
User Agency: 4 Wing Operations, CFB Cold Lake (780) 840-8000 Ext 8595 CSN 690-8595
Controlling Agency: Cold Lake Terminal Control (780) 840-8594 CSN 690-8594

CYR301 – North of latitude 51°51'N surface to 2700', continuous;
South of latitude 51°51'N surface to 3000', continuous;
Above 3000' to FL280 Ocsl by NOTAM
User Agency: 17 Wing Operations, CFB Winnipeg (204) 833-2700 CSN 257-2700
Controlling Agency: Winnipeg ACC (204) 983-8338

CYR303 – Surface to 10,000', 1400-0030Z Mon-Fri when the Tower is open. O/T Ocsl by NOTAM
User/Controlling Agency: Moose Jaw Tower, 15 Wing Moose Jaw (306) 694-2222 Ext 5574
CSN 826-5574

CYR406 – Surface to 4000', continuous
User/Controlling Agency: Range Control Commissionaire (204) 765-3000 Ext 3333,
CSN 258-3333

CYR410 – Surface to FL280, continuous. Surface to FL350 Ocsl by NOTAM
User/Controlling Agency: Range Control Commissionaire (204) 765-3000 Ext 3333,
CSN 258-3333

CYR412 – Surface to 8800´, Ocsl by NOTAM
User Agency: 17 Wing Operations, Winnipeg (204) 833-2700, 1-877-283-6827 (CSN) 257-2700
User/Controlling Agency: Manitoba Rocketry Group (204) 227-8004

CYR501 – Surface to 12,000', continuous. Above 12,000' to 15,000' Ocsl by NOTAM
User Agency: MTFC Meaford Range Control (519) 538-1371 Ext 6738/6991 CSN 260-6738/6991
Controlling Agency: Toronto ACC (905) 676-4509.

CYR502 – Surface to 7000', continuous
User/Controlling Agency: Base Ops/Duty Watch Officer (705) 424-1200 Ext 1381/2445
CSN 270-1381/2445, Range Control 24/7 CSN 270-2164

CYR511 – Surface to FL200, continuous
User/Controlling Agency: Duty Centre CSN 677-5088, Range Control 24/7 CSN 677-5203

CYR514 – Surface to 6000', Ocsl by NOTAM
User Agency: Project Manager, Directorate of Contaminated and Legacy Sites Project Delivery,
Department of National Defence (613) 943-7809 CSN 943-7809
Controlling Agency: Toronto ACC (905) 676-4509

CYR531 – Surface to 1000', continuous
User/Controlling Agency: Connaught Range Control (613) 991-5740 CSN 991-5740

CYR536 – Surface to 2500', continuous
User/Controlling Agency: Dwyer Hill Training Centre D Ops O Air Aviation (613) 838-4756 Ext 2580

CYR537 – Surface to 3000', continuous
User/Controlling Agency: RCMP (613) 952-4200

CYR538 – Surface to 3000', continuous
User/Controlling Agency: RCMP (613) 952-4200

CYR540 – 3000' to FL180, Ocsl by NOTAM
User Agency: Petawawa Tower (613) 687-5511 Ext 7789/7702 or CFB Petawawa Range Control (613) 687-5511 Ext 5203
Controlling Agency: Montreal ACC (514) 633-3365

CYR541 – 3000' to FL180, Ocsl by NOTAM
User Agency: Petawawa Tower (613) 687-5511 Ext 7789/7702 or CFB Petawawa Range Control (613) 687-5511 Ext 5203
Controlling Agency: Montreal ACC (514) 633-3365

CYR542 – 1000' to FL180, Ocsl by NOTAM
User Agency: Petawawa Tower (613) 687-5511 Ext 7789/7702 or CFB Petawawa Range Control (613) 687-5511 Ext 5203
Controlling Agency: Montreal ACC (514) 633-3365

CYR543 – 4500' to FL180, Ocsl by NOTAM
User Agency: Petawawa Tower (613) 687-5511 Ext 7789/7702 or CFB Petawawa Range Control (613) 687-5511 Ext 5203
Controlling Agency: Montreal ACC (514) 633-3365

CYR602 – 7000' to 17,000', Ocsl by NOTAM
User/Controlling Agency: G3 AIR, Valcartier (418) 844-5000 Ext 6189 (Office), (418) 844-5000 Ext 6099 (Twr) or (418) 561-6876 (Cell)

CYR603 – Surface to 17,000', continuous;
Above 17,000' to FL270, Ocsl by NOTAM
User Agency: Range and Training Area Control, ASU Valcartier (418) 844-3710 CSN 666-3710
Controlling Agency: Surface to 17,000' - Base Operations Valcartier (418) 844-5000 Ext 3710 CSN 666-3710, Above 17,000' to FL270 - Quebec TCU (514) 633-3271

CYR605 – Surface to 1200', continuous;
Surface to 3500' Ocsl by NOTAM
User/Controlling Agency: Range Control Officer, Farnham (450) 293-8163 Ext 5225
CSN 273-5225

CYR606 – Surface to 17,000', continuous Mon-Fri 1300-0100Z (DT 1200-0000Z) O/T by NOTAM
Ocsl higher by NOTAM
User Agency: The Superintendent, Proof and Experimental Test Establishment (819) 293-2004
Controlling Agency: Montreal ACC (514) 633-3365

CYR612 – Surface to 2700', continuous
User Agency: Range and Training Area Control, ASU Valcartier (418) 844-3710 CSN 666-3710
Controlling Agency: Base Operations, Valcartier (418) 844-5000 Ext 3710 CSN 666-3710

CYR620 – Surface to 2000', continuous
User/Controlling Agency: RCMP (613) 993-8675

CYR628 – 8000' to FL310, Ocsl by NOTAM
User Agency: 3 Wing Operations, CFB Bagotville (418) 677-4000 Ext 7283, CSN 661-7283

Controlling Agency: Bagotville MTCU(418) 677-4000 Ext 7944, CSN 661-7944, Montreal ACC (514) 633-3365

CYR629 – 18,000' to FL310, 1400-0600Z (DT 1300-0500Z) Mon-Fri excluding holidays, O/T by NOTAM
User Agency: 3 Wing Operations, CFB Bagotville (418) 677-4000 Ext 7283, CSN 661-7283
Controlling Agency: Bagotville MTCU (418) 677-4000 Ext 7944, CSN 661-7944, Montreal ACC (514) 633-3365

CYR630 – 6000' to FL310, 1400-0600Z (DT 1300-0500Z) Mon-Fri, 14-23Z (DT 13-22Z) Sat, Sun and hols, O/T by NOTAM
User Agency: 3 Wing Operations, CFB Bagotville (418) 677-4000 Ext 7283, CSN 661-7283
Controlling Agency: Bagotville MTCU (418) 677-4000 Ext 7944, CSN 661-7944, Montreal ACC (514) 633-3365

CYR651 – Surface to 6000', Ocsl by NOTAM, 48 hr PN
User Agency: Transport Canada, (613) 990-9869
Controlling Agency: Bagotville Military Terminal Control (418) 677-4000 Ext 7944, CSN 661-7944, Montréal ACC (514) 633-3365

CYR652 – 3500' to 12,500', Ocsl by NOTAM, 48 hr PN
User Agency: Transport Canada, (613) 990-9869
Controlling Agency: Bagotville Military Terminal Control (418) 677-4000 Ext 7944, CSN 661-7944, Montréal ACC (514) 633-3365

CYR653 – Above 2000' to 8000', Ocsl by NOTAM, 48 hr PN
User Agency: Transport Canada, (613) 990-9869
Controlling Agency: Bagotville Military Terminal Control (418) 677-4000 Ext 7944, CSN 661-7944, Montréal ACC (514) 633-3365

CYR654 – Surface to 2000', Ocsl by NOTAM, September 1 to May 31, 48 hr PN
User Agency: Transport Canada, (613) 990-9869
Controlling Agency: Bagotville Military Terminal Control (418) 677-4000 Ext 7944, CSN 661-7944, Montréal ACC (514) 633-3365

CYR655 – Surface to 2000', Ocsl by NOTAM, September 1 to May 31, 48 hr PN
User Agency: Transport Canada, (613) 990-9869
Controlling Agency: Bagotville Military Terminal Control (418) 677-4000 Ext 7944, CSN 661-7944, Montréal ACC (514) 633-3365

CYR656 – Surface to 2000', Ocsl by NOTAM June 1 to August 31 - Tuesday, Wednesday, Thursday, O/T Ocsl by NOTAM, 48 hr PN
User Agency: Transport Canada, (613) 990-9869
Controlling Agency: Bagotville Military Terminal Control (418) 677-4000 Ext 7944, CSN 661-7944, Montréal ACC (514) 633-3365

CYR657 – Above 4,000' to below 18,000', Ocsl by NOTAM, 48 hr PN
User Agency: Transport Canada, (613) 990-9869
Controlling Agency: Bagotville Military Terminal Control (418) 677-4000 Ext 7944, CSN 661-7944, Montréal ACC (514) 633-3365

CYR658 – FL180 to below FL280, Ocsl by NOTAM, 48 hr PN
User Agency: Transport Canada, (613) 990-9869
Controlling Agency: Bagotville Military Terminal Control (418) 677-4000 Ext 7944, CSN 661-7944, Montréal ACC (514) 633-3365

CYR664 – Above FL310 to unlimited, Ocsl by NOTAM
User Agency: 3 Wing Operations, CFB Bagotville (418) 677-4000 Ext 7283 CSN 661-7283
Controlling Agency: Bagotville MTCU (418) 677-4000 Ext 7944, CSN 661-7944, Montreal ACC (514) 633-3365

CYR665 – Above FL310 to unlimited, Ocsl by NOTAM
User Agency: 3 Wing Operations, CFB Bagotville (418) 677-4000 Ext 7283 CSN 661-7283
Controlling Agency: Bagotville MTCU (418) 677-4000 Ext 7944, CSN 661-7944, Montreal ACC (514) 633-3365

CYR666 – Above FL310 to unlimited, Ocsl by NOTAM
User Agency: 3 Wing Operations, CFB Bagotville (418) 677-4000 Ext 7283 CSN 661-7283
Controlling Agency: Bagotville MTCU (418) 677-4000 Ext 7944, CSN 661-7944, Montreal ACC (514) 633-3365

CYR701 – Surface to FL280, Ocsl by NOTAM
User/Controlling Agency: Miltary Coordination Centre, 5 Wing Goose Bay (709) 896-6900 Ext 7331 CSN 555-7331, 1-800-563-2390

CYR704 – 3000' to 5000', Ocsl by NOTAM, 48 hr PN
User Agency: ACCE(A) / RJOC(A) (902) 427-2512/2502, CSN 427-2512/2502
Controlling Agency: Moncton ACC (506) 867-7178/7173

CYR705 – Surface to 5000', Ocsl by NOTAM, 48 hr PN
User Agency: ACCE(A) / RJOC(A) (902) 427-2512/2502, CSN 427-2512/2502
Controlling Agency: Moncton ACC (506) 867-7178/7173

CYR706 – Surface to 1000', continuous
User Agency: Army Reserve Training Centre, Camp Aldershot (902) 678-7930 Ext 130 CSN 568-5355
Controlling Agency: 14 Wing Greenwood (902) 765-1494 Ext 5457 CSN 568-5457

CYR717 – Surface to 1700', continuous
User Agency: RJOC(A) (902) 427-2502 CSN 427-2502
Controlling Agency: Moncton ACC (506) 867-7178/7173

CYR720 – Surface to FL250, Ocsl by NOTAM, 24 hr PN
User/Controlling Agency: CTC Gagetown Range Control Officer (506) 422-2000 Ext 3774/2387, CSN 432-3774/2387

CYR721 – 6000' to 14,000', Ocsl by NOTAM, 24 hr PN
User/Controlling Agency: CTC Gagetown Range Control Officer (506) 422-2000 Ext 3774/2387, CSN 432-3774/2387

CYR722 – Surface to 1200', continuous
User/Controlling Agency: CTC Gagetown Range Control Officer (506) 422-2000 Ext 3774/2387 CSN 622-3774/2387

CYR724 – Surface to FL250, continuous
User/Controlling Agency: CTC Gagetown Range Control Officer (506) 422-2000 Ext 3774/2387 CSN 432-3774/2387

CYR725 – Surface to 2000', continuous
User/Controlling Agency: CTC Gagetown Range Control Officer (506) 422-2000 Ext 3774/2387 CSN 432-3774/2387

CYR726 – Surface to 3000', Ocsl by NOTAM
User/Controlling Agency: Military Coordination Centre, 5 Wing Goose Bay (709) 896-6900 Ext 7331 CSN 555-7331, 1-800-563-2390

CYR727 (Area 1) – Surface to 12,500', continuous
User/Controlling Agency: Military Coordination Centre, 5 Wing Goose Bay (709) 896-6900 Ext 7331 CSN 555-7331, 1-800-563-2390

CYR727 (Area 2)
– Surface to FL280, excluding CYR750, Ocsl by NOTAM

User/Controlling Agency: Military Coordination Centre, 5 Wing Goose Bay (709) 896-6900 Ext 7331 CSN 555-7331, 1-800-563-2390

CYR748 – Surface to 1500', Ocsl by NOTAM
User/Controlling Agency: 12 Wing Air Traffic Control (902) 720-1292 CSN 720-1292

CYR750 – Above 12,500' to FL600, Ocsl by NOTAM
User/Controlling Agency: Military Coordination Centre, 5 Wing Goose Bay (709) 896-6900 Ext 7331 CSN 555-7331, 1-800-563-2390

Note: Pilots are cautioned to refer to the current issue of the *Designated Airspace Handbook (TP1820)* when flight planning to confirm the validity of CYA/CYD/CYR information contained in the GPH204A. Current information is contained in the CANADA DFLIP published every 56 days. The editor strives to maintain current information, but there is always a chance that a change could be missed.

329. MILITARY OPERATIONS AREA (MOA)

A MOA is airspace of defined dimensions established to segregate certain military activities from IFR traffic and to identify for VFR traffic where these activities are conducted. MOAs do not include Military Training Routes.

330. MILITARY TRAINING ROUTES (MTR)

Military Training Routes are established for the conduct of military flight training at airspeeds which may be in excess of 250 kts below 10,000 feet ASL. These routes may be flown in accordance with IFR (IR Routes) or VFR (VR Routes). The routes, their location, and the procedures for their activation will be published in the Canada Flight Supplement (CFS).

331. ALTITUDE RESERVATIONS (ALTRV)

1. An altitude reservation is airspace of defined dimensions within controlled airspace, reserved for the use of a civil or military agency during a specified period. A NOTAM will be issued when any part of an ALTRV activity is approved outside Class A, B or C airspace. A NOTAM may be published on ALTRVs wholly within controlled airspace (dimensions and time period) if the ALTRV will have a major effect on the flow of air traffic. An altitude reservation may be confined to a fixed area (stationary) or moving in relation to the aircraft that operate within it (moving).

2. Pilots shall plan to avoid known altitude reservations. ATC will not clear an unauthorized flight into an active reservation. IFR flights operating within controlled airspace and controlled VFR flights are provided with ATC separation from reserved airspace.

3. When flying in a moving altitude reservation, pilots must comply with the specified take-off time criteria (i.e. between ETD and AVANA). Early or late departures render the ALTRV invalid. Contact the appropriate ARU for a new/amended approval.

4. To ensure appropriate protected airspace is afforded to users, pilots must be within plus/minus 10 minutes of the planned enroute or destination fix times.

5. There are two Altitude Reservations Units (ARU) in Canada. Altitude Reservations East (ARE) located in Gander, NL, and Altitude Reservation West (ARW) located in Edmonton AB. The ARE area of responsibility is Toronto, Montreal, Moncton, Gander FIRs and Gander OCA. Normal hours of operation are 1130 UTC to 2000 UTC (DT 1030 to 1900 UTC), daily Monday to Friday excluding statutory holidays. Tel 709-651-5243 CSN 622-1260 (no voice mail) FAX 709-651-5288 ADIS/AFTN CZQXZGZA, Email: atlareqx@navcanada.ca

   Military circuit address: ARE GANDER NFLD CANADA

   Outside the hours identified above, limited immediate services may be available by contacting the Gander ACC Shift Manager at 709-651-5207.

   The ARW area of responsibility is Vancouver, Edmonton and Winnipeg FIRs. Normal hours of operation are 1430-2230 UTC (DT 1330-2130 UTC) daily, Mon-Fri, excluding statutory holidays. Tel 780-890-4739 CSN 528-4742 (no voice mail) FAX 780-890-4738 ADIS/AFTN address: CYEGZGZA,

Email: yegga_arw@navcanada.ca

Military circuit address: ARW EDMONTON AB CANADA

Outside the hours identified above, limited immediate services may be available by contacting the Edmonton ACC Shift Manager at 780-890-8397.

Project Officers requiring Altitude Reservation services must contact the agency responsible for the FIR within which the reservation originates.

Advance notice is preferred in accordance with Para.6.

6. Military Altitude Reservations - NAV CANADA will approve military ALTRV Approval Requests (APREQ) for peacetime operations on the basis of the following priority list

Note: The advance notification guidelines listed in this section should be considered standard operating procedure. In extreme situations, new APREQs may be submitted from the appropriate military headquarters up to 24 hours before an operation.

Class 1 - Aircraft implementing peacetime national emergency plans - Class 1 APREQs are filed so as to reach NAV CANADA as far in advance of takeoff as practicable.

Class 2 - Aircraft engaged in search and rescue operations. - Class 2 APREQs are filed so as to reach NAV CANADA as far in advance of takeoff as practicable.

Class 3 - Aircraft engaged in emergency air evacuations, hurricane operations, or other operations involving safety of lives or property; that is, use of airlift forces as directed by the appropriate authority in support of domestic crises. - Class 3 APREQs are filed so as to reach NAV CANADA as far in advance of takeoff as practicable.

Class 4 - Deployments, at the discretion of the Chief of Defence Staff, in support of an exercise or large scale mission and fulfilling an unforeseen requirement. The deployment should be essential to the success of the exercise or mission. - Class 4 APREQs are filed so as to reach NAV CANADA as far in advance of takeoff as practicable.

Class 5 - Aircraft engaged in important peacetime service, joint or specified command exercises or missions. Notification of this priority must be received from the appropriate military headquarters. - Class 5 APREQs are filed so as to reach NAV CANADA at least 15 days in advance of takeoff.

Class 6 - Aircraft engaged in large-scale missions directed by a command headquarters. - Class 6 APREQs are filed so as to reach NAV CANADA at least 10 days in advance of takeoff.

Class 7 - Aircraft engaged in evaluation-type operations or overseas deployment. - Class 7 APREQs are filed so as to reach NAV CANADA at least 4 days in advance of takeoff.

Class 8 - Aircraft engaged in missions directed by specified air forces or commands, aircraft engaged in other training exercises, and all other aircraft requesting ALTRVs. - Class 8 APREQs are filed so as to reach NAV CANADA at least 4 days in advance of takeoff.

In all cases the originator is responsible for assigning the appropriate class.

7. APREQ Message Format

The following message format is used for filing an approval request (ALTRV APREQ) for a moving ALTRV.

Mission name and priority number.

a. Aircraft identification or radio call sign.

b. Number, type of aircraft, and equipment suffix.

c. Point of departure.

d. Altitude, Route details by segment and segment ETE (hhmm), Event, such as AAR, climb and descent. Within domestic FIRs - via NAVAIDS, fixes or coordinates of latitude and longitude. Within oceanic CTA/FIR - via oceanic intersections or whole degrees of latitude at each ten degrees of longitude. Example: 5800N 4000W, 5700N 5000W, etc).

e. Destination

f. Estimated time of Departure, Mode (ADMIS) and AVANA time

g. TAS (kt)

Additional info: Name of Project Officer and contact information, MARSA statement, for all altitude reservations within the Gander Oceanic Control Area, MNPS or non-MNPS certified shall be indicated. Details of non-standard formation.

Whenever possible, at least 24 hours advance notice is desirable for postponement or amendment of an ALTRV.

8. The following message format is used for filing an APREQ for a Stationary ALTRV

ALTRV/Exercise name and priority number.

(i) STATIONARY RESERVATION (insert altitude block)WITHIN AN AREA BOUNDED BY (insert coordinates) FROM (insert ddhhhh MMM) TO (insert ddhhhh MMM).
(ii) Additional info: Project Officer Name. Add any relevant information.
Contact appropriate ARU during planning for support/assistance.

332. ROCKET RANGES

Rocket ranges are established in the vicinity of Churchill, Manitoba, and are depicted on VFR Aeronautical Charts and Radio Navigation Charts. The particular range to be active, and the time period involved, is published in advance by NOTAM. Pilots of IFR aircraft will not be cleared into active areas of the Churchill Rocket Range unless, after being informed it is active, the pilot specifically requests a clearance to penetrate the area or fly closer to it than separation minima would permit.

333. CHARTING OF CLASS F AIRSPACE

All designated Class F Restricted and Class F Advisory airspace is published on HI or LO charts, as applicable, and on aeronautical charts for visual flight.

CHAPTER 4

FLIGHT PLANNING INFORMATION

SECTION 1 GENERAL

401. REQUIREMENT TO FILE A FLIGHT PLAN

A flight plan or flight itinerary shall be submitted for all flights in Canadian Forces aircraft except as authorized in B-GA-100-001/AA-000 Flying Orders Book 1, Chapter 3.

402. HOW TO FILE FLIGHT PLANS

1. Flight plans are normally filed through base operations, or if not available at a civilian airport, flight plans may be filed through a Flight Service Station or air traffic control unit directly, or through a communications base such as:

   a. an operations office (e.g., flying club, airlines dispatch, etc.),

   b. a designated airport office, etc.,

   Note: Because of possible overloading, air-ground communications frequencies should not be used for the filing of flight plans and flight itineraries where alternate means are available. GPH205 Canada Flight Supplement contains all FSS telephone numbers including toll free numbers where available. DND base operations will accept collect calls from military pilots for the purpose of flight planning.

403. REQUIREMENTS TO CHANGE THE INFORMATION IN A FLIGHT PLAN OR ITINERARY

1. Since control and alerting services are based primarily on information provided by the pilot, it is essential that modifications to flight plans and flight itineraries be communicated to an ATC unit, a FIC, a CARS or, as applicable, a responsible person concerned, as soon as practicable.

2. Pilots shall notify as soon as practicable an air traffic control unit, a flight service station, a community aerodrome radio station or the responsible person, of any change to:

   a. the route of flight;

   b. the duration of flight; or

   c. the destination aerodrome

404. OPENING A VFR FLIGHT PLAN OR FLIGHT ITINERARY

A VFR flight plan or flight itinerary should normally be opened with a control tower, a flight service station or a community aerodrome radio station (CARS) upon departure to activate the alerting service. The pilot is responsible for extending or canceling the flight plan or flight itinerary if the flight is delayed or cancelled. If an extension or cancellation to a filed flight plan or flight itinerary has not been received by the proposed time of departure, the responsible ATS unit will activate the flight plan or flight itinerary, using the ETD as the ATD, unless it has been known that the aircraft has not departed. Failure of the pilot to comply will result in SAR action being initiated.

405. REQUIREMENT TO CLOSE A FLIGHT PLAN AND FLIGHT ITINERARY

1. The pilot is at all times responsible for the closing of his flight plan. It should not be taken for granted that ATC personnel will automatically file VFR arrival reports at locations served by control towers.

2. If the flight is to be conducted wholly or partly within sparsely settled areas and communications are not adequate to submit an arrival report within the prescribed time, a Flight Itinerary may be filed with a responsible person. A responsible person is defined as any person who agrees to notify ATC, a Flight Service Station, a Peace Officer, or an officer of the Canadian Forces, should the pilot fail to arrive at the estimated time of arrival specified in his itinerary. The pilot is responsible for making an arrival report to the responsible person as soon as practicable after landing but not later than:

a. the search and rescue time specified in the flight itinerary; or

b. where no search and rescue time was specified in the flight itinerary, 24 hours after the last reported estimated time of arrival.

3. An arrival report for a flight plan shall be submitted to an ATC unit, a FSS or a community aerodrome radio station as soon as practicable after landing but not later than

a. the search and rescue time specified in the flight plan; or

b. where no search and rescue time is specified in the flight plan, one hour after the last reported estimated time of arrival; or

c. where no search and rescue time is specified in the flight itinerary, 24 hours after the last reported estimated time of arrival.

4. A pilot who terminates an IFR flight at an aerodrome where there is an operating ATC unit or FSS is not required to file an arrival report unless requested to do so by the appropriate ATC unit or FSS.

When submitting an arrival report, the pilot should clearly indicate that he/she was operating on a flight plan or flight itinerary and wishes it to be closed. Failure to close a flight plan or flight itinerary will initiate SAR action. It should not be assumed that ATS personnel will automatically file arrival reports for VFR flights at locations served by control towers and FSSs. Toll-free calls as outlined in the CFS may be made to an ATS facility for this purpose. The arrival report for a flight plan or flight itinerary, shall include:

a. the aircraft registration mark, flight number or radio call sign;

b. the type of flight plan or flight itinerary;

c. the departure aerodrome;

d. the arrival aerodrome, and

e. the date and time of arrival.

Note: Closing of a Flight Plan or Flight Itinerary Prior to Landing

A pilot, who conducts a flight in respect of which a flight plan or flight itinerary has been filed with an air traffic control unit, flight service station, or community aerodrome radio station, has the option of closing the flight plan or flight itinerary with an air traffic control unit, flight service station, or community aerodrome radio station prior to landing.

The closure of a flight plan or flight itinerary prior to landing is considered as filing an arrival report, and as such, it will result in the termination of all alerting services with respect to search and rescue notification.

When flying IFR, use of the terms "Cancel IFR" or "Cancelling IFR" will only result in the discontinuation of IFR separation, but will not automatically close your flight plan or flight itinerary. Therefore, alerting services with regards to search and rescue notification are still active and based on the information submitted in the original flight plan or flight itinerary. As the above phrases **DO NOT** close the flight plan or flight itinerary, the flight plan or flight itinerary must either be closed prior to landing, or an arrival report filed after landing with an air traffic control unit, a flight service station or a community aerodrome radio station.

When flying IFR in the U.S.A. or landing at a Canadian airport that underlies airspace delegated to the control of the FAA, use of the phrase "Cancelling IFR" results in ATC discontinuing the provision of IFR separation and also closes the flight plan or itinerary. Therefore, alerting service with regard to SAR notification is also terminated, unless the pilot files and activates a VFR flight plan.

406. CUSTOMS, IMMIGRATION AND DIPLOMATIC CLEARANCES

A VFR or IFR flight plan must be filed prior to conducting any flight between Canada and a foreign state.

If the flight is to any country other than the U.S., an ICAO flight plan must be filed.

1. FLIGHTS FROM CANADA TO THE UNITED STATES

For transborder flights departing from Canada to the U.S. or from the U.S. to Canada, it is solely the pilot's responsibility to make sure that U.S. Customs is properly notified at least one hour prior to arrival. Failure to do so may subject the pilot to a penalty.

ADCUS notification is no longer accepted on flight plans for transborder flights departing from Canada to the U.S. or from the U.S. to Canada. Pilots must make their own customs arrangements before departing on a transborder flight. U.S Customs will provide any special requirements prior to entry such as passenger manifests to include number of U.S and non U.S citizens on the flight.

2. FLIGHTS FROM OTHER COUNTRIES TO CANADA

Flights should normally return to Canada via an Airport of Entry (AOE) unless previously arranged with Canada Customs. ADCUS notifications on flight plans will no longer be accepted. Military crews must always make their own arrival customs arrangements with the local custom officials by telephone, by letter or via HF communications (through Wing Ops, phone patch, etc). Agreements between Wings and local Custom offices may vary. Therefore, contact the applicable Wing Ops for local procedures. Request for the telephone number of the applicable local Custom office may be requested using the 1-888-CANPASS number (1-888-226-7277). Aerodromes with custom facilities are listed in the GPH205 and additional custom information is available in the General Section of this publication.

3. DIPLOMATIC CLEARANCE

All aircraft owned or operated by the Canadian Forces shall have a diplomatic clearance prior to entering a foreign country. Failure to do so may result in severe fines or possible confiscation of aircraft. These clearances can be confirmed or requested through 1 Cdn Air Div Chief AMD Overflights in Winnipeg (CSN 257-2858/2859).

When overflying or landing in the United States, blanket clearance has been granted for those flights that are not carrying dangerous cargo (DC) or VIPs. Dangerous cargo is an item listed as Class 1, forbidden or requiring special approval in the ICAO Procedures for the Safe Transportation of Dangerous Cargo by Air manual. VIPs, for US diplomatic clearance purposes, are LGen/Cabinet Minister or above. Those persons below such ranks but still requiring appropriate protocol should be referred to as Distinguished Visitors (DV). Flights to the US that are carrying DC or VIPs require clearance that may be obtained through 1 Cdn Air Div Chief Combat Plans. Request must be submitted no less than five working days prior to the flight entering the US.

Note: When conducting flights, including Round Robin or training flights into a foreign country, the aerodrome where the aircraft wheels first touch the foreign ground is considered the Aerodrome of Entry and therefore Customs and Immigration clearances shall be carried out at that location. Suitable planning by the crew should ensure these facilities are available.

407. FLIGHT PRIORITY

1. Normally, ATC provides control service on a first-come, first-served basis. However, controllers may adjust the arrival or departure sequence in order to facilitate the maximum number of aircraft movements with the least average delay. Altitude assignment may also be adjusted in order to accommodate the maximum number of aircraft at their preferred altitudes, or to comply with ATFM requirements. However, flight priority is provided to:

a. an aircraft that is known or believed to be in a state of emergency;

Note: This category includes aircraft subjected to unlawful interference, or other distress or urgency conditions that may compel the aircraft to land or require flight priority.

b. a MEDEVAC flight;

c. military or civilian aircraft participating in SAR missions and identified by the radiotelephony call sign "RESCUE" and the designator "RSCU", followed by an appropriate flight number;

d. military aircraft that are departing on:

(i) operational air defence flights,
(ii) planned and co-ordinated air defence exercises, and
(iii) exercises to an ALTRV (altitude reservation).

e. an aircraft carrying the Prime Minister, Heads of State, or Foreign Heads of Government.

408. MINIMUM FUEL ADVISORY

1. Pilots may experience situations where delays caused by traffic, weather or any other reason result in the pilot being concerned about the aircraft's fuel state upon reaching destination. In such cases, the pilot may declare to ATC that a MINIMUM FUEL condition exists. A MINIMUM FUEL declaration requires that the pilot:

a. advise ATC as soon as possible that a MINIMUM FUEL condition exists;

b. following an ATC communications transfer, advise the new sector or unit that a MINIMUM FUEL condition exists;

c. be aware that this is not an emergency situation but merely an advisory that indicates an emergency is possible should any undue delay occur;

d. be aware that a minimum fuel advisory does not imply an ATC traffic priority although ATC special flight handling will be implemented; and

e. declare an EMERGENCY if the pilot determines that the remaining usable fuel supply suggests the need for ATC traffic priority to ensure a safe landing. In this case, the pilot should indicate low fuel as the reason for the emergency and report to ATC the fuel remaining in minutes of flight.

2. ATC will take the following special flight handling action when advised that a MINIMUM FUEL condition exists:

a. be alert for any occurrence or situation that might delay the concerned aircraft and attempt to resolve any conflicts;

b. inform the aircraft of any anticipated delay as soon as becoming aware of such delay;

c. inform the next sector or unit of the minimum fuel condition of the aircraft;

d. record the information in the unit log; and

e. be aware that an emergency situation may develop following a MINIMUM FUEL declaration.

3. Traffic priority is given to a pilot who declares an emergency for fuel by broadcasting MAYDAY MAYDAY MAYDAY FUEL. Use of standardized pilot phraseology distinguishes minimum fuel from a fuel emergency, assuring pilot intent without further verification.

4. In an effort to avoid confusion and to ensure that the appropriate ATC responses are provided, any non-standard phraseology used by the pilot referring to fuel or fuel shortage will cause ATC to immediately inquire if the pilot is declaring an emergency. Traffic priority will be given to a pilot who declares an emergency for fuel.

409. WEATHER AND NOTAM SERVICES

1. The Canadian Forces Weather and Oceanographic Service (CFWOS) is responsible for the dissemination of weather information, observations and forecasts for military aviation users. Military weather services

are normally restricted to military use only. NAV CANADA has the same responsibilities for civil aviation customers.

2. Military weather services are available on the DIN at http:/met.forces.gc.ca. Links to Canadian and International NOTAM sites are on this site.

3. Online Canadian weather and NOTAM services for civil and military users are available from the NAV CANADA web site at http://www.flightplanning.navcanada.ca.

4. International NOTAMs are available on the DIN and online at https://www.notams.jcs.mil and https://www.notams.faa.gov.

5. For more information on NOTAMs see Section 5.

SECTION 2 FLIGHT PLANNING

410. FLIGHT PLAN OR FLIGHT ITINERARY

1. Intermediate Stops:

   a. Intermediate stops may not be included in a single IFR flight plan. Except for transborder flights, a single VFR flight plan or an IFR or VFR flight itinerary including one or more intermediate stops en route may be filed provided:

      (i) for VFR flight plans, the stop will be of short duration (for purposes such as boarding passengers, and refueling);
      (ii) for IFR flight itineraries, the stop will be in uncontrolled airspace; and
      (iii) each intermediate stop is indicated by repeating the name of the stopping point and its duration in the route section of the flight plan/itinerary. Record the duration of the stopover in hours and minutes with four consecutive digits. Example: CYXU 0045 CYXU. A phone number for the stopover may be included in the "Remarks" section for use in case of search and rescue.

   b. Transborder Canada/USA flight plans shall be filed to an AOE only to avoid unnecessary alerting service procedures from being initiated due to delays created in the process of clearing customs. Flight plans for locations beyond the AOE may be filed with a FAA FSS.

   c. When intermediate stops are planned, the "Estimated Elapsed Time" must be calculated as the total time to the final destination, including the duration of the intermediate stop(s). It should be noted that Search and Rescue (SAR) action would only be initiated at the specified SAR time or in the event that a SAR time is not indicated, 60 minutes for a flight plan and 24 hours for a flight itinerary after the ETA at the final destination. Pilots wishing SAR action based on every leg of a flight should file one flight plan or flight itinerary for each leg.

   d. Since flight following action is based primarily on information provided by the pilot, it is most essential that modifications to flight plans and flight itinerary be communicated to the agency or person concerned as soon as possible after the change occurs. When a person intends to make any changes in the flight route or destination aerodrome specified in a VFR flight plan, the nature of the changes must be transmitted as soon as possible to an FSS or to ATC.

   Note: For departures from locations having no means of communicating the departure time, unless otherwise stated in the filed flight plan or flight itinerary, the flight plan or flight itinerary will be activated at the proposed time of departure. Failure to communicate delays may result in activating the Search and Rescue (SAR) process.

2. As a minimum every flight itinerary must include:

   a. the type and identification of the aircraft being used,

   b. the estimated duration of the flight(s) and the ETA at destination,

   c. the route of flight, or the specific boundaries of the area of flight operations,

d. the location of overnight stops, if applicable, and

e. the tail number of the aircraft.

3. In addition for a Flight itinerary, indicate the following in ITEM 18 Other Information of the flight plan form:

a. Unit, base, organization or individual to be contacted in the event of non-arrival;

b. With whom an arrival report will be filed and indicate means; and

c. Time (UTC) Search and rescue should be alerted if different from Article 404

411. DEFENCE VFR (DVFR) FLIGHT PLANS AND DEFENCE FLIGHT ITINERARY

1. Chapter 10 defines the conditions under which DVFR flight plans and Defence flight itinerary are to be filed.

2. These regulations provide that no person shall operate an aircraft into or within the Air Defence Identification Zone (ADIZ) unless an IFR or DVFR flight plan or Defence flight itinerary has been filed with the appropriate ATC unit or the Command /Group Operation Centre responsible for that flight.

3. If filing a flight plan for flight under visual flight rules, indicate that it is a Defence itinerary or flight plan by inserting under item 18 remarks either – RMK/E (Defence flight itinerary) PADRA or RMK/D (Defence VFR) PADRA.

412. IFR FLIGHT PLANS

1. CF Flying Orders require that prior to taking off from any point within and prior to entering any controlled airspace during IFR flight, or during instrument meteorological conditions (IMC), a flight plan for the flight containing such information as may be specified by the regulations shall be submitted by the pilot-in-command of the aircraft to the appropriate air traffic control unit.

2. In order to assist ATC in improving the service provided and to allow for sufficient time for input into the ATC data processing system, pilots are urged to file IFR flight plans as early as practicable, preferably 30 minutes prior to their proposed departure time, and to be prepared to depart as closely as possible to the proposed departure time specified in the flight plan.

3. In the case of transborder flights, where the point of departure is in proximity to the border, and flight routing will result in border crossing shortly after departure, flight plans should be filed at least one hour in advance to facilitate adequate coordination and data transfer.

4. Consecutive IFR flight plans involving intermediate stops enroute may be filed at the initial point of departure providing the following points are adhered to:

a. initial point of departure and enroute stops must be in airspace controlled by Canada

b. the sequence of stops will fall within one 24 hr. period

c. the flight planning unit must be provided at least the following items of information for each stage of the flight:

(i) point of departure
(ii) altitude
(iii) route
(iv) destination
(v) proposed time of departure
(vi) estimated elapsed time
(vii) alternate
(viii) fuel on board, and, if required

- T.A.S.
- number of persons on board
- where an arrival report will be filed.

d. a consecutive IFR flight plan may be filed for a departure point within FAA controlled airspace provided:

(i) the procedures contained in para. 4. b. and c. are followed;
(ii) the first flight originates in Canadian controlled airspace; and
(iii) only one flight plan for departure from FAA controlled airspace is filed.

5. Aircraft that are operating IFR are required to advise ATC and obtain a new or amended clearance, as appropriate, before making any changes in an IFR flight plan in respect of:

a. cruising altitude

b. route,

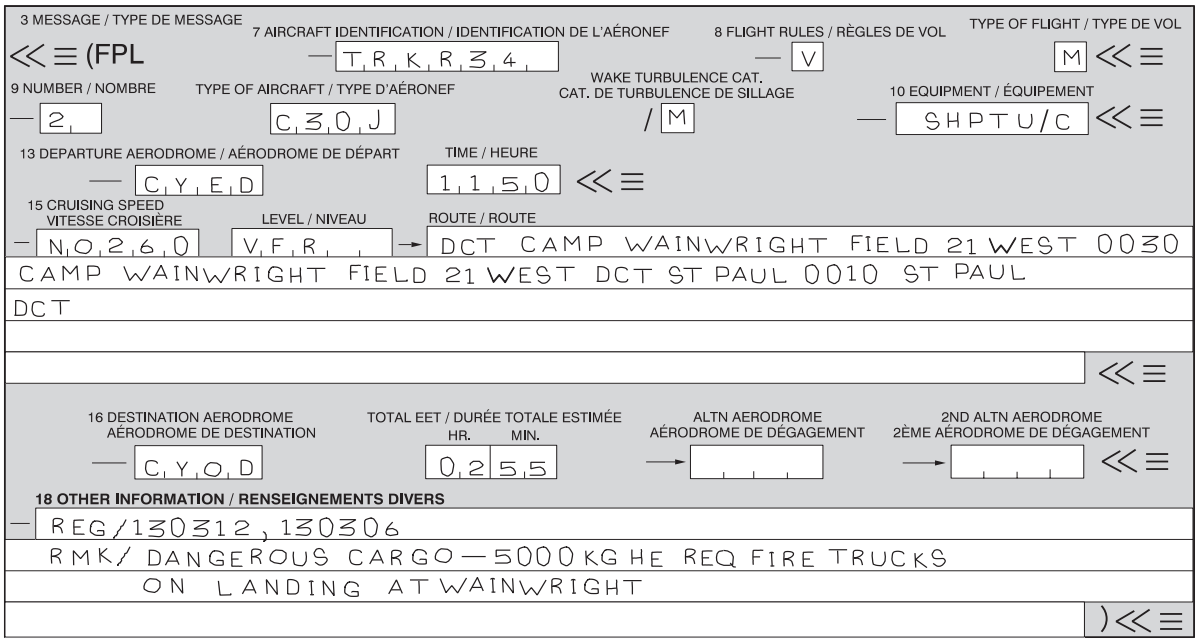
c. destination aerodrome,

Additionally, when in controlled airspace:

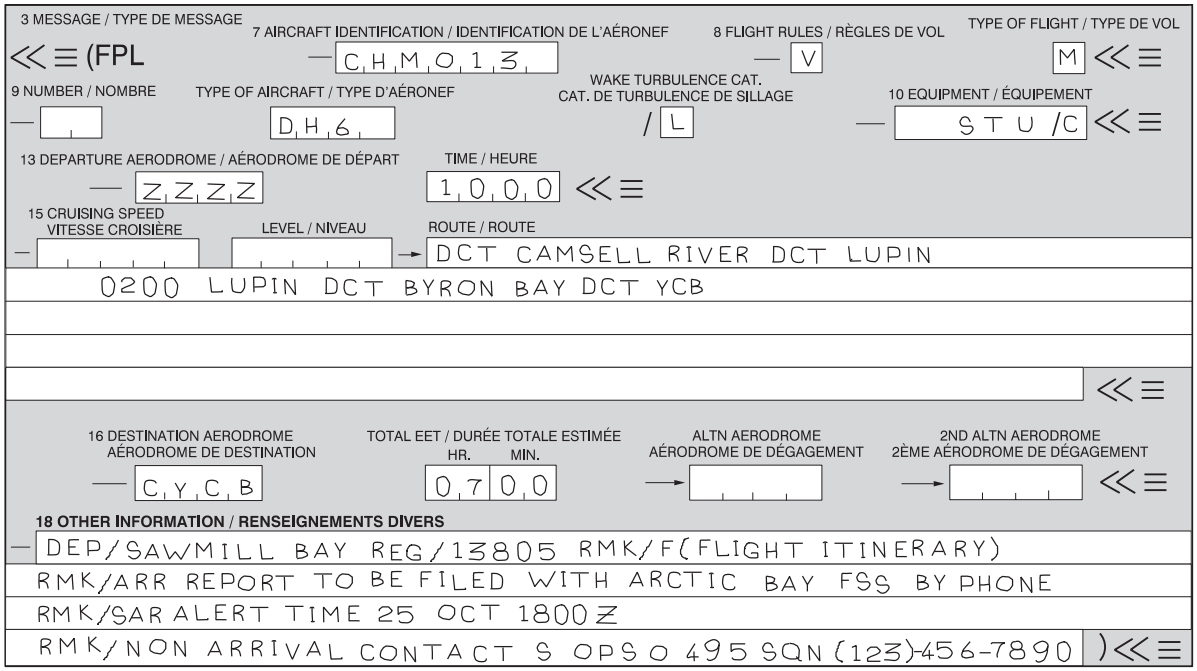
d. true airspeed at cruising altitude or flight level where the change is 5% or more of the true airspeed specified in the flight plan, or

e. any change of .01 or more to the Mach number where the Mach number has been included in the ATC clearance.

DOMESTIC VFR FLIGHT PLAN



DOMESTIC FLIGHT ITINERARY



413. ICAO FLIGHT PLAN FORM (DOMESTIC AND INTERNATIONAL)

1. Flight Plans shall be filed in the ICAO format as specified in ICAO Doc. 4444 (PANS-ATM) and this article when required by all military pilots.

2. Instructions for completion of the flight plan form:

   a. Adhere closely to the prescribed formats and manner of specifying data.

   b. Commence inserting data in the first space provided. Where excess space is available, leave unused spaces blank.

   c. Insert all clock times in 4 figures UTC.

   d. Insert all estimated elapsed times in 4 figures (hours and minutes).

   e. Shaded area preceding item 3 – to be completed by ATS and COM services, unless the responsibility for originating flight plan messages has been delegated.

   f. Where unique domestic requirements are necessary, they will be noted within the specific item instruction.

   Note: The term “aerodrome” where used in the flight plan is intended to cover also sites other than aerodromes which may be used by certain types of aircraft, e.g. helicopters or balloons.

3. Instructions for completion of ATS data:

   a. Complete items 7 to 18 as indicated hereunder.

   b. Complete item 19 to facilitate alerting of SAR services.

Note: ITEM NUMBERS ON THE FORM ARE NOT CONSECUTIVE, AS THEY CORRESPOND TO FIELD TYPE NUMBERS IN ATS MESSAGES.

ITEM 7: AIRCRAFT IDENTIFICATION (MAXIMUM 7 CHARACTERS)

INSERT one of the following aircraft identifications, not exceeding 7 characters:

a.) The authorized group, squadron, unit or tactical call sign using the authorized abbreviation from the List of Authorized Group/Squadron/Unit Call Signs Table below. These call signs are authorized for use within Canadian Domestic Airspace only unless prior arrangements have been made with an international host agency. Pilots are reminded that they are NOT to use call signs that are not found in this Table.

List of Authorized Group/Squadron/Unit Call Sign Table.

CALL SIGN	ABBREVIATION	GROUP SQN OR UNIT	LOCATION OF UNIT
ALOUETTE	ALUT	425 SQN	BAGOTVILLE
APACHE	APCH	2 CFFTS – A Flt	MOOSE JAW
ATLAS	ATLS	435 SQN	WINNIPEG
AXE	AXXE	409 SQN	COLD LAKE
BANDIT	BDIT	2 CFFTS – B Flt	MOOSE JAW
BANJO	BNJO	426 SQN TAT	TRENTON
BAT	BATT	1 WING HQ	KINGSTON
BATTLE	BATL	450 SQN	PETAWAWA
BENGAL	BNGL	439 SQN	BAGOTVILLE
BISON	BISN	429 SQN	TRENTON
BLACK	BLAK	425 SQN	BAGOTVILLE
BLADE	BLDE	433 SQN	BAGOTVILLE
BLOWTORCH	BTRCH	450 SQN	PETAWAWA
BOXCAR	BXCR	435 SQN TAT	WINNIPEG
BRONCO	BRNC	3 CFFTS QA	SOUTHPORT
BRUISER	BRUSR	CATS	OTTAWA
BURMA	BRMA	436 SQN TAT	TRENTON
CANUCK	CNUK	436 SQN	TRENTON
CASPER	CSPR	8 WING TAT	TRENTON
CHALLENGER	CHAL	412 SQN	OTTAWA
CHEETAH	CHETA	CATS	OTTAWA
CLAW	CLAW	425 SQN	BAGOTVILLE
CLOAK	CLOK	409 SQN	COLD LAKE

CALL SIGN	ABBREVIATION	GROUP SQN OR UNIT	LOCATION OF UNIT
COBRA	CBRA	2 CFFTS – C Flt	MOOSE JAW
COLT	COLT	CFTS/3 CFFTS	SOUTHPORT
COUGAR	KUGR	410 SQN	COLD LAKE
CRADLE	CRADL	CATS	OTTAWA
CROSSBOW	CBOW	409 SQN	COLD LAKE
CYCLONE	CYCL	12 WG HQ	SHEARWATER
DAGGER	DAGR	409 SQN	COLD LAKE
DEFIANT	DFNT	410 SQN	COLD LAKE
DEMON	DMON	407 SQN	COMOX
DRAGON	DRGN	2 CFFTS – D Flt	MOOSE JAW
DRIFTER	DFTR	3 CFFTS ME STDS	SOUTHPORT
EAGLE	EAGL	CAS	OTTAWA
FAUCON (FALCON)	FCON	430 SQN	VALCARTIER
FREEDOM	FREE	408 SQN	EDMONTON
FURBALL	FURBL	CATS	OTTAWA
GANDER	GNDR	408 SQN	EDMONTON
GHOST	GOST	8 WING TAT/SPECIAL OPS	TRENTON
GONZO	GONZ	402 SQN	WINNIPEG
GRIFFIN	GRFN	400 SQN	BORDEN
GRIM	GRIM	427 SQN	PETAWAWA
GRIZZLY	GRZL	402 SQN	WINNIPEG
HAMMER	HAMR	450 SQN	PETAWAWA
HORNET	HRNT	4 WING OPS	COLD LAKE
HUNTER	HNTR	404 SQN	GREENWOOD
HUSKY	HUSK	437 SQN	TRENTON
JAW	JAWW	STAFF OFFICERS	MOOSE JAW
JESTER	JSTR	417 SQN HELO	COLD LAKE
JOKER	JOKR	417 SQN HELO	COLD LAKE
KARMA	KRMA	3 CFFTS RW STDS	SOUTHPORT
KNIGHT	NITE	414 SQN	COMOX

CALL SIGN	ABBREVIATION	GROUP SQN OR UNIT	LOCATION OF UNIT
KRAKEN	KRKN	12 WING OPS	SHEARWATER
LANCE	LANC	CADET OPS	CENTRAL REGION
LARK	LARK	425 SQN	BAGOTVILLE
LION	LION	427 SQN	PETAWAWA
LEOPARD	LEPD	2 CFFTS 15 WING	MOOSE JAW
LYNX	LYNX	406 SQN	SHEARWATER
MATRIX	MTRX	CFS/ICP FLT	WINNIPEG
MAXIM	MAXM	410 SQN	COLD LAKE
MENACE	MENACE	TOP ACES	POINTE-CLAIRE
MOGGY	MOGGY	CATS	OTTAWA
MOOSE	MOOS	419 SQN	COLD LAKE
MUSTANG	MSTG	3 CFFTS ME SCHOOL	SOUTHPORT
NABOB	NABO	MAINT TEST FLIGHT	MOOSE JAW
NIGHTMARE	NTMR	409 SQN	COLD LAKE
NOMAD	NOMD	444 SQN	GOOSE BAY
NORTHSTAR	NSTAR	MEUF, 8 WING OPS	TRENTON
OILER	OILR	435 SQN	WINNIPEG
OUTCAST	OCST	103 (SAR) SQN	GANDER
OUTLAW	OTLW	3 CFFTS (HELO)	SOUTHPORT
PATHFINDER	PATH	405 SQN	GREENWOOD
PHANTOM	FNTM	1 WING NVG	ALL AREAS
PHOENIX	FENX	GRND TNG SCHOOL	MOOSE JAW
POGO	POGO	PLER	COLD LAKE
PROPHET	PRFT	FTS-PFT TESTS	SOUTHPORT
QUILL	QUIL	433 SQN	BAGOTVILLE
RACER	RACR	429 SQN TAT	TRENTON
RAIDER	RADR	427 SQN	PETAWAWA
RAM	RAMM	401 SQN	COLD LAKE
RANGER	RNGR	3 CFFTS BHT	SOUTHPORT
RAVEN	RAVN	2 CAD / AF AOT	WINNIPEG

CALL SIGN	ABBREVIATION	GROUP SQN OR UNIT	LOCATION OF UNIT
REAPER	REPR	15 WG Standards	MOOSE JAW
REBEL	REBL	435 SQN AAR	WINNIPEG
RETRIEVER	RTVR	444 SQN	GOOSE BAY
RUT	RUTT	419 SQN	COLD LAKE
SABRE	SABR	1 Cdn Air Div/CANR	WINNIPEG/SETS
SAGUENAY	SGNY	3 WING OPS	BAGOTVILLE
SCAR	SCAR	433 SQN	BAGOTVILLE
SCOUT	SCOU	CADET OPS	PRAIRIE REGION
SHARK	SHRK	HOTEF	SHEARWATER
SHOTGUN	STGN	CFTS/3 CFFTS	SOUTHPORT
SKYHAWK1	SKYHK1	CANADIAN PARACHUTE CENTRE	TRENTON
SLINGSHOT	SLST	CADET OPS	ATLANTIC REGION
SNAKE	SNAK	442 SQN	COMOX
SNAPPER	SNAP	2 CFFTS – Stand Flt	MOOSE JAW
SNIPER	SNPR	410 FTR WPNS INST CS	COLD LAKE
SNOWBIRD	SNBD	431 SQN	MOOSE JAW
SPANNER	SPNR	BMTF	SHEARWATER
SPECTRE	SPCTR	405 SQN/UAV FLT	GREENWOOD
SPIKE	SPKE	433 SQN	BAGOTVILLE
SPINNER	SPIN	CFMETR	PACIFIC REGION
STALKER	STKR	410 SQN	COLD LAKE
STINGER	STGR	443 SQN	ESQUIMALT
STRIKER	STRKR	TOP ACES	POINTE-CLAIRE
SUPERDOG	SDOG	CADET OPS	EASTERN REGION
SWORDFISH	SFSH	415 SQN	GREENWOOD
TALON	TALN	423 SQN	SHEARWATER
TEST	TEST	AETE	COLD LAKE
THOR	THOR	450 SQN	PETAWAWA
THUNDER	TNDR	426 SQN	TRENTON
TIGER	TIGR	424 SQN	TRENTON

CALL SIGN	ABBREVIATION	GROUP SQN OR UNIT	LOCATION OF UNIT
TIPIC	TIPIC	433 SQN	BAGOTVILLE
TRACER	TRCR	12 WG, WFSO	SHEARWATER
TRAPPER	TRPR	436 SQN TAT	TRENTON
TRIALS	TRLS	415 SQN	GREENWOOD
TRUCKER	TRKR	426 SQN TAT	TRENTON
TUG	TUGG	CADET OPS	PACIFIC REGION
TUSKER	TSKR	413 SQN	GREENWOOD
VAMPIRE	VMPR	440 SQN	YELLOWKNIFE
VAPOUR	VAPR	WSM MIRABEL	MONTREAL
VIKING	VKIN	FIS	MOOSE JAW
VIPER	VIPR	444 SQN	GOOSE BAY
VOODOO	VODO	410 SQN	COLD LAKE
WARLOCK	WRLK	425 SQN	BAGOTVILLE
WILDCAT	WCAT	438 SQN	ST-HUBERT
WRAITH	WRTH	405 SQN/UAV FLT	GREENWOOD
WOLF	WOLF	403 SQN	GAGETOWN
YOGI	YOGY	414 SQN	COMOX
ZULU	ZULU	2 CAD / AF AOT	WINNIPEG

Note 1: Pilots must always ensure that the filed call sign is used in all ATC communications from the start of flight until completion. Failure to do so will create significant errors in NAV CANADA'S automated data collection and tracking system. e.g., Filed call sign is ALUT05. Pilot would use 'ALOUETTE 05' in all voice communications with ATC from the start of the flight until the completion. If halfway through the flight the pilot started to use 'ALOUETTE5' the controller would enter this information and the tracking system used by NAV CANADA would now consider this a second aircraft movement because the call sign has changed. Another example would be the pilot filing 'CFC01' and then using 'CANFORCE1' with ATC. This subtle error would also create the same problem as did the previous example.

Note 2: The same applies to all formation flights. The filed call sign must be used throughout the entire flight by the formation until arrival at destination. The exception is at destination when the flight separates into single elements using individual call signs, NAV CANADA will be able to collate the data without difficulty. Formation leads are encouraged to use their assigned personal call sign when flight planning to prevent potential conflict with another formation flight e.g. 'ALUT15'.

b.) For operations outside of Canadian Domestic Airspace the call sign CANFORCE (CFC) shall be used unless specific tactical call signs have been authorized by the tasking agency and coordinated with civil authorities. 1 Cdn Air Div Order Vol 3, 3-501 refers.

Note 1: Pilots must ensure the CANFORCE call sign is filed using the correct abbreviation for CANFORCE (CFC). e.g. 'CFC 3701' is correct; 'CF3701' and 'CAF3701' are incorrect.

Note 2: Contracted Airborne Training Services (CATS) aircraft are authorized to use the following call signs outside of Canadian Domestic Airspace to include Continental North America, Thule, and Hawaii: BRUISER, CHEETAH, CRADLE, FURBALL, and MOGGY. The call sign abbreviation plus two numbers shall be used.

Call signs below are also authorized as prescribed:

CALL SIGN	ABBREVIATION	PURPOSE
BOXTOP	BXTP	ATG CFS Alert Resupply
CANFORCE	CFC	international use or flights not using group, unit, squadron or tactical call signs including those carrying Prime Minister, Foreign Heads of State or Government (Note 1)
MEDEVAC	N/A	used to request ATS priority handling for a medical evacuation flight, based on a medical emergency in the transport of patients, organ donors, organs or other urgently needed life-saving medical material. Indicated in Flight Plan Item 18: Other Information as follows: STS/MEDEVAC (Note 2)
RESCUE	RSCU	aircraft engaged in search and rescue missions (Note 3)
ROYAL	ROYL	flights carrying royalty or prepositioning for same (Note 1)

Note 1: Allocation and use of call signs for CF aircraft is prescribed in 1 Cdn Air Div Order Vol. 3, 3-501 refers, including assigning suffixes for specific purposes; e.g., VIP Numeric Suffixes 01 – 20 for CFC are restricted to specific VIP flights.

Note 2: MEDEVAC is to be used in conjunction with designated call sign in radiotelephony communications (i.e. ‘Snake 70 MEDEVAC’ or ‘CANFORCE 1234 MEDEVAC’)

Note 3: If a rescue crew reverts to a tactical call sign after completion or cancellation of a SAR mission while airborne the crew must use the same numeric sequence as filed in the original flight plan. i.e. 'RSCU305' would revert to 'TSKR305' or 'RSCU454' would revert to 'SNAK454'. Failure to do so would create an additional aircraft movement in NAV CANADA's data collection and tracking system.

ITEM 8: FLIGHT RULES AND TYPE OF FLIGHT (ONE OR TWO CHARACTERS)

FLIGHT RULES

INSERT one of the following letters to denote the category of flight rules with which the pilot intends to comply:

- I if it is intended that the entire flight will be operated under the IFR
- V if it is intended that the entire flight will be operated under the VFR
- Y if the flight initially will be operated under the IFR, followed by one or more subsequent changes of flight rules or
- Z if the flight initially will be operated under the VFR followed by one or more subsequent changes of flight rules

AND, INSERT if for a flight itinerary or special flight (domestic only), in section 18 RMK/,

- C (Controlled VFR)
- D (Defence Flight Plan)
- E (Defence Flight Itinerary)
- F (Flight Itinerary)

Note: A composite flight plan or flight itinerary may be filed that describes part(s) of the route as operating under VFR and part(s) of the route as operating under IFR. All rules governing VFR or IFR apply to that portion of the route of flight. **A composite flight plan or flight itinerary shall not be filed for an aircraft that will enter airspace controlled by the FAA, including CDA delegated to the FAA, as composite data cannot be correctly processed between NAV CANADA and FAA systems.**

A pilot who files IFR for the first part of a flight and VFR for the next part will be cleared by ATC to the point within controlled airspace at which the IFR part of the flight ends. A pilot who files VFR for the first part of a flight and IFR for the next part is expected to contact the appropriate ATC unit for clearance prior to approaching the point where the IFR portion of the flight commences. If direct contact with an ATC unit is not possible, the pilot may request ATC clearance through an FIC. It is important that the flight continue under VFR conditions until appropriate IFR clearance within controlled airspace is issued by ATC and acknowledged by the pilot.

TYPE OF FLIGHT

INSERT one of the following letters to denote the type of flight when so required by the appropriate ATS authority:

S	if	Scheduled Air Service
N	if	Non-scheduled Air Transport Operation
G	if	General Aviation
M	if	Military
X	if	Other than any of the defined categories above (specify in Item 18 RMK/...)

ITEM 9: NUMBER AND TYPE OF AIRCRAFT AND WAKE TURBULENCE CATEGORY

NUMBER OF AIRCRAFT (1 or 2 CHARACTERS)

INSERT the number of aircraft, if more than one

TYPE OF AIRCRAFT (2 to 4 CHARACTERS)

INSERT the appropriate designator as specified in ICAO Doc 8643, “Aircraft Type Designators”, or Transport Canada manual TP143 “Air Traffic Designators”

OR, if no such designator has been assigned, or in case of formation flights comprising more than one type,

INSERT ZZZZ, and SPECIFY in Item 18, the (numbers and) type(s) of aircraft preceded by TYP/.

Note: The following Flight Plan designators shall be used:

NAME (ICAO Common)	FLIGHT PLAN DESIGNATOR
Airbus A310	A310
Aurora	P3
Bell 412	B412
Buffalo	DHC5
Challenger	CL60
Chinook 147F	H47F
Cormorant	EH10
Cyclone CH-148	S92
Dash 8	DH8A
F-18 Hornet	F18H
F-18 Super Hornet	F18S
Globemaster III	C17
Grob	G120
Harvard II	TEX2

NAME (ICAO Common) (Continued)	FLIGHT PLAN DESIGNATOR (Continued)
Hawk	HAWK
Hercules E/H	C130
Hercules J	C30J
Jet Ranger	B06
King Air 90	BE9L
Sea King	S61
Tutor	CL41
Twin Otter	DHC6

ICAO WAKE TURBULENCE CATEGORY (1 CHARACTER)

/H – HEAVY, to indicate an aircraft type with a maximum certified takeoff mass of 136,000 kg (300,000 pounds) or more.

/M – MEDIUM, to indicate an aircraft type with a maximum certificated takeoff mass of less than 136,000 kg (300,000 pounds) but more than 7000 kg (15,500 pounds).

/L – LIGHT, to indicate an aircraft type with a maximum certificated takeoff mass of 7000 kg (15,500 pounds) or less.

ITEM 10: EQUIPMENT AND CAPABILITIES

Capabilities comprise the following elements:

a. presence of relevant serviceable equipment on board the aircraft;

b. equipment and capabilities commensurate with flight crew qualifications; and

c. where applicable, authorization from the appropriate authority

RADIO COMMUNICATION, NAVIGATION AND APPROACH AID EQUIPMENT AND CAPABILITIES

INSERT one letter as follows:

N if no COM/NAV/approach aid equipment for the route to be flown is carried, or the equipment is unserviceable,

OR

S if standard COM/NAV/approach aid equipment for the route to be flown is carried and serviceable (see Note 1),

AND/OR

INSERT one or more of the following letters to indicate the serviceable COM/NAV/approach aid equipment and capabilities available:

A	GBAS landing system	J7	CPDLC FANS 1/A SATCOM (Iridium)
B	LPV (APV with SBAS)	K	MLS
C	LORAN C	L	ILS
D	DME	M1	ATC RTF SATCOM (INMARSAT)

E1	FMC WPR ACARS	M2	ATC RTF (MTSAT)
E2	D-FIS ACARS	M3	ATC RTF (Iridium)
E3	PDC ACARS	O	VOR
F	ADF	P1-P9	Reserved for RCP
G	GNSS (See Note 2)		
H	HF RTF	R	PBN approved (see Note 4)
I	Inertial Navigation	T	TACAN
J1	CPDLC ATN VDL Mode (See Note 3)	U	UHF RTF
J2	CPDLC FANS 1/A HFDL	V	VHF RTF
J3	CPDLC FANS 1/A VDL Mode 4	W	RVSM approved
J4	CPDLC FANS 1/A VDL Mode 2	X	MNPS approved
J5	CPDLC FANS 1/A SATCOM (INMARSAT)	Y	VHF with 8.33 kHz channel spacing capability
J6	CPDLC FANS 1/A SATCOM (MTSAT)	Z	Other equipment carried or other capabilities (see Note 5)

Any alphanumeric characters not indicated above are reserved

Notes:

1. If the letter S is used, standard equipment is considered to be VHF RTF, VOR and ILS, unless another combination is prescribed by the appropriate ATS authority.
2. If the letter G is used, the types of external GNSS augmentation, if any, are specified in Item 18 following the indicator NAV/ and separated by a space.
3. See RTCA/EUROCAE Interoperability Requirements Standard For ATN Baseline 1 (ATN B1 INTEROP Standard - DO-280B/ED-110B) for data link services ATC clearance and information/air traffic control communications management/air traffic control microphone check.
4. If the letter R is used, the performance based navigation levels that can be met are specified in Item 18 following the indicator PBN/. Guidance material on the application of performance based navigation to a specific route segment, route or area is contained in the Performance-Based Navigation Manual (ICAO Doc 9613).
5. If the letter Z is used, specify in Item 18 the other equipment carried or other capabilities, preceded by COM/, NAV/ and/or DAT, as appropriate.
6. Information on navigation capability is provided to ATC for clearance and routing purposes.

SSR EQUIPMENT AND CAPABILITIES

INSERT

N if no surveillance equipment for the route to be flown is carried, or the equipment is unserviceable,

OR

INSERT one or more of the following descriptors, to a maximum of 20 characters, to describe the serviceable surveillance equipment and/or capabilities on board:

SSR Modes A and C

A Transponder - Mode A (4 digits - 4 096 codes)
C Transponder - Mode A (4 digits - 4 096 codes) and Mode C

SSR Mode S

E Transponder - Mode S, including aircraft identification, pressure-altitude and extended squitter (ADS-B) capability
H Transponder - Mode S, including aircraft identification, pressure-altitude and enhanced surveillance capability

I	Transponder - Mode S, including aircraft identification, but no pressure-altitude capability
L	Transponder - Mode S, including aircraft identification, pressure-altitude, extended squitter (ADS-B) and enhanced surveillance capability
P	Transponder - Mode S, including pressure-altitude, but no aircraft identification capability
S	Transponder - Mode S, including both pressure altitude and aircraft identification capability
X	Transponder - Mode S with neither aircraft identification nor pressure-altitude capability

Note 1: Enhanced surveillance capability is the ability of the aircraft to down-link aircraft derived data via a Mode S transponder.

Note 2: What is entered at Item 7 must match exactly what is entered in the Mode S Aircraft Identification (also known as Flight ID) input device in the cockpit. If it does not, then the aircraft will not be correlated with its stored flight plan and delays will ensue. (Refer to ICAO Doc 4444 Procedures for Air Navigation Services: Air Traffic Management and ICAO Doc 8168 Procedures for Air Navigation Services: Aircraft Operations.

ADS-B

B1	ADS-B with dedicated 1090 MHz ADS-B "out" capability
B2	ADS-B with dedicated 1090 MHz ADS-B "out" and "in" capability
U1	ADS-B "out" capability using UAT
U2	ADS-B "out" and "in" capability using UAT
V1	ADS-B "out" capability using VDL Mode 4
V2	ADS-B "out" and "in" capability using VDL Mode 4

ADS-C

D1	ADS-C with FANS 1/A capabilities
G1	ADS-C with ATN capabilities

Alphanumeric characters not indicated above are reserved.

Example: ADE3RV/HB2U2V2G1

Note: Additional surveillance application should be listed in Item 18 following the indicator "SUR/".

ITEM 13: DEPARTURE AERODROME AND TIME

INSERT the ICAO four-letter location indicator of the departure aerodrome as specified in Doc 7910, Location Indicators,

OR, if no location indicator has been assigned,

INSERT ZZZZ and SPECIFY, in Item 18, the name and location of the aerodrome preceded by DEP/ ,

OR, the first point of the route or the marker radio beacon preceded by DEP/…, if the aircraft has not taken off from the aerodrome,

OR, if the flight plan is received from an aircraft in flight,

INSERT AFIL, and SPECIFY, in Item 18, the ICAO four-letter location indicator of the location of the ATS unit from which supplementary flight plan data can be obtained, preceded by DEP/ .

THEN, WITHOUT A SPACE,

INSERT for a flight plan submitted before departure, the estimated off-block time (EOBT),

OR, for a flight plan received from an aircraft in flight, the actual or estimated time over the first point of the route to which the flight plan applies.

Note: Pilots may file a flight plan or flight itinerary up to 24 hr in advance of the departure time.

ITEM 15: CRUISING SPEED, ALTITUDE/LEVEL AND ROUTE

Canadian:

Note 1: On designated airways and air routes, IFR flights may be operated at the published MEA/MOCA except that in winter, when air temperatures may be much lower than those of the ICAO Standard Atmosphere (ISA), aircraft should be operated at an altitude which is at least 1 000 feet higher than the published MEA/MOCA .

Note 2: Mandatory IFR routes, published in the GPH205 - PLANNING Section, have been established to aid in the efficient and orderly management of air traffic between selected aerodromes. Pilots are to file these routes or make alternate arrangements with ATC if unable to comply.

Canadian and ICAO:

INSERT

- "the first cruising speed as described in (a),
- "the first cruising level as described in (b), and
- "the route description as described in (c).

(a) Cruising Speed (maximum 5 characters)

INSERT the True Airspeed for the first or the whole cruising portion of the flight, in terms of: Kilometres per hour, (ICAO only) expressed as "K" followed by 4 figures (e.g., K0830),

OR, Knots, expressed as "N" followed by 4 figures (e.g., N0485)

OR, Mach number, when so prescribed by the appropriate ATS authority, to the nearest hundredth of unit Mach, expressed as "M" followed by 3 figures (e.g., M082).

(b) Cruising Level (maximum 5 characters):

INSERT the planned cruising level for the first or the whole portion of the route to be flown, in terms of: Flight Level, expressed as "F" followed by 3 figures (e.g., F085; F330),

OR, Standard Metric Level in tens of metres, (ICAO only) expressed as "S" followed by 4 figures (e.g., S1130), when so prescribed by the appropriate ATS authorities,

OR, Altitude in hundreds of feet, expressed as "A" followed by 3 figures (e.g., A045; A100), or, Altitude in tens of metres, (ICAO only) expressed as "M" followed by 4 figures (e.g., M0840),

OR, for uncontrolled VFR flights, the letters "VFR" (ICAO only).

(c) Route (including Changes of Speed, Level and/or Flight Rules)

Flights Along Designated ATS Routes:

INSERT if the departure aerodrome is located on, or connected to the ATS route, the designator of the first ATS route (e.g., if departure aerodrome is Ottawa: V300 ULAMO, etc.)

OR, (ICAO only) if the departure aerodrome is not on, or connected to the ATS route, the letters DCT, followed by the joining point of the first ATS route, followed by the designator of the ATS route. (e.g., if the departure aerodrome is Ottawa: DCT IKLAX T634, etc.)

OR, (Canadian only) by filing the joining point of the first ATS route, followed by the designator of the ATS route (e.g., if departure aerodrome is Ottawa: YOW T616).

INSERT each point at which either a change of speed or level, a change of ATS route, and/or a change of flight rules is planned, (e.g., YMX/N0200A170 IFR)

Note: When a transition is planned between a lower and an upper ATS route and the routes are oriented in the same direction, the point of transition need not be inserted.

FOLLOWED IN EACH CASE

by the designator of the next ATS route segment, even if the same as the previous one, (e.g., if departure aerodrome is Ottawa: V300 ULAMO, etc.)

OR, (ICAO only) by DCT, if the flight to the next point is outside a designated route, unless both points are defined by geographical coordinates

OR, (Canadian only) by filing the next point if it is outside a designated route (e.g., if departure aerodrome is Ottawa: V300 ULAMO 3B, etc.) Absence of DCT between points on a Canadian flight plan/itinerary indicates direct flight.

Flights Outside Designated ATS Routes:

ICAO:

INSERT points normally not more than 30 minutes flying time or 370 km (200 NM) apart (ICAO only), including each point at which a change of speed or level, a change of track, or a change of flight rules is planned,

OR, when required by appropriate ATS authority(ies),

DEFINE (ICAO only)the track of flights operating predominantly in an east - west direction between 70°N and 70°S by reference to significant points formed by the intersections of half or whole degrees of latitude with meridians spaced at intervals of 10° of longitude. For flights operating in areas outside those latitudes the tracks shall be defined by significant points formed by the intersection of parallels of latitude with meridians normally spaced at 20° of longitude. The distance between significant points shall, as far as possible, not exceed one hour's flight time. Additional significant points shall be established as deemed necessary.
(ICAO only) For flights operating predominantly in a north - south direction, define tracks by reference to significant points formed by the intersection of whole degrees of longitude with specified parallels of latitude which are spaced at 5°.

INSERT (ICAO only) DCT between successive points unless both points are defined by geographical coordinates or by bearing and distance.

Canadian:

INSERT (Canadian only) points at which a change of speed or level, a change of track, or a change of flight rules is planned. Absence of DCT between points on a Canadian flight plan/itinerary indicates direct flight.

OR, when required by appropriate ATS authority(ies),

Canadian and ICAO:

USE conventions (1) to (5) and SEPARATE each sub-item by a space.

(1) ATS ROUTE (2 to 7 characters):

The coded designator assigned to the route or route segment including, where appropriate, the coded designator assigned to the standard departure or arrival route (e.g., BCN1, B1, R14, UB10, KODAP2A).

(2) SIGNIFICANT POINT (2 to 11 characters):

The coded designator (2 to 5 characters) assigned to the point (e.g., LN, MAY, HADDY),

or, if no coded designator has been assigned, one of the following ways:

Degrees only (7 characters):

2 figures describing latitude in degrees, followed by "N" (North) or "S" (South), followed by 3 figures describing longitude in degrees, followed by "E" (East) or "W" (West). Make up the correct number of figures, where necessary, by insertion of zeros, e.g., 46N078W.

Degrees and minutes (11 characters):

4 figures describing latitude in degrees, and tens and units of minutes followed by "N" (North) or "S" (South), followed by 5 figures describing longitude in degrees and tens and units of minutes, followed by "E" (East) or "W" (West). Make up the correct number of figures, where necessary, by insertion of zeros, e.g., 4620N07805W.

Bearing and distance from a reference point:

The identification of the reference point, followed by the bearing from the point in the form of 3 figures giving degrees magnetic, followed by the distance from the point in the form of 3 figures expressing nautical miles. In areas of high latitude where it is determined by the appropriate authority that reference to degrees magnetic is impractical, degrees true may be used. Make up the correct number of figures, where necessary, by insertion of zeros - e.g. a point 180° magnetic at a distance of 40 nautical miles from VOR "DUB" should be expressed as DUB180040.

(3) CHANGE OF SPEED OR LEVEL (maximum 21 characters):

The point at which a change of speed (5% TAS or 0.01 Mach or more) or a change of level is planned, expressed exactly as in (2), followed by an oblique stroke and both the cruising speed and the cruising level, expressed exactly as in (a) and (b), without a space between them, even when only one of these quantities will be changed.

Examples:

LN/N0284A045
MAY/N0305F180
HADDY/N0420F330
4602N07805W/N0500F350
46N078W/M082F330
DUB180040/N0350F330

(4) CHANGE OF FLIGHT RULES (maximum 3 characters):

The point at which the change of flight rules is planned, expressed exactly as in (2) or (3) as appropriate, followed by a space and one of the following: VFR if from IFR to VFR IFR if from VFR to IFR

Examples:

LN VFR
LN/N0284A050 IFR (5)

(5) CRUISE CLIMB (maximum 28 characters):

The letter "C" followed by an oblique stroke; THEN the point at which cruise climb is planned to start, expressed exactly as in (2), followed by an oblique stroke; THEN the speed to be maintained during cruise climb, expressed exactly as in (a), followed by the two levels defining the layer to be occupied during cruise climb, each level expressed exactly as in (b), or the level above which cruise climb is planned followed by the letters PLUS, without a space between them.

Examples:

C/48N050W/M082F290F350
C/48N050W/M082F290PLUS
C/52N050W/M220F580F620

ITEM 16: DESTINATION AERODROME AND TOTAL ESTIMATED ELAPSED TIME, ALTERNATE AERODROME(S)

DESTINATION AERODROME (4 CHARACTERS)

INSERT the ICAO four-letter location indicator of the destination aerodrome followed, by the total estimated elapsed time,

OR, if no location indicator has been assigned,

INSERT ZZZZ followed, without a space, by the total estimated elapsed time, and SPECIFY in Item 18

the name of the aerodrome, preceded by DEST/.

Note – For a flight plan received from an aircraft in flight, the total estimated elapsed time is the estimated time from the first point of the route to which the flight plan applies.

TOTAL ESTIMATED ELAPSED TIME (4 CHARACTERS)

INSERT if an IFR flight plan the total time from take-off to overhead destination exclusive of time for anticipated enroute delays, such as enroute approaches, etc. to the nearest minute.

OR, if a VFR, DVFR, CVFR, FLT ITIN or a combination VFR/IFR the total elapsed time from take-off to overhead the destination, including pre-planned airwork, practice approaches, enroute stops, to the nearest minute.

ALTERNATE AERODROME(S) (4 CHARACTERS)

INSERT the ICAO four-letter location indicator(s) of not more than two alternate aerodromes

OR, if no location indicator has been assigned to the alternate aerodrome,

INSERT ZZZZ and SPECIFY in Item 18 the name of the aerodrome, preceded by ALTN/.

OR, if a domestic flight plan and no alternate is required

INSERT 0 (zero).
Note: If departure alternate required insert ZZZZ for 2nd alternate aerodrome and SPECIFY in ITEM 18 the departure alternate, i.e.: DEP ALTN/CYOW

ITEM 18: OTHER INFORMATION

Note. Use of indicators not included under this item may result in data being rejected, processed incorrectly or lost.

Hyphens or oblique strokes should only be used as prescribed below.

INSERT 0 (zero) if no other information,

OR, any other necessary information in the sequence shown hereunder, in the form of the appropriate indicator selected from those defined hereunder followed by an oblique stroke and the information to be recorded

STS/	Reason for special handling by ATS, e.g. a search and rescue mission, as follows:
ALTRV:	for a flight operated in accordance with an altitude reservation;
ATFMX:	for a flight approved for exemption from ATFM measures by the appropriate ATS authority;
FFR:	fire-fighting;
FLTCK:	flight check for calibration of navaids;
HAZMAT:	for a flight carrying hazardous material;
HEAD:	a flight with Head of State status;
HOSP:	for a medical flight declared by medical authorities;
HUM:	for a flight operating on a humanitarian mission;
MARSA:	for a flight for which a military entity assumes responsibility for separation of military aircraft;
MEDEVAC:	for a life critical medical emergency evacuation;
NONRVSM:	for a non-RVSM capable flight intending to operate in RVSM airspace;
SAR:	for a flight engaged in a search and rescue mission; and
STATE:	for a flight engaged in military, customs or police services.

Other reasons for special handling by ATS shall be denoted under the designator RMK/.

PBN/ Indication of RNAV and/or RNP capabilities. Include as many of the descriptors below, as apply to the flight, up to a maximum of 8 entries, i.e. a total of not more than 16 characters.

RNAV SPECIFICATIONS			
A1	RNAV 10 (RNP 10)	C2	RNAV 2 GNSS
B1	RNAV 5 all permitted sensors	C3	RNAV 2 DME/DME
B2	RNAV 5 GNSS	C4	RNAV 2 DME/DME/IRU
B3	RNAV 5 DME/DME	D1	RNAV 1 all permitted sensors
B4	RNAV 5 VOR/DME	D2	RNAV 1 GNSS
B5	RNAV 5 INS or IRS	D3	RNAV 1 DME/DME
B6	RNAV 5 LORANC	D4	RNAV 1 DME/DME/IRU
C1	RNAV2 all permitted sensors		

RNP SPECIFICATIONS			
L1	RNP 4	S1	RNP APCH
O1	Basic RNP 1 all permitted sensors	S2	RNP APCH with BARO-VNAV
O2	Basic RNP 1 GNSS	T1	RNP AR APCH with RF (special authorization required)
O3	Basic RNP 1 DME/DME	T2	RNP AR APCH without RF (special authorization required)
O4	Basic RNP 1 DME/DME/IRU		

Combinations of alphanumeric characters not indicated above are reserved.

NAV/ Significant data related to navigation equipment, other than specified in PBN/, as required by the appropriate ATS authority. Indicate GNSS augmentation under this indicator, with a space between two or more methods of augmentation, e.g. NAV/GBAS SBAS.

COM/ Indicate communications applications or capabilities not specified in Item 10a.

DAT/ Indicate data applications or capabilities not specified in 10a.

SUR/ Include surveillance applications or capabilities not specified in Item 10b.

DEP/ Name and location of departure aerodrome, if ZZZZ is inserted in Item 13, or the ATS unit from which supplementary flight plan data can be obtained, if AFIL is inserted in Item 13. For aerodromes not listed in the relevant Aeronautical Information Publication, indicate location as follows:

With 4 figures describing latitude in degrees and tens and units of minutes followed by "N" (North) or "S" (South), followed by 5 figures describing longitude in degrees and tens and units of minutes, followed by "E" (East) or "W" (West). Make up the correct number of figures, where necessary, by insertion of zeros, e.g. 4620N07805W (11

characters).

OR, Bearing and distance from the nearest significant point, as follows:

The identification of the significant point followed by the bearing from the point in the form of 3 figures giving degrees magnetic, followed by the distance from the point in the form of 3 figures expressing nautical miles. In areas of high latitude where it is determined by the appropriate authority that reference to degrees magnetic is impractical, degrees true may be used. Make up the correct number of figures, where necessary, by insertion of zeros, e.g. a point of 180° magnetic at a distance of 40 nautical miles from VOR "DUB" should be expressed as DUB180040.

OR, The first point of the route (name or LAT/LONG) or the marker radio beacon, if the aircraft has not taken off from an aerodrome.

DEST/ Name and location of destination aerodrome, if ZZZZ is inserted in Item 16. For aerodromes not listed in the relevant Aeronautical Information Publication, indicate location in LAT/LONG or bearing and distance from the nearest significant point, as described under DEP/ above.

DOF/ The date of flight departure in a six figure format (YYMMDD, where YY equals the year, MM equals the month and DD equals the day).

REG/ The nationality or common mark and registration mark of the aircraft, if different from the aircraft identification in Item 7.

EET/ Significant points or FIR boundary designators and accumulated estimated elapsed times from take-off to such points or FIR boundaries, when so prescribed on the basis of regional air navigation agreements, or by the appropriate ATS authority.

Examples: EET/CAP0745 XYZ0830
EET/EINN0204

SEL/ SELCAL Code, for aircraft so equipped.

TYP/ Type(s) of aircraft, preceded if necessary without a space by number(s) of aircraft and separated by one space, if ZZZZ is inserted in Item 9.

Example:TYP/2F15 5F5 3B2

DLE/ Enroute delay or holding, insert the significant point(s) on the route where a delay is planned to occur, followed by the length of delay using four figure time in hours and minutes (hhmm).

Example:DLE/MDG0030

OPR/ ICAO designator or name of the aircraft operating agency, if different from the aircraft identification in item 7.

ORGN/ The originator's 8 letter AFTN address or other appropriate contact details, in cases where the originator of the flight plan may not be readily identified, as required by the appropriate ATS authority.

Note: In some areas, flight plan reception centres may insert the ORGN/ identifier and originator's AFTN address automatically.

PER/ Aircraft performance data, indicated by a single letter as specified in the Procedures for Air Navigation Services - Aircraft Operations (PANS-OPS, Doc 8168), Volume I - Flight Procedures, if so prescribed by the appropriate ATS authority.

ALTN/ Name of destination alternate aerodrome(s), if ZZZZ is inserted in Item 16. For aerodromes not listed in the relevant Aeronautical Information Publication, indicate location in LAT/LONG or bearing and distance from the nearest significant point, as described in DEP/ above.

RALT/ ICAO four letter indicator(s) for en-route alternate(s), as specified in Doc 7910, Location Indicators, or name(s) of en-route alternate aerodrome(s), if no indicator is allocated. For aerodromes not listed in the relevant Aeronautical Information Publication, indicate location in LAT/LONG or bearing and distance from the nearest significant point, as described in DEP/ above.

TALT/ ICAO four letter indicator(s) for take-off alternate, as specified in Doc 7910, Location Indicators, or name of take-off alternate aerodrome, if no indicator is allocated. For aerodromes not listed in the relevant Aeronautical Information Publication, indicate location in LAT/LONG or bearing and distance from the nearest significant point, as described in DEP/ above.

RIF/ The route details to the revised destination aerodrome, following by the ICAO four-letter location indicator of the aerodrome. The revised route is subject to reclearance in flight.

Examples: RIF/DTA HEC KLAX
RIF/ESP G94 CLA YPPH

RMK/ Any other plain language remarks when required by the appropriate ATS authority or deemed necessary.
Note 1: Dangerous cargo shall be included in this section.
Note 2: Pilots flight planning for operations in RVSM airspace shall add STATE AIRCRAFT.
Example: RMK/Dangerous Cargo/25 Meter Parking Restriction

ITEM 19: SUPPLEMENTARY INFORMATION

ENDURANCE

After E/ *INSERT* a 4-figure group giving the fuel endurance for the planned flight in hours and minutes to the nearest five minutes
Note: For domestic flights if VFR stopovers are indicated without enroute refueling, this will be fuel to final destination. If refueling at an enroute stopover, ITEM 19 – E/ will show fuel to refueling stop and ITEM 18 other information RMK/ will show fuel available after take-off from refueling point.

PERSONS ON BOARD

After P/ *INSERT* the total number of persons (passengers and crew) on board, when required by the appropriate ATS authority. *INSERT TBN* (to be notified) if the total number of persons is not known at the time of filing.

EMERGENCY AND SURVIVAL EQUIPMENT

R/(RADIO) *CROSS OUT* U if UHF on frequency 243.0 MHz is not available
CROSS OUT V if VHF on frequency 121.5 MHz is not available
CROSS OUT E if emergency location beacon – aircraft (ELT) is not available

Note: For the Canadian Forces all aircraft except the F18 and CT114 have an ELT.

S/(SURVIVAL EQUIPMENT) *CROSS OUT* all indicators if survival equipment is not carried
CROSS OUT P if polar survival equipment is not carried
CROSS OUT D if desert survival equipment is not carried
CROSS OUT M if maritime survival equipment is not carried
CROSS OUT J if jungle survival equipment is not carried

J/ (JACKETS) *CROSS OUT* all indicators if life jackets are not carried
CROSS OUT L if life jackets are not equipped with lights
CROSS OUT F if life jackets are not equipped with fluorescein
CROSS OUT U or V both as in R/ above to indicate radio capability of jackets, if any

D/(DINGHIES) *CROSS OUT* indicators D and C if no dinghies are carried, or *INSERT* number of dinghies carried; and

(CAPACITY) *INSERT* total capacity, in persons, of all dinghies carried; and

(COVER) *CROSS OUT* indicator C if dinghies are not covered; and

(COLOUR) *INSERT* colour of dinghies if carried

A/(AIRCRAFT COLOUR AND MARKINGS) *INSERT* colour of aircraft and significant markings

N/(REMARKS) *CROSS OUT* indicator N if no remarks, or *INDICATE* any other survival equipment carried and any other remarks regarding survival equipment

C/(PILOT) *INSERT* name of pilot-in-command, and for domestic flight plans add the base to which the aircraft captain is attached. If more than one flying unit is at the base, indicate base and unit

Example: C/I.M. Smart/440 Sqn DET/CYZF

DOMESTIC IFR FLIGHT PLAN

PRIORITY / PRIORITÉ — ADDRESSEE(S) / DESTINATAIRE(S)

<< ≡ **FF** →

<< ≡

FILING TIME / HEURE DE DÉPÔT → ORIGINATOR / EXPÉDITEUR << ≡

SPECIFIC IDENTIFICATION OF ADDRESSEE(S) AND/OR ORIGINATOR / IDENTIFICATION PRÉCISE DU(DES) DESTINATAIRE(S) ET/OU DE L'EXPÉDITEUR

3 MESSAGE TYPE /TYPE DE MESSAGE: << ≡ **(FPL**

7 AIRCRAFT IDENTIFICATION/IDENTIFICATION DE L'AÉRONEF: G O N Z 0 3

8 FLIGHT RULES/RÈGLES DE VOL: I

TYPE OF FLIGHT/TYPE DE VOL: M <<≡

WAKE TURBULENCE CAT. /

9 NUMBER / NOMBRE:

TYPE OF AIRCRAFT / TYPE D'AÉRONEF: D H 8 A

CAT. DE TURBULENCE DE SILLAGE: M

10 EQUIPMENT / ÉQUIPEMENT: SRGBIF/P

13 DEPARTURE AERODROME / AÉRODROME DE DÉPART: C Y W G

TIME / HEURE: 1 7 3 0 <<≡

15 CRUISING SPEED / VITESSE DE CROISIÈRE: N 0 1 8 0

ALTITUDE / LEVEL / NIVEAU: A 0 5 0

ROUTE / ROUTE: 402 SQN Route # 3

<<≡

16 DESTINATION AERODROME / AÉRODROME DE DESTINATION: C Y W G

TOTAL EET / DURÉE TOTALE ESTIMÉE HR. MIN: 0 3 0 0

ALTN AERODROME / AÉRODROME DE DÉGAGEMENT: C Y Q K

2ND ALTN AERODROME / 2e AÉRODROME DE DÉGAGEMENT: <<≡

18 OTHER INFORMATION / RENSEIGNEMENTS DIVERS

PBN/B2,B5 NAV/SBAS

REG/ 142803

RMK/ 402 SQN TRG-REQ 15NM EITHER SIDE OF TRACK)<<≡

SUPPLEMENTARY INFORMATION (NOT TO BE TRANSMITTED IN FPL MESSAGES)

RENSEIGNEMENTS COMPLEMENTAIRES (A NE PAS TRANSMETTRE DANS LES MESSAGES DE PLAN DE VOL)

19 ENDURANCE / AUTONOMIE HR. MIN: 0 5 4 0

PERSONS ON BOARD / PERSONNES À BORD: 9

EMERGENCY RADIO / RADIO DE SECOURS: → R / UHF: U VHF: V ELBA: E

SURVIVAL EQUIPMENT / ÉQUIPEMENT DE SURVIE

POLAR / POLAIRE: S / DESERT / DÉSERT: P MARITIME: ~~M~~ JUNGLE / JUNGLE: ~~J~~

DINGHIES / CANOTS

NUMBER / NOMBRE: D / 1 CAPACITY / CAPACITÉ: 1 0 COVER / COUVERTURE: C COLOUR / COULEUR: BLACK AND ORANGE <<≡

JACKETS / GILETS DE SAUVETAGE

LIGHT / LAMPES: J / L FLUORES / FLUORES: ~~F~~ UHF: ~~U~~ VHF: ~~V~~

AIRCRAFT COLOUR AND MARKINGS / COULEUR ET MARQUES DE L'AÉRONEF

A / BLUE

REMARKS / REMARQUES

N / ARTEX C406-N/SLB 1000-200 <<≡

PILOT-IN-COMMAND / PILOTE COMMANDANT DE BORD

C / MORRISSETTE / 402 SQN / CYWG)<<≡

FILED BY / DÉPOSÉ PAR

SPACE RESERVED FOR ADDITIONAL REQUIREMENTS / ESPACE RÉSERVÉ À DES FINS SUPPLÉMENTAIRES

ICAO MODEL FLIGHT PLAN FORM

National Defence / Défense nationale

AIR TRAFFIC SERVICES
ICAO FLIGHT PLAN

SERVICES DE LA CIRCULATION AERIENNE
OACI PLAN DE VOL

PRIORITY / PRIORITÉ

<< ≡ **FF** →

ADDRESSEE(S) / DESTINATAIRE(S)

<< ≡

FILING TIME / HEURE DE DÉPÔT

→

ORIGINATOR / EXPÉDITEUR

<< ≡

SPECIFIC IDENTIFICATION OF ADDRESSEE(S) AND/OR ORIGINATOR / IDENTIFICATION PRÉCISE DU(DES) DESTINATAIRE(S) ET/OU DE L'EXPÉDITEUR

3 MESSAGE TYPE /TYPE DE MESSAGE

<< ≡ **(FPL**

7 AIRCRAFT IDENTIFICATION/IDENTIFICATION DE L'AÉRONEF

8 FLIGHT RULES/RÈGLES DE VOL

–

TYPE OF FLIGHT/TYPE DE VOL

M << ≡

WAKE TURBULENCE CAT. /

9 NUMBER / NOMBRE

TYPE OF AIRCRAFT / TYPE D'AÉRONEF

CAT. DE TURBULENCE DE SILLAGE

L

10 EQUIPMENT / ÉQUIPEMENT

/

13 DEPARTURE AERODROME / AÉRODROME DE DÉPART

TIME / HEURE

<< ≡

15 CRUISING SPEED
VITESSE DE CROISIÈRE

ALTITUDE / LEVEL / NIVEAU

ROUTE / ROUTE

<< ≡

16 DESTINATION AERODROME
AÉRODROME DE DESTINATION

TOTAL EET / DURÉE TOTALE ESTIMÉE
HR. MIN

ALTN AERODROME
AÉRODROME DE DÉGAGEMENT

2ND ALTN AERODROME
2e AÉRODROME DE DÉGAGEMENT

<< ≡

18 OTHER INFORMATION / RENSEIGNEMENTS DIVERS

REG/

)<< ≡

SUPPLEMENTARY INFORMATION (NOT TO BE TRANSMITTED IN FPL MESSAGES)
RENSEIGNEMENTS COMPLEMENTAIRES (A NE PAS TRANSMETTRE DANS LES MESSAGES DE PLAN DE VOL)

19 ENDURANCE / AUTONOMIE
HR. MIN

PERSONS ON BOARD / PERSONNES À BORD

EMERGENCY RADIO / RADIO DE SECOURS
UHF VHF ELBA

→ R / U V E

JACKETS / GILETS DE SAUVETAGE
LIGHT LAMPES FLUORES FLUORES UHF VHF

→ J / L F U V

SURVIVAL EQUIPMENT / ÉQUIPEMENT DE SURVIE
POLAR POLAIRE DESERT DESERT MARITIME MARITIME JUNGLE JUNGLE

S / P D M J

DINGHIES / CANOTS
NUMBER NOMBRE CAPACITY CAPACITÉ COVER COUVERTURE COLOUR COULEUR

→ D / → C → << ≡

AIRCRAFT COLOUR AND MARKINGS / COULEUR ET MARQUES DE L'AÉRONEF

A /

REMARKS / REMARQUES

→ N / << ≡

PILOT-IN-COMMAND / PILOTE COMMANDANT DE BORD

C /)<< ≡

FILED BY / DÉPOSÉ PAR

SPACE RESERVED FOR ADDITIONAL REQUIREMENTS / ESPACE RÉSERVÉ À DES FINS SUPPLÉMENTAIRES

054 (1-86) 28-0081 (8-85)
1-901-0227

Design: Forms Management 996-3870 (4-96)
Dessin: Gestion des formulas 995-2931 (fax)

414. FLIGHT PLANNING AND PROCEDURES FOR MILITARY CROSS COUNTRY INSTRUMENT TRAINING FLIGHTS ("ROUND ROBINS")

1. Flight Planning

   a. A single flight plan shall be filed for each flight.

b. Those intermediate locations at which instrument approaches and go-arounds are requested shall be listed in ITEM 18 “Other Information” portion of the flight plan form, together with the estimated period of time to carry out each approach.

c. The estimated elapsed time (EET) shown in ITEM 16 of the flight plan form is NOT to include the estimated time to carry out approaches at the intermediate locations.

Note: Actual time elapsed during all practice approaches, shall be added to the EET to calculate the approach time if lost communication procedures are required at destination.

2. Procedures

The following ATC procedures apply to military “Round Robin” flights:

a. an aircraft will normally be cleared to final destination;

b. if it is not practicable to clear the aircraft to final destination or to assign an operationally suitable altitude with the initial clearance, a time or specific location for the aircraft to expect further clearance to the destination or to a higher altitude will be issued with the initial clearance.

c. when an enroute or intermediate approach clearance is requested, an approach clearance and a missed approach clearance will be issued to the aircraft; and

d. if traffic does not permit an approach, holding instructions will be issued to the aircraft if requested by the pilot.

DOMESTIC “ROUND ROBIN” FLIGHT PLAN

3 MESSAGE TYPE /TYPE DE MESSAGE	7 AIRCRAFT IDENTIFICATION/IDENTIFICATION DE L'AÉRONEF	8 FLIGHT RULES/RÉGLES DE VOL	TYPE OF FLIGHT/TYPE DE VOL
<< ≡ **(FPL**	MTRX 17	– I	M << ≡
		WAKE TURBULENCE CAT. /	
9 NUMBER / NOMBRE	TYPE OF AIRCRAFT / TYPE D'AÉRONEF	CAT. DE TURBULENCE DE SILLAGE	10 EQUIPMENT / ÉQUIPEMENT
	B E 9 L	L	S D G /S
13 DEPARTURE AERODROME / AÉRODROME DE DÉPART	TIME / HEURE		
C Y W G	1 2 0 0 << ≡		
15 CRUISING SPEED VITESSE DE CROISIÈRE	ALTITUDE / LEVEL / NIVEAU	ROUTE / ROUTE	
N 0 2 4 0	A 1 5 0	V181 YRL/ NO240A140 A19 YQK G1 WG	
			<< ≡
16 DESTINATION AERODROME AÉRODROME DE DESTINATION	TOTAL EET / DURÉE TOTALE ESTIMÉE HR. MIN	ALTN AERODROME AÉRODROME DE DÉGAGEMENT	2ND ALTN AERODROME 2e AÉRODROME DE DÉGAGEMENT
C Y W G	0 1 4 5	C Y P G	<< ≡
18 OTHER INFORMATION / RENSEIGNEMENTS DIVERS			
REG/ C-FMFZ			
RMK/ REQ 1 APP CYRL (+10 MIN)			
RMK/ REQ 1 APP CYQK (+ 10 MIN)			
			)<< ≡

415. MILITARY NOTICE OF VISITING AIRCRAFT (NOVA) MESSAGE

1. To ensure that details of servicing, maintenance and personnel requirements are transmitted to aerodromes and bases prior to the arrival of a non-scheduled flight, the aircraft captain shall ensure that the origin Base/Unit of the departing aircraft contact all Canadian destination airfield(s) with the exception of Halifax and Edmonton via telephone or fax for forwarding of the requested NOVA message. Flights to out of country destinations can still use the AFTN/ADDN circuit procedures.

2. The NOVA message shall be sent PRIORITY when:

a. passengers of colonel rank or above (or equivalent) are on board;

b. personnel aboard require designated personnel from the base to meet the aircraft; or

c. special facilities or services are required.

3. In all other cases the NOVA message should be sent via normal administrative communications channels or may be air-filed with an appropriate ground station. In either event, the message shall be written in the following format, contain the following information, and be dispatched in sufficient time to arrive at the destination at least one hour before arrival of the aircraft:

NOVAMSG

a. Aircraft type, registration number - designated flight number (if applicable).

b. Itinerary (date time group UTC - show place by aerodrome name) e.g.,

Arrive	Place	Depart
	Trenton	141600Z
141700Z	Downsview	141800Z
142230Z	Winnipeg	

c. Servicing and maintenance required (indicate special requirements or services not listed in FLIPs).

d. Accommodation requirements (show place, number of officers, number of NCMs, and other special considerations such as female crew members or passengers).

e. Meal/in-flight meal requirements.

f. Transportation requirement.

g. Names of officers of rank of colonel or above (specify deplaning point if passenger not remaining on board for full itinerary).

h. Space available for passengers or freight (designate enplaning aerodrome).

i. Custom requirements (specify place, inbound/outbound clearance required).

j. Remarks.

k. Captain's name and telephone number.

4.

a. Where civil or both civil and military agencies are handling ground requirements, a plain language version of the NOVA message, containing all pertinent information on the basis of the form prescribed above, shall be used;

b. It should be noted that Airport Managers should be action addressees only when requesting services which fall within their areas of responsibility such as, extension of CFR services, use of civil terminal or facilities, flight demonstrations, dangerous cargo, etc.; and

c. When notifying civilian agencies send messages in plain language with specific requests to individual agencies as per the following example:

(i) for Avitat: Please arrange two compact U-drives government rate for pick-up at 1200 hours local; and
(ii) for 33 Wing AMS: Three (3) seats available YYW/YXX.

416. FORMATION FLYING IFR AND CVFR

Enroute in Civil Airspace

1. When formation flying IFR or CVFR enroute in civil controlled airspace:

a. The formation leader shall operate at the cleared altitude and the other formation aircraft shall fly within 100 feet vertically of the altitude of the formation leader;

b. The formation shall occupy a maximum frontal width of 1 nautical mile;

c. The formation shall have a maximum longitudinal spacing of 1 nautical mile between the first and the last aircraft;

d. On initial contact with the controlling agency at destination the formation leader shall inform the controlling agency whether the formation will let down as one unit, in sections or individually;

e. The formation leader shall be responsible for separation between aircraft within the formation. In the event of a descent by sections, the responsibility for separation within the remaining section shall revert to the leader of that section at the time the preceding section commences descent;

f. The controlling agency will provide an expected approach time for each remaining section to commence descent.

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

In Military Controlled Airspace

2. In addition to Article 416 - 1(d), (e), and (f), the following definitions are applicable when flying IFR in military controlled airspace:

a. Definitions:

(i) Close Formation (also Echelon and Line Astern Formations): positioning one to three aircraft in close proximity to the Lead aircraft, in Echelon Left, Echelon Right and/or Line Astern. The proper Echelon and Line Astern definitions, alignments and distances are specified in individual Manuals of Flying Training/How to Fly Manuals;
(ii) Route Formation: a formation of two or more aircraft, with the trailing aircraft positioned in Echelon, but spaced from one to three aircraft widths apart. The proper alignments and distances are defined in individual Manuals of Flying Training/How to Fly Manuals;
(iii) Fighting Wing Formation: normally a two aircraft element with the second aircraft positioned at an angle of 30° to 60° sweep from the Lead and from 500 to 1500 ft distance. The proper alignments and distances are defined in individual Manuals of Flying Training/How to Fly Manuals.

b. To ensure the appropriate standard of radar separation is applied to formations when commencing IFR approach, all formations shall advise ATC on initial contact if in other than close formation.

SECTION 3 SPECIAL PROCEDURES

417. ADHERENCE TO MACH NUMBER

1. Within Canadian Domestic airspace, aircraft shall adhere to the Mach number assigned by Air Traffic Control (ATC) to within 0.01 Mach unless approval is obtained from ATC to make a change or until the pilot receives the initial descent clearance approaching destination. If it is essential to make an immediate temporary change in the Mach number (due to turbulence, etc.), ATC shall be notified as soon as possible that such a change has been made.

2. If it is not possible, due to aircraft performance, to maintain the last assigned Mach number during enroute climbs and descents, pilots shall advise ATC at the time of the climb/descent request.

418. PARALLEL OFFSET PROCEDURES

1. ATC may request that an aircraft fly a parallel offset from an assigned route. This manoeuvre and subsequent navigation is the responsibility of the pilot. When requested to offset or regain the assigned

route, the pilot should change heading by 30 to 45 degrees and report when the offset or assigned route is attained.

2. In a radar environment, ATC will provide radar monitoring and the required separation.

3. In a non-radar environment ATC will apply parallel offsets to RNPC certified aircraft operating within high level RNPC airspace in order to accomplish an altitude change with respect to same direction aircraft.

4. The following phraseology is normally used for parallel offset procedures:

"(Flight identification) PROCEED OFFSET (number) MILES (right/left) OF CENTRE LINE (track/route) AT (point/now) UNTIL (point/time)".

419. STRUCTURED AIRSPACE

During specific periods, certain portions of domestic high level airspace may be structured for one-way traffic in which flight levels inappropriate to the direction of flight may be assigned. Aircraft operating in a direction contrary to the traffic flow will be assigned those flight levels appropriate to the direction of flight except in specific instances, such as turbulence. When the airspace is not structured for one-way traffic, flight levels appropriate for direction of flight will be used. ATC will transition aircraft to the appropriate altitude for the direction of flight before aircraft exit the defined areas or before termination of the indicated times.

420. REQUIRED NAVIGATION PERFORMANCE CAPABILITY AIRSPACE (RNPCA)

1. Definition

a. Required Navigation Performance Capability (RNPC) airspace is defined as a controlled airspace within the Canadian Domestic Airspace (CDA) in the Designated Airspace Handbook (TP 1820). RNPC airspace accommodates area navigation (RNAV) operations and is contained within the Southern Domestic Airspace (SDA) and Northern Control Area (NCA).

b. Reduced ATC separation criteria can be applied in RNPC airspace. To conduct RNAV operations (fixed or random routes) in the RNPC 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 RNPC .

2. RNAV operations require the following additional certifications:

a. Only aircraft certified by the State of Registry or the State of the Operator as meeting the required navigation performance capability are permitted to conduct RNAV operations.

b. The minimum navigation equipment to satisfy the RNPC requirement is one long-range RNAV system, plus a short-range navigation system (VOR/DME or ADF).

c. Canadian military operators intending to conduct RNAV operations should contact their fleet Technical and Operational Airworthiness Authorities (TAA/OAA).

3. RNAV/DME Distance

ATC requests for distance information from RNAV certified aircraft shall be based on RNAV distances. DME based on Tactical Air Navigation (TACAN) or VOR/DME shall be used only if ATC indicates such information in the request.

4. RNAV Equipment Failure Procedures

RNAV operations and the associated ATC separation minima depend upon the accuracy of the RNAV systems. ATC is to be advised immediately at any time that a pilot is uncertain of the aircraft position or of an on-board navigation system failure or degradation.

421. CANADIAN MINIMUM NAVIGATION PERFORMANCE SPECIFICATION AIRSPACE (CMNPSA)

1. Definition

a. Canadian Minimum Navigation Performance Specifications (CMNPS) airspace is that controlled airspace within Canadian Domestic Airspace, between FL330 and FL410 inclusive, as defined in the *Designated Airspace Handbook (TP 1820)* and described in the NAV CANADA Aeronautical Information Publication (ICAO) (http://www.navcanada.ca/EN/products-and-services/Pages/AIP-current.aspx). The airspace is contained for the most part in the Arctic and Northern Control Areas with a small portion in the Southern Control Area.

b. 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.

2. CMNPS Transition Airspace

In order to permit both CMNPS certified and non certified aircraft to operate above FL270, a transition area exists from FL270 to below FL330 underlying the lateral limits of CMNPS airspace.

3. CMNPS Aircraft Certification

a. Only aircraft certified by the State of Registry or the State of the Operator as meeting the MNPS of either the North Atlantic (NAT) or Canada are permitted to operate within CMNPS airspace unless the ATC unit concerned indicates that the non-certified aircraft may be accommodated without penalizing certified aircraft.

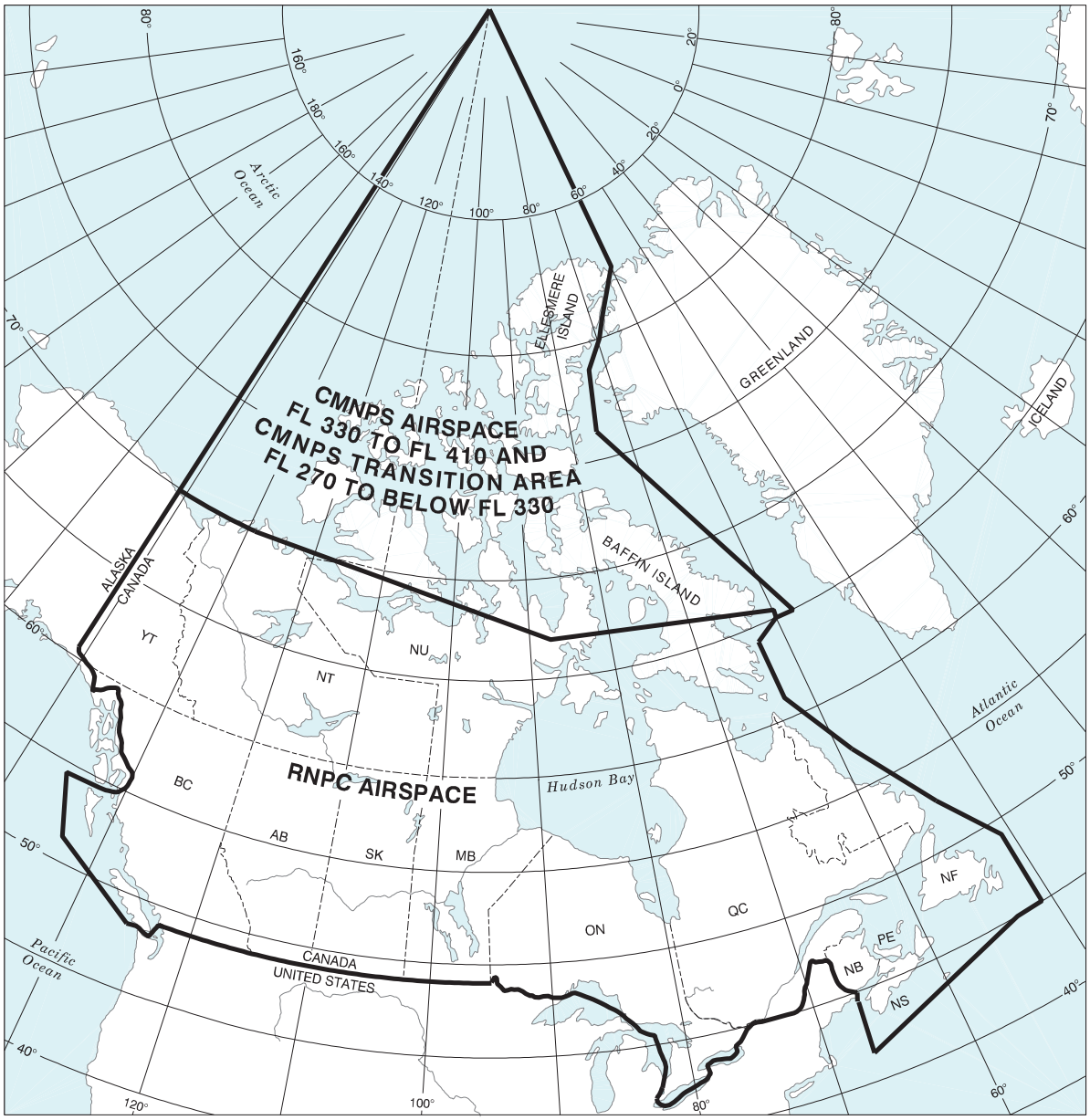
b. Such navigation performance capability shall be verified by the State of Registry or the State of Operator, as appropriate. Aircraft certified to operate within designated airways and company approved routes, that are completely in signal coverage of ground-based navigation aids, satisfy CMNPS requirements when operating within the protected airspace for airways and company approved routes.

c. The following minimum navigation systems may be deemed to satisfy the CMNPS:

(i) Aircraft transiting Canadian Domestic airspace to/from another continent must be equipped with two long-range navigation systems or one navigation system using the inputs from one or more sensor systems plus one short-range navigation system (ADF, VOR/DME).
(ii) Aircraft operating within North America on routes that lie within reception of ground-based navigation aids must be equipped with a single long-range navigation system plus a short-range navigation system (ADF, VOR/DME).
(iii) Aircraft operating on high level airways or company approved routes must be equipped with dual short-range navigation systems (ADF, VOR/DME).

d. Canadian military operators intending to operate in CMNPS airspace should contact their fleet Technical and Operational Airworthiness Authorities for details of certification requirements:

CMNPS AIRSPACE, RNPC AND CMNPS TRANSITION AIRSPACE



4. Partial or Complete Loss of Navigation Capability While Operating Within CMNPS Airspace

a. CMNPS operations and the associated ATC separation minima depend upon the accuracy of the navigation systems. ATC is to be advised immediately at any time that a pilot is uncertain of the aircraft position, or of an on-board navigation system failure or degradation.

b. Upon entry into CMNPS airspace, or as soon as practical thereafter, flight crews are to cross-check the accuracy of their long-range navigation system with information obtained from station-referenced aids. Navigation systems shall be updated if the cross-check indicates such action is considered necessary.

5. Air-to-Ground Communications

Aircraft operating in CMNPS airspace are to communicate with ATS facilities as published on the Enroute High Altitude Chart HI 1 and 2. Communication with the Edmonton ACC is in the following order of priority:

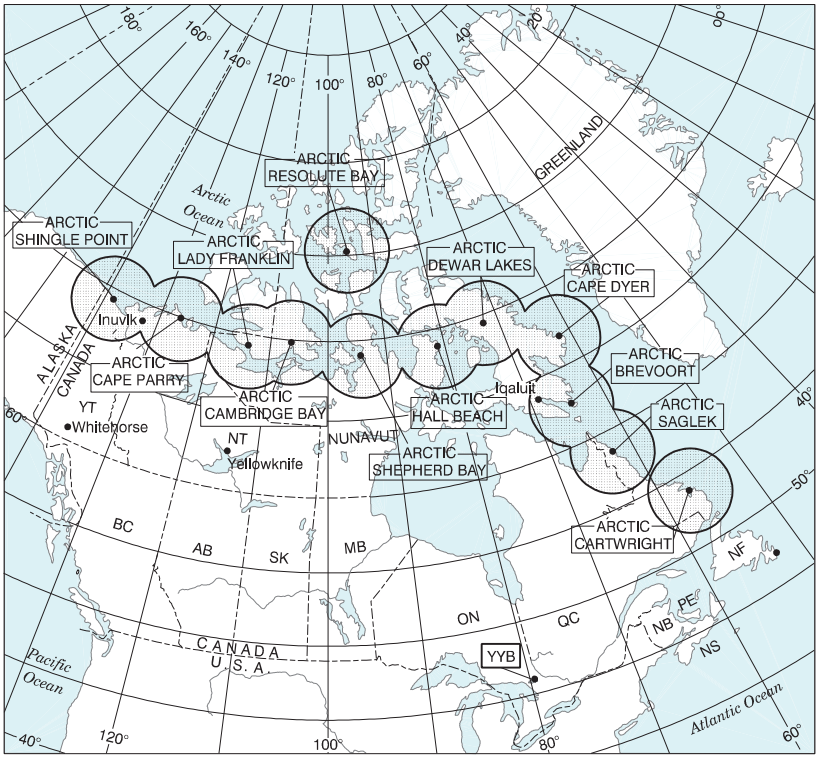
a. Arctic Radio on an RCO frequency as published on the Enroute High Altitude Chart HI 1 and 2;

b. Arctic, Montreal (Iqaluit) or Churchill Radio on HF; and

c. as a last resort because of limited means of forwarding information, Alert (CYLT) (military) on 126.7 MHz or HF 5680 kHz, 6706 kHz or 11232 kHz.

During periods of HF unreliability, aircraft are to make position reports immediately upon coming within range (approximately 200 NM) of any published VHF facility.

VHF COVERAGE – NORTHERN AIRSPACE 30,000'



422. CANADIAN DOMESTIC ROUTES

1. General

Within Canadian Domestic Airspace, various route and track systems exist in order to provide effective management of airspace and traffic. Under specified conditions, random routes may be flight planned or requested.

2. North American Route Program (NRP)

a. Introduction

The North American Route Program (NRP) is a joint FAA and NAV CANADA program that allows air operators to select operationally advantageous routings. The objective of the NRP is to harmonize and adopt common procedures, to the extent possible, applicable to random route flight operations at and above FL 290 within the conterminous U.S. and Canada.

The NRP will be implemented through various phases with the end goal of allowing all international and domestic flight operations to participate in the NRP throughout the conterminous U.S. and Canada.

b. Eligibility

Flights may participate in the NRP under specific guidelines and filing requirements:

(i) provided the flight originates and terminates within conterminous U.S. and Canada; or
(ii) for North Atlantic international flights, provided that they are operating within the North American Route (NAR) System.

c. Procedures

NRP common procedures and specific NAV CANADA requirements are contained in the "Planning" section of the CFS.

3. Mandatory IFR Routes

Mandatory IFR routes provide guidance in planning routes, minimize route changes and allow for an efficient and orderly management of traffic. Procedures for and descriptions of mandatory routes are published in the "Planning" section of the CFS.

4. Northern Control Area Random Routes

Within the Northern Control Area (NCA), flights operating on random routes shall flight plan and make positions reports as follows:

a. flights operating on predominately north or south tracks (315°T clockwise through 045°T or the reciprocals) shall report over reporting line points formed by the intersection of parallels of latitude spaced at 5° intervals expressed in latitude by whole degrees and meridians of longitude expressed in either whole degrees or whole and half degrees;

b. south of 75°N latitude, flights operating on predominately east or west tracks (046°T clockwise through 134°T or the reciprocals) shall report over reporting line points formed by the intersection of either whole degrees or whole and half degrees of latitude coincident with each 10° of longitude. For flights operating north of 75°N latitude, where 20° of longitude is traversed in less than 60 min, reporting line points are to be defined by parallels of latitude expressed in degrees and minutes coincident with meridians of longitude at 20° intervals;

c. as requested by ATS.

5. Arctic Control Area Random Routes

Within the Arctic Control Area (ACA), flights operating on random routes shall flight plan and make position reports as follows:

a. at the reporting lines coincident with 141°W, 115°W and 60°W meridians. If the route of flight is north of 87°N latitude, the 115°W report is not required;

b. westbound flights which do not cross the 60°W meridian on entry or prior to entry into the ACA shall report at the point of entry into the ACA;

c. westbound flights which do not cross the 141°W meridian prior to exiting the ACA shall report at the point of exit from the ACA;

d. eastbound flights which do not cross the 141°W meridian on entry into the ACA shall report at the point of entry;

e. eastbound flights which do not cross the 60°W meridian on or after exiting the ACA shall report the point of exit;

f. northbound or southbound flights which do not cross significant reporting lines shall report at the entry and exit points of the ACA; and

g. as requested by ATS.

423. CANADIAN TRACK STRUCTURES

1. Northern Control Area Track Structure

a. General

The Northern Control Area (NCA) Track System allows for a reduced lateral separation, and facilitates the application of the Mach number technique. The tracks are contained within the Southern and Northern Control Areas and extend upward from FL280. The system is primarily used by international flights operating North America/Europe (NAT) and North America/Alaska-Orient (PAC). The tracks are described in the *Designated Airspace Handbook (TP 1820)* and are depicted on Enroute High Altitude Charts.

The mandatory use of NCA tracks and the availability to random route is different for NAT and PAC traffic. The operating conditions for the two traffic flows are indicated in the following paragraphs.

b. Flight Planning Procedures

For flight planning an NCA or Lateral track, the flight plan routing is indicated by using the abbreviation "NCA" or "LAT", as appropriate, followed by the letter or number of the track.

Example:	Track Bravo-	NCA B
	Lateral 3-	LAT 3
	Track 17-	NCA 17

c. Position Reports

For flights operating within the NCA Track System, position reports are to be indicated by the compulsory reporting point designator. In cases where these points have not been named, pilots should use the published coordinates for that point.

Example 1:
For a flight on NCA Track BRAVO where it crosses 080°W: "SIX SEVEN THREE ZERO NORTH, ZERO EIGHT ZERO WEST AT (time.)"

Example 2:
For a flight on NCA Track SIERRA where it crosses 090°W: "SIGPI AT (time)."

d. NCA Tracks - NAT Traffic

There are no special conditions applicable to eastbound or westbound NAT traffic transiting CDA.

Note: The requirement to flight plan and operate using the North American Route (NAR) System, as specified in the CFS, Planning Section, remain in effect.

e. NCA Tracks - PAC Traffic

PAC traffic includes flights operating from North America to Alaska, the Orient and the Russian Far East. No special conditions apply as flight planning on NCA tracks is completely optional for PAC traffic.

2. Southern Control Area Track System

a. General

The Southern Control Area (SCA) Track System is primarily used by international traffic operating between the mid-west and western United States and Europe via NAT. The tracks are within the SCA and extend upwards from FL180. The tracks are described in the *Designated Airspace Handbook (TP1820)* and are depicted on Enroute High Altitude Charts.

b. Flight Planning Procedures

The SCA tracks are completely optional for flight planning.

Entry or exit from the SCA tracks may be at designated reporting points or at the reporting points coincident with the longitudes 80°W and 90°W. Lateral transitions between tracks may be flight planned or requested between significant reporting points.

For flight planning an SCA track, the route is indicated by using the abbreviation “SCA” followed by the letter of the track.

Example: SCA Hotel Track SCAH

c. Position Reports

Flight operating within the SCA Track System shall report over reporting lines coincident with the longitudes 80°W and 90°W, designated reporting points or as requested by ATS.

3. North American Routes

a. The North American Routes (NAR) Track System provides an interface between NAT oceanic and domestic airspaces. Operating conditions and description of the NAR are contained in the CFS (GPH205) Planning Section and Section 4 (North Atlantic Operations).

b. The requirement to flight plan and operate using the NAT System is published in the CFS (GPH205) Planning Section.

424. SECURITY CONTROL OF AIR TRAFFIC

a. Flights that will enter the Air Defence Identification Zone (ADIZ) while in the ACA may forward the required estimated time and place of ADIZ entry as part of their 115W longitude or Mould Bay position report.

b. Flights that will enter or operate within the ADIZ while in the NCA, shall be governed by the requirements as set out in GPH204A.

425. AIR TRAFFIC FLOW MANAGEMENT (ATFM)

Air Traffic Flow Management (ATFM) programs have been developed by NAV CANADA and the United States Federal Aviation Administration to ensure that national air traffic control systems are used to maximum capacity and that the need for excessive en-route airborne holding, especially at low altitude, is minimized. ATFM also distributes required delays more equitably among users. Initiatives include the publication of standard instrument departures (SID) and standard terminal arrivals (STAR), the rerouting of aircraft because of sector overloading and weather avoidance, flow-control metering of arriving aircraft into terminal control areas, 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

Pilots or operators can obtain ATFM information, which may be pertinent for their particular flight, by referring to Canada ATFM Advisories (http://www.fly.faa.gov) or NOTAM. Additional information, if required, can be obtained by contacting the following:

In Canada

The shift manager or ATFM unit of the applicable Area Control Centre (ACC).

Gander ACC		(709) 651-5207
Moncton ACC		(506) 867-7173
Montreal ACC		(514) 633-3028 or 3365
Toronto ACC	(Canada)	1-800-268-4831
		(905) 676-3528 or 4509
	(U.S.)	1-800-387-3801
Winnipeg ACC		(204) 983-8338

Edmonton ACC	(780) 890-4714
Vancouver ACC	(604) 775-9673 or 9622

In the United States of America

The shift manager or ATFM unit of the applicable Canadian ACC for the airport of departure or by the FAA Air Traffic Control System Command Center (ATCSCC) Web site (www.atcscc.faa.gov) and selecting "Advisories Database" from the drop-down list under "Products".

426. FLOW CONTROL PROCEDURES

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

a. Altitude

b. Miles-in-trail/minutes-in-trail

c. Speed control

d. Fix balancing

e. Airborne holding

f. Sequencing programs

(i) Departure Sequencing Program (DSP)
DSP assigns a departure time to achieve a constant flow of traffic over a common point. Runway and departure procedures are considered for accurate projections.

(ii) En route Sequencing Program (ESP)
ESP assigns a departure time that will facilitate integration into an en-route stream. Runway configuration and departure procedures will be considered for accurate projections.

(iii) Arrival Sequencing Program (ASP)
ASP assigns meter fix times to aircraft destined to the same airport.

g. Ground delay programs

A 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.

h. Ground stop

The 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.

In the U.S., the Airport Reservations Office (ARO) has been established to monitor the operation of the high-density rule required by Part 93, subpart k, of the *Code of Federal Regulations* (CFR), as amended. This office receives and processes all IFR requests for operations at designated high-density traffic airports (HDTA), and allots reservations on a first come, first served basis, determined by the time the request is received at the ARO. Standby lists are not maintained.

The HDTAs are John F. Kennedy International Airport, La Guardia Airport, Chicago O'Hare International Airport, and Washington National Airport. Reservations for John F. Kennedy International Airport are required between

3:00 p.m. and 7:59 p.m. local time. Reservations at Chicago O'Hare International Airport are required between 6:45 a.m. and 9:15 p.m. local time. Reservations for La Guardia Airport and Washington National Airport are required between 6:00 a.m. and 11:59 p.m. local time. Requests for IFR reservations will be accepted starting 48 hr. prior to the proposed time of operation at the affected airports. An exception to the 48-hr. limitation is made for holidays to recognize normal business hours.

427. EUROCONTROL (CFMU)

1. Central Flight Management Unit (CFMU) in Brussels is a central agency which receives and provides all air traffic data for the airspace of France, Germany, Netherlands, Belgium and Luxembourg. In addition, the flight plan data of IFR/GAT flights penetrating airspace other than within the countries specified above is also made available to CFMU. This information is used for the management of air traffic flow throughout central Europe. CFMU will calculate departure slots for traffic departing or transiting the Paris Air Traffic Area and other specified areas. Recipients of the Slot Allocation Messages (SAM) are required to comply with the issued departure slot. Details of traffic flows subject to Air Traffic Flow Management (ATFM) restrictions are published daily in the ATFM Notification Message (ANM).

2. General Air Traffic (GAT) are flights operating in accordance with civil air traffic procedures. All originators of Flight Plans (FPL) and associated update message for IFR/GAT flights within the FIRs/UIRs of Europe shall continue to include the addresses of both the Integrated Flight Plan Processing System (IFPS) Units of Haren and Bretigny (EBBDZMFP and LFPYZMFP) in the AFTN addressee list in addition to the current address. Unless a valid FPL has been received and acknowledged by IFPS (i.e. an ACK message has been received), the requirement to submit a FPL for an IFR/GAT flight intended to operate in the areas defined above will not be satisfied, and no Air Traffic Flow Management (ATFM) slot can be issued for those flights which are subject to ATFM measures. Mistakes in FOLs and FPL associated messages may result in a delay to a flight. Consequently, FPLs for those flights which are rejected by IFPS (via a REJ message) must be cancelled to original addresses with the exception of the two IFPS Units named above, and correct FPLs refilled to all of the appropriate addresses, including the two IFPS Units.

3. Procedures related to IFPS and Central Flow Management can be found in the CFMU Handbook, in particular, IFPS Users Manual and the ATFM Users Manual available at the EUROCONTROL library: address: EUROCONTROL, Library, rue de la Fusee, 96-1130 Brussels. Tel.: 729 36 39.

428. DUE REGARD

1. Article III of the 1944 Chicago Convention of the International Civil Aviation Chicago (I.C.A.O.) exempts 'state aircraft' (Military, Customs or Police) from complying with ICAO rules and procedures when operating over the high seas (international waters, outside of 12 NM of a sovereign territory). This exemption requires 'state aircraft' to fly with 'due regard' for the safety of civil aviation. Due regard can be exercised for Military Contingencies, Classified Missions, Politically Sensitive Missions, Carrier / Ship borne Aircraft Operations or other Training.

2. Before an Aircraft Commander declares 'due regard', one or more of the following conditions must be met:

   a. Aircraft shall be operated in visual meteorological conditions (VMC); or

   b. Aircraft shall be operated within radar surveillance and radio communications of a surface radar facility; or

   c. Aircraft shall be equipped with airborne radar that is sufficient to provide separation between themselves, aircraft they may be controlling, and other aircraft; or

   d. Aircraft shall be operated outside of controlled airspace.

   Following the above conditions is deemed provide an appropriate level of safety and fulfill the obligations and requirements under Article 3 of the Chicago Convention.

3. Flights planning to operate under 'due regard' normally file an ICAO flight plan with a delay indicating the point and time the mission plans to go 'due regard' or 'operational'. Prior to declaring 'due regard', aircrew are encouraged to co-ordinate and receive acknowledgement from ATC of a point and time that a return IFR clearance can be anticipated. To preclude a "lost comms' situation from arising, the following phraseology may be used with ATC:

"in the event of lost comms, Callsign XXXX intends IFR at XXXX (fish point or lat / long) at time XXXX, Flight Level XXX with your anticipated routing to planned destination".

Crews are to be advised that once 'due regard' is declared, their IFR flight plan and any flight following services provided by ATC will be terminated. Crews proceeding 'due regard' should ensure that 'flight watch' is established for the duration of the 'due regard' portion of the mission with the appropriate Military authority.

429. MARSA

The application of MARSA is a command prerogative and shall not be invoked indiscriminately by individual units or pilots. It is employed only for special operations requiring its use. Examples are tasked defence of Canada missions, NORAD exercises, air refueling, and air intercept training. Commands authorizing MARSA must ensure that its implementation and terms of use are documented and coordinated with the Air Traffic Control agency having jurisdiction over the area in which such operations are conducted. Terms of use must assign responsibility and provide for separation among participating aircraft.

Note 1: MARSA is defined in ATC MANOPS as "Military assumes responsibility for separation of aircraft".

430. GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS) OPERATIONS

1. General

GNSS certification, installation, and aircraft AOI/SMM will determine whether the GNSS can be used as a supplemental, primary, or sole-means navigation system. This will also determine which phases of flight (oceanic, en-route, terminal, and/or approach) it can be used under IFR. The US GPS constellation provides a precise positioning service (PPS) and a standard positioning service (SPS). The PPS broadcast is encrypted and reserved for military applications while the SPS broadcast is designed for civilian users. Equipment must be operated in accordance with Aircraft Operating Instructions (AOIs) and the GNSS avionics operating manual.

2. Certification

GNSS navigation equipment must be operationally airworthy and approved by 1CAD/CANR HQ after technical airworthiness approval from the applicable Technical Airworthiness Authority.

The Wide Area Augmentation System (WAAS) is a Space Based Augmentation System (SBAS) developed to augment GNSS with the goal of improving its accuracy, integrity, and availability under TSO C145/C146/C145a/C146a, or equivalent.

3. Enroute and Terminal Operations

GNSS will support RNAV and RNP operations. For en route and terminal operations, the GNSS equipment shall meet TSO C129/C129a, TSO C145/C146/C145a/C146a, or equivalent criteria.

Crews should note that the pre-flight and in-flight procedures associated with using the avionics grouped within the two separate TSOs are slightly different. These differences will be pointed out in the following paragraphs and individual AOI's.

Aircraft using GNSS equipment under IFR should be equipped with another approved and operational means of navigation. Should GNSS navigation capability be lost, the crew will continue in a dead reckoning mode until an alternate navigation source will allow navigation along the planned route or suitable alternate route.

When operating outside of radar coverage, crews may be cleared by ATC to a position defined by a latitude and longitude. As these are usually outside the range of traditional navigation aids, there is no means to cross check that the coordinates have been entered accurately. Crews must be particular careful to verify that the coordinates are correct.

4. Oceanic and Long Range Navigation

Aircraft equipped with a GNSS that meets the necessary certification criteria may use the GNSS to replace

one or both of the other approved means of long-range navigation (INS or IRS) in NAT MNPS airspace (see Article 452 paragraph 1.d.) For flight within Canadian Minimum Navigation Performance Specifications (CMNPS) airspace or Required Navigation Performance Capability (RNPC) airspace, a GNSS meeting the necessary certification criteria may serve as the long-range navigation system.

There are four general provisions (accuracy, integrity, availability and continuity) for the operational approval to use GNSS as a primary-means navigation system in oceanic and remote areas including NAT MNPS. Primary-means navigation systems under the right GNSS constellations conditions may be used as the only required means if they satisfy the necessary levels of accuracy, integrity and availability for a particular area, route, procedure, or operation.

Primary-means GNSS sensors meet requirements beyond those in TSO C-129 for RAIM. This increases the availability of integrity to the point where two primary-means GNSS receivers can be used as the only required means of long-range navigation. The use of GNSS as primary-means equipment requires that the flight be planned for times when GNSS signals will support operations. This pre-flight planning is achieved through the use of a RAIM prediction program and/or crosscheck of WAAS NOTAMs. The failure of a primary-means navigation system may require revision to a reduced means of navigation (e.g. dead reckoning).

5. GNSS Approaches

a. General

GNSS-based RNAV approaches are designed to take full advantage of GNSS capabilities. A series of waypoints in a "T" or "Y" pattern eliminates the need for a procedure turn. The accuracy of GNSS often means lower minima and increased capacity at the airports.

RNAV GNSS approach charts will in many cases, depict these sets of minima:

- LPV (localizer performance with vertical guidance- using WAAS)
- LNAV/VNAV (lateral/vertical navigation) and
- LNAV (lateral navigation only)
- Circling

GNSS approaches rely on way points stored in a receiver data base. In many cases this database is provided by a third party contractor. Coordinates are checked during the data base creation process and updated at regular intervals. Errors should be rare, but are possible. Crews must therefore verify way point coordinates in accordance with AOIs, SMM, GNSS Supplements and operating manuals. Database suppliers also provide database NOTAMS or Alerts for erroneous information and these must be checked as well.

The avionics database must be current, and crews must retrieve approaches from the database. This allows the avionics to increase CDI sensitivity to ensure terrain and obstacle clearance, and to enable the GNSS integrity warnings necessary to ensure detection of GNSS faults which would require a missed approach. It is not possible to change or enter way points in the approach database. The GNSS avionics must store the location of all way points required to define the approach and present them in the order depicted on the published instrument approach procedure. Approach way points must be verified.

Crews must check the contents of the database as part of the pre-flight process to verify the information required i.e. approaches; SIDs/STARs, etc are actually in the database. Suppliers offer different database versions, tailored to particular areas and/or operations. Depending on the version loaded, the information for a particular airport may be missing or limited.

b. GNSS approaches providing Lateral and Vertical guidance

Operational and Technical Airworthiness Approval to fly LNAV/VNAV and LPV type approaches is based on the requirements of RCAF FOM 2.3.6.2. The LNAV/VNAV and LPV minima depict a

decision altitude (DA), which requires the pilot to initiate a missed approach at the DA if the necessary visual reference to continue the landing phase of the approach has not been established.

Suitably equipped aircraft and qualified crews may fly vertically guided approaches to the VNAV minima published on the approach plate. Crews must be aware that the vertical path defined by barometric VNAV is affected by Temperature Limitation (TLIM) and remote altimeter setting restrictions.

c. GNSS approaches providing Lateral guidance and/or GNSS Overlay Approaches

Certification for non-precision approach operations (LNAV), must meet the requirements of RCAF FOM 2.3.6.2.

Crews can also use VNAV capability to conduct an LNAV or GNSS Overlay approach. In this case the published Minimum Descent Altitude (MDA) must be adhered to so that the aircraft does not descend below the MDA unless the required visual references are acquired. Some approach procedures may provide a Vertical Descent Angle (VDA) as an aid in flying a Constant Descent Angle (CDA) approach; however, flying a CDA approach does not make the approach a Vertical Guidance procedure. It must still be flown to an MDA since the TERPS design criteria has not evaluated a glide path.

It is important that the crew understands how the GNSS will cycle from approach guidance to the missed approach guidance to ensure that the aircraft continues along its lateral path to the Missed Approach Waypoint (MAWP). However, this does not preclude the pilot from initiating a climb prior to the MAWP.

When flying GNSS Overlay Approaches, only those approaches identified by the addition of (GNSS) in the title are approved to be flown as overlays with GNSS in IMC.

d. GNSS Assisted approaches (Traditional IFR Approach using GNSS as guidance for an IFR approach that is not GNSS certified.)

Crews wishing to use the GNSS to provide lateral guidance to fly a traditional IFR approach (VOR, TACAN or NDB) that are not certified for GNSS in IMC may program their GPS/FMS to provide lateral guidance by using waypoints or inbound courses that correspond to the traditional IFR approach. The preferred method is to use database extracted waypoints; however crews may enter user defined waypoints for points not contained in the database. Crews shall make primary reference to the tuned and identified serviceable traditional NAVAID that provides guidance for the conventional approach. The guidance information from both the GNSS and the traditional NAVAID should be displayed simultaneously. This is to facilitate the quick detection of any deviation from the intended approach path as indicated by the conventional ground based NAVAID. When deviations exist between the GNSS course and the traditional NAVAID course, the traditional NAVAID guidance will take precedence.

e. Pilot-Defined Approaches

Crews are prohibited from flying pilot-defined approaches under IMC.

6. GNSS NOTAMs

TSO C129/C129a or equivalent

Crews wishing to take advantage of a RNAV (GPS) or RNAV (GNSS) approach when specifying the IFR alternate shall obtain GPS NOTAMs and verify the status of the constellation. NOTAMs covering GPS satellite serviceability are available under the identifiers: KGPS (Domestic NOTAM File) or KNMH (International NOTAM File).

NOTAM originated by U.S. Military on GNSS satellite outages are received from the U.S. NOTAM Office under the four-letter indicator "KNMH". Canadian users of the NOTAM system can retrieve this information by automatic query/response using "KNMH", which includes GNSS outage information.

The GPS NOTAM file must be checked for a period of 60 min before and after the ETA at proposed alternate aerodrome. If not more than one GPS satellite outage is predicted during the ETA +/- 60 min period, no pre-departure RAIM prediction is required. If two or more GPS satellite outages are predicted during the ETA +/- 60 min period, a pre-departure RAIM prediction is necessary to determine if approach level RAIM will be available at ETA, taking into account the satellite outages. See the manufacturer's manual or AOIs on how to remove a GNSS satellite from the RAIM Prediction.

TSO C145/C146/C145a/C146a or equivalent (WAAS)

NAV CANADA has implemented a NOTAM system for users of WAAS avionics (TSO C145a/C146a). It makes use of a service volume model (SVM) that considers current and anticipated GPS constellation status and geometry and the availability of WAAS GEO satellites and computes estimates of the availability of service where SatNav-based approach procedures are published.

The SVM runs twice daily, at 0000Z and 1200Z. It computes the expected availability of LPV, and WAAS-based LNAV/ VNAV and LNAV for a period of eighteen hours for all aerodromes in its database. When a service is predicted not to be available for duration of more than fifteen minutes, an aerodrome NOTAM will be issued. In the event that two outages of less than fifteen minutes each are predicted, and are separated by a period of less than fifteen minutes during which the service is available, a NOTAM will be issued for a single outage covering the entire period.

The SVM is also run in response to an unscheduled change in the GPS constellation status. This typically implies a satellite failure.

Pilots should f light plan based on the assumption that the services referred to in a NOTAM will not be available. However, once they arrive at the aerodrome, they may discover that a service is, in fact, available because of the conservative nature of the prediction, in which case they may use the approach safely if they so choose.

When LPV and WAAS-based LNAV/VNAV are not available, pilots may fly the LNAV procedure to the published MDA. Since LNAV procedures will be used when LPV and LNAV/VNAV is not available, pilots should ensure that they maintain their skills in flying these approaches.

Because of the high availability of services supporting en-route and terminal operations, no NOTAMs are issued for these phases of flight.

7. GNSS RAIM Prediction

When equipped with TSO C129/C129a avionics or equivalent, crews operating to a destination and/or using an alternate where an approach using GNSS guidance is intended shall do a RAIM prediction prior to departure to ensure approach level RAIM availability at the destination and/or alternate. An enroute RAIM prediction shall be conducted to determine RAIM availability at ETA if the airborne computed ETA differs by more than 15 minutes from the ETA used on the ground prior to departure. Crews should periodically conduct RAIM predictions while enroute to confirm RAIM availability. If a RAIM warning is displayed when the aircraft is established on the final approach course, crews shall not continue the approach using GNSS guidance.

Note: To ensure the most accurate RAIM Prediction, crews should contact MFAU, FSS or Base Ops to determine if there are any changes in the NOTAMs regarding GNSS status so that any new outages can be input into the RAIM Prediction function.

Note: Some receivers do not have the ability to remove satellites from the RAIM Prediction. Lack of this feature does not prevent the use of these receivers but pilots are warned that if satellites are out of service and the receiver lacks this feature, they may discover just prior to initiation of / or during an approach that they are unable to fly the GNSS approach due to RAIM being unavailable.

TSO C145/C146/C145a/C146a or equivalent, eliminates the requirement for RAIM predictions when the GNSS receiver is in WAAS coverage and receiving integrity data while applying WAAS corrections. Outside WAAS coverage, or not using the WAAS signals, the receivers become similar to C129/C129a receivers and depending on the equipment may require the crews to complete a RAIM prediction as per

TSO C129/C129a.

8. GNSS Training

Aircrew training and operating requirements for GNSS operations are found in RCAF FOM 2.3.6.2.

9. Types of Navigation Systems

a. Supplemental-Means

A navigation system that must be used in conjunction with a sole-means navigation system. Approval for supplemental-means for a given phase of flight requires that a sole-means navigation system for that phase must be on board. Amongst the navigation system performance requirements for a given phase of flight, a supplemental-means navigation system must meet the same accuracy and integrity requirements of a sole-means system: there is no requirement to meet availability and continuity requirements. Operationally, while accuracy and integrity requirements are being met, a supplemental-means system can be used without any cross-check with the sole-means system. Any navigation system approved for supplemental-means could involve one (stand-alone installation) or several sensors, possibly of different types (multi-sensor installation).

b. Primary-Means

A navigation system approved for a given operation or phase of flight that must meet accuracy and integrity requirements, but need not meet full availability and continuity of service requirements. Safety is achieved by limiting flights to specific time periods, and through appropriate procedural restrictions. There is no requirement to have a sole-means navigation system on board to support a primary means system.

c. Sole-Means

A sole-means navigation system for a given phase of flight must allow the aircraft to meet, for that phase of flight, all four navigation system performance requirements: accuracy, integrity, availability and continuity of service. This does not exclude the carriage of other navigation systems. Any sole-means navigation system could include one (stand-alone installation) or several sensors, possibly of different types (multi-sensor installation).

d. Portable GNSS Units (PGUs)

This category of GNSS navigation system includes handheld GNSS units such as the Garmin 90 or laptop Personal Computer-based GNSS moving maps, or any other portable type GNSS unit. These units do not have RAIM capability and cannot determine if false data is being supplied to the unit. These units do not meet the requirements of TSO C-129 or TSO C-129A and are not certified nor approved for navigation under IFR.

10. PGU Use Policy

a. PGUs are prohibited for IFR navigation, including instrument approaches.

b. Aircrew navigating under VFR with a PGU shall monitor the PGU's performance by cross-checking with available ground-based navaids, ATC or maps.

c. PGUs shall be cleared for use on specific aircraft by the applicable Aircraft Engineering Officer (AEO), DTA and/or DGAEPM. This clearance shall include a check for electromagnetic interference (EMI) potential.

d. The user is responsible for ensuring that the PGU has up-to-date data.

e. Aircrew shall receive training on the use of the PGU being used on their particular aircraft. This training shall consist of as a minimum one ground-training session and one flight-training session. Upon successful completion of the training, the aircrew members file shall be documented.

f. Units using PGUs shall publish any restrictions in their SOPs.

431. REDUCED VERTICAL SEPARATION MINIMUM

1. Definitions

RVSM is the application of 1000 ft vertical separation between RVSM aircraft in RVSM airspace.

Non-RVSM Aircraft: An aircraft that does not meet RVSM certification and/or operator approval requirements.

RVSM Aircraft: An aircraft that meets RVSM certification and operator approval requirements.

2. RVSM Airspace

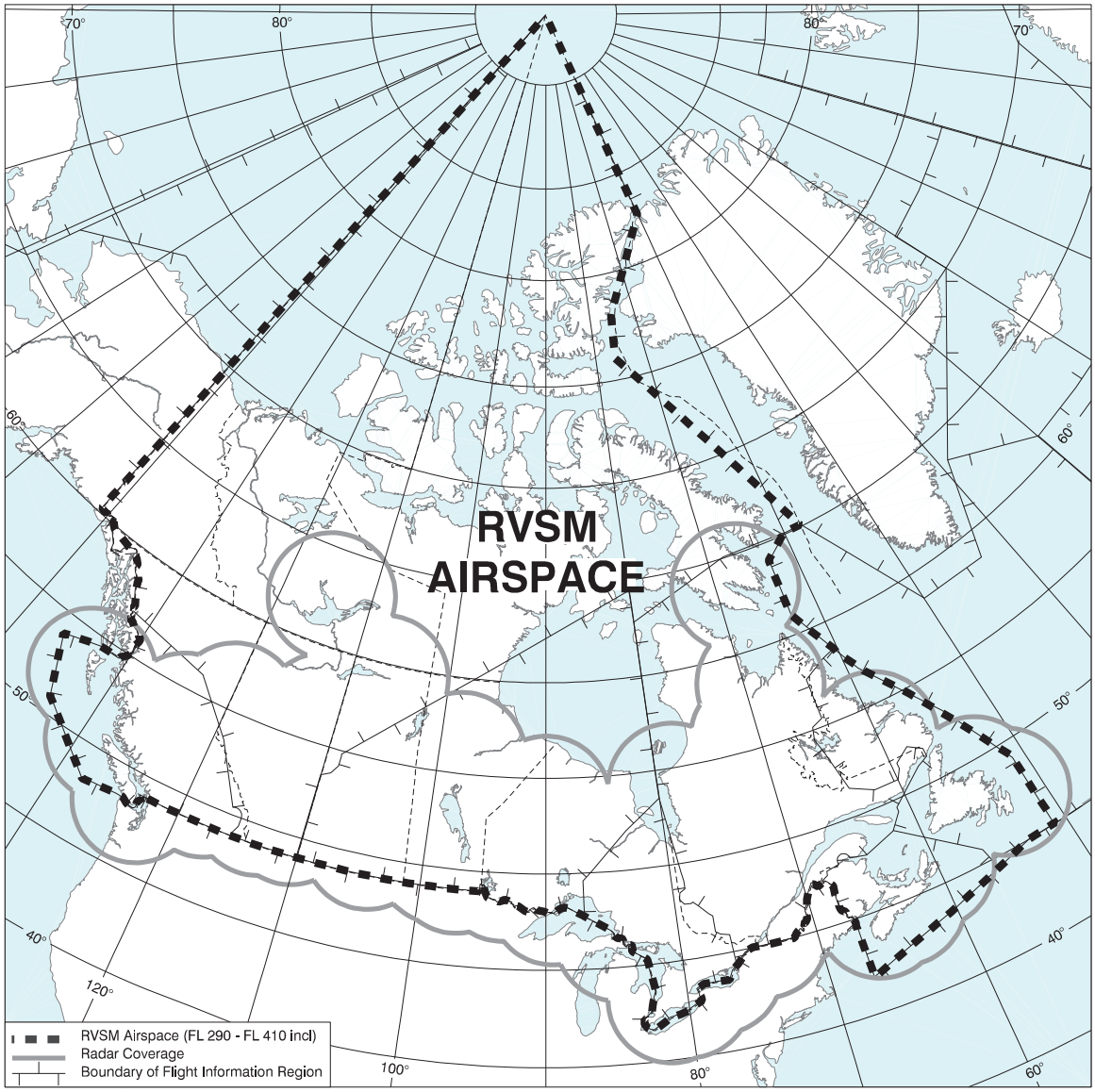
RVSM airspace is all airspace within CDA from FL 290 to FL 410 inclusive as defined in the DAH (TP 1820) and depicted in Figure below.

3. ATC Procedures

a. Within RVSM airspace ATC:

(i) will, within non-radar airspace, endeavour to establish 2000 ft separation or applicable lateral or longitudinal separation minimum if an aircraft reports greater-than-moderate turbulence, and/or mountain wave activity that is of sufficient magnitude to significantly affect altitude-keeping, and is within 5 min of another aircraft at 1000 ft separation;
(ii) will, within radar airspace, vector aircraft to establish radar separation or establish 2000 ft separation if an aircraft reports greater-than-moderate turbulence, or encountering mountain wave activity that is of sufficient magnitude to significantly affect altitude-keeping, if 1000 ft vertical separation exists between two aircraft, and targets appear likely to merge;
(iii) may structure portions of the airspace for specific periods of time for one-way traffic in which inappropriate flight levels to the direction of flight may be assigned; and
(iv) may, within non-radar airspace, temporarily suspend RVSM within selected areas and/or altitudes due to adverse weather conditions, e.g. pilot reports greater-than-moderate turbulence. When RVSM is suspended, the vertical separation minimum between all aircraft will be 2000 ft.

RVSM AIRSPACE



b. Pilots may be requested by ATC to confirm that they are approved for RVSM operations. Pilots/operators unable to provide such confirmation will be issued a clearance to operate outside RVSM airspace:

Phraseology: "Affirm RVSM" or "Negative RVSM (supplementary information, e.g. monitoring flight)." See phraseology depicted on Page 107.

4. In-Flight Procedures

a. Before entering RVSM airspace, the status of required equipment should be reviewed. The following equipment should be operating normally:

(i) two independent altitude measurement systems;
(ii) one automatic altitude control system; and
(iii) one altitude alert system.

b. The pilot must notify ATC whenever the aircraft:

(i) is no longer RVSM-compliant due to equipment failure;
(ii) experiences loss of redundancy of altimetry systems; or
(iii) encounters turbulence or mountain wave activity that affects the capability to maintain the cleared flight level.

c. In the event that any of the required equipment fails prior to entering RVSM airspace, a new clearance should be requested in order to avoid RVSM airspace.

d. In level cruise, it is essential that the aircraft maintains the cleared flight level. Except in contingency situations, aircraft should not deviate from the cleared flight level without an ATC clearance. If the pilot is notified by ATC of an assigned altitude deviation (AAD) error of 300 ft or greater, the pilot should return to the cleared flight level as soon as possible.

e. TRANSITION BETWEEN FLs: During cleared transition between flight levels, the aircraft should not overshoot or undershoot the assigned level by more than 150 ft.

f. PILOT LEVEL CALL: Pilots shall report "reaching" any altitude assigned within RVSM non-radar airspace.

5. Flight Planning Requirements

a. Unless special arrangement is made as detailed in paragraph 430.6 (e), RVSM approval is required for aircraft to operate within RVSM airspace. The operator must determine that the aircraft has been approved by the appropriate State authority and will meet the RVSM requirements for the filed route of flight and any planned alternate routes. The letter "W" shall be inserted in Item 10 (Equipment) of the flight plan to indicate that the aircraft is RVSM-compliant and the operator is RVSM-approved. The "W" designator is not to be used unless both conditions are met. If the aircraft registration is not used in Item 7, the registration is to be entered in Item 18 (RAC 3.16.8 "REG/").

b. ATC will use the equipment block information to either issue or deny clearance into RVSM airspace and to apply either 1000 ft or 2000 ft vertical separation minimum.

c. Non-RVSM aircraft requesting permission to operate in RVSM airspace shall include "STS/NONRVSM" in Item 18 of the flight plan to indicate the reason for special handling by ATS.

6. Operation of Non-RVSM Aircraft in RVSM Airspace

a. FLIGHT PRIORITY: RVSM aircraft will be given priority for level allocation over non-RVSM aircraft.

b. VERTICAL SEPARATION: The vertical separation minimum between non-RVSM aircraft operating in RVSM airspace and all other aircraft is 2000 ft.

c. CONTINUOUS CLIMB OR DESCENT THROUGH RVSM AIRSPACE: Non-RVSM aircraft may be cleared to climb to and operate above FL 410 or descend to and operate below FL 290 provided:

(i) the aircraft is capable of a continuous climb or descent and does not need to level off at an intermediate altitude for any operational considerations; and
(ii) the aircraft is capable of climb or descent at the normal rate for the aircraft.

d. STATE AIRCRAFT:

For the purposes of RVSM operations, State aircraft are those aircraft used in military, customs and police services.

State aircraft:
(i) are exempt from the requirement to be RVSM-approved to operate in RVSM airspace;
(ii) do not require advanced approval to operate in RVSM airspace as per paragraph (e) below.

e. SPECIAL COORDINATION PROCEDURES FOR NON-RVSM AIRCRAFT IN RVSM AIRSPACE:

Non-RVSM aircraft may flight plan to operate within RVSM airspace, provided the aircraft:
(i) is being delivered to the State of Registry or Operator;

(ii) was formerly RVSM-approved but has experienced an equipment failure and is being flown to a maintenance facility for repair in order to meet RVSM requirements and/or obtain approval;
(iii) is being utilized for mercy or humanitarian purposes;
(iv) is a photographic survey flight (CDA only). This approval is not applicable for that portion of flight transiting to and from the area(s) of surveying or mapping operations;
(v) is conducting flight checks of a navigation aid. This approval is not applicable for that portion of flight transiting to and from the area(s) of flight check operations; and
(vi) is conducting a monitoring, certification or developmental flight.

f. Aircraft operators may request approval for the operations above as follows:

(i) Flight planning to operate in more than one FIR/CTA, including transborder flights:
Request prior approval from the National Operations Center (NOC) toll free telephone: 1 866 651-9053, toll free calls from the USA 1 866 651-9056.
(ii) Flight planning to operate within one FIR/CTA:
Request prior approval directly from the ACC concerned.

g. Approval is to be requested not less than 2 hr prior to intended departure time. The operator is to include "STS/APVD NONRVSM" in Item 18 of the flight plan.

The unit receiving the request will provide notification of approval via telephone, AFTN, fax or email, as appropriate. The NOC will coordinate with the ACCs concerned, and the FAA, where required.

This special coordination provides approval to flight plan into RVSM airspace only. Routings and altitudes are still subject to an ATC clearance.

This approval process is intended exclusively for the purposes indicated above and not as a means to circumvent the normal RVSM approval process.

h. PHRASEOLOGY:

Pilots of non-RVSM flights shall include the phraseology "Negative RVSM" in all initial calls on ATC frequencies, requests for flight level changes, read-backs of flight level clearances within RVSM airspace and read-back of climb or descent clearances through RVSM airspace. See Phraseology on Page 107.

7. Delivery Flights for Aircraft that are RVSM-Compliant on Delivery

a. An aircraft that is RVSM-compliant on delivery may operate in Canadian Domestic RVSM airspace provided that the crew is trained on RVSM policies and procedures applicable in the airspace and the responsible State issues the operator a letter of authorization approving the operation.

b. State notification to the NAARMO (see RAC 12.16.10) should be in the form of a letter, e-mail or fax documenting the one-time flight indicating:

(i) planned date of the flight;
(ii) flight identification;
(iii) registration number; and
(iv) aircraft type/series.

8. Airworthiness and Operational Approval and Monitoring

a. Operators must obtain airworthiness and operational approval from the State of Registry or State of the Operator, as appropriate, to conduct RVSM operations. For the purposes of RVSM, the following terminology has been adopted:

(i) RVSM Airworthiness Approval: The approval that is issued by the appropriate State authority to indicate that an aircraft has been modified in accordance with the relevant approval documentation, e.g. service bulletin, supplemental type certificate, and is therefore eligible for monitoring. The date of issue of such an approval should coincide with the date when the modification was certified by the operator as being complete.

(ii) RVSM (Operational) Approval: The approval that is issued by the appropriate State authority once an operator has achieved the following:
- RVSM airworthiness approval; and
- State approval of Operations Manual (where applicable) and on-going maintenance procedures.

b. Operators of Canadian-registered aircraft intending to operate in RVSM airspace will be required to show that they meet all the applicable standards in accordance with CARs Parts VI and VII. Information on RVSM approval may be obtained from:

Airworthiness Approvals:
Transport Canada Safety and Security
Director, Aircraft Certification (AARD)
Ottawa ON K1A 0N8
Fax: 613 996-9178

DND
DGAEPM/DTAES
DIN:http://materiel.mil.ca/en/about-us-organizational-structure/dgaepm-directorate-technical-airworthiness-engineering-support.page

Operating Standards Commercial Air Carriers and Private Operators:
Transport Canada Safety and Security
Director, Commercial and Business Aviation (AARX)
Ottawa ON K1A 0N8
Fax: 613 954-1602

RVSM Maintenance Programs:
Transport Canada Safety and Security
Director, Aircraft Maintenance and Manufacturing (AARP)
Ottawa ON K1A 0N8
Fax: 613 996-9178

9. Monitoring

a. All operators that operate or intend to operate in airspace where RVSM is applied are required to participate in the RVSM monitoring program. Monitoring prior to the issuance of RVSM operational approval is not a requirement. However, operators should submit monitoring plans to the responsible civil aviation authority to show that they intend to meet the North American RVSM Minimum Monitoring Requirements.

b. Ground-based and GNSS-based monitoring systems are available to support RVSM operations. Monitoring is a quality control program that enables Transport Canada and other civil aviation authorities to assess the in-service altitude-keeping performance of aircraft and operators.

c. Ground-based height monitoring systems are located in the vicinity of Ottawa, Ont., and Lethbridge, Alta. Over-flight of ground-based height monitoring systems is transparent to the pilot. Aircraft height-keeping performance monitoring flights using ground-based monitoring systems should be flight planned to route within a 30 NM radius of the Ottawa VORTAC, or a 30 NM radius of the Lethbridge VOR/DME.

d. GPS monitoring unit (GMU) services to conduct a height-keeping performance monitoring flight may be obtained from the following agencies:

CSSI, Inc.
Washington, DC
Tel: 202 863-2175
E-mail: monitor@cssiinc.com
Web site: <http://www.cssiinc.com/industries/aviation/reduced-vertical-separation-minimum-rvsm>

ARINC
Annapolis, MD
RVSM Operations Coordinator
Tel: 410 266-4707
E-mail: rvsmops@arinc.com
Web site: <http://www.rockwellcollins.com/Services_and_Support/Information_Management.aspx>

10. NAARMO

a. The Regional Monitoring Agency for CDA is the NAARMO, located in Atlantic City, NJ, and may be contacted as follows:

William J. Hughes Technical Center
NAS & International Airspace Analysis Branch (ACT-520)
Atlantic City International Airport
Atlantic City, N J 08405
USA
Fax: 609 485-5117
AFTN: N/A

b. Information on the responsibilities and procedures applicable to the NAARMO may be found on the Web site:
<www.faa.gov/air_traffic/separation_standards/naarmo/>.

11. ACAS II

It is recommended that those aircraft equipped with ACAS and operated in RVSM airspace be equipped with ACAS II (TCAS II systems with Version 7.0 incorporated meets the ICAO ACAS II standards).

12. Mountain Wave Activity (MWA)

a. Significant MWA occurs both below and above FL 290, which is the floor of RVSM airspace. It often occurs in western Canada and western USA in the vicinity of mountain ranges. It may occur when strong winds blow perpendicular to mountain ranges, resulting in up and down or wave motions in the atmosphere. Wave action can produce altitude excursions and airspeed fluctuations accompanied by only light turbulence. With sufficient amplitude, however, wave action can induce altitude and airspeed fluctuations accompanied by severe turbulence. MWA is difficult to forecast and can be highly localized and short-lived.

b. Wave activity is not necessarily limited to the vicinity of mountain ranges. Pilots experiencing wave activity anywhere that significantly affects altitude-keeping can follow the guidance provided below.

c. In-flight indications that the aircraft is being subjected to MWA are:

(i) altitude excursions and airspeed fluctuations with or without associated turbulence;
(ii) pitch and trim changes required to maintain altitude with accompanying airspeed fluctuations; and
(iii) light to severe turbulence depending on the magnitude of the MWA

d. TCAS Sensitivity-For both MWA and greater-than-moderate turbulence encounters in RVSM airspace, an additional concern is the sensitivity of collision avoidance systems when one or both aircraft operating in close proximity receive TCAS advisories in response to disruptions in altitude hold capability.

e. Pre-flight tools-Sources of observed and forecast information that can help the pilot ascertain the possibility of MWA or severe turbulence are: Forecast Winds and Temperatures Aloft (FD), Area Forecast (FA), SIGMETS and PIREPS.

13. Wake Turbulence

a. Pilots should be aware of the potential for wake turbulence encounters following Southern Domestic RVSM (SDRVSM) implementation. Experience gained since 1997, however, has shown that such encounters in RVSM airspace are generally moderate or less in magnitude.

b. It is anticipated that, in SDRVSM airspace, wake turbulence experience will mirror European RVSM experience gained since January 2002. European authorities have found that reports of wake turbulence encounters had not increased significantly since RVSM implementation (eight versus seven reports in a ten-month period). In addition, they found that reported wake turbulence was generally similar to moderate clear air turbulence.

c. Pilots should be alert for wake turbulence when operating:

(i) in the vicinity of aircraft climbing or descending through their altitude;
(ii) approximately 12-15 mi. after passing 1000 ft below opposite direction traffic; and
(iii) approximately 12-15 mi. behind and 1000 ft below same direction traffic.

PILOT/CONTROLLER PHRASEOLOGY-RVSM OPERATIONS

Standard Phraseology for RVSM Operations

Message	Phraseology
For a controller to ascertain the RVSM approval status of an aircraft	(call sign) confirm RVSM approved
Pilot indication that flight is RVSM-approved	**Affirm RVSM**
Pilot will report lack of RVSM approval (Non-RVSM status): a. On the initial call on any frequency in the RVSM airspace; and b. In all requests for flight level changes pertaining to flight levels within the RVSM airspace; and c. In all read-backs to flight level clearances pertaining to flight levels within the RVSM airspace; and d. In read-back of flight level clearances involving climb and descent through RVSM airspace	**Negative RVSM** (supplementary information, e.g. "monitoring flight")
(FL 290-410)	
Pilot report of one of the following after entry into RVSM airspace: all primary altimeters, automatic altitude control systems or altitude alerters have failed *(This phrase is to be used to convey both the initial indication of RVSM aircraft system failure and on initial contact on all frequencies in RVSM airspace until the problem ceases to exist or the aircraft has exited RVSM airspace)*	**Unable RVSM Due Equipment**
ATC denial of clearance into RVSM airspace	**Unable issue clearance into RVSM airspace, maintain FL ___ .**
Pilot reporting inability to maintain cleared flight level due to weather encounters.	**Unable RVSM due** (state reason) (e.g. turbulence, mountain wave)
ATC requesting pilot to confirm that an aircraft has regained RVSM-approved status or a pilot is ready to resume RVSM	**Confirm able to resume RVSM**
Pilot ready to resume RVSM after aircraft system or weather contingency	**Ready to resume RVSM**

14. In-Flight Contingencies

a. The following general procedures are intended as guidance only. Although all possible contingencies cannot be covered, they provide for cases of inability to maintain assigned level due to:

(i) weather;
(ii) aircraft performance; and
(iii) pressurization failure.

The pilot's judgment shall determine the sequence of actions to be taken, taking into account specific circumstances, and ATC shall render all possible assistance.

b. If an aircraft is unable to continue flight in accordance with its ATC clearance, a revised clearance shall, whenever possible, be obtained prior to initiating any action, using a distress or urgency signal if appropriate. If prior clearance cannot be obtained, an ATC clearance shall be obtained at the earliest possible time. The pilot should take the following actions until a revised ATC clearance is received:

(i) establish communications with and alert nearby aircraft by broadcasting, at suitable intervals: flight identification, flight level, aircraft position,
(ii) (including the ATS route designator or the track code) and intentions on the frequency in use, as well as on frequency 121.5 MHz (or, as a back-up, the inter-pilot air-to-air frequency 123.45 MHz);
(iii) initiate such action as necessary to ensure safety. If the pilot determines that there is another aircraft at or near the same flight level, which might conflict, the pilot is expected to adjust the path of the aircraft, as necessary, to avoid conflict.

The following table provides pilot guidance on actions to take under certain conditions of aircraft system failure and weather encounters. It also describes the ATC controller actions in these situations. It is recognized that the pilot and controller will use judgement to determine the action most appropriate to any given situation.

CONTINGENCY ACTIONS: WEATHER ENCOUNTERS AND AIRCRAFT SYSTEM FAILURES

Initial Pilot Actions in Contingency Situations

Initial Pilot actions when unable to maintain flight level or unsure of aircraft altitude-keeping capability
- Notify ATC and request assistance as detailed below;
- Maintain cleared flight level, if possible, while evaluating the situation; if equipped; and
- Watch for conflicting traffic, both visually and with reference to ACAS/TCAS, if equipped; and
- Alert nearby aircraft by illuminating exterior lights, broadcasting position, flight level and intentions on 121.5 MHz (or as back-up, the inter-pilot air-to-air frequency, 123.45 MHz).

Inability to Maintain Cleared Flight Level Due to Weather Encounter

Pilot should:	*ATC may be expected to:*
- Contact ATC and advise "Unable RVSM Due (state reason)" (e.g. turbulence, mountain wave)	- In radar airspace, where 1000 ft vertical separation exists between two aircraft, and targets appear likely to merge, vector one or both aircraft to establish radar separation until the pilot reports clear of the turbulence
- If not initiated by the controller, and if in radar airspace, request vector clear of traffic at adjacent flight levels	- Provide lateral or longitudinal separation from traffic at adjacent flight levels, traffic-permitting
- Request flight level change or re-route, if desired	- Advise pilot of conflicting traffic
	- Issue flight level change or re-route, traffic-permitting

Pilot Report of Mountain Wave Activity (MWA)

Pilot should:	*ATC may be expected to:*
- Contact ATC and report experiencing MWA	- Advise pilot of conflicting traffic
- If advised of conflicting traffic at adjacent flight levels and the aircraft is experiencing MWA that significantly affects altitude-keeping, request vector to acquire horizontal separation - If so desired, request a flight level change or re-route	- If pilot requests, vector aircraft to achieve horizontal separation, traffic-permitting - In radar airspace, where 1000 ft vertical separation exists between two aircraft, and targets appear likely to merge, vector one or both aircraft to establish radar separation until the pilot reports clear of MWA - Issue flight level change or re-route, traffic-permitting
- Report location and magnitude of MWA to ATC	- Issue PIREP to other aircraft concerned

Wake Turbulence Encounters

Pilot should:	*ATC may be expected to:*
- Contact ATC and request vector, lateral offset or flight level change	- Issue vector, lateral offset or flight level change, traffic-permitting

Failure of Automatic Altitude Control System, Altitude Alerter or all Primary Altimeters

Pilot will:	*ATC will:*
- Contact ATC and advise "Unable RVSM Due Equipment" - Request Clearance out of RVSM airspace, unless operational situation dictates otherwise	- Provide 2000 ft vertical separation or appropriate horizontal separation - Clear aircraft out of RVSM airspace unless operational situation dictates otherwise

One Primary Altimeter Remains Operational

Pilot will:	***ATC will:***
- Cross-check stand-by altimeter - Notify ATC of loss of redundancy, operation with single primary altimeter - If unable to confirm primary altimeter accuracy, follow action for failure of all primary altimeters	- Acknowledge operation with single primary altimeter and monitor progress

432. CANADA TO GREENLAND FLIGHTS

1. General

Greenland's airspace (Sondrestrom FIR) is totally within the North Atlantic (NAT) Operations area; however, because of its unique structure and proximity to Canadian airspace, special operating procedures have been adopted for operations in some of these areas. The southern tip of Greenland above FL195 is controlled airspace and controlled by Gander Oceanic as standard NAT airspace. (See Figure on page 112). The remainder of Greenland airspace above FL195, is also controlled airspace and is similarly controlled by Reykjavik Oceanic Area Control Centre (OACC). All Sondrestrom FIR below FL195 is uncontrolled and only flight information and alerting services are provided. There is however some controlled areas below FL195 around the Sondrestrom airport (domestic and CTA) and the Thule airport (CTA). VFR flight at night in Greenland is not allowed.

2. Procedures

a. All flights from Canada that are transiting through the Sondrestrom FIR to Europe, Greenland or the Arctic, should follow the standard operating procedures and request their oceanic clearances at least 30 minutes prior to entering Oceanic airspace.

b. For IFR flights from Canada (Edmonton FIR) that transits in uncontrolled Canadian airspace and then plan to enter the Sondrestrom FIR at or above FL195 (or any other of their controlled airspace below FL195) the aircraft ***shall*** request a clearance prior (30 minutes) to entering that controlled airspace. Reykjavik ***should*** have your ***filed*** flight plan, but a CARS or FSS may not necessarily pass position reports to the Edmonton ACC. Therefore, they would not be able to update your flight plan with Reykjavik to include your ETA for the boundary or any revised flight level. This clearance may be obtained on VHF from a PAL, FSS, or Arctic Radio or on HF from Reykjavik, Sondrestrom, or on Intl Air Carrier frequencies.

Note1: ALERT-THULE IFR CLEARANCE - If required, pilots have the option of obtaining their IFR clearance on the ground in Alert by contacting Reykjavik OACC via telephone prior to departure. A valid IFR clearance will be issued to the pilot allowing the aircraft to enter Reykjavik's controlled airspace with a valid clearance even if HF communications were unsuccessful due to HF propagation. The number to call is +354 424 4264 (P) or +354 424 4141 (S).

Note2: If the pilot wishes to climb to FL270 or above (Edmonton's controlled airspace), Reykjavik will do the coordination with Edmonton prior to issuing a clearance. The pilot will be on hold as the coordination of the clearance and clearance void time is coordinated with Edmonton.

c. Thule Global Radio will not pass any ATC clearances; however, they will provide, as a last resort (emergency), worldwide phone patch services. They also have a direct line to Edmonton ACC and Reykjavik OACC that can be used to contact these agencies as a last resort.

Note: Most agencies contacted recommended that if all attempts to get an oceanic clearance were unsuccessful, the flight should continue as filed (if able) while attempting to contact the controlling agency. They believe that the confusion from reversal of most flights would be

more disruptive than continuing as filed. However, the United Kingdom in their AIP has stated in a recent AIC that flights shall **not** proceed into oceanic airspace without a clearance.

SECTION 4 NORTH ATLANTIC (NAT) OPERATIONS

433. REGULATIONS

1. B-GA-100-001/-00, Flying Orders, Book 1, Flight Rules, Chapter 1, Para 4 - Military assignment permitting, aircraft in international airspace over the high seas shall comply with ICAO Annex 2, and with the applicable regional supplementary procedures set out in ICAO, Doc 7030/4.

2. Doc 7300 Convention on International Civil Aviation (ICAO), Part 1, Article 3- details military exemption from ICAO regulations. “Due regard” for the safety of navigation of civilian aircraft must be maintained while engaged in military operations. (See Article 428)

434. NAT DOCUMENTS AND GUIDANCE MATERIAL

Refer to the ICAO website www.paris.icao.int, then follow the routing *EUR and NAT DOCS / NAT DOCS* for a number of documents regulating flight operations in the North Atlantic region.

435. NORTH AMERICAN ROUTES

1. The North American Routes (NAR) System interfaces with the NAT oceanic and domestic airspace, and is used by air traffic transiting the North Atlantic. NARs extend to/from established oceanic coastal fixes to major airports throughout Canada and the United States.

2. NAR procedures and routes are published in the *Canada Flight Supplement*, GPH205, Planning Section and in the *Airport Facility Directory* (FAA) (Northeast).

436. NAT ORGANIZED TRACK SYSTEM

1. Organized tracks are formulated and published in a NAT Track Message via AFTN to all interested operators. The day-time structure is published by Shanwick Area Control Centre (ACC) and the night-time structure by Gander ACC. The hours of validity of the two Organized Track Systems (OTS) are normally:

   a. day-time OTS – 1130 – 1900 UTC at 30°W

   b. night-time OTS – 0100 – 0800 UTC at 30°W

   The hours of validity are specified in the track message.

2. The most northerly track of a day OTS is designated as NAT Track Alpha; the adjacent track to the south, as NAT Track Bravo; etc. For the night OTS, the most southerly track is designated as Track Zulu; the adjacent track to the north, as Track Yankee; etc. Flight levels are allocated for use within the OTS and, in most cases, details of domestic entry and exit routings associated with individual tracks are provided in the NAT Track Message.

3. To permit an orderly change-over between successive OTS, a period of several hours is interposed between the termination of one system and the commencement of the next. During these periods, operators are expected to file random routes or use the coordinates of a track in the system about to come into effect.

4. East bound traffic crossing 30° W at 1030 UTC or later and westbound traffic crossing 30° W at 0000 UTC of later should plan to avoid the OTS.

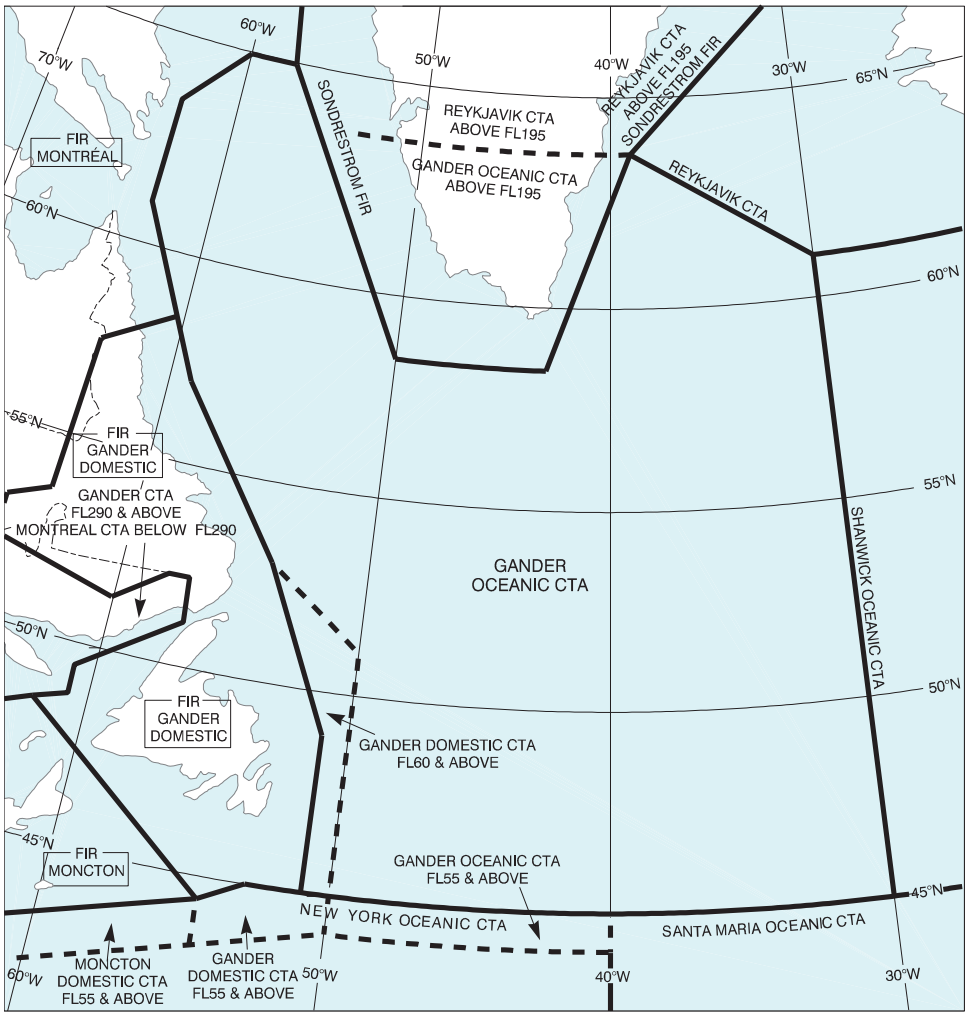
437. FLIGHT RULES

1. Over the high seas, the lower limit of all NAT Oceanic Control Areas (OCA) is FL55 with no upper limit. Throughout the NAT Region, airspace at and above FL55 is Class A controlled airspace, and below FL55 is Class G uncontrolled airspace.

2. Flights shall be conducted in accordance with the instrument flight rules (even when not operating in IMC) when operated at or above FL60.

3. Air Traffic Control (ATC) clearances to climb or descend maintaining one's own separation while operating in VMC shall not be issued.

GANDER OCEANIC CONTROL AREA



438. FLIGHT PLANNING PROCEDURES

1. Routes

   a. Flights conducted wholly or partially outside the OTS shall be planned along great circle tracks joining successive significant points.

   b. For flights operating predominately in an east-west direction:

      (i) south of 70°N, the planned tracks shall be defined by significant points formed by the intersection of half or whole degrees of latitude at each 10° of longitude (60°W, 50°W, 40°W). For flights

operating north of 70°N, significant points are defined by the parallels of latitude expressed in degrees and minutes with longitudes at 20° intervals;

(ii) the distance between significant points shall, as far as possible, not exceed one hour of flight time. Additional points should be established when required due to aircraft speed or the angle at which meridians are crossed. When the flight time between successive significant points is less than 30 minutes, one of the points may be omitted.

(iii) oceanic traffic transitioning through the GOTA from FL 290 to FL 600 shall flight plan an OEP, a 050°W coordinate and a 040°W coordinate.

(iv) OEPs AVPUT, CLAVY, EMBOK, KETLA, MAXAR, PIDSO, SAVRY, URTAK, AVUTI, CUDDY and DORYY are restricted to flights operating from FL 290 up to and including FL 600.

(v) OEPs HOIST, JANJO, LOMSI, NEEKO, RIKAL, TUDEP, ALLRY, ELSIR, JOOPY, NICSO, PORTI, SUPRY and VODOR shall be flight planned by all aircraft entering or exiting Gander oceanic airspace, regardless of altitude.

c. For flights operating predominately in a north-south direction, the planned tracks shall be defined by significant points formed by the intersection of whole degrees of longitude with parallels of latitude spaced at 5° (65°N, 60°N, 55°N).

d. For flights planning to operate within the OTS from the entry point into oceanic airspace to the exit point as detailed in the daily NAT track message, the track shall be defined in Item 15 of the flight plan by the abbreviation “NAT” followed by the code letter assigned to the track.

e. For eastbound NAT flights planning to operate on the organized tracks, the second and third route options should be indicated at the end of Item 18 of the flight plan. Those operators who do not have the capability to provide this information in Item 18 of the flight plan should send the information by separate AFTN message to Gander ACC (CYQXZQZX).

Examples

(1) RMKS/....O2.X370 O3.V350
(Option 2 is Track X at FL370, Option 3 is Track V at FL350)

(2) RMKS/..... O2.RS390 O3.Z370
(Option 2 is random track south at FL390, Option 3 is Track Z at FL370)

Note: In the above examples, the options 2 and 3 are indicated by the letter “O” and not the number zero.

f. ATS requires flights entering or exiting the Gander OCA to flight plan in accordance with the published NAT OTS or, if entering or exiting by way of 58°N 050°W and south thereof, via the following OEPs and associated 050°W coordinates (see OEP Coordinates Table):

Oceanic Entry/Exit Point Coordinates			
OEP	**Coordinates**	**OEP**	**Coordinates**
CUDDY, DORYY	58°N 050°W	ALLRY	51°N 050°W
HOIST	57°N 050°W	ELSIR	50°N 050°W
JANJO	56°N 050°W	JOOPY	49°N 050°W
LOMSI	55°N 050°W	NICSO	48°N 050°W
NEEKO	54°N 050°W	PORTI	47°N 050°W
RIKAL	53°N 050°W	SUPRY	46°N 050°W
TUDEP	52°N 050°W	VODOR	45°N 050°W

These OEPs are compulsory reporting points. ATS requires flights entering or exiting the New York OCA through CDA to flight plan over NOVOK, JEBBY, BOBTU or TALGO; or via ELERI or MUSPO, if arriving at or departing from Halifax airport (CYHZ). Eastbound flights that exit the New York OCA

via CDA and subsequently enter the Gander OCA are required to flight plan in accordance with the published NAT OTS or over an oceanic entry point and associated 050°W coordinate, as provided in OEP Coordinates Table

Flights exiting the New York OCA via BOBTU should contact Gander ACC five minutes prior to BOBTU on frequency 134.7 MHz. Operators should be aware that if the NAT OTS includes tracks that are at or south of SUPRY 46°N 050°W (or 46°N 050°W SUPRY), then optimal flight levels and routes may not be available.

To facilitate effective coordination for flights entering or exiting the Gander domestic CTA and the New York OCA via 44°N 050°W or south thereof:

(i) eastbound flights exiting the Gander domestic CTA directly into the New York OCA are required to flight plan via LOMPI direct JAROM direct TALGO direct 44°N 050°W or south thereof;
(ii) eastbound flights exiting the New York OCA directly into the Gander domestic CTA are required to flight plan via BOBTU; and
(iii) westbound flights exiting the New York OCA directly into the Gander domestic CTA are required to flight plan via BOBTU direct JAROM direct LOMPI.

Note: TALGO is not to be used for westbound flights.

g. Pilots of potential non-stop westbound flights may flight plan to any suitable aeronautical radio facility or designated intersection east of 70°W. The route and altitude to any of the approved regular or alternate aerodromes may be specified. Prior to reaching the flight planned fix or clearance limit, the pilot, after assessing the onward flight conditions, will advise ATC of the intended destination and request an ATC clearance accordingly. If flight to the airport of destination is undesirable, the pilot will request an appropriate ATC clearance to the alternate airport. If an onward ATC clearance from the flight planned fix is not obtained by the time the fix is reached, the pilot must proceed towards the alternate airport in accordance with the flight plan and amendments thereto.

2. Airspeed

True Airspeed (TAS) or Mach number is to be entered in Item 15 of the flight plan.

3. Altitude

a. The planned cruising level(s) for the oceanic portion of the flight to be included in Item 15 of the flight plan.

Note: Flights planning to operate wholly or partly outside the OTS should flight plan cruising level(s) appropriate to direction of flight except that, within the Gander/Shanwick OCAs and the Reykjavik CTA, during the westbound OTS (valid from 1130 to 1900 UTC at 30°W) westbound aircraft may flight plan FL330 and during the eastbound OTS (valid from 0100 to 0800 UTC at 30°W) eastbound aircraft may flight plan FL350.

b. For flight level allocations applicable to Reduced Vertical Separation Minimum (RVSM) refer to Article 454

c. Requests for a suitable alternative flight level may be indicated in Item 18 of the flight plan.

4. Estimated Times

a. For flights operating on the OTS, the accumulated elapsed time only to the first oceanic Flight Information Region (FIR) boundary are to be entered in Item 18 of the flight plan.

b. For flights operating wholly or partly on the OTS, accumulated estimated times to significant points Enroute (EST) are to be entered in Item 18 of the flight plan.

5. Aircraft Approval Status and Registration

a. For flights certified as being in compliance with Minimum Navigation Performance Specifications (MNPS) and intending to operate wholly or partly in MNPS airspace, the approval status (MNPS) shall

be indicated in Item 10 by entering the letter “X”. It is the pilots’ responsibility to ensure that specific approval has been given for MNPS operations.

b. For flights certified as being in compliance with Reduced Vertical Separation Minimum (RVSM) Minimum Aircraft System Performance Specification (MASPS) and intending to operate wholly or partly at RVSM designated altitudes, the approval status (RVSM) shall be indicated in Item 10 by entering the letter “W”. It is the pilots’ responsibility to ensure that specific approval has been given for RVSM operations.

c. With the implementation of RVSM, the letter “X” will continue to indicate MNPS approval and is to be entered in Item 10. For those aircraft being in compliance with both MNPS and RVSM, the letters “X” and “W” shall be entered in Item 10.

d. The aircraft registration shall be indicated in Item 18.

e. Aircraft for HMU monitoring shall include in Item 18 the remarks RMK/HMU/FLT/STU or YQX as applicable.

6. Filing

a. NAT operators are to forward all flight plans for easbound NAT flights to those Canadian ACCs in which the flight will traverse their FIR/CTA’s. These flight plans are to include the Estimated Enroute Time (EET) for each CTA boundary in Item 18 of the flight plan. The AFTN address for Canadian ACCs are:

AFTN Address	Canadian ACCs	AFTN Address	Canadian ACCs
CZQXZQZX	Gander	CZWGZQZX	Winnipeg
CZQMZQZX	Moncton	CZEGZQZX	Edmonton
CZULZQZX	Montréal	CZVRZQZX	Vancouver
CZYZZQZX	Toronto		

b. Flight plans for flights departing from points within adjacent regions and entering the NAT Region without intermediate stops should be submitted at least 3 hours prior to departure.

c. Where possible, operators are to file eastbound NAT flight plans at least four hours prior to the ETA at the coast-out fix specified in the flight plan.

439. PREFERRED ROUTE MESSAGES

1. NAT operators are to send Preferred Route Messages (PRM) for eastbound and westbound flights to the following:

- EGGXZOZX (Shanwick ACC)
- EGTTZDZE (London Flow Management Unit)
- KCFCZDZX (FAA Air Traffic Control System Command Centre)
- KZNYZRZX (New York ARTCC)
- BIRDZQZX (Reykjavik ACC)
- LPPOZOZX (Santa Maria ACC)
- CZQXZQZX (Gander ACC)
- CZQMZQZX (Moncton ACC)
- CZULZQZX (Montréal ACC)
- CYHQZDZX (Canadian Air Traffic Management Unit)

2. The following format is to be used for westbound PRMs:

[PRIORITY] [DEST ADDRESS] [DEST ADDRESS]-----
[DATE TIME OF ORIGIN] [ORIGIN ADDRESS]
[MESSAGE TYPE]-[COMPANY]-[WB]-[YYMMDD AT 30W]-
[(DEP/DEST) (FIRST UK POINT) (ANCHOR POINT) (OCA RPS)
(LANDFALL) (INLAND FIX) (NUMBER OF FLT 01 99)]

Note: If there is no Inland Navigation Fix (INF), the latitude crossing 80°W is to be used.

Example:

FF EGGXZOZX EGTTZDZE CZQXZQZX CZQMZQZX CZULZQZX CYHQZDZX
KCFCZDZX KZNYZRZX BIRDZQZK LPPOZOZX
111824 LSZHSWRW
PRM-SWR-W-930212-
LSZH/KJFK BNE BEL 55/10 56/20 57/30 55/40 53/50 YAY TOPPS 02
LSZH/KIAD BNE BURAK 53/15 53/20 52/30 51/40 50/50 YQX TUSKY 01

3. The following format is to be used for eastbound PRMs:

[PRIORITY] [DES ADDRESS] [DEST ADDRESS] -----
[DATE TIME OF ORIGIN] [ORIGIN ADDRESS]
[MESSAGE TYPE]-[COMPANY]-[EB]-[YYMMDD AT 30W]-
[DEP/DEST) (INLAND FIX) (ANCHOR POINT) (OCA RPS)
(LANDFALL) (LAST UK POINT) (NUMBER OF FLT 01-99)]

Note: If there is no INF, the latitude crossing 80°W is to be used.

Example:

FF EGGXZOZX EGTTZDZE CZQXZQZX CZQMZQZX CZULZQZX CYHQZDZX
KCFCZDZX KZNYZRZX BIRDZQZK LPPOZOZX
120936 EHAMKLMW
PRM-KLM-E-930213-
KJFK/EHAM TOPPS YAY 53/50 53/40 54/30 54/20 54/15 BABAN BLUFA 03
CYMX/EHAM YML FOXXE 57/50 58/40 58/30 57/20 56/10 MAC BLUFA 01

4. PRMs are to be sent for:

a. eastbound flights: no later than 1000 UTC, and

b. westbound flights: no later than 1900 UTC.

440. CLEARANCES

1. Oceanic Clearances

Pilots intending to operate in the Gander OCA should note the following:

a. Clearances for VFR climb or descent will not be granted.

b. The Mach number to be maintained will be specified for turbojet aircraft.

c. ATC will specify the full route details for aircraft cleared on a route other than an organized track or flight plan route. The pilot is to read back the full details of the clearance, including the cleared track.

d. ATC will issue an abbreviated oceanic clearance to aircraft that will operate along a NAT organized track. The abbreviated clearance will include the track letter, the flight level and the Mach number to be maintained (for turbojet aircraft). The pilot is to read back the clearance including the Track Message Identification (TMI) number. ATC will confirm the accuracy of the read-back and the TMI number.

Note: The eastbound OTS is identified by a TMI number which is determined by using the Julian calendar for the day which the eastbound tracks are effective. The TMI number is contained in the "Remarks" section on the eastbound NAT track message.

Amendments to already published tracks are indicated by appending a letter to the Julian date, e.g., TMI 320A. A revised TMI will be issued for changes to:

(i) any track coordinate(s) including named points;
(ii) track published levels; or
(iii) named points within European routes west.

A TMI revision will not be issued for changes to other items such as North American Routes (NARs).

e. Whether received via data link or voice, the oceanic clearance to enter the Gander OCA has the following meaning:

(i) The clearance is valid only within oceanic airspace, and details the route, altitude and speed at which the flight is to enter oceanic airspace;
(ii) The flight crew is not immediately authorized to change the route, altitude or speed in order to comply with the oceanic clearance;
(iii) The flight crew is required to obtain a subsequent clearance in order to comply with the oceanic clearance; and
(iv) If unable to obtain a subsequent clearance, the flight crew should revert to the procedures for radio communications failure detailed in section 451, Communications Failure - NAT Traffic, of the GPH204, the CFS and the North Atlantic section of ICAO's Regional Supplementary Procedures (Doc 7030) in order to manoeuvre as necessary to comply with the oceanic clearance.

f. If the aircraft is designated to report meteorological information, the pilot will be advised by the inclusion of the phrase “SEND MET REPORTS” in the clearance.

g. Aircraft routed through the Shanwick, Gander, and New York OCAs that will proceed south of 39°N/067°W do not receive an oceanic clearance to landfall. Shanwick will clear such flights to the first named fix in the New York OCA that is contained in the aircraft's filed flight plan, followed by the phraseology "VIA FLIGHT PLANNED ROUTE TO DESTINATION". The phraseology "VIA FLIGHT PLANNED ROUTE" is used once the flight is established in the Shanwick OCA.

The point to where an aircraft is cleared by Shanwick ACC within New York oceanic airspace, prior to the statement "FLIGHT PLANNED ROUTE TO DESTINATION", should not be misinterpreted as a clearance limit. Aircraft are expected to continue on course. It is imperative that operators file flight plans and flight plan change messages through the New York oceanic CTA/FIR using the address KZWYZOZX. It must be noted that the oceanic address is separate from the New York domestic address (KZNYZRZX).

2. Domestic Clearances - NAT Westbound Traffic

a. Pilots proceeding westbound across the North Atlantic and entering Canadian Domestic Airspace within the Gander, Moncton and Montréal FIRs should comply with the following procedures:

(i) Flights that have been cleared by ATC via the flight planned route prior to reaching Canadian Domestic Airspace will not be issued enroute clearances upon entering Domestic airspace and are to follow the flight planned route as cleared.
Domestic enroute clearances will be issued:
- for flights that have been rerouted and exit oceanic airspace at other than the flight planned exit fix;
- at a pilot’s request for another routing; or
- if a flight plan has not been received by the ACC.

(ii) Flights that have been rerouted from the flight planned route and enter Canadian Domestic Airspace within 120 NM of the flight planned oceanic exit point can anticipate a clearance to regain the flight planned route by the INF unless the pilot requests a different routing. For flights beyond 120 NM from the flight planned oceanic exit point, a clearance will be issued following consultation with the pilot.
(iii) ATC will use the latest flight plan received before a flight departs. Subsequent changes to the flight plan route after departure, including any changes received by the pilot from

operations/dispatch, must be requested directly by the pilot on initial contact with the appropriate domestic ACC. Direct requests from flight operations/dispatchers to ATC to reclear aircraft will only be considered under exceptional circumstances and are not an acceptable alternative to a pilot initiated request for a reclearance.

(iv) Domestic reclearances by ATC may contain either the route specified in full detail or a NAR.

b. If entering Canadian Domestic Airspace within the Edmonton FIR, the onward domestic routing will have been established in co-ordination between the Reykjavik and Edmonton ACCs, and additional domestic clearance is not required. If there has been a change in route from the filed flight plan, clarification of the onward routing may be obtained from Edmonton ACC on request.

c. Westbound turbojet aircraft which have proceeded across the North Atlantic and have entered Canadian Domestic Airspace shall maintain the last Mach number assigned by ATC:

(i) unless approval is obtained from ATC to make a change, or
(ii) until the pilot receives an initial descent clearance approaching destination.

Note: Pilots should request changes to their oceanic Mach setting once communication has been established within the GOTA or CDA

3. Oceanic Clearance Delivery

a. Unless otherwise directed by ATC, the following Oceanic Clearance Delivery procedures are in effect daily between 2330 and 0730 UTC (DST 2230 and 0630 UTC) for all eastbound oceanic flts (including datalink equip acft) opr above FL280 that transit the Gander Domestic FIR/CTA. Clearance delivery freq will be pub daily in the remarks section on the eastbound NAT track message. Pilots are to contact Gander Clearance Delivery on the freq for the track/route as per the NAT track message. Contact clearance delivery within 200NM of the specified clearance delivery freq location. In the event that contact cannot be established advise ATC on the assigned sector CTL freq. The following freq and freq locations will normally be used:

(i) Natashquan (YNA) - 135.45;
(ii) Allen's Island - 128.45;
(iii) Churchill Falls (UM) 128.7;
(iv) Stephenville (YJT) 135.05;
(v) Sydney (YQY) 119.42;
(vi) Brevoort 132.025; and
(vii) Kuujjuaq (YVP) 134.2

For opr that do not receive the NAT track message, pilots shall contact Gander Clearance Delivery on one of the above freq within 200NM of the freq location. In the event that contact cannot be established advise ATC on the assigned sector CTL freq. On initial contact with Gander Oceanic Clearance Delivery, only the ETA for the oceanic entry point is required if no change has occurred from the flight plan filed

b. Pilots are to maintain a continuous listening watch on the assigned control sector frequency while obtaining the oceanic clearance.

c. Unless the flight has received the message "CLA RECEIVED CLEARANCE CONFIRMED END OF MESSAGE", data link oceanic clearances must be verified during the times indicated above with Gander Clearance Delivery. Aircraft with authorization may provide verification by stating the message sequence number. Outside the indicated hours, oceanic clearances are to be verified on the appropriate control frequency.

d. ATC will not normally advise pilots to contact Gander Clearance Delivery. There is no requirement for pilots to confirm receipt of an oceanic clearance (including a data link oceanic clearance) from Gander Clearance Delivery with the assigned ATC sector frequency.

e. Due to frequency congestion on both the clearance delivery and sector control frequencies, pilots should refrain from unnecessary lengthy discussions with respect to oceanic clearances and

procedures. Constructive comments and complaints should be processed postflight through the Wing/Squadron operations.

441. POSITION REPORTS

1. Requirements

a. Unless otherwise requested by ATC, flights shall make position reports at the significant points listed in the flight plan. Time between reports should not normally exceed one hour.

b. The contents of a position report at geographical coordinates are to be expressed as follows:

(i) for generally eastbound or westbound aircraft, latitude shall be expressed in degrees and minutes, longitude in degrees only; and
(ii) for generally northbound or southbound aircraft, latitude shall be expressed in degrees only, longitude in degrees and minutes.

c. Position reports shall include the reported position, the next reporting point and estimated time and the succeeding reporting point as per the cleared route. If the estimated time over the next reporting point is found to be in error by three minutes or more, a revised estimated time shall be transmitted as soon as possible to the appropriate ATC unit.

d. Position information shall be based on the best obtainable navigation fix. The time of fixing aircraft position shall be arranged so as to provide the most accurate position information and estimates possible.

e. When making position reports, all times shall be expressed in UTC, giving both the hour and minutes.

2. Communications

a. All flights operating in the Gander OCA should report on international air-to-ground frequencies.

b. In addition to maintaining a listening watch on the appropriate enroute frequency, flights are to establish and maintain communication with Gander, Moncton, or Montréal as soon as possible in accordance with the following:

(i) At FL290 or above:
- 132.05, 230.3, 134.7 or 245.0 MHz for coastal fixes BOBTU to YYT when within 200 NM of YYT.
- 133.9, 294.5, 125.9, 132.6 or 342.9 MHz for coastal fixes VIXUN to CYMON when within 200 NM of YQX.
- 134.3 or 128.6 MHz for coastal fixes DOTTY to CARPE when within 200 NM of YAY.
- 133.42 or 132.4 MHz for coastal fixes OYSTR and SCROD when within 200 NM of YYR.
- 128.32 MHz for coastal fixes LOACH to MOATT when within 200 NM of HO.
- 134.0 MHz when within 200NM of YWK; 126.32 MHz when within 200 NM of YZV; 132.8 MHz when within 200 NM of YGR; 132.75, 133.7, 133.3 or 125.25 MHz when within 200 NM of YQY.

(ii) At FL280 or below:
- 133.15 or 227.3 MHz for coastal fixes BOBTU to VIXUN when within 150 NM of YYT.
- 132.1 or 289.4 MHz for coastal fixes YQX and CYMON when within 150 NM of YQX
- 133.0 or 371.9 MHz for coastal fixes DOTTY to CARPE when within 150 NM of YAY.
- 120.4 or 294.5 MHz for coastal fixes OYSTR and SCROD when within 150 NM of YYR.
- 135.4 MHz for coastal fixes LOACH to MOATT when within 150 NM of HO
- 134.9 MHz when within 150 NM of Allen's Island (46?50'N 55?47'W); 132.3 or 247.0 when within 150 NM of YJT;

c. Eastbound flights which traverse the Gander Domestic FIR are required to establish contact with "Gander Clearance Delivery" in accordance with Section 8C.

d. If an aircraft in the Gander OCA is unable to communicate with Gander Oceanic, pilots are to endeavour to pass position reports by relay through:

(i) another oceanic centre with which communication has been established;
(ii) another aircraft. In the NAT Region, when out of range of VHF ground stations, 123.45 MHz may be used for air-to-air communications including the relaying of position reports; or
(iii) another aircraft on frequency 121.5 or 243.0 MHz, if no other means is available.

3. Radiotelephony Network Operations - NAT Area (HF)

a. The Families of HF allotted to the NAT are to be used according to the routes flown and are as follows:

	kHz	kHz	kHz	kHz	kHz	EMISSION
FAMILY A	3016	5598	8906		13306	J3E
FAMILY B	2899	5616	8864		13291	J3E
FAMILY C	2872	5649	8879	11336	13306	J3E
FAMILY D	2971	4675	8891	11279	13291	J3E
FAMILY E	2962	6628	8825	11309	13354	J3E
FAMILY F	3476	6622	8831		13291	J3E

Note: See CFS/CFFS for frequency assignment.

b. The Families of high frequencies to be used in accordance with the route flown are as follows. In the table under route flown, the letters “A”, “B”, “C”, “D”, “E” and “F” refer to NAT Frequency Families A, B, C, D, E and F.

	ROUTE FLOWN		
Designated for use by:	Southern	Central	Northern
Aircraft registered in the hemisphere West of 30° W	A	B & F	B
Aircraft registered in the hemisphere East of 30° W	A	C & F	C
Aircraft flying northern routes outside OTS tracks (Organized Track System)	–	–	D
Aircraft flying southern routes	E	–	–

Notes:

(1) Southern routes are those which enter New York or Santa Maria Oceanic FIRs. The Central and Northern routes are comprised of all others.
(2) Aircraft registered in Australia will use Families designated for aircraft registered East of 30°W.
(3) In the event that a family becomes or is anticipated to become overloaded, aircraft of one or more operators may be off-loaded from that Family to another, for the duration of the condition. The off-loading may be requested by any station, but Shannon and Gander will be responsible for implementation after co-ordination with all NAT stations concerned.

c. Aircraft operating in the Anchorage Arctic CTA/FIR beyond the line of sight range of remote control VHF air-to-ground facilities operated from the Anchorage ACC shall maintain communications with Arctic Radio and a listening or SELCAL watch on HF frequencies of North Atlantic Delta (NAT D) network 2971 kHz, 4675 kHz, 8891 kHz and 11279 kHz. Additionally, and in view of reported marginal reception of Honolulu Pacific VOLMET broadcast in that and adjacent Canadian airspace, Arctic Radio can provide, on request, Anchorage and Fairbanks surface observations and aerodrome forecasts to flight crews.

Note: North Atlantic Meteorological Information (HF & VHF) (VOLMET). See GPH205, Section D.

4. Use of General Purpose VHF in Lieu of International HF Air-Ground Frequencies

a. General Purpose VHF Communications facilities have been provided by Canada, Denmark and Iceland in order to supplement HF radio coverage in the NAT Region. The minimum altitude for continuous VHF coverage across the NAT is considered to be 30,000 ft.

b. Several attempts to establish communication may be necessary upon entry into the “fringe area” of reception. Aircraft should maintain SELCAL watch on HF when in fringe areas of VHF coverage. On exit, communications should be re-established on HF channels preferably before flying beyond normal VHF coverage.

c. Normal SELCAL service is available on VHF General Purpose frequencies.

442. MINIMUM NAVIGATION PERFORMANCE SPECIFICATIONS (MNPS)

1. All operators are to ensure that aircraft used to conduct flights within NAT Minimum Navigation Performance Specifications (MNPS) have the minimum navigation equipment. For detailed requirements refer to:

   a. ICAO, Doc 7030 - Regional Supplementary Procedures (NAT);

   b. ICAO, NAT Doc 001 - Guidance and Information Material concerning Air Navigation in the North Atlantic Region;

   c. North Atlantic MNPS Airspace Operations Manual; and

   d. Canadian Aviation Regulations, Parts VI and VII.

2. Eastbound aircraft requesting an oceanic clearance from Gander ACC to enter MNPS airspace may be requested by ATC to confirm that they are approved for MNPS operations. Pilots/operators unable to provide such confirmation will be issued an oceanic clearance to operate outside MNPSA (below FL285 or above FL420).

443. REDUCED VERTICAL SEPARATION MINIMUM (RVSM) - MINIMUM AIRCRAFT SYSTEM PERFORMANCE SPECIFICATIONS

1. All operators are to ensure that aircraft used to conduct flights within NAT MNPS airspace where Reduced Vertical Separation Minimum (RVSM) airspace is applied meet the Minimum Aircraft System Performance Specification (MASPS). For detailed requirements, refer to:

   a. ICAO, Doc 7030 - Regional Supplementary Procedures (NAT);

   b. ICAO, NAT Doc 001 - Guidance and Information Material concerning Air Navigation in the North Atlantic Region;

   c. North Atlantic MNPS Airspace Operations Manual; and

   d. Canadian Aviation Regulations, Parts VI and VII.

2. Eastbound aircraft requesting an oceanic clearance from Gander ACC to enter MNPS airspace at designated RVSM altitudes may be requested by ATC to confirm that they are approved for MNPS and/or RVSM operations. Pilots/operators unable to provide such confirmation will be issued an oceanic clearance to operate outside MNPSA (below FL285 or above FL420) and/or outside the RVSM designated altitudes, as applicable.

444. ARRANGEMENTS FOR REDUCED LATERAL SEPARATION

1. Eastbound aircraft not certified for MNPS operations, which are laterally separated by 60 NM while still within coverage of ground-based facilities, are deemed to be separated provided the assigned tracks continuously diverge to provide at least 120 NM at the next designated reporting point.

2. Westbound aircraft for which reduced lateral separation is applied in the Reykjavik CTA are deemed to have lateral separation when entering the Gander OCA provided such separation on entry is more than 60 NM and the aircraft are on continuously diverging tracks to establish 120 NM separation at 40°W.

445. ADHERENCE TO MACH NUMBER (NAT)

1. Turbojet aircraft, in oceanic airspace and Canadian Domestic Airspace, shall adhere to the Mach number assigned by ATC unless approval is obtained from ATC to make a change or until the pilot receives an initial descent clearance approaching destination. If it is essential to make an immediate temporary change in Mach number (e.g., due to turbulence), ATC shall be notified as soon as possible that such a change has been made.

2. If it is not possible, due to aircraft performance, to maintain the last assigned Mach number during enroute climbs and descents, pilots shall advise ATC at the time of the climb/descent request.

446. OPERATION OF TRANSPONDERS

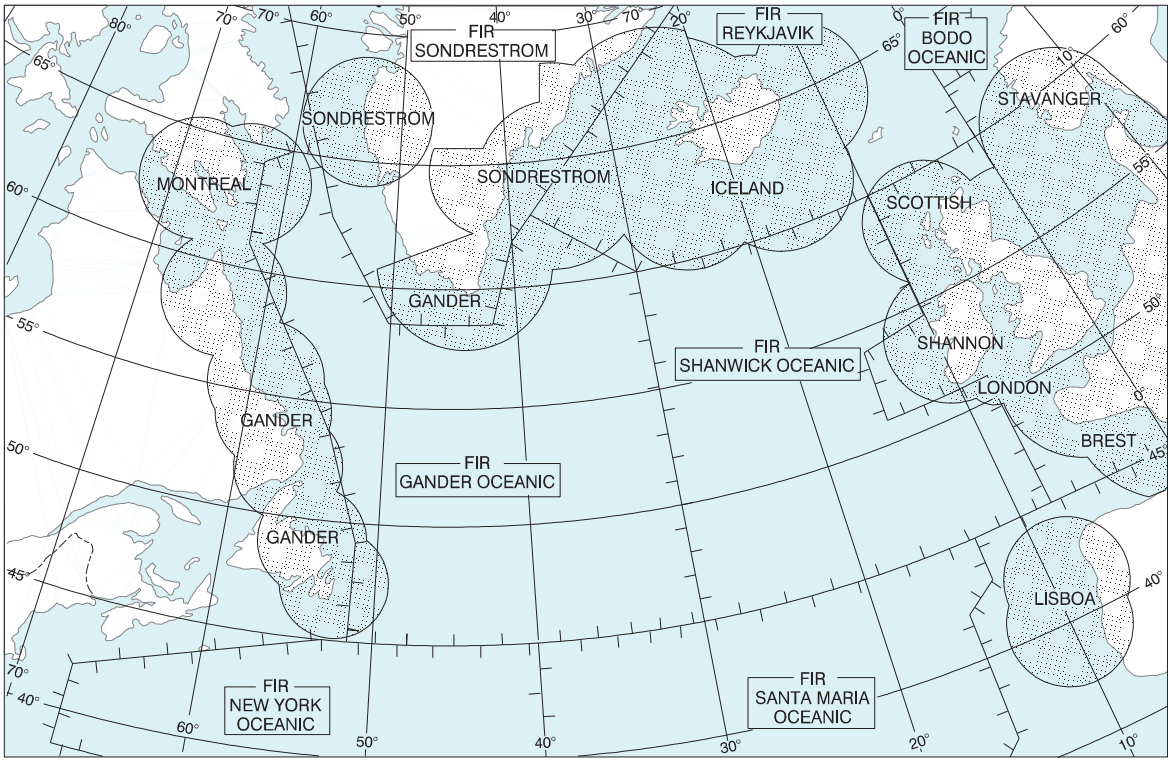
The pilot shall operate the transponder at all times on Mode A and C, code 2000 during flight in the NAT Region, except, the last ATC assigned code must be retained for a period of 30 minutes after entry into NAT airspace unless otherwise directed by ATC.

Note: This procedure does not affect the use of the special purpose codes 7500, 7600 and 7700.

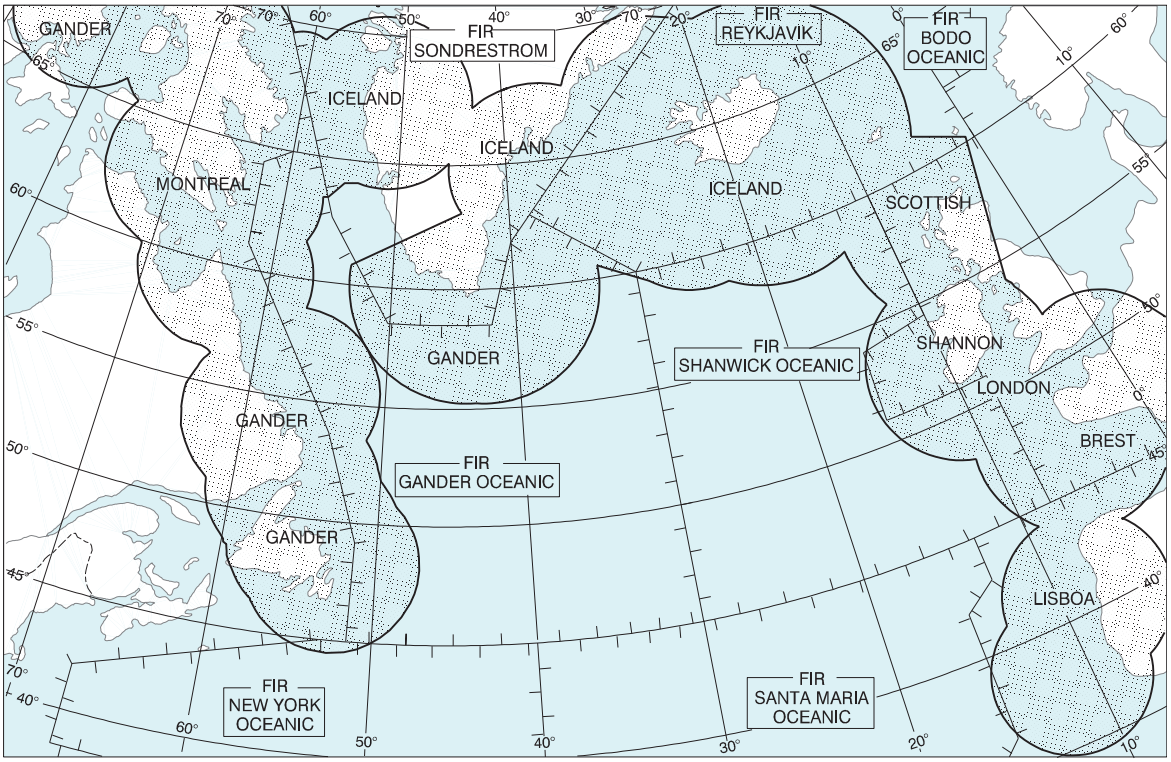
447. METEOROLOGICAL REPORTS

On a routine basis, aircraft must make, record and report meteorological observations at each designated reporting point, except that, aircraft cleared on an organized track shall be required to make, record and report meteorological observations only upon a specific request by ATC. Such requests will be included in the oceanic clearance using the phrase “SEND MET REPORTS”. ICAO AIREP form Model AR, as contained in Doc 4444, *Rules of the Air and Air Traffic Services*, Appendix 1, should be used for this purpose.

VHF COVERAGE – NORTH ATLANTIC 20,000'



VHF COVERAGE – NORTH ATLANTIC 30,000'



448. ADHERENCE TO ROUTE

If an aircraft has inadvertently deviated from the route specified in its ATC clearance, it shall take immediate action to regain the route within 100 NM from the position at which the deviation was observed.

449. STEP-CLIMB PROCEDURE

To facilitate the use of step-climbs, pilots should, on initial contact with ATC at each OCA boundary, include at the end of the position report the highest acceptable level and the time or position at which this level could be accepted.

Example: POSITION AAL101, 51N 30W 0346 FL330 ESTIMATING 50N 40W 0440 NEXT 50N 50W WILL ACCEPT FL350 AT 40W.

450. CRUISE CLIMBS ALTITUDE REPORTS

1. Aircraft cleared for cruise climbs shall report their level to the nearest 100 feet.

2. Aircraft cleared for a climb or descent shall report reaching the cleared altitude.

451. SPECIAL PROCEDURES FOR IN-FLIGHT CONTINGENCIES IN OCEANIC AIRSPACE

1. Introduction

Although all possible contingencies cannot be covered, the procedures in this section provide for the more frequent cases such as:

a. inability to maintain assigned flight level due to meteorological conditions, aircraft performance or pressurization failure;

b. en route diversion across the prevailing traffic flow; and

c. loss of, or significant reduction in, the required navigation capability when operating in an airspace where the navigation performance accuracy is a prerequisite to the safe conduct of flight operations.

With regard to a) and b), the procedures are applicable primarily when rapid descent and/or turn-back or diversion is required. The pilot's judgement shall determine the sequence of actions to be taken, having regard to the prevailing circumstances. Air traffic control shall render all possible assistance.

2. General Procedures

If an aircraft is unable to continue flight in accordance with its ATC clearance, and/or an aircraft is unable to maintain the navigation performance accuracy specified for the airspace, a revised clearance shall be obtained, whenever possible, prior to initiating any action.

The radio telephony distress (MAYDAY) or urgency signal (PAN PAN) preferably spoken three times shall be used as appropriate. Subsequent ATC action with respect to that aircraft shall be based on the intentions of the pilot and the overall air traffic situation.

If prior clearance cannot be obtained, an ATC clearance shall be obtained at the earliest possible time and, until a revised clearance is received the pilot shall:

a. leave the assigned route or track by initially turning 45 degrees to the right or left. When possible the direction of the turn should be determined by the position of the aircraft relative to any organized route or track system. Other factors which may affect the direction of the turn are:

   (i) the direction to an alternate airport, terrain clearance;
   (ii) any lateral offset being flown, and
   (iii) the flight levels allocated on adjacent routes or tracks.

b. following the turn, the pilot should:

   (i) if unable to maintain the assigned flight level, initially minimize the rate of descent to the extent that is operationally feasible;
   (ii) take account of other aircraft being laterally offset from its track;
   (iii) acquire and maintain in either direction a track laterally separated by 28 km (15 NM) from the assigned route; and
   (iv) once established on the offset track, climb or descend to select a flight level which differs from those normally used by 150 m (500 ft);

c. establish communications with and alert nearby aircraft by broadcasting, at suitable intervals: aircraft identification, flight level, position (including the ATS route designator or track code, as appropriate) and intentions on the frequency in use and on 121.5 MHz (or, as a back-up, on the inter-pilot air-to-air frequency 123.45 MHz);

d. maintain a watch for conflicting traffic both visually and by reference to ACAS (if equipped);

e. turn on all aircraft exterior lights (commensurate with appropriate operating limitations);

f. keep the SSR transponder on at all times; and

g. take action as necessary to ensure the safety of the aircraft.

When leaving the assigned track to acquire and maintain the track laterally separated by 28 km (15 NM), the flight crew, should, when practicable, avoid bank angles that would result in overshooting the track to be acquired, particularly in airspace where a 55.5 km (30 NM) lateral separation minimum is applied.

For extended range operations by aeroplanes with two-turbine power-units (ETOPS):

If the contigency procedures are employed by a twin engined aircraft as a result of an engine shutdown or failure of an ETOPS critical system, the pilot should advise ATC as soon as practicable of the situation, reminding ATC of the type of aircraft involved, and request expeditious handling.

3. Weather Deviation Procedures

General

Note: The following procedures are intended for deviations around adverse meteorological conditions.

When the pilot initiates communications with ATC, a rapid response may be obtained by stating 'WEATHER DEVIATION REQUIRED' to indicate that priority is desired on the frequency and for ATC response. When necessary, the pilot should initiate the communications using the urgency call 'PAN PAN' (preferably spoken three times).

The pilot shall inform ATC when weather deviation is no longer required, or when a weather deviation has been completed and the aircraft has returned to its cleared route.

If the controller-pilot communications are established, the pilot should notify ATC and request clearance to deviate from track, advising, when possible, the extent of the deviation expected.

ATC should take one of the following actions:

a. when appropriate separation can be applied, issue clearance to deviate from track; or

b. if there is conflicting traffic and ATC is unable to establish appropriate separation, ATC shall:

(i) advise the pilot of inability to issue clearance for the requested deviation;
(ii) advise the pilot of conflicting traffic; and
(iii) request the pilot's intentions.

The pilot should take the following actions:

a. comply with the ATC clearance issued; or

b. advise ATC of intentions and execute the procedures detailed in the paragraph below

Actions to be taken if a revised ATC clearance cannot be obtained;

If the aircraft is required to deviate from track to avoid adverse meteorological conditions and prior clearance cannot be obtained, an ATC clearance shall be obtained at the earliest possible time. Until an ATC clearance is received the pilot shall take the following actions:

a. if possible, deviate away from an organized track or route system;

b. establish communications with and alert nearby aircraft by broadcasting, at suitable intervals: aircraft identification, flight level, position (including ATS route designator or the track code) and intentions, on the frequency in use and on 121.5 MHz (or, as a back-up, on the inter-pilot air-to-air frequency 123.45MHz);

c. watch for conflicting traffic both visually and by reference to ACAS (if equipped);

Note: If, as a result of actions taken under the provisions of paragraphs b) and c) above, the pilot determines that there is another aircraft at or near the same flight level with which a conflict may occur, then the pilot is expected to adjust the path of the aircraft, as necessary, to avoid conflict.

d. turn on all aircraft exterior lights (commensurate with appropriate operating limitations);

e. for deviations of less than 19 km (10 NM) remain at a level assigned by ATC;

f. for deviations greater than 19 km (10 NM), when the aircraft is approximately 19 km (10 NM) from track, initiate a level change in accordance with Table 1:

Route centre line track	Deviations > 19 km (10 NM)	Level Change
EAST 000° - 179° magnetic	LEFT RIGHT	DESCEND 90 m (300 ft) CLIMB 90 m (300 ft)
WEST 180° - 359° magnetic	LEFT RIGHT	CLIMB 90 m (300 ft) DESCEND 90 m (300 ft)

g. when returning to track, be at its assigned flight level when the aircraft is within approximately 19 km (10 NM) of the centre line; and

h. if contact was not established prior to deviating, continue to attempt to contact ATC to obtain a clearance. If contact was established, continue to keep ATC advised of intentions and obtain essential traffic information.

4. Publications

Detailed in-flight contingency procedures are published in the following documents:

a. ICAO, Doc 7030 - Regional Supplementary Procedures (NAT)

b. ICAO, NAT Doc 001 - Guidance and Information Material concerning Air Navigation in the North Atlantic Region; and

c. North Atlantic MNPS Airspace Operations Manual

d. PANS-ATM, Doc 4444 – ICAO's Procedures for Air Navigation Services, Air Traffic Management

452. COMMUNICATIONS FAILURE - NAT TRAFFIC

The following procedures are intended to provide general guidance for NAT aircraft experiencing a communications failure. These procedures are intended to complement and not supersede state procedures and regulations as contained in GPH205. It is not possible to provide guidance for all situations associated with a communications failure.

1. General

a. If the aircraft is so equipped, a pilot experiencing a two-way radio communications failure shall operate the transponder on Code 7600 and Mode C.

b. The pilot shall attempt to contact any ATC facility and inform them of the difficulty and request that information be relayed to the ATC facility with whom communications are intended.

2. Communications Failure Prior to Entering NAT Oceanic Airspace

a. If operating with a received and acknowledged oceanic clearance, the pilot shall enter oceanic airspace at the cleared oceanic entry point, level and speed, and proceed in accordance with the received and acknowledged oceanic clearance. Any level or speed changes required to comply with oceanic clearance shall be completed within the vicinity of the oceanic entry point.

b. If operating without a received and acknowledged oceanic clearance, the pilot shall enter oceanic airspace at the first oceanic entry point, level and speed, as contained in the filed flight plan and proceed via the filed flight plan route to landfall. The first oceanic level and speed shall be maintained to landfall.

3. Communications Failure Prior to Exiting NAT Oceanic Airspace

a. If cleared on flight plan route, the pilot shall proceed in accordance with the last received and acknowledged oceanic clearance, including level and speed, to the last specified oceanic route point,

normally landfall, then continue on the flight plan route. Maintain the last assigned oceanic level and speed to landfall. After passing the last specified oceanic route point conform with the relevant State procedures and regulations.

b. If cleared on other than flight plan route, the pilot shall proceed in accordance with the last received and acknowledged oceanic clearance, including level and speed, to the last specified oceanic route point, normally landfall. After passing this point, conform with the relevant State procedures and regulations, rejoining the filed flight plan route by proceeding, via published ATS routes where possible, to the next significant point ahead as contained in the filed flight plan.

453. NORTH ATLANTIC MINIMUM NAVIGATION PERFORMANCE SPECIFICATION AIRSPACE (NAT MNPSA)

1. General

a. Compliance with MNPS is required by all aircraft operating within the following defined airspace boundaries:

(i) between FL285 and FL420,
(ii) between latitudes 27°N and the North Pole,
(iii) bounded in the east, by the eastern boundaries of CTAs Santa-Maria, Shanwick Oceanic and Rekyjavik, and
(iv) in the west, by the western boundaries of CTAs Rekyjavik and Gander and New York Oceanic, excluding the area west of 60°W and south of 38°30'N.

b. Aircraft used to conduct flights within MNPS airspace shall have navigation performance capability such that:

(i) the standard deviation of lateral track errors shall be less than 6.3 NM;
As a considerable simplification, the standard deviation can be interpreted as a need for aircraft to remain within 12.6 NM of track for at least 95% of the time.
(ii) the proportion of the total flight time spent by aircraft 30 NM or more off the cleared track shall be less than 5.3×10^{-4};
As a considerable simplification, the navigation system must demonstrate a continuing capability to keep lateral deviations from cleared track in excess of 30 NM to less than 53 per 100 000 flight hours in the system.
(iii) the proportion of the total flight time spent by aircraft between 50 and 70 NM off the cleared track shall be less than 1.3×10^{-4}.

As a considerable simplification, the navigation system must demonstrate a continuing capability to keep lateral deviations from cleared track between 50 and 70 NM to less than 13 per 100 000 flight hours in the system.

c. Such navigation performance capability shall be verified by the State of Registry or the State of the Operator as appropriate. Certification for DND aircraft and equipment is specified in CFTOC-05-005-001/AG-000 under DGAEPM. IN NDHQ and A3 OPS READINESS IN 1CAD/CANR.

d. In order to justify consideration for State approval for unrestricted operation in the MNPSA, an aircraft is required to be equipped as follows:

(i) two fully serviceable Long-Range Navigation Systems (LRNSs) which may consist of:
- two Inertial Navigation Systems (INS);
- two Flight Management Systems (FMS) with two Inertial Reference Systems (IRS);
- two primary-means Global Navigation Satellite Systems (GNSS);
- one INS and one FMS/IRS;
- one INS and one GNSS with TSO C-129 authorization in Class A1, A2, B1, B2, C1, or C2;
- one FMS/IRS and one GNSS with TSO C-129 authorization in Class A1, A2, B1, B2, C1, or C2;

(ii) Each LRNS must be capable of providing a continuous indication to the flight crew of the aircraft position relative to track, and
(iii) It is desirable that the navigation system employed for the provision of steering guidance should

be capable of being coupled to the automatic pilot.

e. Prior to entry into MNPS airspace, the time reference system(s) to be used during the flight for calculation of way point Estimated Times of Arrival (ETAs) and way point Actual Times of Arrival (ATAs) shall be synchronized to UTC. All ETAs and ATAs passed to ATC shall be based on a time reference that has been synchronized to UTC or equivalent. Acceptable sources of UTC include the following:

(i) WWV - National Institute of Standards and Technology (NIST: Fort Collins, Colorado, U.S.). WWV operates 24 hours a day on 2500, 5000, 10000, 15000, 20000 KHz (AM/SSB) and provides UTC voice every minutes;
(ii) GNSS (corrected to UTC) - Available 24 hours a day to those pilots that can access the time via approved on board GNSS (TSO-129) equipment;
(iii) CHU - National Research Council (NRC: Ottawa, Canada). Available 24 hours a day on 3330, 7335, 14670 KHz (SSB). In the final ten-second period of each minute, a bilingual station identification and time announcement is made in UTC;
(iv) BBC - British Broadcasting Corporation (Greenwich, U.K.). The BBC transmits on a number of domestic and worldwide frequencies and transmits the Greenwich time signal (referenced to UTC) once every hour on most frequencies, although there are some exceptions;
(v) Any other source shown to the State of Registry or State of Operator (as appropriate) to be an equivalent source of UTC.

2. Provision for Partial Loss of Navigation Capability

If an aircraft suffers partial loss of navigation capability (only one long-range navigation system serviceable) prior to entry into oceanic airspace, the following routes should be considered:

a. Stornoway – 60°N10°W – 61°N12°34'W – ALDAN – Keflavik

Benbecula – 61°N10°W – ALDAN – Keflavik

b. Machrihanish
Glasgow
Belfast
Shannon } – 57°N10°W – 60°N15°W – 61°N16°30'W – BREKI– Keflavik

c. Keflavik – GIMLI – Kulusuk – Sondre Stromfjord – FROBAY

d. Keflavik – EMBLA – 63°N30°W – 61°N40°W – Prins Christian Sund

e. Prins Christian Sund – 5°N50°W – PRAWN – NAIN

f. Prins Christian Sund – 59°N50°W – PORGY – Hopedale

g. Prins Christian Sund – 59°N50°W – LOACH – Goose VOR

h. Sondre Stromfjord – 67°N60°W – Pangnirtung (YXP)

i. Kook Islands – 66°N60°W – Pangnirtung (YXP)

j. Kook Islands – 64°N60°W – 64°N63°W (LESAM) – FROBAY and

k. Reykjanesskoli – 69°30'N22°40'W – Constable Pynt

These routes are subject to the following conditions:
(i) sufficient navigation capability remains to meet the MNPS and the requirements in ICAO Annex 6, Part I, Chapter 7 (sec. 3) and ICAO Annex 6, Part II, Chapter 7 (sec. 2) can be meets by relying on the use of short-range navigation aids;
(ii) a revised flight plan is filed with appropriate ATS unit; and
(iii) an ATC clearance is obtained.

NOTES:

(1)A revised oceanic clearance will be issued after co-ordination between all oceanic ACCs concerned.
(2)If the organized track system extends to the northern part of the NAT Region, the aircraft concerned may be required to accept a lower than optimum flight level in the revised oceanic clearance, especially during peak traffic periods.
(3)This guidance material does not relieve the pilot of the responsibility to take the best possible course of action in light of the prevailing circumstances.

3. Special Routes For Aircraft Fitted with a Single Long-Range Navigation System

Aircraft, having State approval for operating in MNPS airspace, which are equipped with normal short-range navigation equipment (VOR/DME, ADF) and at least one fully operational set of one of the following navigation equipment are considered capable of meeting the MNPS while operating along the following routes:

a. Equipment

(i) DOPPLER with computer;
(ii) INS;
(iii) GNSS approved in accordance with the requirements specified in Technical Standard Order (TSO) C-129 (Class A1, A2, B1, B2, C1, or C2);
(iv) LORAN-C (not applicable to (b), (xiii) and (b) (xiv); and
(v) Flight Management System (FMS) or IRS.

b. Routes (referred to as Blue Spruce routes)

(i) Stornoway – 60°N10°W – 61°N12°34'W – ALDAN – Keflavik (HF required on this route),
Benbecula – 61°N10°W – ALDAN – Keflavik [VHF coverage exists and, subject to prior co-ordination with Scottish Airways and Prestwick (Shanwick OACC), this route may be used by non-HF equipped aircraft],
(ii) Machrihanish
Glasgow – 57°N10°W – 60°N15°W – 61°N16°30'W – BREKI – Keflavik
Belfast(HF required on this route)
Shannon
(iii) Keflavik – GIMLI – Kulusuk – Sondre Stromfjord – FROBAY,
(iv) Keflavik – EMBLA – 63°N30°W – 61°N40 °W – Prins Christian Sund,
(v) Prins Christian Sund – 59°N50°W – PRAWN – NAIN,
(vi) Prins Christian Sund – 59°N50°W – PORGY – Hopedale,
(vii) Prins Christian Sund – 58°N50°W – LOACH – Goose VOR,
(viii) Sondre Stromfjord – 67°N60°W – Pangnirtung (YXP),
(ix) Kook Islands – 66°N60°W – Pangnirtung (YXP),
(x) Kook Islands – 64°N60°W – 64°N63°W – FROBAY,
(xi) Reykjanesskoli – 69°30'N22°40'W – Constable Pynt,
(xii) Cork – 50°N09°W – 49°N09°W – 45°N09°W – Santiago VOR Lands End – 51°N08°W (HF required on this route),
(xiii) Funchal/Porto Santo – Santa Maria/Ponta Delgada, and
(xiv) Lisboa Porta Faro – Ponta Delgada/Santa Maria/Lajes.

4. Special Routes for Aircraft Fitted with Short-Range Navigation Equipment Operating Between Iceland and Other Parts of Europe

Aircraft, having State Approval for operating in MNPS airspace provided with normal short-range navigation equipment (VOR/DME, ADF) operating on the routes below and within MNPS airspace are considered capable of meeting the MNPS.

a. Flesland – Myggenes – INGO – Keflavik (G3), and

b. Sumburgh – Akrabeg – Myggenes (G11).

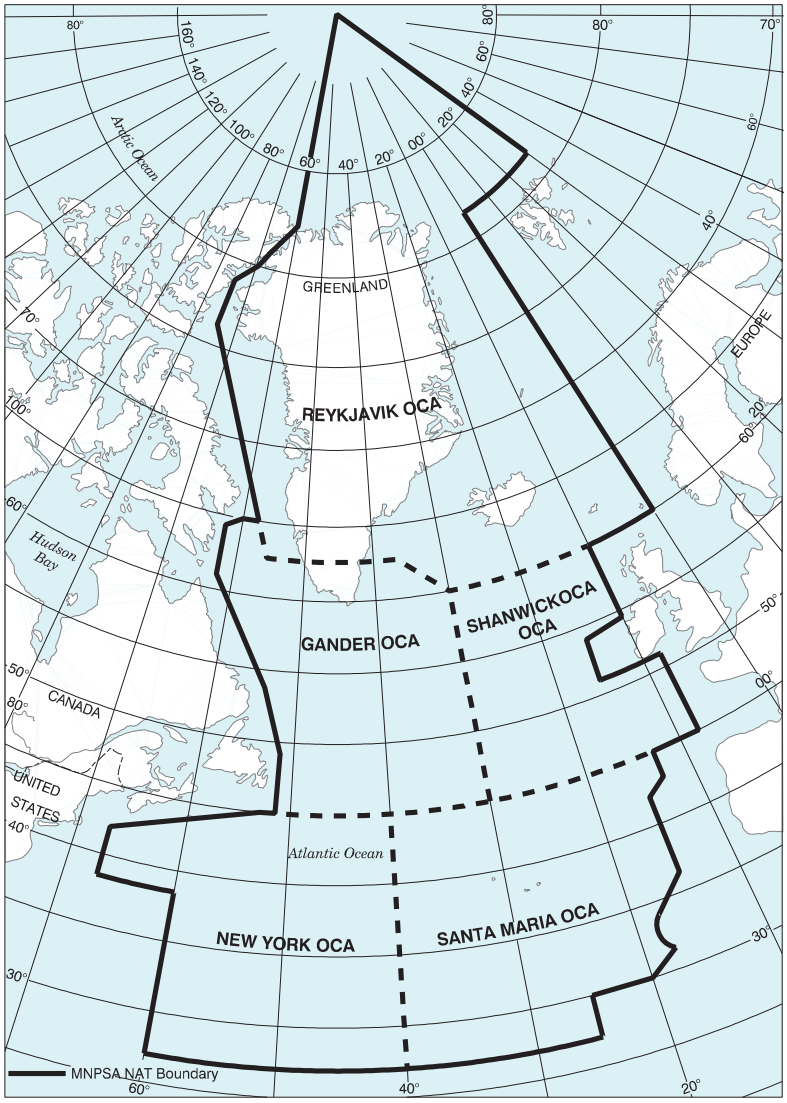
5. Aircraft without MNPS Capability

a. Non-approved MNPS aircraft will not be issued a clearance to enter into MNPS airspace.

b. Non-approved MNPS aircraft may be cleared to climb or descend through MNPS airspace provided:

(i) the climb or descent can be completed within 200 NM of the Gander VORTAC (YQX), St. John's, VOR/DME (YYT), St. Anthony VOR/DME (YAY), Goose VOR/DME (YYR), or within the radar coverage of Gander, Moncton and Montréal ACCs, and
(ii) MNPS aircraft affected by such a climb or descent are not penalized.

NORTH ATLANTIC MINIMUM NAVIGATION PERFORMANCE SPECIFICATIONS AIRSPACE (NAT MNPSA) BETWEEN FL285 AND FL420



c. When conducting NAT operations below MNPS airspace on a random routing, the pilot is to ensure that sufficient radio/navigation equipment including one Long Range Navaid is installed and functioning that enable the aircraft to conduct the flight IAW the flight plan and ATC clearances. Any reduction in navigational capability or performance shall be reported to ATC as soon as possible.

6. Monitoring of Gross Navigation Errors

a. In order to ensure that the required navigation standards are being observed within the MNPSA, a continuous monitoring of the navigation accuracy of aircraft in this airspace takes place using radars in Canada, Ireland, France, Iceland and the United Kingdom. In cases of a gross navigation error, the pilot will normally be notified by the ATC unit observing the error. The subsequent investigation to determine the error will involve the ATC unit, the operator and the State of Registry.

b. If there is a serious increase in the number of large errors, it may become necessary to increase separation standards until remedial action has been determined. Alternatively, if rapid corrective action cannot be achieved, it may be necessary for the State of Registry or the State of the Operator to temporarily exclude offending types of aircraft or operators from the MNPS airspace.

7. Canadian military operators may contact the following to obtain information on MNPS certification requirements:

NDHQ	DGAELPM	(613) 993-3354	
1 Cdn Air Div/CANR	A3 OPS Readiness	(204) 833-2022	CSN 257-2022
ATM COORD	ATM COORD 2	(613) 996-1418	CSN 846-1418

454. NORTH ATLANTIC REDUCED VERTICAL SEPARATION MINIMUM (RVSM)

1. General

In the North Atlantic, Reduced Vertical Separation Minimum (RVSM) airspace is that airspace within the geographic extent of the NAT region from FL290 to FL410 inclusive.

2. RVSM Details and Procedures

For RVSM details and procedures applicable to both the NAT and Canadian Domestic airspace see Article 431

3. RVSM Flight Allocation Scheme

a. The following flight level allocation scheme (FLAS) should be used by operators for flight planning purposes:

FL430	May be flight planned for both eastbound and westbound non-RVSM certified aircraft - 24 hours a day	
FL410		Eastbound flight level - **24 hours per day**
FL400	Westbound flight level - except within eastbound OTS	
FL390		Eastbound flight level - except within westbound OTS
FL380*	Westbound flight level - except within eastbound OTS	
FL370		Eastbound flight level - except within westbound OTS
FL360*	Westbound flight level - except within eastbound OTS	
FL350*		Eastbound flight level - except within westbound OTS
FL340	Westbound flight level - except within eastbound OTS	
FL330*		Eastbound flight level - except within westbound OTS
FL320*	Westbound flight level - except within eastbound OTS	
FL310*		Eastbound flight level - except within westbound OTS
FL300	Westbound flight level - **24 hours per day**	

FL290 & below	Even levels westbound - 24 hours per day	Odd levels eastbound - 24 hours per day

NOTES: (1)**Flight Level***: Shanwick/Gander may exchange on a tactical basis during OTS periods.
(2)**OTS Times**: Eastbound - 0100 to 0800 UTC, Westbound - 1130 to 1800 UTC. Times are UTC at 30° West.
(3)**For operations outside of OTS times and/or the OTS structure**, flight plan levels in accordance with the above flight allocation scheme.

b. If a flight is expected to be level(s) critical, operators should contact the initial Oceanic ACC prior to filing the flight plan to determine the likely availability of such level(s).

4. NAT RVSM Aircraft Approvals

a. An aircraft will not be permitted to operate at RVSM designated altitudes until RVSM (operational) approval has been awarded.

b. For group aircraft to be approved for NAT RVSM operations, it is required to:

(i) have MNPS (horizontal navigation performance) approval;,
(ii) obtain RVSM airworthiness approval (MASPS compliant);
(iii) demonstrate acceptable height-keeping performance through monitoring; and
(iv) obtain RVSM (operational) approval from the aircraft State authority.

c. For non-group aircraft, operators must apply for operating authority individually. Monitoring by an HMU or GMU is a prerequisite to obtain RVSM (operational) approval unless flight test evidence can be provided to the State to show that each airframe is compliant with Altimetry System Error (ASE) targets.

d. Operators of Canadian-registered aircraft intending to fly in NAT MNPS/RVSM airspace will be required to show that they meet all of the applicable standards. Further information on the measures necessary to gain approval may be obtained from the following:

NDHQ	DGAEPM	(613) 993-3354
1 Cdn Air Div/CANR	A3 CBT RDNS	(204) 833-2002 CSN 257-2022
ATM COORD	ATM COORD2	(613) 996-1418 CSN 846-1418

5. Central Monitoring Agency (CMA)

a. The Regional Monitoring Agency for the NAT is the Central Monitoring Agency (CMA) located in London, UK and may be contacted as follows:

North Atlantic Central Monitoring Agency
National Air Traffic Services Limited
One Kemble Street
London WC2B 4AP
United Kingdom
Fax: 44 207 832-5562
AFTN: EGGAYFYG

b. Information on the responsibilities and procedures applicable to the CMA are contained in "*ICAO, NAT Doc 001 - North Atlantic Systems Planning Group (NAT SPG) Handbook*" and through the internet at http://www.icao.int/EURNAT/Pages/EUR-and-NAT-Document.aspx.

6. Height Monitoring

For the NAT, height-monitoring is carried out using a hybrid system comprising two fixed ground-based Height Monitoring Units (HMU) and a GNSS-based monitoring system comprising portable GPS

Monitoring Units (GMUs).

7. Height Monitoring Unit (HMU)

a. General

(i) The two HMU sites located at:
- Strumble, UK - 15NM east of the Strumble VOR/DME (STU) beneath Upper ATS UGI at coordinates N51°56'00" W04°40'00"; and
- Gander, NF - 347°T/3.27NM from the Gander VORTAC (YQX) at coordinates N48°57'10" W54°33'13".

(ii) The coverage areas for both HMUs is a 13.8NM radius circle from FL 290 to 410 inclusive.

b. Pre-flight Procedures

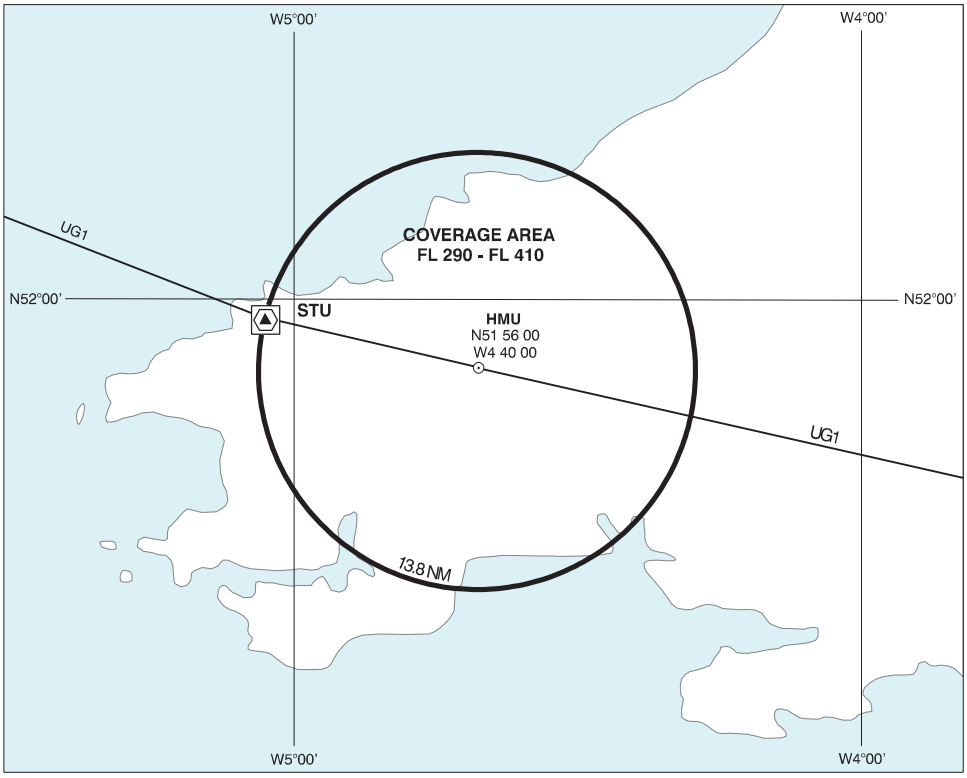
(i) Operators proposing to divert from an optimum route in order to fly over an HMU should check the HMU status line at 44 171 832-6031 (UK) for Strumble HMU serviceability information, or contact the Gander Shift Manager at (709) 651-5207 for Gander HMU serviceability information. Every effort will be made to ensure that the promulgated information is accurate, but operators should note that the equipment may become unserviceable on short notice.

(ii) Aircraft for monitoring should be flight planned for a route over STU or YQX. Item 18 of the flight plan is to include both the aircraft registration (if not included in Item 7) and the remarks "RMK/HMU FLT STU" or "RMK/HMU FLT YQX", as applicable.

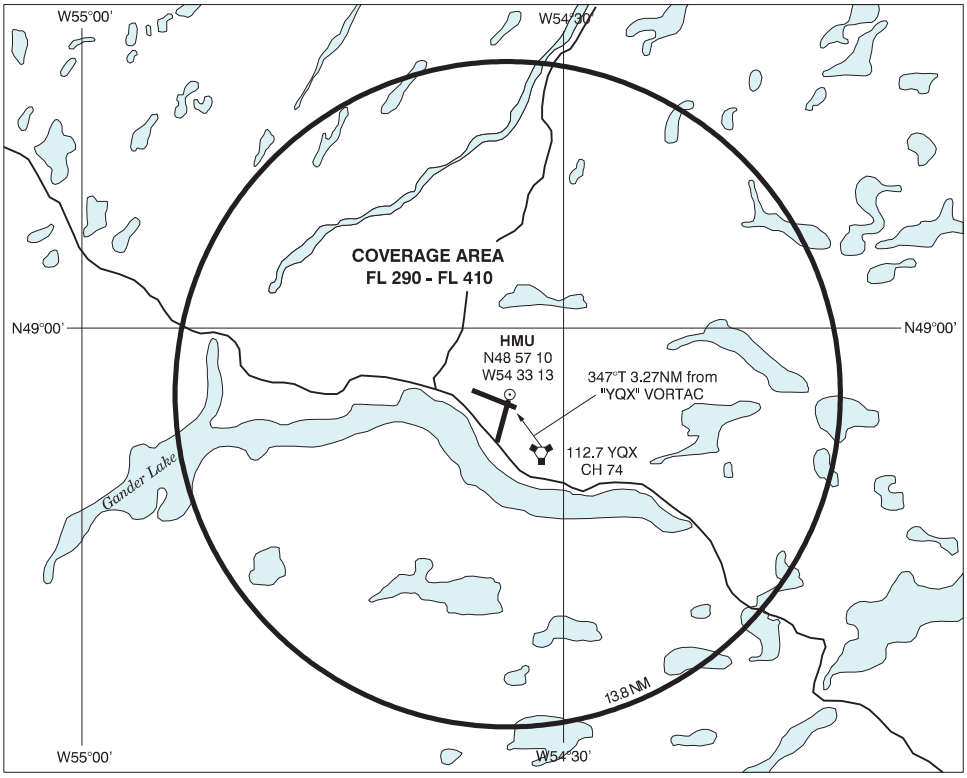
c. In-flight Procedures

Prior to an overflight of an HMU, pilots are requested to transmit "for HMU flight" to London Control or Gander ACC, as applicable, on initial contact. Operational requirements permitting, ATC will endeavour to accommodate the flight.

STRUMBLE HMU



GANDER HMU



d. Post-flight Procedures

(i) ATC is not aware whether an aircraft has been successfully monitored by the HMU. Operators wishing to ascertain this information may send a fax to the NAT CMA.
(ii) Operator queries for specific overflights may be made to the NAT CMA. Such queries should include the Mode S or A codes and approximate time of overflight.

8. GMU Monitoring

a. GMUs are available for those aircraft that do not wish to be monitored by overflying an HMU.

b. For GMU services to conduct a height-monitoring flight see Article 431

SECTION 5 NOTAM SYSTEM

455. NOTAM

1. General

A NOTAM is a notice containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations. NOTAMs are distributed by means of telecommunication on the Aeronautical Fixed Telecommunications Network (AFTN) or by voice advisory using radio communications.

NOTAM are a means of advertising temporary changes to the information on aeronautical charts or in the aeronautical information publications.

A NOTAM is originated and issued promptly whenever the information to be disseminated is of temporary nature and of short duration or when operationally significant permanent changes or temporary changes of long duration are made at short notice, except for extensive text and/or graphics.

IAW BGA-100, all available information appropriate to an intended flight shall be obtained prior to the commencement of that flight. One of the critical safety of flight items that must be obtained in Notices to Airmen (NOTAMs). In practice, obtaining all the appropriate NOTAMs can be complicated. However, every attempt must be made to obtain all the NOTAMs to ensure the safety of the mission.

The location in which NOTAMs are posted is dependant upon the products and/or facilities they are meant to service. As a result, pilots must consult a variety of sources to get all the applicable NOTAMs for all phases of the flight.

Worldwide ATC, Airspace, Aerodrome, and Facility NOTAMs, as well as NAV CANADA and DoD/FAA FLIP NOTAMs, can be obtained from the appropriate government NOTAMs database/website. Vendor specific NOTAMs, such as those for Jeppesen products, are not available through normal NOTAM sources such as an FSS, but must be obtained directly from the vendor responsible for producing that product. NOTAMs for RAF, RAAF, and other Host Nation products must be obtained directly from the respective government NOTAM system.

To accomplish a complete NOTAM check, the pilot should obtain the following NOTAMs as applicable to the route of the flight, aircraft equipment, and products being utilized:

a. Vendor (such as Jeppesen) specific FMS database NOTAMs,

b. Aerodrome NOTAMs (including vendor specific NOTAMs appropriate for the products being used),

c. Enroute NOTAMs (including ARTCC, Airspace, DRVSM / RVSM, NAVAID, GNSS, vendor specific NOTAMs, etc. as appropriate to the route of flight).

d. Special Notices / Temporary Flight Restrictions / Attention Notices (if appropriate)

NOTE 1: When using DoD FLIP products, pilots will check appropriate Terminal Change Notices for the Terminal Approach Procedures and applicable Planning Changes Notices for the GPH270.

NOTE 2: Jeppesen NOTAMs can be obtained directly from Jeppesen via the internet (http://ww1.jeppesen.com/index.jsp) or by phone (1-800-JET-PLAN).

Pilots must also ensure the accuracy and completeness of their FMS database (if so equipped) by comparing the database to a known and trusted source. Verifying the FMS data for the route of flight (including the departure, enroute, and arrival segments) by comparing it to a trusted NOTAM verified paper FLIP product may identify the applicable database errors for the expected route of flight. However, checking the database NOTAMs at the appropriate vendor source will accurately identify all known errors prior to the flight. These NOTAMs include information that, if not identified and complied with, could prevent safe use of the affected preloaded FMS database information.

Note: Information of short duration containing extensive text and/or graphics is published as an AIP Canada Supplement.

2. NOTAM Distribution — Canadian

Canadian NOTAMs are available to FSSs, FICs, and users via the AFTN. Approximately 210 NOTAM files (Canadian four-letter location identifiers) are resident in the domestic NOTAM data base. The first four characters of the NOTAM text further identifies the aerodrome, the facility, the area of activity or an obstruction being advertised.

3. NOTAM Distribution — International

Canadian NOTAMs for the CZQX, CZQM, CZUL and CZYZ flight information regions (FIRs) requiring international distribution are issued in the ICAO format under Series A. Canadian NOTAMs for the CZWG, CZEG and CZVR FIRs ring international distribution are issued in the ICAO format under Series B. A monthly numerical checklist of current Canadian International NOTAM is generated automatically on the first day of each month.

4. Criteria for Issuing a NOTAM

Whenever possible, notification of conditions requiring the issue of a NOTAM will be distributed at least five hours in advance, but generally not more than 48 hours.

A NOTAM is originated and issued promptly to disseminate information concerning any of the conditions listed below:

a. the establishment or withdrawal of electronic and other aids to air navigation and aerodromes;

b. changes in frequency, identification, orientation and location of electronic aids to navigation;

c. interruptions in service or unreliability, and the return-to-normal operation of enroute and terminal aids to navigation;

d. the establishment or withdrawal of, or significant changes to, designated airspace or air traffic procedures and services;

e. significant changes in operations of runways and serviceabilities of associated approach or runway lighting systems that could prohibit or limit aircraft operations;

f. the presence or removal of hazards that could endanger air navigation or aircraft operations;

g. military exercises or manoeuvres and airspace reservations;

h. the establishment or discontinuance of, or change in, the status of Advisory or Restricted Areas;

i. communication failures where no satisfactory alternate frequency is available;

j. inaccuracies or omissions in publications that might endanger aircraft operations,

k. failure of measuring and/or indicating systems needed to supply current information on the altimeter setting, surface wind, RVR and cloud height for the pilot about to land or take off; and

l. any other information of direct operational significance as recommended in Annex 15 to the Convention on International Civil Aviation.

5. NOTAM Summaries

Abbreviated plain language FIR summaries of all NOTAM currently in effect are compiled and computer generated daily at predetermined times daily by the International NOTAM Office in Ottawa. These summaries, together with updating NOTAM, provide current information for flight planning and for relay to enroute traffic by the air/ground agencies when requested.

a. Four types of summaries are compiled as follows:

(i) FIR Summary – An English summary containing an alphabetical listing of all valid NOTAM within that FIR.
(ii) French (FR1) – A French summary of all NOTAMs originated in the Province of Quebec, the National Capital Region, the Cornwall area (Ontario) and northern New Brunswick. .
(iii) General (GEN) – An English NOTAM summary of general interest to all users.
(iv) General (GEN – FR2) – A French NOTAM summary of general interest to users receiving French NOTAMs.

NOTAMs in the FIR summary are listed alphabetically by airport name or facility name and include items that would affect enroute flight and aerodromes. Information on volcanic eruptions would be found in the general portion of the FIR summary. When this hazard is affecting operations at a specific aerodrome, it would also appear under the aerodrome listing.

b. Summary Distribution Schedule

FIR summaries are issued daily between 0430Z and 1415Z commencing with the FIR summaries from East to West, the General (as required) followed by the FR2 Summary.

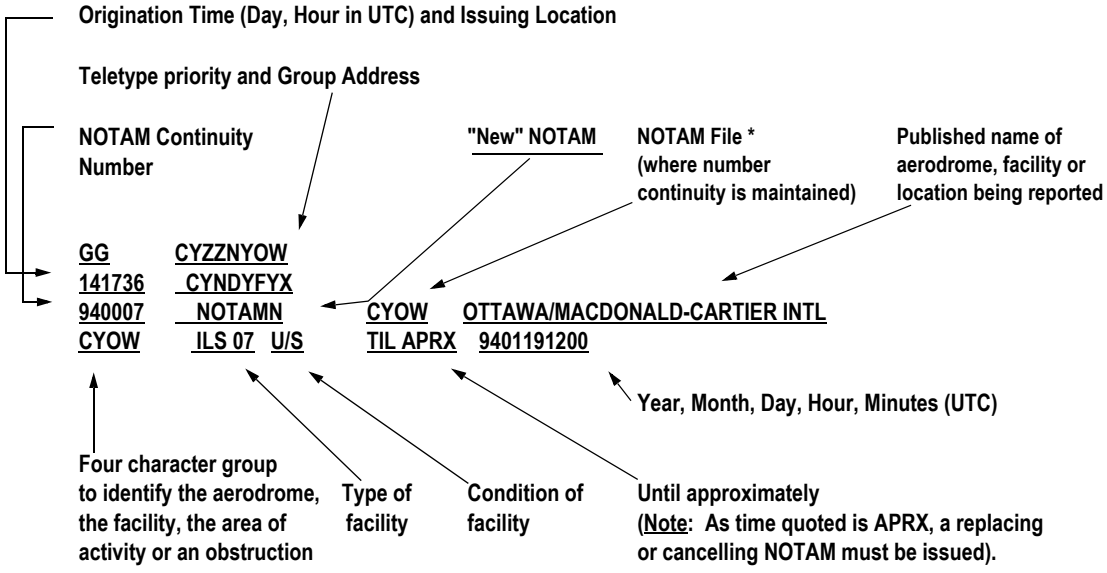
GANDER FIR/OCA	– 0430Z DAILY
MONCTON FIR	– 0530Z DAILY
MONTREAL FIR	– 0630Z DAILY
TORONTO FIR	– 0735Z DAILY
WINNIPEG FIR	– 0830Z DAILY
EDMONTON FIR NORTH OF 60N	– 0930Z DAILY
EDMONTON FIR SOUTH OF 60N	– 1030Z DAILY
VANCOUVER FIR	– 1130Z DAILY
SOMMAIRE FR1	– 0715Z DAILY
SUMMARY GEN	– 0915Z AS REQUIRED
SOMMAIRE GEN FR2	– 1415Z AS REQUIRED

c. The General summary is divided into two subsections depending on the originator of the NOTAM:

(i) NOF (NAV CANADA Head Office and International NOTAM Office)
(ii) OPS (Transport Canada Headquarters)

6. NOTAM Format

a. New NOTAM



*NOTAM File as indicated in the CFS under FLT PLN

b. Replacing NOTAM

940008 NOTAMR 940007 CYOW OTTAWA/MACDONALD-CARTIER INTL
CYOW ILS 07 U/S TIL APRX 9401191800

c. Cancelling NOTAM

940009 NOTAMC 940007 CYOW OTTAWA/MACDONALD-CARTIER INTL
CYOW ILS 07 SVCBL

Some textual reference to the cancelled NOTAM must be included for comparison with the original to ensure that it refers to the same subject.

d. RSC/JBI/CRFI NOTAM

000000 NOTAMJ CYND OTTAWA/GATINEAU
CYND RSC SNOW DRIFTS 3-4 INS 9401191150
CYND JBI/CRFI 09/27 - 10.30 9401191150

e. Query/Response NOTAM

NOTAMQ CYYZ CYUL CYMX

7. Automatic Query/Response - Canadian International NOTAM Database

Canadian NOTAM and NOTAM from member States that distribute their NOTAM to Canada are available by automatic query/response to Canadian users. Limited non-Canadian NOTAM information is available by query/response via AFTN to international users. These users will normally be the International NOTAM offices from member States.

EXAMPLES:

GG CYZZQQNI	GG CYZZQQNI	GG CYZZQQNI
011845 EGGNYNYX	011846 BIRKYNYX	011847 RJAAYNYX
NOTAMQ A2541/89	NOTAMQ C0025/89	NOTAMQ D0018/89

Up to 4 individual requests are permitted in any 1 query/response.

8. Response Delivery

Should a user wish to direct a response to another teletype address or predetermined address indicator on the AFTN, the 8-letter address indicator must be added to the query/response format immediately following “NOTAMQ”.

EXAMPLES:

GG CYZZQQNI	GG CYZZQQNI
261855 EGGNYNYX	011947 RJAAYNYX
NOTAMQ EGZZOGXX A2541/89	NOTAMQ RJZZNAXX D0125/89

Note: States requiring additional information should contact the International NOTAM Offica via

NAV CANADA
International NOTAM Office
Combined ANS Facility
P.O. Box 9824 Station T
Ottawa ON Canada K1G 6R2

Telephone:(613) 248-4000
Facsimile:(613) 248-4001
E-mail: notam@navcanada.ca
AFTN: CYHQYNYX

9. NOTAM Files

The NOTAM files are four letter location identifiers under which Canadian domestic NOTAM are available by query/response:

a. for NOTAMs of general interest to all users:
CYHQ

b. for NOTAMs of general interest to a specific FIR:
CZVR CZEG CZWG CZYZ CZUL CZQM CZQX

c. for NOTAMs on specific locations use the “NOTAM FILE” for the applicable airport/aerodrome listed in the GPH205 (CFS), Part B, -AERODROME/FACILITY DIRECTORY, section “Flight planning” (FLT/PLN)

Note: Activities occurring beyond 25 NM of any aerodrome are reported under the appropriate FIR NOTAM file.

SECTION 6 TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEMS AND AIRBORNE COLLISION AVOIDANCE SYSTEMS (TCAS/ACAS)

456. TCAS/ACAS

1. General

TCAS is the acronym for the Traffic Alert and Collision Avoidance System developed in the United States by the Federal Aviation Administration (FAA), while the Airborne Collision Avoidance System (ACAS) is the name applied by the International Civil Aviation Organization (ICAO) for similar systems. The use of TCAS/ACAS has been mandated in the United States and has been agreed upon and adopted by the ICAO member states, including Canada. No mandate has been set in Canada.

TCAS/ACAS is designated to operate independently of air traffic control (ATC) and, depending on the type of TCAS/ACAS, will display proximate traffic, providing Traffic Alerts (TAs) and Resolution Advisories (RAs). TAs provide information on proximate traffic and are intended to assist the flight crew in visual acquisition of conflicting traffic and to alert pilots to the possibility of an RA. RAs are divided into two categories: preventative advisories, which instruct the pilot to maintain or avoid certain vertical speeds; and corrective advisories, which instruct the pilot to deviate from the current flight path (e.g., “CLIMB” when the aircraft is in level flight). In an encounter between two TCAS/ACAS II equipped aircraft, their computers will communicate using the Mode S transponder data link which has the capability to provide complementary RAs (e.g., one climbing and one descending). Aircraft without transponders, are invisible to TCAS/ACAS equipped aircraft; thus TAs or RAs are not provided.

2. Types

There are three types of TCAS/ACAS:

a. TCAS/ACAS I is a less sophisticated system which will provide a warning of proximate traffic (TA) without guidance to avoid potential collisions;

b. TCAS/ACAS II consists of a computer, pilot displays, a Mode S transponder, modified instantaneous vertical speed indicators, controls, wiring and antennas which provides both TAs and vertical plane RAs;

c. TCAS/ACAS III is a more advanced system (still under development) which will provide TAs, and both horizontal and vertical plane RAs, i.e., turns, as well as climbs and descents.

3. Mode S Transponder and Unique Codes

Mode S transponders are an integral component of all TCAS/ACAS II installations. Each Canadian registered aircraft with a Mode S transponder must receive a unique code assignment, which must be loaded in the transponder. Along with performing all the functions of Mode A or C transponders, Mode S transponders also have a data link capability. There is no requirement to replace existing Mode A or C transponders with Mode S transponders until it becomes impossible to maintain presently installed Mode A and C transponders.

4. Pilot/Controller Actions

In order to utilize TCAS/ACAS in the most effective and safest manner, the following pilot and controller actions are necessary:

a. Pilots shall not manoeuvre their aircraft in response to TAs only;

b. Pilots shall notify the appropriate ATC unit, as soon as possible, of the deviation, including its direction, and when the deviation has ended;

c. In the event of an RA to alter the flight path, the alteration of the flight path should be limited to the minimum extent necessary to comply with the RA;

d. When a pilot reports a manoeuvre induced by an RA, the controller should not attempt to modify the aircraft flight path until the pilot reports returning to the terms of the existing ATC instruction or clearance, but should provide traffic information as appropriate;

e. Pilots who deviate from an ATC instruction or clearance in response to an RA shall promptly return to the terms of that instruction or clearance when the conflict is resolved.

Once an aircraft has begun a manoeuvre in response to an RA, the controller is not responsible for providing separation between the aircraft and other aircraft, airspace, terrain or obstruction. The responsibility for separation will resume when either:

(i) the responding aircraft has returned to its assigned altitude,
(ii) the controller is informed by the responding aircraft that the manoeuvre is completed and that the controller observes that separation has been re-established, or
(iii) the responding aircraft has executed an alternate clearance and separation has been established.

Note: The controller is still responsible to ensure that other aircraft are separated from the aircraft executing the RA manoeuvre.

5. Pilot and Controller Interchange

ICAO is currently developing pilot/controller phraseologies. It should be noted that, for the purpose of phonetic clarity, the term TCAS is used.

Circumstances		
After modifying vertical speed to comply with a TCAS/ACAS RA	Pilot:	(Call Sign) TCAS CLIMB (or DESCENT);
	Controller:	(acknowledgement);
After TCAS/ACAS “Clear of conflict” is annunciated in the cockpit	Pilot:	(Call Sign) RETURNING TO (assigned clearance);
	Controller:	(acknowledgement) (or alternate instructions);
After the response to a TCAS/ACAS RA is completed	Pilot:	(Call Sign) TCAS CLIMB (or DESCENT), RETURNING TO (assigned clearance);
	Controller:	(acknowledgement) (or alternate instructions);
After returning to clearance after responding to a TCAS/ACAS RA	Pilot:	(Call Sign) TCAS CLIMB (or DESCENT), COMPLETED (assigned clearance); RESUMED;
	Controller:	(acknowledgement) (or alternate instructions);
When unable to comply with a clearance because of a TCAS/ACAS RA	Pilot:	(Call Sign) UNABLE TO COMPLY, TCAS/ACAS RA;
	Controller:	ROGER

6. Pilot Immunity from Enforcement Action for Deviating from Clearances

Pilots are permitted to deviate from a clearance in order to follow a resolution advisory in Canadian airspace. After responding to the resolution advisory, the pilot shall, as soon as possible, advise ATC of the deviation, and return to the altitude in the previous clearance, or obtain a new one. The policy outlined

below is the same as applies in U.S airspace. (CAR 602.31)

Enforcement investigation into a deviation from an assigned altitude in response to a TCAS/ACAS RA in Canadian airspace and the use of TCAS/ACAS recorded data is as follow:

The use of TCAS/ACAS II may result in a flight crew deviating from an assigned altitude for a short period of time. During the investigation of the incident, all factors will be considered, including factors that are TCAS/ACAS related, before a final determination is made. Specifically, enforcement action will not be taken against flight crew who deviate from a clearance issued by ATC when that deviation is in response to a TCAS/ACAS generated RA and the response is in accordance with the operator's approved flight procedures. Likewise, enforcement action will not be taken if the operator's procedures allow a crew not to follow a displayed RA because of other information that may be available to the pilot.

CHAPTER 5

AIRPORT OPERATIONS AND VFR PROCEDURES

SECTION 1 GENERAL

501. GENERAL

Public Use: An aerodrome or airport listed in the GPH 205 that does not require prior permission of the aerodrome or airport operator for aircraft operations is called a public-use aerodrome or airport.

Private Use: An aerodrome or airport can be listed in the GPH 205, but be limited in its use. This can include:

a. Prior Permission Required (PPR): The aerodrome operator's permission is required prior to use. (All military aerodromes require PPR for Civilian aircraft).

b. Prior Notice Required (PN): The aerodrome operator owner or operator is to be notified prior to use in order that current information on the aerodrome may be provided.

Notes:

1. Pilots and aerodrome operators are reminded that aerodrome or airport trespass restrictions are not applicable to aircraft in distress.

2. Pilots intending to use a non-certified aerodrome are advised to obtain current information from the aerodrome operator concerning operating conditions prior to using that aerodrome for aircraft operations

Pilots must be particularly alert when operating in the vicinity of an airport. Increased traffic congestion, aircraft in climb and descent attitudes, and pilots preoccupied with cockpit duties are some of the factors that increase the accident potential near airports.

It has been confirmed that the use of landing lights greatly increases the probability of the aircraft being seen. An important side benefit for improved safety is that birds appear to see aircraft showing lights in time to take avoiding action. In view of this, it is recommended that when so equipped, all aircraft use landing lights during the take-off and landing phases and when flying below 2,000' AGL within terminal areas and aerodrome traffic patterns.

Pilots shall maintain a listening watch on the appropriate tower frequency while under control of the tower. Whenever possible, requests for radio checks and taxi instructions should be made on the appropriate ground control frequency. After establishing initial contact with the control tower, the pilot will be advised of any frequency changes required.

502. RVOP/LVOP RESTRICTIONS AND PROCEDURES

This procedure is applicable to all Civilian Canadian Aerodrome Operators conducting reduced/low visibility operations below RVR 2600 (1/2sm).

If an Aerodrome Operator has an RVOP or LVOP, these plans may contain restrictions and procedures to support the plan. The specific restrictions and procedures required by air operators and pilots need to be published in the aeronautical information publications.

At sites where there is ATC present, restrictions and procedures may be transparent to the flight crew as they will be administered by ATC on behalf of the aerodrome operator pursuant to the RVOP / LVOP. Therefore, at some of these sites there may be no need to publish any restrictions or procedures as ATC may apply RVOP/LVOP specific restrictions and procedures via clearances and instructions.

Civil Aerodrome Operators should be aware that, in reduced/low visibility conditions, military aircraft may be operating below the published level of service when using take-off alternate even though civil aircraft operations may actually be prohibited in such conditions.

1. Definitions and Abbreviations

a. Reduced Visibility Operations - Means operations below RVR 2600 (½ statute mile) down to and including RVR 1200 (¼ statute mile).

b. Reduced Visibility Operations Plan (RVOP) - Is a plan that calls for specific procedures by the Airport Operator and/or ATC when visibility is below RVR 2600 (½ statute mile) down to and including RVR 1200 (¼ statute mile). The RVOP would be activated or terminated when the RVR is stabilized at the targeted RVR.

c. Low Visibility Operations - Means operations below RVR 1200 (¼ statute mile).

d. Low Visibility Operations Plan (LVOP) - Is a plan that calls for specific procedures by the Airport Operator and/or ATC when visibility is below RVR 1200 (¼ statute mile). The LVOP would be activated or terminated when the RVR is stabilized at the targeted RVR.

2. Publication of Special Reduced/Low Visibility

For publication in the Aeronautical Information Publications usually in the GPH205, Aerodrome Operators will consider the following RVOP/LVOP restrictions and procedures:

a. Specific runway(s) to be closed, or restrictions on the use of specific runway(s).

Note: Where specific runways are closed or restricted, the associated RVR's are normally not reported pursuant to the RVOP/LVOP. Where RVR's are specifically reported due to an operational requirement, the pilot needs to be made aware of this.

b. Specific taxiway(s) to be closed, or restrictions on the use of specific taxiway(s).

c. Specific taxi routes to be used, including (but not limited to):

(i) The use of one-way flows;
(ii) Routes to/from de-icing facilities; and
(iii) Routes for follow-me vehicles.

d. Specific procedures for aircraft proceeding to/from de-icing facilities.

e. Specific procedures for follow-me vehicles, i.e., communication procedures (including receipt and read-back of taxi clearances) and marshalling procedures.

f. Where Air Operators or pilots need to reposition aircraft for maintenance or other operational purposes, specific restrictions and procedures need to be published.

g. At certain sites ATC operates limited hours. Outside ATC operating hours, specific restrictions and procedures may need to be published.

h. Where supporting infrastructure is not available to support reduced/low visibility operations, such operations may be conducted by limiting the number of aircraft operating on the manoeuvring area to one aircraft at a time. In such cases, specific operating restrictions and procedures need to be published, e.g., the issuance of IFR clearances is limited until the preceding aircraft has either landed or departed.

i. Where the complexity of the aerodrome warrants it, the Aerodrome Operator needs to consider the publication of a specific reduced/low visibility taxi/ground movement chart.

j. If an Exemption has been issued to the Aerodrome Operator in support of reduced/low visibility operations, then any conditions pertinent to the pilot/air operator need to be published.

k. For the purposes of reduced/low visibility operations, rotorcraft are normally treated like any other aircraft. Where rotorcraft, either wheel or skid equipped, use runways for reduced/low visibility operations their taxi requirements are the same as for fixed-wing aircraft. Where specific IFR departure locations or heliports are located on the aerodrome, restrictions and procedures for the use of these facilities need to be published for pilots.

Note: Once at the take-off point, rotorcraft are permitted to take-off when the visibility is one half the CAP value (CAP mentioned for reference purposes only) but not less than ¼ SM.

l. Specific procedures for military aircraft as required.

503. AUTOMATIC TERMINAL INFORMATION SERVICE (ATIS)

1. Automatic Terminal Information Service (ATIS) is the continuous broadcasting of recorded information for arriving and departing aircraft on VOT/VOR or a discrete VHF/UHF frequency. Its purpose is to improve controller effectiveness and to relieve frequency congestion by automating the repetitive transmission of essential but routine information. If ATIS is available, a pilot should obtain the ATIS information prior to contacting either the ground control or tower.

2. Airports providing ATIS are listed in the Canada Flight Supplement (GPH205) and the Canadian Forces Flight Supplement (GPH205S).

3. ATIS messages are recorded in a standard format and contain such information as:

   a. airport name and message code letter;

   b. weather information, including:

      (i) time,
      (ii) surface winds,including gusts (indicated in degrees magnetic and knots),
      (iii) visibility,
      (iv) weather and obstructions to vision
      (v) ceiling
      (vi) sky condition,
      (vii) temperature,
      (viii) dew point,
      (ix) altimeter setting,
      (x) pertinent SIGMETs, AIRMETs and PIREPs, and
      (xi) other pertinent remarks;

   c. type of instrument approach in use including information on parallel or simultaneous converging operations;

   d. landing runway, both IFR and VFR, including information on hold short operations and the stopping distance available;

   e. departure runway, both IFR and VFR;

   f. a NOTAM or excerpt from NOTAM with pertinent information regarding the serviceability of a NAVAID, or field conditions applicable to arriving or departing aircraft. These may be deleted from an ATIS message after a broadcast period of 12 hrs at domestic airports or 24 hrs at international airports;

   g. instruction that aircraft are to acknowledge receipt of the ATIS broadcast on initial contact with ATC.

4. Each recording will be identified by a phonetic alphabet code letter, beginning with “ALFA”. Succeeding letters will be used for each subsequent message. Current time and RVR measurements will not be included in the ATIS message, but will be issued in accordance with current practices. Temperature and dew point information is derived only from scheduled hourly weather observations.

5. Pilots hearing the broadcast should inform the ATC unit on first contact that they have received the information, by repeating the code word which identifies the message, thus obviating the need for the controller to issue information.

   Example: “.....WITH BRAVO”.

6. During periods of rapidly changing conditions which would create difficulties in keeping the ATIS message current, the following message will be recorded and broadcasted:

"BECAUSE OF RAPIDLY CHANGING WEATHER/AIRPORT CONDITIONS, CONTACT ATC FOR CURRENT INFORMATION."

SECTION 2 DEPARTURE PROCEDURES – CONTROLLED AIRPORTS

504. GENERAL

The departure procedures listed below are based on those applicable for an aerodrome that has all available services, and are listed in the order that they would be used. At smaller, less equipped airports some services will be combined, for example, the IFR clearance would be obtained from ground control where there is no separate clearance delivery frequency. IFR departure procedures are further detailed in Chapter 7 – Departure.

505. CLEARANCE DELIVERY

Some major airports require departing VFR aircraft to contact "clearance delivery" before taxi.

506. RADIO CHECKS

Radio checks, if required, should wherever possible be requested on frequencies other than ATC frequencies.

507. TAXI INFORMATION

Taxi authorization should be requested on the ground control frequency. If no flight plan has been filed, the pilot should inform the tower on initial contact of the nature of the flight, such as "local VFR" or "proceeding VFR to (destination)".

Pilot: WINNIPEG GROUND, AZTEC GOLF JULIETT VICTOR HOTEL AT HANGAR NO. 3, REQUEST TAXI-IFR EDMONTON 8000.

Ground Control: GOLF JULIETT VICTOR HOTEL, WINNIPEG GROUND, RUNWAY (number), WIND (in magnetic degrees and knots), ALTIMETER (4-figure group giving the altimeter in inches of mercury), TAXI (runway or other specific point, route). Other information, such as traffic, airport conditions, CRFI, RSC, or RVR when applicable, CLEARANCE ON REQUEST.

Pilot: GOLF JULIETT VICTOR HOTEL.

Under no circumstances may a taxiing aircraft, whether proceeding to or from the active runway, taxi onto an active runway unless specifically authorized to do so.

Upon receipt of a normal taxi authorization, a pilot is expected to proceed to the taxi-holding position for the runway assigned for takeoff. If a pilot is required to cross any runway while taxiing towards the departure runway, the ground or airport controller will issue a specific instruction to cross or hold short. If a specific authorization to cross was not received, pilots shall hold short and request authorization to cross the runway. Pilots may be instructed to **monitor** the tower frequency while taxiing or until a specific point, or they may be advised to "Contact tower holding short". The term *holding short,* when used during the communications transfer, is considered as a location and does not require a readback.

To emphasize the protection of active runways and to enhance the prevention of runway incursions, taxi authorizations that contain the instructions **hold** or **hold short** shall be acknowledged by the pilot providing a readback or repeating the hold point.

Examples of hold points that should be read back:

HOLD or HOLD ON (runway number or taxiway);
HOLD (direction) OF (runway number); or
HOLD SHORT OF (runway number, or taxiway).

In order to reduce frequency congestion, pilots are reminded that readback of ATC taxi instructions, other than those listed above, is not required. Such instructions are simply acknowledged. With the increased simultaneous

use of more than one runway, however, instructions to enter, cross, backtrack or line up on any runway should also be acknowledged by a readback.

Example: An aircraft is authorized to backtrack a runway to the holding bay and to report clear when in the holding bay.

Pilot: GOLF CHARLIE FOXTROT ALFA BACKTRACKING RUNWAY 25 AND WILL REPORT IN THE HOLDING BAY.

Note: To avoid causing clutter on controllers' radar displays, pilots should adjust their transponders to "standby" while taxiing and should not switched them to "on" (or "normal") until immediately before takeoff.

The tower may instruct aircraft to "line up and wait." Controllers will issue the name of the runway intersection or taxiway with the authorization if the line-up position is not at the threshold of the departing runway. When more than one entry point for the same runway is in use, ATC will also specify the runway entry point with the instruction to line up at the threshold.

Pilots are urged to remain alert to the different phraseologies that may be encountered near runway thresholds in various locations. When in doubt pilots should always seek clarification from the controller. The table below is provided to acquaint pilots with the different phraseologies that may be encountered.

ICAO	CANADA	United States (FAA)
TAXI VIA (taxiway routing) TO HOLDING POINT RUNWAY (number)	RUNWAY (number), TAXI VIA (taxiway routing)	TAXI TO RUNWAY (number) VIA
LINE UP	LINE UP	RUNWAY (number) LINE UP AND WAIT
LINE UP AND WAIT	LINE UP AND WAIT (reason)	RUNWAY (number) LINE UP AND WAIT

508. TAXI HOLDING POSITIONS

Authorization must be obtained before leaving a taxi holding position, or where holding position markings are not visible or have not been established, before proceeding closer than 200 ft. from the edge of the runway in use. At airports where it is not possible to comply with this provision, taxiing aircraft are to remain at a sufficient distance from the runway in use to ensure that a hazard is not created to arriving or departing aircraft.

509. TAXI HOLDING POSITIONS DURING IFR OPERATIONS

It is imperative that aircraft do not proceed beyond taxi holding signs at controlled airports until cleared by ATC. Aircraft proceeding beyond the taxi holding position signs may enter electronically sensitive areas and cause dangerous interference to glide path and/or localizer signals. In Canada, HOLD signs normally indicate the boundaries of electronic sensitive areas and provide safe obstruction clearance distances from landing runways.

When an airport is operating under CAT II or III weather conditions, pilots are to observe CAT II or III mandatory holding position signs. When an airport is not operating under CAT II or III weather conditions, pilots need not abide by the CAT II or III taxiway holding positions and are expected to taxi to the CAT I taxiway holding position markings, unless advised otherwise by ATC.

At uncontrolled aerodromes, pilots awaiting takeoff should not proceed beyond the holding position signs or holding position markings until there is no risk of collision with landing aircraft.

510. TAKE-OFF CLEARANCE

When ready for take-off the pilot shall request a take-off clearance and should include the runway number. Upon receipt of the take-off clearance, the pilot shall acknowledge it and take off without delay, or inform ATC if unable to do so.

A pilot may request, or the controller may suggest, take-off using only part of a runway. A pilot's request will be approved provided noise abatement procedures, traffic and other conditions permit. If suggested by the controller, the available length of the runway will be stated. It is the pilot's responsibility to ensure that the portion of the runway to be used will be adequate for the take-off run.

To expedite movement of airport traffic and achieve spacing between arriving and departing aircraft, take-off clearance may include the word “immediate”. In such cases “immediate” is used for the purpose of air traffic separation. On acceptance of the clearance, the aircraft shall taxi onto the runway and take off in one continuous movement. If, in the pilot's opinion, compliance would adversely affect his operation, he should refuse the clearance.

511. VISUAL SIGNALS

Authorized visual signals used by the tower and their meanings are described in the table below. At an MFAU visual signals have the same meaning as at a controlled airport/aerodrome except that for airborne aircraft the visual signal shall be interpreted the same as verbal instructions, i.e. "at pilot’s discretion".

ATC LIGHT SIGNALS		
Colour & type of signal	**Aircraft on the ground**	**Aircraft in flight**
Steady green	Cleared for takeoff	Cleared to land
Flashing green	Cleared to taxi	Return for landing (to be followed by a steady green at the proper time)
Steady red	Stop	Give way to other aircraft and continue circling
Flashing red	Taxi clear of landing area or runway in use	Aerodrome unsafe - Do not land
Flashing white	Return to starting point on the aerodrome	Not applicable
NOTE 1: Flashing of runway lights may be used by the tower to alert vehicles or pedestrians to vacate the active runway. NOTE 2: Light signals provided to an airborne aircraft by an MFAU mean "at pilot’s discretion".		

An airport rotating beacon will be lighted at night during airport hours of operation except 1 Wg units where they may be shut off during NVG operations.

Acknowledgment of Visual Signals - A pilot shall, where practicable, acknowledge all clearances and instructions received by visual signals. Signals may be acknowledged as follows:

a. by day, full movement of rudder or ailerons, whichever can be seen most easily (such movement should be repeated at least three times in succession), or by taxiing the aircraft to the authorized position.

b. by day, distinct rocking of aircraft in flight;

c. at night, by a single flash of a landing light.

512. NOISE ABATEMENT

All pilots must conform to Aircraft Noise Operating Restrictions as published in GPH200 noise abatement procedures.

When selecting preferential runways for noise abatement or other reasons, controllers consider the runway condition, effective cross-wind component and effective tail wind component.

The maximum effective cross-wind component considered in determining runway selection is 25 kt for arrivals and departures on dry runways, and 15 kt on wet runways. The maximum effective tail wind component is 5 kt.

Although controllers may select a preferential runway in accordance with the foregoing criteria, pilots are not obligated to accept the runway for taking off or landing. It remains the pilot's responsibility to decide if the assigned runway is operationally acceptable.

513. HIGH INTENSITY RUNWAY OPERATIONS (HIRO)

Several of Canada's airports rank among North America's busiest in total air carrier movements. High intensity runway operations (HIRO), as a concept, has evolved from procedures developed by high density terminals in North America and Europe. It is intended to increase operational efficiency and maximize the capacity at those airports where it is employed through the use of disciplined procedures applied by both pilots and air traffic controllers. HIRO is intended to minimize the occurrence of go-arounds that result from slow-rolling and/or slow-clearing aircraft and offers the prospective of reducing delays overall, both on the ground and in the air. In its fullest application, HIRO enables ATC to apply minimum spacing to aircraft on final approach to achieve maximum runway utilization.

The tactical objective of HIRO is to minimize runway occupancy times (ROT) for both arriving and departing aircraft, consistent with both safety and passenger comfort. Effective participation in HIRO results when the pilot of an arriving aircraft exits the runway expeditiously, allowing the following arriving aircraft to cross the threshold with a minimum time interval. In the case of an arrival and a subsequent departure, the arriving pilot clears the runway in a minimum ROT, permitting a departure before the next arrival crosses the threshold. The air traffic controller's objective in HIRO is to optimize approach spacing. This can be best achieved when pilots reach and adhere to assigned speeds as soon as practicable.

Effective participation in HIRO is achieved by satisfying the following key elements.

1. Key elements for arrivals:

    a. The pilot's objective should be to achieve minimum ROT, within the normally accepted landing and braking performance of the aircraft, by targeting the earliest suitable exit point and applying the right deceleration rate so that the aircraft leaves the runway as expeditiously as possible at the nominated exit.

    b. The expected runway exit point to achieve minimum ROT should be nominated during approach briefing. It is better, in terms of ROT, to select an exit you know you can make, rather than choose an earlier one, miss it, and then roll slowly to the next available exit.

    c. Upon landing, pilots should exit the runway without delay.

    d. High-speed exits have specific maximum design speeds. These speeds may be available through the appropriate airport authority.

2. Key elements for departures:

    a. On receipt of a line-up clearance, pilots should ensure that they are able to taxi to position and line-up on the runway as soon as the preceding aircraft has commenced its take-off roll.

    b. ATC will expect aircraft to enter the runway at a suitable angle to quickly line-up on the centreline and, when possible, continue in to a rolling takeoff when cleared. Pilots should ensure that they are able to commence the take-off roll immediately when a take-off clearance is issued.

    c. Aircraft that need to enter the runway at right angles, to backtrack, or to use the full length of the runway will require extra time on the runway. Therefore, pilots should notify ATC before arriving at the holding area so that the controller can re-sequence departures to provide the extra time.

    d. Cockpit checks should be completed prior to line-up and any checks requiring completion on the runway should be kept to a minimum. If extra time is required on the runway, ATC should be informed before the aircraft arrives at the holding area so that the controller can re-sequence departures to provide the extra time.

SECTION 3 ARRIVAL PROCEDURES – CONTROLLED AIRPORTS

514. ATIS BROADCASTS

If ATIS is available, all arrivals should monitor this frequency to obtain the basic aerodrome information prior to contacting the appropriate local ATC facility.

515. INITIAL CONTACT

Prior to entering a control zone with Class C airspace, the pilot shall call the tower on the appropriate frequency, inform the tower he intends to land at an airport within the zone or proceed through the zone, and obtain clearance to proceed into the zone. When practicable, it is recommended that a pilot makes an initial contact 10 miles prior to entering the zone.

516. INITIAL CLEARANCE

On initial contact with the tower, unless the pilot advises receipt of ATIS, the airport controller will inform the pilot of runway in use, wind direction and speed, altimeter setting and any other pertinent information. Following this the pilot will receive clearance to proceed including any necessary restrictions or to hold clear of the control zone temporarily until conditions allow further clearance. The shortest routing to the runway may be expected if traffic permits. Any special procedures will be published in the GPH205 or a VTA chart if applicable.

A straight-in approach is an approach where an aircraft joins the traffic circuit on the final leg without having executed any other portion of the circuit.

517. LANDING CLEARANCE

A pilot must obtain landing clearance prior to landing. Normally the ATC tower controller will initiate landing clearance without having first received the request from the aircraft; however, should this not occur, the onus remains upon the pilot to request such clearance in sufficient time to accommodate the operating characteristics of the aircraft being flown.

Note 1: "CLEARED FOR THE OPTION"

a.For an arriving aircraft: ATC authorization for an aircraft to make a touch-and-go, low approach, missed approach, stop and go, or full stop landing at the discretion of the pilot.
b.For a departing aircraft: ATC authorization for an aircraft to make a simulated rejected takeoff, reduced power takeoff and a simulated engine out failure on departure procedure at the discretion of the pilot.

Note 2: "STOP-AND-GO"

A procedure in which an air- craft lands, makes a complete stop on the runway, and then commences a takeoff from that point.

Note 3: "TOUCH-AND-GO"

A procedure in which an aircraft lands and then commences a takeoff, without stopping.

518. TAXIING

Unless otherwise instructed by ATC, aircraft are expected to continue in the landing direction to the nearest suitable taxiway and exit the runway without delay. No aircraft should exit a runway onto another runway unless instructed or authorized to do so by ATC. When required, ATC will provide the pilot with instructions for leaving the runway. These instructions will normally be given to the pilot prior to landing or during the landing roll. After landing on a dead-end runway, the pilot will normally be given instructions to backtrack. In all cases, after leaving the runway, unless otherwise instructed by ATC, pilots should continue to taxi forward across the taxi holding position lines or to a point at least 200 feet from the edge of the runway where a taxi holding position line is not available. The aircraft is not considered clear of the runway until all parts of the aircraft are past the taxi holding position line or the 200-foot point. Once clear of the runway pilots are reminded that if they are required to cross any runway while taxiing, the ground or airport controller will issue a specific instruction to cross or hold short. If a specific authorization to cross was not received, pilots shall hold short and request authorization to cross the runway.

519. VFR CIRCUIT PROCEDURES – CONTROLLED AERODROMES

1. Unless otherwise published in GPH205/CFS all VFR circuits are standard left-hand traffic circuits flown at 1,000' AAE rounded to the nearest 100'. Jet overhead break circuits are flown 500' above the standard circuit altitude or as published in GPH205/CFS using normal military procedures.

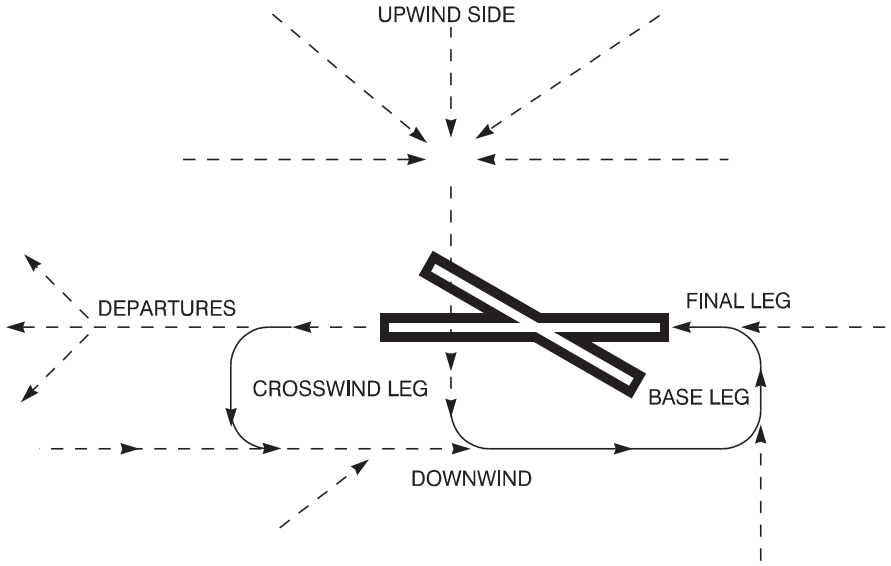
2. The following diagram shows the civil standard left-hand traffic circuit and the methods of joining the circuit at which a control tower is in operation. NORDO and RONLY aircraft should approach the circuit from the upwind side and join crosswind at circuit height, and at all times be on the alert for visual signals.

3. Entry to the circuit shall be made in such a manner so as to avoid cutting off other aircraft, conforming as closely as possible to the altitude (normally 1,000 ft AAE), speed and size of the circuit being flown by other traffic.

4. In order to increase safety by reducing the possibility of conflicting with departing traffic, aircraft approaching the active runway from the upwind side are to join the downwind leg abeam a point approximately midway between each end of the runway, taking into account aircraft performance, wind and/or runway length.

5. Aircraft departing the circuit or aerodrome VFR should climb straight ahead on the runway heading until reaching the circuit altitude before commencing a turn in any direction to an enroute heading. The tower controller should be advised of any turns that are anticipated prior to reaching circuit altitude. Turns prior to reaching the departure end of the runway should not be made unless specifically approved by the controller and only when safety is not jeopardized.

FIGURE 5.1 - STANDARD LEFT-HAND TRAFFIC CIRCUIT



520. OPERATIONS ON INTERSECTING RUNWAYS

ATC procedures allow for sequential and/or simultaneous operations on intersecting runways. Their intent is to increase airport traffic capacity thus reducing delays and saving fuel. These operations differ only in the controllers' application of ATC procedures; ATC advisories will specify the type of operation(s) in progress.

1. Sequential Operations

   Sequential operations do not permit controllers to allow either an arriving aircraft to cross the arrival threshold or a departing aircraft to commence its take-off roll until certain conditions are met.

   For an arriving aircraft the conditions are as follows:

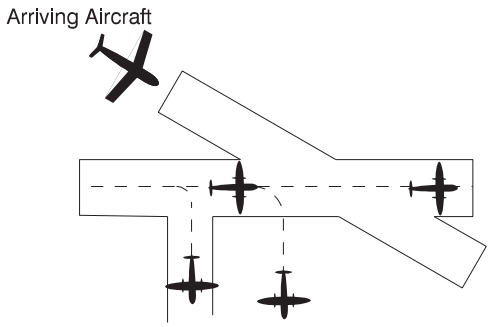
   a. the preceding departing aircraft has:

(i) passed the intersection, or
(ii) is airborne and has turned to avoid any conflict;

b. the preceding arriving aircraft has:

(i) passed the intersection, or
(ii) completed its landing roll and will hold short of the intersection (i.e. stopped or at taxi speed), or
(iii) completed its landing roll and turned off the runway.

FIGURE 5.2



For a departing aircraft the sequential conditions are:

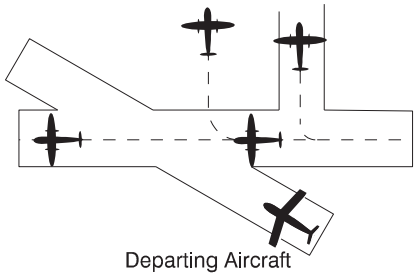
c. the preceding departing aircraft has:

(i) passed the intersection, or
(ii) is airborne and has turned to avoid any conflict;

d. the preceding arriving aircraft has:

(i) passed the intersection, or
(ii) completed its landing roll and will hold short of the intersection (i.e. stopped or at taxi speed), or
(iii) completed its landing roll and turned off the runway.

FIGURE 5.3



2. Land and Hold Short Operations (LAHSO)

Simultaneous operations differ from sequential operations in the application of ATC procedures. The procedures for simultaneous use of intersecting runways are applied only between two arrivals or an arrival and a departure. Air Traffic Controllers will permit an arriving aircraft to cross the runway threshold or a departing aircraft to begin its takeoff roll without adhering to the conditions in 1b.(3) and 1d.(3) above provided one of the aircraft has accepted a clearance to land and “hold short” of the intersecting runways. Land and Hold Short Operations (LAHSO), may be carried out under the following conditions:

a. the landing distance available (LDA), measured from the threshold, or displaced threshold, to 200 feet short of the nearest edge of the runway being intersected, must be published in the GPH200 and the CFS. ATC shall also broadcast LAHSO advisories, including LDAs, through ATIS or voice advisory, well in advance of the final approach descent;

b. the weather minima of a 1000-foot ceiling and visibility of 3 SM are required. In specific cases, these criteria may be reduced with 1 Cdn Air Div approval;

c. the reported braking action must be not less than good. The runway must be bare, (No snow, slush, ice, frost, or standing water is visible from the tower or reported by a competent person. In order to accommodate small accumulations of ice or snow at the runway edge during winter operations, only the centre 100 feet of the runway must be bare.);

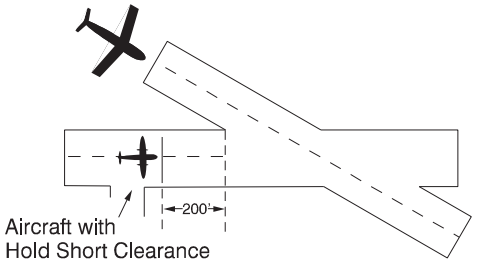
d. a tail component of less than 5 kt is acceptable for both dry and wet runway operations. The maximum allowable crosswind component for a wet runway LAHSO is 15 kt and 25 kt on a dry runway. Controllers will not initiate or approve a request for LAHSO on any runway when crosswinds on that runway exceed the maximum;

e. acceptance and full read back of a "hold short" landing clearance indicates to the controller that the pilot is able to comply with the clearance. Thus, pilots are obligated to remain 200 feet short of the closest edge of the runway being intersected. If for any reason the pilot elects to use the full runway length or is unsure of being able to comply with a “hold short” clearance, the pilot must advise ATC immediately of non-acceptance of the clearance; it is far better to be safe than sorry; and

f. taxi and hold position markings shall be located on the runway 90 degrees to the “hold short” runway centre line, 200 feet short of the nearest edge of the runway being intersected Red and white mandatory instruction signs, illuminated for night LAHSO, shall be located at either end of the lines. More details on lines can be found in *Aerodrome Standards and Recommended Practices* (TP 312E).

Note: LAHSO is not authorized if thunderstorms, turbulence, wind shear or other conditions exist which would adversely affect the restricted aircraft's ability to “hold short” after landing.

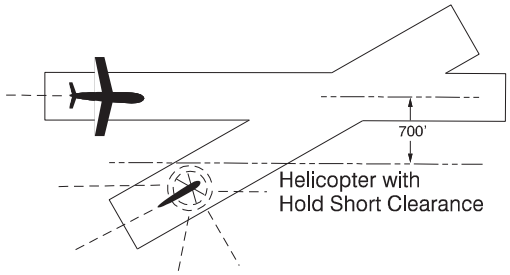
FIGURE 5.4



g. If there is an operational advantage, controllers may offer or approve a pilot request for the use of a dry runway for landing with a tailwind not exceeding 10 knots. LAHSO will not be authorized on **wet** runways if tailwinds are 5 knots or more.

h. If the arriving helicopter has a “hold short” clearance, its point of landing is at least 700 feet from the centre of the other runway.

FIGURE 5.5



Wet Runways

The following conditions are applicable for wet runway operations:

(i) no group 6 aircraft shall be instructed to hold short of an intersection runway;
(ii) groups 1, 2 and 3 aircraft stopping distances are increased by 15% (see Note); and
(iii) the coefficient of friction on LAHSO runways must meet a minimum standard. The coefficient of friction will be measured in accordance with *Airport Pavement Evaluation Surface Friction* (AK-68-35-000 (TP 3716); only those runways with average coefficients of friction above 0.6 will be approved for wet runway LAHSO;

Note: Aircraft are categorized into groups requiring the following stopping distances

	Dry Runway	Wet Runway
Group 1 –	1,650 ft.	1,900 ft.
Group 2 –	3,000 ft.	3,500 ft.
Group 3 –	4,500 ft.	5,200 ft.
Group 4 –	6,000 ft.	6,000 ft.
Group 5 –	8,000 ft.	8,000 ft.
Group 6 –	8,400 ft.	8,400 ft.

The above stopping distances are based on ISA conditions for sea level runways. For higher airport elevations the distances are adjusted for pressure altitude. An aircraft's grouping is such that its normal stopping distance is approximately 50% of the available stopping distance. Aircraft Stop Groups are listed in the publication Air Traffic Designators TP 143.

3. General Provisions

a. All pilots will be advised that simultaneous operations are in progress.

b. Controllers will issue appropriate traffic information.

CAUTION: DURING SEQUENTIAL AND/OR SIMULTANEOUS OPERATIONS, ATC PROCEDURES AND PILOT COMPLIANCE WITH CLEARANCE CONDITIONS WILL ENSURE AIRCRAFT SEPARATION (I.E. SPACING BETWEEN AIRCRAFT). NOTWITHSTANDING THIS, CONFLICTS BETWEEN AIRCRAFT MAY OCCUR, PARTICULARLY AT RUNWAY INTERSECTIONS, IF A PILOT DOES NOT COMPLY WITH A CLEARANCE OR IS UNABLE TO COMPLY DUE TO UNFORESEEN CIRCUMSTANCES SUCH AS MISSED APPROACHES, MISJUDGED LANDINGS, BALKED LANDINGS OR BRAKE FAILURES. IN THESE CIRCUMSTANCES ATC WILL ENDEAVOUR TO PROVIDE TRAFFIC ADVISORIES AND/OR INSTRUCTIONS TO ASSIST PILOTS WITH COLLISION AVOIDANCE.

WARNING: Acceptance of a LAHSO could mean acceptance of a 25 kt crosswind and/or a 10 kt tailwind under certain conditions. (ATC MANOPS).

521. WAKE TURBULENCE SEPARATION MINIMA INFORMATION

1. In Canada aircraft groups and wake turbulence minima are as follows:

CATEGORY	LIMITS
Super Heavy (S)	Aircraft with a maximum take-off mass of 560 000kg
Heavy (H)	Aircraft types weighing less than 560 000kg but more than 136 000kg
Medium (M)	Aircraft types weighing less than 136 000kg but more than 7000kg
Light (L)	Aircraft types weighing 7000kg or less

2. Generally controllers apply the following radar separation minima between a preceding IFR/VFR aircraft and an aircraft vectored directly behind it and at less than 1,000 feet below:

PRECEDING	SUCCEEDING	DISTANCE
Super Heavy (S)	Light (L)	8 miles
	Medium (M)	7 miles
	Heavy (H)	6 miles
	Super Heavy (S)	4 miles
Heavy (H)	Light (L)	6 miles
	Medium (M)	5 miles
	Heavy (H)	4 miles
	Super Heavy (S)	
Medium (M)	Light (L)	

3. Non-Radar Separation

Controllers will apply the following wake turbulence separation to any IFR of VFR departure that takes off into the wake of an aircraft from the threshold of the same or parallel runway separated by less than 2,500 feet as follows:

PRECEDING	SUCCEEDING	TIME
Super Heavy (S)	Light (L)	3 minutes
	Medium (M)	
	Heavy (H)	2 minutes
	Super Heavy (S)	
Heavy (H)	Light (L)	
	Medium (M)	
	Heavy (H)	
	Super Heavy (S)	
Medium (M)	Light (L)	Cautionary

Controllers will apply a 3 minute separation interval to any aircraft that takes off into the wake of a known heavy aircraft, or a light aircraft that takes off into the wake of a known medium aircraft if:

a. the following aircraft starts its takeoff roll from an intersection or from a point further along the runway than the preceding aircraft; or

b. the controller has reason to believe that the following aircraft will require more runway length for takeoff than the preceding aircraft.

ATC will also apply separation intervals of up to 3 minutes when the projected flight paths of any following aircraft will cross that of a preceding heavy aircraft. In spite of these measures, ATC cannot guarantee that wake turbulence will not be encountered

4. Pilot Waivers

Direction to ATC tower controllers requires that the pilot be advised whenever a requested takeoff clearance is denied solely because of wake turbulence requirements. The intention of this advisory is to make pilots aware of the reason for the clearance denial so that they may consider requesting a wake turbulence waiver. To aid the pilot's decision, the tower controller will advise the type and position of the wake-creating aircraft. Pilots are reminded that there are some circumstances where wake turbulence separation cannot be waived.

There may be departure situations, such as with a steady cross-wind component, where the full wake turbulence separation minima may not be required. The pilot is in the best position to make an assessment of the need for wake turbulence separation. Although controllers are not permitted to initiate waivers to wake turbulence separation minima, they will issue takeoff clearance to a pilot who has waived wake turbulence on his own initiative, provided it is not a light or medium aircraft departing;

a. behind a Super Heavy;

b. behind a Heavy aircraft from an intersection or a point significantly further along the runway in the direction of take off;

c. behind a Heavy aircraft or Super Heavy doing a low or missed approach in the same direction on the same runway;

d. behind a Heavy aircraft or Super Heavy taking off or doing a low or missed approach in the opposite direction on the same runway.

A pilot initiated waiver indicates to the controller that the pilot accepts responsibility for wake turbulence separation. The controller will still issue a wake turbulence cautionary with the takeoff clearance.

SECTION 4 HELICOPTER OPERATIONS – CONTROLLED AIRPORTS

522. AIR/HOVER TAXI

To accommodate movements by helicopters, two modes of airborne taxiing have been defined; they are AIR TAXI and HOVER TAXI. Because of the greater operating range afforded by the term AIR TAXI, you may expect clearance to AIR TAXI unless the local traffic conditions will not permit this mode of operation. This does not preclude helicopters taxiing on wheels if so equipped. If a pilot wishes to operate in this mode, ATC should be informed when requesting a clearance.

AIR TAXI

Movement of a helicopter above the surface of an aerodrome but normally not above 100 feet AGL. The aircraft may proceed via either HOVER TAXI or flight at speeds more than 20 knots. The pilot is solely responsible for selecting a safe airspeed/altitude for the operation being conducted.

HOVER TAXI

Movement of a helicopter above the surface of an aerodrome and in ground effect at airspeeds less than approximately 20 knots. The actual height may vary, and some helicopters may require HOVER TAXI above 25 feet AGL to reduce ground effect turbulence or provide clearance for cargo slingloads.

SECTION 5 MILITARY FLIGHT ADVISORY UNIT PROCEDURES

523. GENERAL

The following procedures are provided to clarify the unique operating requirements at an MFAU. The provision of positive ground control in addition to a flight advisory service creates situations that are not common to a civil operated uncontrolled/FSS aerodrome. For general MFAU characteristics refer to Article 118.

The MFAU will provide advisories on known ground and airborne traffic, and pertinent obstacle information; to the pilot. Aside from taxi operations (including hover taxi to/from dispersal or ramps as detailed below) all operations are conducted at the pilot's discretion. The transition from positive ground control to flight advisory occurs when the flight advisor includes the phraseology "AT YOUR DISCRETION".

524. TAXIING

Prior to taxi the pilot must state their intentions and await response from the Ground Controller / Flight Advisor. Positive ground control is exercised from the ramp / dispersal areas to/from one of the following:

a. for fixed wing aircraft - to a point short of the departure runway;

and

b. for rotary wing aircraft - to the departure point on the heliport or if a runway/extended FATO is involved (heliport or airport) to a point short of the runway/extended FATO.

Air taxi directly to or from a ramp should be avoided to minimize hazards to ground personnel; local unit orders should provide further direction on this issue.

525. DEPARTURE

Prior to lift-off into a hover or departure, the pilot must state their intentions and await response from the Flight Advisor.

For IFR departures, pilots must ensure they receive an IFR clearance and obtain release (clearance validation) from the approving IFR agency (e.g. terminal control) before departure. IFR clearance will normally be relayed from the appropriate ACC to the pilot by the Flight Advisor.

526. ARRIVAL

Arriving aircraft shall enter the MFAU airspace in accordance with procedures established in GPH205 and GPH204 Chapter 5, Section 6. Upon arrival at, or landing on, an extended FATO or runway, aircraft are expected to exit the landing surface as soon as practicable and contact the Ground Controller for further clearance. When arriving at a designated helipad, aircraft must maintain their position and contact the Ground Controller for further clearance or instruction.

When in the final approach and landing phases, IFR flights controlled (e.g. PAR) or monitored by an MFAU require unrestricted access to the landing surface. VFR pilots shall give way to IFR aircraft in the latter stages of an approach. (Wing/Squadron Flying Orders shall specify the specific range.)

SVFR will be coordinated between the Flight Advisor and the responsible IFR agency. The IFR control agency may approve SVFR for one or more SVFR aircraft, or for a specific period of time. Note: The approving IFR agency may amend or revoke the approval to conduct SVFR flight at their discretion.

Note: IAW direction from 1 Cdn Air Div HQ, a "NOT BELOW 200 FEET" restriction will be issued to an IFR or VFR aircraft conducting a low approach where personnel and/or equipment are working on or adjacent to the approach / landing surface (e.g. extended FATO, runway, helipad, etc).

SECTION 6 AIRCRAFT OPERATIONS – UNCONTROLLED AERODROMES

527. GENERAL

An uncontrolled aerodrome is an aerodrome without a control tower, or one where the tower is not in operation. There is no substitute for alertness while in the vicinity of an uncontrolled aerodrome. It is essential that pilots be aware of and look for other traffic, and exchange traffic information when approaching or departing from an uncontrolled aerodrome, particularly since some aircraft may not have communication capability. To achieve the greatest degree of safety, it is essential that all radio-equipped aircraft monitor a common designated frequency (normally VHF - unless operational requirements dictate otherwise) such as the published MF or ATF, and follow the reporting procedures specified for use in an MF area*, while operating on the manoeuvring area or flying within an MF area surrounding an uncontrolled aerodrome.

*"MF area" means an area in the vicinity of an uncontrolled aerodrome for which an MF has been designated. The area is defined in the COMM Section of the CFS for a particular aerodrome and within which MF procedures apply. Normally, the MF area is a circle with a 5NM radius capped at 3,000 feet AAE.

At uncontrolled aerodromes without a published MF or ATF, the common frequency for the broadcast of aircraft position and pilot's intentions flying in the vicinity of that aerodrome is 123.2 MHz.

At aerodromes within an MF area, traffic information may be exchanged by communicating with an FSS, CARS, UNICOM operator, vehicle operator, or by a broadcast transmission. A VCS in conjunction with AAS is normally provided at aerodromes served by an FSS. Some uncontrolled aerodromes are indirectly served by an FSS through an RCO and may provide RAAS. As Flight Service Specialists may be located some distance from an aerodrome, it is essential that they be kept fully informed of both aircraft and vehicle activity.

Other aerodromes are designated as having an ATF. At some aerodromes with a control tower or FSS, an ATF is designated for use when the air traffic facility is closed. If a radio-equipped vehicle is present at ATF aerodromes, pilots can contact the vehicle operator directly on the ATF to ascertain that no vehicle-aircraft conflict exists. Operators of such radio-equipped vehicles will also provide pilots with any other available information on runway status and presence of other aircraft or vehicles on the runway.

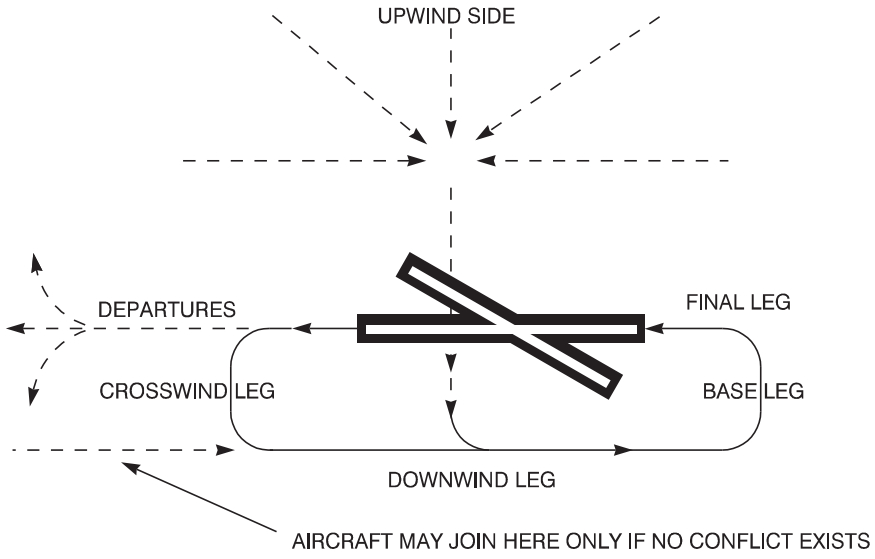
At aerodromes where either remote aerodrome advisory service (RAAS) or flight information service enroute (FISE) information is provided via an RCO and an AWOS with a Voice Generator Module (VGM) weather broadcast on VHF is available, pilots will be advised by the Flight Service Specialist to monitor the designated AWOS frequency for local weather information. To avoid unnecessary frequency changes, it is desirable to acquire weather information prior to entering either an MF or ATF area. On start-up at such an aerodrome, it would be desirable to listen to the AWOS broadcast prior to taxiing.

Because the AWOS broadcast contains minute-by-minute weather information it may differ slightly from the most recently disseminated METAR or SPECI. The current METAR or SPECI for the remote aerodrome will be provided, on request, from the Flight Service Station controlling the RCO. Transport Canada recognizes that for any given site at any given time there can be only one official weather observation (METAR or SPECI), whether from a human observer or an automated station.

528. TRAFFIC CIRCUIT PROCEDURES – UNCONTROLLED AERODROMES

The following procedures apply to all aircraft operating at aerodromes where airport control service is not provided except those aircraft following a standard instrument approach procedure. For procedures that apply to aircraft on a standard instrument approach refer to Chapter 8. Prior to joining a traffic circuit, all pilots should announce their intentions. All turns shall be to the left while operating in the circuit, unless a right-hand circuit has been specified in the CFS.

FIGURE 5.6 - STANDARD LEFT-HAND CIRCUIT PATTERN



Pilots operating aircraft under IFR or VFR are expected to approach and land on the active runway. The active runway is a runway that other aircraft are using or are intending to use for the purpose of landing or taking off. Should it be necessary for aircraft to approach to, land on, or take off from a runway other than the active runway, it is expected that the appropriate communication between pilots and the ground station will take place to ensure there is no conflict with other traffic. Some pilots operating under VFR at many sites prefer to give commercial IFR and larger type of aircraft priority. This practice, however, is a personal airmanship courtesy, and it should be noted that these aircraft do not establish any priority over other aircraft operating VFR at that aerodrome.

1. Joining the Circuit

   a. Landing and takeoff should be accomplished on or parallel to the runway most nearly aligned into the wind. However, the pilot has the final authority and responsibility for the safe operation of the aircraft and another runway may be used if it is determined to be necessary in the interest of safety.

   b. Unless otherwise specified or required by the applicable distance from cloud criteria, aircraft should approach the traffic circuit from the upwind side. Alternatively, once the pilot has ascertained without any doubt that there will be no conflict with other traffic entering the circuit or traffic established within the circuit, the pilot may also join the circuit on the downwind leg (Figure 5.6 - Standard Left-Hand Circuit Pattern). When joining from the upwind side, plan the descent to cross the runway in level flight at 1,000 ft AAE or the published circuit altitude. Maintain that altitude until further descent is required for landing.

      Note: Pilots operating at Aerodromes not within an MF area or at Aerodromes within an MF area when airport advisory information is not available are to use the procedures detailed above in subpara (b).

   c. If it is necessary for an aircraft to cross the airport before joining the circuit, it is recommended that the crossover be accomplished at least 500 ft above the circuit altitude.

   d. All descents should be made on the upwind side or well clear of the circuit pattern.

   e. Aerodromes within an MF area when airport advisory information is available: Aircraft may join the circuit pattern straight-in or at 45° to the downwind leg or straight-in to the base or final legs (Figure 5.1 - Standard Left-Hand Traffic Circuit). Pilots should be alert for other VFR traffic entering the circuit at these positions and for IFR straight-in or circling approaches.

2. Continuous Circuits

   Aircraft performing a series of circuits and landings should, after each takeoff, reach circuit altitude before

joining the downwind leg.

3. Departing the Circuit or Airport

Aircraft departing the circuit or airport should climb straight ahead on the runway heading until reaching the circuit traffic altitude before commencing a turn in any direction to an en route heading. Turns back toward the circuit or airport should not be initiated until at least 500 ft above the circuit altitude.

529. HELICOPTER OPERATIONS

Pilots of helicopters at uncontrolled aerodromes are urged to avoid air taxiing or low flying across runways and taxiway areas where risk of collision with unseen aircraft or vehicles exists.

530. MANDATORY FREQUENCY

1. Nav Canada has designated a Mandatory Frequency (MF) for use at selected uncontrolled aerodromes or aerodromes that are uncontrolled between certain hours. Aircraft operating within the area in which the MF (MF area) is applicable, on the ground or in the air, shall be equipped with a functioning radio capable of maintaining two-way communication. Specified reporting procedures shall be followed.

2. A MF area will be established at an aerodrome if the traffic volume and mix of aircraft traffic at that aerodrome is such that there would be a safety benefit derived from implementing MF procedures. There may or may not be a ground station in operation at the aerodrome for which the MF area has been established. When a ground station is in operation, (FSS, RCO through which RAAS is provided, CARS, Approach UNICOM), then all aircraft reports that are required for operating within, and prior to entering an MF area, shall be directed to the ground station. However, when the ground station is not in operation, all aircraft reports that are required for operating within and prior to entering an MF area shall be broadcast. The MF will normally be the frequency of the ground station that provides the air traffic advisory services for the aerodrome. For the aerodromes with an MF, the specific frequency, distance and altitude within which MF procedures apply will be published in the GPH205.

531. AERODROME TRAFFIC FREQUENCY

1. An Aerodrome Traffic Frequency (ATF) is normally designated for active uncontrolled aerodromes that do not meet the criteria listed in Article 530 for a MF. The ATF is established to ensure that all radio-equipped aircraft operating on the ground or within the specified area are listening on a common frequency and following common reporting procedures. The ATF will normally be the frequency of the UNICOM where one exists or 123.2 Mhz where a UNICOM does not exist. Trained vehicle operators who possess a valid radio-telephone licence and authorized to do so, can communicate with pilots using two-way communication on the ATF, and provide information such as position of vehicles and other aircraft on the maneuvering area and runway condition, if known. The specific frequency, distance and altitude within which use of the ATF is required will be published in the GPH205.

2. The designation of an ATF is not limited to aerodromes only. An ATF may also be designated for use in certain areas other that the area immediately surrounding an aerodrome, where VFR traffic activity is high, and there is a safety benefit to ensuring that all traffic monitor the same frequency. For example, an ATF area could be established along a frequently flown corridor between two uncontrolled aerodromes. All aircraft operating within the area, below a certain altitude, would be requested to monitor and report intentions on one frequency. When such an area is designated, it will be specified in the GPH205.

532. USE OF MANDATORY FREQUENCY AND AERODROME TRAFFIC FREQUENCY

1. When operating in accordance with VFR, or in accordance with IFR but in visual meteorological conditions, pilots have sole responsibility for seeing and avoiding other aircraft. Aural and visual alertness are required to enhance safety of flight in the vicinity of uncontrolled aerodromes. At uncontrolled aerodromes for which an MF or ATF has been designated, certain reports shall be made by all radio-equipped aircraft.

   Note: Pilots operating VFR enroute in uncontrolled airspace or VFR on an airway should continuously monitor 126.7 MHz when not communicating on the MF or the ATF.

2. Reports on either the MF or the ATF have three formats; either:

a. a directed transmission made to a ground station;

b. a directed transmission made to a vehicle operator on the ATF; or

c. a broadcast transmission that is not directed to any particular receiving station.

3. Whenever the CFS indicates that reports are to be made to a ground station, the initial transmission should be made to the station. To assist in reducing frequency congestion, pilots are encouraged to use the phrase HAVE NUMBERS on the initial call to a ground station (arrival or departure) to indicate that they have received runway, wind and altimeter information from the previous aerodrome advisory. When operating outside an MF area and when frequency congestion prevent pilots from making their mandatory calls, it is their responsibility to remain clear of the MF until contact can be established with the FSS. If operating inside an MF area, the pilot should continue as stated in previous radio transmissions.

4. Should there be no acknowledgment of a directed transmission to a ground station, reports shall be made in the broadcast format unless the ground station subsequently established two-way contact, in which case pilots shall resume communicating by directed transmission.

533. COMMUNICATION PROCEDURES AT AERODROMES WITH MF AND ATF AREAS

1. Radio-equipped Aircraft

The following procedures shall be followed by pilots of radio-equipped aircraft at uncontrolled aerodromes within an MF area and should also be followed by pilots at aerodromes with ATFs:

a. Operations on Maneuvering Area

Report intentions prior to entering the maneuvering area, and maintain a listening watch on the MF or ATF frequency while operating an aircraft on the maneuvering area;

b. Departure

(i) Complete pre-takeoff check, and report departure intentions on the MF or ATF frequency before moving onto the runway. If a delay is encountered, broadcast intentions and expected length of delay, then rebroadcast departure intentions prior to moving onto the runway;
(ii) Ascertain by radio on the MF or ATF frequency and by visual observation that no other aircraft or vehicle is likely to come into contact with the aircraft during takeoff; and
(iii) Report departing from the aerodrome traffic circuit, and monitor the MF or ATF until well clear of the area (5-10 NM);

c. Arrival

(i) Report position, altitude, arrival procedure intentions and estimated time of landing at least 5 minutes (where possible) prior to entering the area;
(ii) Maintain a listening watch on the MF or ATF while in the area;
(iii) Report joining the circuit pattern giving position in the pattern;
(iv) Report on downwind leg, if applicable;
(v) Report established on final approach; and
(vi) Report clear of the active runway after landing;

d. Continuous Circuits

(i) Report joining the downwind leg;
(ii) Report established on final approach; stating the pilot-in-command's intentions; and
(iii) Report clear of active runway after final landing;

e. Local Flying

Maintain a listening watch on the designated MF or ATF when operating within the area;

f. En Route Reports when flying through an MF area

(i) Report position, altitude and intentions prior to entering the area;
(ii) Maintain a listening watch on the MF or ATF while in the area; and
(iii) Report clear of the area.

Note: In the interests of minimizing possible conflict with local traffic and minimizing radio congestion on the MF or ATF, pilots of enroute VFR aircraft should avoid passing through MF or ATF areas.

2. NORDO

NORDO aircraft will only be included as traffic to other aircraft and ground traffic as follows:

a. Arrival

From five minutes before the ETA until ten minutes after the ETA, and

b. Departure

From just prior to the aircraft departing until ten minutes after the departure, or until the aircraft is observed/reported clear of the MF area.

SECTION 7 VFR ENROUTE PROCEDURES

534. MONITORING 126.7 MHZ AND POSITION REPORTING ENROUTE

Pilots operating Visual Flight Rules (VFR) enroute in uncontrolled airspace when not communicating on a Mandatory Frequency (MF) or an Aerodrome Traffic Frequency (ATF), or VFR on an airway should continuously monitor 126.7 MHz. Although monitoring of 126.7 MHz and position reporting during VFR or VFR over-the-top (VFR-OTT) flights is not mandatory, pilots are encouraged to do so for their own protection. Position reports should be made to the nearest FSS where they are recorded by the specialist and are immediately available in the event of search and rescue action. In uncontrolled airspace, report on 126.7 MHz; however, if reporting on another frequency, also broadcast on 126.7 MHz. The following format is recommended.

1.	Identification	4.	Altitude
2.	Position	5.	VFR/VFR-OTT
3.	Time over	6.	Destination

NOTES:

1.It is important on initial contact that the pilot alerts the FSS to the fact that it is a VFR or VFR-OTT position report.
2.The ETA destination or next reporting point may be included.
3.Under certain conditions position reports are required prior to entering the ADIZ when operating on a DVFR flight plan
or a defence flight itinerary.

535. ALTITUDES AND FLIGHT LEVELS – VFR

Aircraft shall be operated at altitudes or flight levels appropriate to the direction of flight when in level cruising flight above 3,000' AGL. (See GPH205 section “C” for cruising altitudes.)

536. ATC RADAR NAVIGATION ASSISTANCE TO VFR FLIGHTS

1. When requested by pilots, radar-equipped ATC units will provide assistance to navigation in the form of position information, vectors or track and groundspeed checks. Flights requesting this assistance must be operating within areas of radar and communication coverage and be radar-identified.

2. VFR flights may be provided this service:

a. At the request of a pilot, when traffic conditions permit.

b. When the controller suggests and the pilot concurs.

c. In the interest of flight safety.

3. The responsibility for avoiding other aircraft and maintaining flight in VFR weather conditions remains with the pilot of a VFR flight being provided with radar vectors.

4. If a radar vector will lead a VFR flight into IFR weather conditions the pilot must inform the controller and take the following action:

a. If practicable, obtain a vector which will allow the flight to remain in VFR weather conditions.

b. If an alternative vector is not practicable, revert to navigation without radar assistance.

c. If the pilot has an IFR rating and the aircraft is equipped for IFR flight, he may file an IFR flight plan, and request an IFR clearance.

5. When operating in areas where radar coverage exists, VFR flights with transponder equipped aircraft may request radar traffic information. ATC will provide this information, traffic (or workload) permitting.

537. AIRCRAFT SPEED LIMIT ORDER (IFR AND VFR)

1. Below 10,000 feet above sea level

No person shall operate an aircraft in Canada below 10,000 feet ASL at an indicated airspeed of more than 250 kts.

2. Below 3,000 feet above ground level

No person shall operate an aircraft in Canada below 3,000 feet AGL within 10NM of a controlled airport at an indicated airspeed of more than 200 kts unless authorized to do so in an air traffic control clearance.

Note: While aircraft shall not be operated at speeds greater than 200 kts below 3000 feet AGL and within 10NM of a controlled aerodrome, other than para 1 above, there is no mandatory speed restriction when operating in the vicinity of an uncontrolled aerodrome. As traffic levels at some of these aerodromes may be high from time to time, the risk of a possible mid-air collision is somewhat elevated during these periods. For this reason, it is recommended that pilots reduce their aircraft speed to the maximum extent possible when operating below 3000 feet AGL and within 10NM of an uncontrolled aerodrome.

3. Exemptions

a. where the minimum safe airspeed for the flight configuration to maintain safe manoeuvrability or ejection parameters (IAW AOI / AFM) is greater than the maximum speeds defined above, the aircraft may be operated at that speed. Where the required or recommended speed is given as a range, the lower part of the speed range should be used consistent with good operating practice. Pilots must notify ATC when exceeding the speed limit order for safety reasons. Phraseology of "*minimum safe speed XXX*" is encouraged and ATC will acknowledge;

b. the above limitations do not apply:

(i) in Military Terminal Control Areas (MTCA);
(ii) within military advisory areas (CYA), as defined at Article 326 of this publication;
(iii) within military danger areas (CYD), as defined at Article 327 of this publication;
(iv) within military restricted areas (CYR), as defined at Article 328 of this publication;
(v) within military operating areas (MOA), as defined at Article 329 of this publication;
(vi) on Military Training Routes (MTR), as defined at Article 330 of this publication. These routes are USAF low-level training routes (IR) as published in GPH205/205S;
(vii) within military altitude reservations (ALTRV), as defined at Article 331 of this publication. 1 Cdn Air Div may authorize flight operations as it considers necessary to accomplish the national defence mission. When operating within large-scale exercises or on short-term special missions, coordination will be effected to ensure awareness on the part of the non-participating flying public; and
(viii) when operating in military developed and published low flying and tactical low flying areas.

Flights in these areas shall be established for specific missions and used only by designated units. If applicable, frequently used VFR training routes shall be published in Unit and/or Wing Flying Orders. Low flying areas and tactical low flying areas shall be published in Wing and/or 1 Cdn Air Div Orders, Vol. 2; and

c. VFR Training Routes - low level high speed training routes that cross controlled airspace will continue provided that co-ordination with regional air traffic control agencies in the form of prearranged route is adhered to. A flight plan must be filed and appropriate clearance received.

538. RUNWAY CHARACTERISTICS GENERAL

1. Runway Length and Width

Runways are generally dimensioned to accommodate the aircraft considered to be the "critical aircraft" that is anticipated to utilize the runways most frequently. The "critical aircraft" is defined as being the aircraft type which the airport is intended to serve and which requires the greatest runway length. To identify the "critical aircraft", flight manual performance data of a variety of aircraft are examined. Once the "critical aircraft" has been determined, the longest distance determined from analyzing both take-off and landing performance is used as the basis for runway dimensions. Generally, the runway width is increased to a maximum of 60 m (200 feet) as a function of length.

2. Graded Area

Each runway is bounded on the sides and ends by a prepared "graded" area. This graded area is provided to prevent catastrophic damage to aircraft leaving the runway sides and to protect aircraft that overfly the runway at very low altitudes during a balked approach for landing. The graded area at the end of the runway is not considered a normal stop way for accelerate-to-stop calculations.

3. Displaced Runway Threshold

Occasionally, natural and human-made obstacles penetrate the obstacle limitation surfaces of the take-off and approach paths to runways.

To ensure that a safe clearance from these obstacles is maintained, it is necessary to displace the runway thresholds. In the case of runways for which instrument approach procedures are published in the GPH 200, the usable runway distances for landings and takeoffs are specified as declared distances. The displacements are also depicted on the aerodrome or airport diagram in both the GPH 200 and the GPH 205. For other runways not having published GPH 200 approaches, the requisite data is given in the GPH 205. Where a threshold is displaced, it is marked.

When the portion of the runway before the displaced threshold is marked with displaced threshold arrows, it is permissible to use that portion of the runway for taxiing, for takeoff and for the landing roll-out from the opposite direction. In addition, this displaced portion of the runway may be used for landing; however, it is the pilot's responsibility to ensure that the descent path can be safely adjusted to clear all obstacles. When taking off from the end opposite to the displaced threshold, pilots should recognize the fact that there are obstacles present that penetrated above the approach slope to the physical end of the runway, which resulted in the threshold being displaced.

When a section of a runway is closed, either temporarily because of construction or permanently because the full length is no longer required, the closed portion of the runway is unavailable for the surface movement of aircraft for taxiing, take-off or landing purposes and is marked with an "X", indicating that the area is not suitable for aircraft use. A lighted "X" may also be used to mark a temporarily closed runway.

The closed portion of the runway may be shown on the aerodrome or airport diagram in the GPH 200 and 205 for identification purposes; however, declared distances will only include runway length starting at the new threshold position.

4. Turnaround Bay

Some runways have thresholds not served directly by taxiways. In such cases, there may be a widened area which can be used to facilitate turnaround. Pilots are cautioned that these bays do not give sufficient

clearance from the runway edge to allow their use for holding while other aircraft use the runway.

5. Pre-Threshold Area

A paved, non-load-bearing surface that precedes a runway threshold is marked over the entire length with yellow chevrons, when its length exceeds 60 m (200 feet).

6. Stopway

A stopway is a rectangular area on the ground at the end of the runway, in the direction of takeoff, prepared as a suitable area in which an aircraft can be stopped in the case of an abandoned takeoff. It is marked over the entire length with yellow chevrons and is lighted with red edge and end lights in the take-off direction. Its length is included in the ASDA declared for the runway.

7. Clearway

A clearway is a rectangular area above the ground or water selected as a suitable area over which an aircraft may make a portion of its initial climb.

8. Declared Distances

a. Take-off Run Available (TORA): The length of runway declared available and suitable for the ground run of an aircraft taking off.

b. Takeoff Distance Available (TODA): The length of the takeoff run available plus the length of the clearway, if provided.

Note: Maximum clearway length allowed is 300 m. The clearway length allowed must lie within the aerodrome or airport boundary.

c. Accelerate Stop Distance Available (ASDA): The length of the takeoff run available plus the length of the stopway, if provided.

d. Landing Distance Available (LDA): The length of runway which is declared available and suitable for the ground run of an aircraft landing.

9. Rapid-Exit Taxi

To reduce the aircraft runway occupancy time, some aerodromes or airports provide rapid-exit taxiways which are angled at approximately 30 degrees to the runway.

10. Runway and Taxi Bearing Strength

The bearing strength of some aerodrome or airport pavement surfaces (runways, taxiways and aprons) to withstand continuous use by aircraft of specific weights and tire pressures has been assessed at specific locations. The TC Pavement Load Rating (PLR) and ICAO Pavement Classification Number (PCN) define the weight limits at or below which the aircraft may operate on pavements without prior approval of the aerodrome or airport authority. The tire pressure and Aircraft Load Rating (ALR)/Aircraft Classification Number (ACN) must be equal to or less than the PLR/PCN figures published for each aerodrome or airport. Aircraft exceeding published load restrictions may be permitted limited operations following an engineering evaluation by the airport operator. Requests to permit such operations should be forwarded to the airport operator and include the type of aircraft, operating weight and tire pressure, frequency of proposed operation and pavement areas required at the aerodrome or airport.

11. Pavement Load Rating Charts

Operators requiring information respecting aircraft weight limitations in effect at an aerodrome or airport can contact the airport operator.

CHAPTER 6

DEPARTURE

SECTION 1 GENERAL

601. AERODROME OPERATIONS

Pilots should read Chapter 5 airport operations and VFR procedures in conjunction with the IFR departure procedures listed in this chapter. The Aircraft Speed Limit Order as outlined in Article 537 applies to IFR and VFR departures outside of military controlled airspace.

SECTION 2 CLEARANCE

602. TAKE-OFF MINIMA

1. B-GA-100 and 1 Cdn Air Div "Take-off Minima," specifies that takeoff for all aircraft is governed by reported visibility and ceiling and when using a Take-off Alternate, the takeoff for all aircraft is governed by visibility only.

2. Take-off visibility, in order of precedence, is defined as:

   a. the reported RVR of the runway to be used (unless it is fluctuating above and below minimum or is less than minimum because of a localized phenomenon);

   b. the ground visibility of the aerodrome (if the RVR is unavailable, fluctuating above and below minimum or less than minimum because of a localized phenomenon); or

   c. when neither (a) nor (b) is available, the visibility for the runway as observed by the pilot-in-command.

3. The ground visibility of an aerodrome is defined as the visibility reported by:

   a. an ATC unit;

   b. an FSS;

   c. a Community Aerodrome Radio Station (CARS);

   d. a ground-based radio station that is operated by an air operator; or an AWOS used for the purpose of making aviation weather observations

603. ATIS BROADCASTS

If available, the basic aerodrome information should be obtained from ATIS prior to requesting taxi clearance.

604. INITIAL CONTACT

On initial contact with ATC (clearance delivery or ground control), a pilot departing IFR should state the destination and initial planned cruising altitude

605. IFR CLEARANCE REQUEST

At locations where a “Clearance Delivery” frequency is listed, pilots shall obtain their IFR clearance on this frequency prior to contacting ground control. Where no “Clearance Delivery” frequency is listed the IFR clearance will normally be relayed by ground control after taxi clearance has been issued. However due to high fuel consumption during ground running time, pilots of turbo-jet aircraft may elect to obtain their IFR and taxi clearance prior to starting engines. Pilots using this procedure shall contact ATC using a phrase such as READY TO START NOW or READY TO START AT (TIME). Normally this request should be made within 5 minutes of the planned engine start time.

606. AIR TRAFFIC CONTROL CLEARANCE

An ATC clearance shall be obtained before takeoff from any point within controlled airspace or before entering controlled airspace for flight under IFR or during IMC. If departing from an uncontrolled aerodrome it is recommended that pilots inform ATC if a flight will not commence within 60 min of the proposed departure time stipulated in an IFR flight plan. Failure to do so will result in activating the SAR process.

A clearance received by a pilot must be read back to the controller, except in certain circumstances. When the clearance is received on the ground, before departing a controlled aerodrome, and a SID is included in the clearance, the pilot only needs to acknowledge receipt of the clearance by repeating the aircraft call sign and the transponder code that was assigned. If there is an amendment to the altitude contained in the SID, that altitude shall also be read back. At any time that the controller requests a full readback, the pilot shall comply. Also, the pilot may, at any time, read back a clearance in full to seek clarification.

Whenever a clearance is received and accepted by the pilot, the pilot shall comply with the clearance. If a clearance is not acceptable, the pilot shall immediately notify ATC of this fact because acknowledgement of the clearance alone will be taken by the controller as acceptance.

Deviations from a clearance shall not be made except in an emergency that necessitates immediate action or in order to respond to an ACAS/TCAS resolution advisory or a warning from a ground proximity warning system. In these cases, the pilot shall inform ATC as soon as possible and obtain an amended clearance.

607. IFR CLEARANCE WITH VFR RESTRICTIONS

ATC may issue an IFR clearance for an aircraft to depart, climb or descend VFR until a specified time, altitude, or location provided:

1. the pilot requests it;
2. the aircraft is outside Class A airspace;
3. the aircraft is within Class B airspace at or below 12,500′ ASL or within Class C, D or E airspace; and
4. the weather conditions permit.

Pilots are reminded that during such a VFR restriction they must provide their own separation from all IFR aircraft as well as from the VFR traffic. Pilots who accept responsibility for visual separation must maintain constant visual contact, without referring to an airborne surveillance system, with the other aircraft involved until visual separation is discontinued. Controllers normally issue traffic information concerning other IFR aircraft, particularly in marginal weather conditions. If compliance with the restriction is not possible, the pilot should immediately advise ATC and request an amended clearance.

In all instances, Pilots operating IFR must be aware of the need to provide their own visual separation from VFR aircraft when operating in VMC and from any other aircraft when operating in uncontrolled airspace.

608. VFR RELEASE OF AN IFR AIRCRAFT

When a delay is experienced in receiving an IFR departure clearance, a pilot may request approval to depart and maintain VFR until an IFR clearance can be received. If the request for a VFR departure is approved, the pilot will be given a time, altitude or location at which to contact ATC for an IFR clearance. Depending upon the reasons for the IFR departure clearance delay, a VFR departure of an IFR flight may not be approved by the IFR unit.

609. ASSIGNED ALTITUDE – TURBO-PROP/TURBO-JET

Except where SIDs are in use, Air Traffic Control will normally clear an aircraft to an operationally suitable altitude. For all types of aircraft this will be at or as near as possible to the flight - planned altitude. In the high level structure this is interpreted to mean not more than 4000 feet below the flight - planned flight level. However, if it is not practical to assign the flight - planned altitude and if the aircraft has not been informed when it may expect clearance to another altitude, it is the responsibility of the pilot to advise ATC if the assigned altitude will not permit the aircraft to proceed to the airport of destination if a communications failure should occur.

SECTION 3 DEPARTURE PROCEDURES

610. STANDARD INSTRUMENT DEPARTURES

1. At certain airports, an IFR departure clearance may include departure instructions known as standard instrument departure (SID). A SID is planned instrument flight rule (IFR) air traffic control departure procedure published in the GPH200 and the Canada Air Pilot in graphic and textual form. SIDs provide a transition from the terminal to the appropriate enroute structure and may be either:

   a. Pilot Navigation SIDs – established where the pilot is required to use the chart as reference for navigation to the enroute phase; or

   b. Vector SIDs – established where ATC will provide radar navigational guidance to a filed/assigned route or to a fix depicted on the chart. Pilots are expected to use the SID chart as reference for navigation until radar vectoring is commenced.

2. Pilots of aircraft operating at airports for which SIDs have been published will normally be issued a SID clearance by ATC. No pilot is required to accept a SID clearance. If any doubt exists as to the meaning of such a clearance, the pilot should request a detailed clearance.

   Routings contained in SIDs will normally be composed of two segments:

   a. An initial segment from the departure end of the runway to the position where the aircraft will first turn from the initial departure heading; and

   b. A second segment, either via radar vectors or by pilot navigation, from the first turning point to the SID termination point.

      Note: When instructed to fly or maintain "runway heading" or when flying a SID for which no specific heading is published, pilots are expected to fly or maintain the heading that corresponds with the extended centre line of the departure runway until otherwise instructed by ATC. Drift correction must not be applied; e.g. RWY 04, if the actual heading of the runway centre line is 044 degrees, then fly a heading of 044 degrees.

      Note: An ATC revision to any item of a SID or published departure **does not** cancel the rest of the departure procedure. It remains the pilots responsibility to ensure that terrain & obstacle clearance has been achieved prior to accepting the revision.

611. INSTRUMENT DEPARTURE PROCEDURES – OBSTACLE CLEARANCE

1. GPH209 chapter 12 details the criteria that are applied in determining if a runway requires a departure procedure to ensure obstacle clearance, or, if an aircraft can, in IMC, safely depart in any direction. These criteria are based on the premise that the aircraft will:

   a. cross the departure end of the runway at 35′ AGL or above;

   b. climb on runway heading 400' AAE before turning; and,

   c. maintain a minimum climb gradient of 200′ per NM (except as specified in 1 Cdn Air Div Orders Vol 2 Art 2-006 - Special Departure Procedures (SDP)) throughout the climb to the minimum enroute altitude for enroute operations. Climb gradients greater than 200 feet per NM may be published. In this case, the aircraft is expected to achieve and maintain the published gradient to the specified altitude or fix, then continue climbing at a minimum of 200 feet per NM until reaching a minimum IFR altitude or fix, then climb to the minimum IFR altitude for enroute operations.

   The 200′ per NM climb gradient is divided into an obstacle clearance surface (OCS) of 152′ per NM and a required obstacle clearance (ROC) of 48′ per NM. The concept is illustrated in Figure 6.1.

   Note: When turning on departure from an aerodrome with a temperature of 0° Celcius or less, consideration should be given to temperature correcting the minimum 400' AAE or the specified turn altitude.

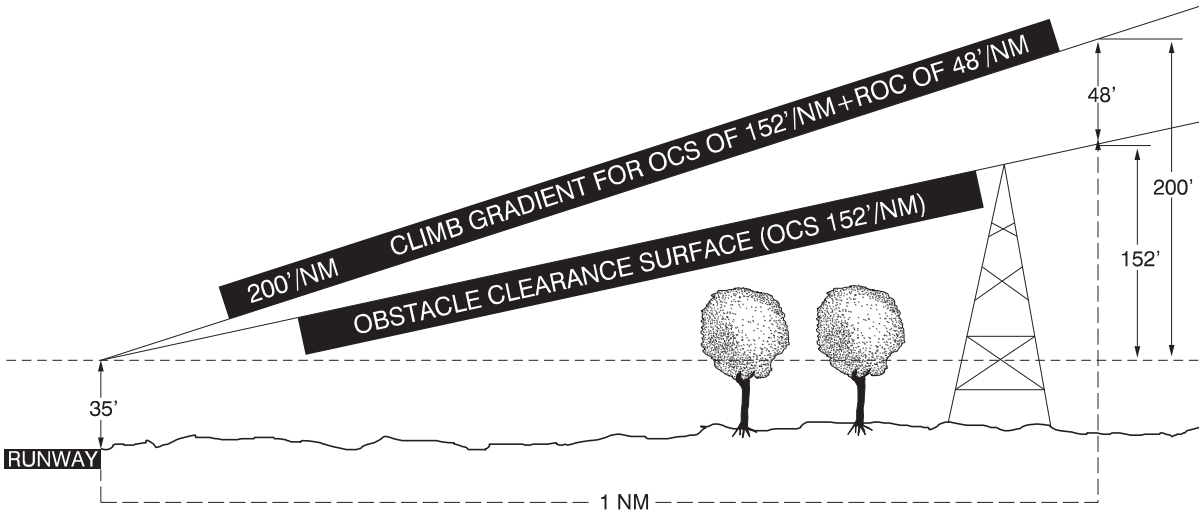


FIGURE 6.1

2. At runways where obstacles penetrate the OCS as illustrated in Figure 6.2, departure procedures will be specified. These procedures may describe:

   a. a detailed departure route or excluded sector(s) to avoid obstacles;

   b. A minimum climb gradient (CG) greater than 200' per NM which will result in an ROC of greater than 48' per NM. The increased ROC can be calculated by using the formula (.24h) divided by (.76d) where "h" is the height of the obstacle above the altitude (in feet) from which the climb is initiated and "d" is the distance in NM from the initiation of the climb to the obstacle. Another way simplified is: .24 X CG = ROC. Refer to GPH209 for additional information.;

   c. a visual climb to a specific altitude and/or fix;

   d. increased weather limits (take-off visibility); or

   e. a combination of the above.

Note: ATC terms such as “on departure, right turn climb on course” or “on departure, left turn on course” are not to be considered specific departure instructions. It remains the pilot's responsibility to ensure that terrain and obstacle clearance has been achieved by conforming with the IFR departure procedures. To ensure obstacle clearance, the pilot must continue a climb of at least 200 feet per NM until reaching MEA.

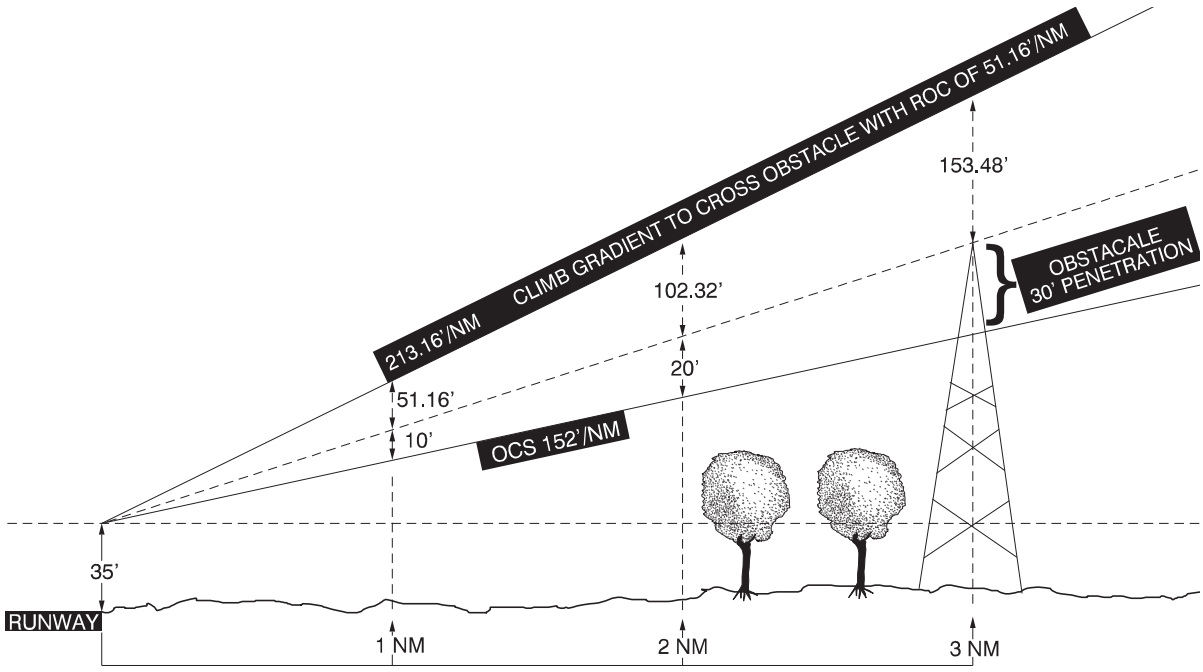


FIGURE 6.2

612. HELICOPTER ONLY PROCEDURES - MISSED APPROACH AND DEPARTURE CLIMB GRADIENT

1. The missed approach and departure segment criteria for all COPTER procedures (Helicopter Only Procedures) take advantage of a helicopter's increased climb capability as a result of a slower airspeed that results in a higher climb gradient when compared to that of a fixed-wing aircraft. Normally the obstacle clearance surface used to evaluate the missed approach and departure segment is a 20:1 inclined plane. However, this surface is twice as steep for a helicopter than for a fixed-wing aircraft. A helicopter's climb performance on COPTER ONLY procedures is therefore anticipated to be double that of a fixed-wing aircraft's climb gradient. A minimum climb gradient of at least 400 feet per NM is required. A helicopter with a ground speed of 70 KIAS is required to climb at a rate of 467 feet per minute (FPM). The advantage of using the 20:1 OCS for the COPTER missed approach segment instead of the 40:1 OCS used for a fixed-wing aircraft is that obstacles in the 40:1 missed approach segment do not have to be considered, and the MDA may be lower for helicopters than for fixed-wing aircraft. The minimum required climb gradient of 400 feet per NM for a helicopter on a missed approach or on departure will provide 96 feet of required obstacle clearance (ROC) for each NM of flight path.

   i.e. 70 KIAS X 400 Feet per NM/60 seconds = 467 FPM

613. SPECIFIED MINIMUM TAKE-OFF VISIBILITY (SPEC VIS)

1. Departure procedures which require a climb gradient in excess of 200′ per NM shall also specify a minimum visibility that will permit visual manoeuvring around the obstacle(s) until an altitude is reached where a climb gradient of 200′ /NM will provide the required obstacle clearance. This visibility is shown in departure procedures as SPEC VIS and is dependent upon aircraft category as shown in the chart below. SPEC VIS allows the pilot to visually depart an aerodrome when his aircraft performance is not capable

of achieving the minimum required published climb gradient for an IFR departure. It is NOT a VFR procedure. Aircraft category is based on the speed at which the aircraft manoeuvres.

AIRCRAFT CATEGORY	A	B	C D E
SPEC VIS	1	1 ½	2

2. Where a visual climb or manoeuvring is stated in the departure procedure, the visual portion of the procedure will terminate at a specified altitude. Pilots unable to meet the minimum climb gradient must comply with the SPEC VIS requirements corresponding to the appropriate aircraft category and be able to climb visually to the specified altitude.

Example: Anyville ON – departure reads –
RWY 05 – ½ – climb rwy hdg at 240′/NM to 600' then return to “BX” NDB BPOC
SPEC VIS – climb visual to “BX” NDB at 600′ or above BPOC

If a pilot departing RWY 05 flying a category C aircraft at this aerodrome can maintain a climb gradient of 240′ /NM, then Command/Group departure weather limits apply. However, if aircraft performance is less than the required climb gradient of 240′/NM, then departing aircraft must follow the SPEC VIS departure instructions and the weather minima for departure will be 600′-121′ (aerodrome elevation) = 479′ rounded to 500′ and 2 SM (from SPEC VIS chart) visibility. If the required climb gradient is considered excessive by the procedure design specialist, then it will not be published (see example in 3 below).

3. SPEC VIS shall not reduce take-off weather limits below that required by B-GA-100-001/AA-000 or 1 Cdn Air Div Flying Orders. For example, the Maniwaki Quebec departure for RWY 21 reads:

Example: RWY 21 – SPEC VIS – climb visual to 900' BPOC. Do not proceed west of Rwy before reaching 1500′

Using the 900' altitude and the SPEC VIS chart, a pilot flying a category C aircraft would require a ceiling of 900' - 656' = 244' rounded to 300' and a visibility of 2 SM. However, unless 1 Cdn Air Div Flying Orders state otherwise, the take-off weather minima will be the landing limits for the RNAV(GNSS) approach which is 600 and 1 ¾, rounded up to 2 to meet the minimum SPEC VIS requirement for category C.

614. DEPARTURE PROCEDURES

1. Airport runways within Canada are currently being assessed for departure obstacle clearance criteria. Until all runways have been assessed pilots will encounter four departure situations as follows:

a. at those aerodromes where runways have been assessed and there is **NO** penetration of the Obstacle Clearance Surface (OCS), normal take-off weather limits apply (as per B-GA-100-001/AA-000 or 1 Cdn Air Div Orders). These runways will be shown in the Aerodrome Chart take-off minima box as ½ after the runway number.

b. at aerodromes where runways have not been assessed for IFR departures the pilot is responsible for terrain and obstacle clearance. These runways will be listed as “NOT ASSESSED”;

c. at aerodromes where runways have been assessed for IFR departures and obstacles penetrate the (OCS), special procedures are published in the departure section, or on the aerodrome chart. An asterisk (*) after the runway number in the take-off minima box indicates a procedure published. The ½, when depicted after the runway number in the departure procedure narrative on the Aerodrome Chart, means that as long as the required climb gradient indicated in the departure procedure narrative can be met and maintained, normal 1 Cdn Air Div Orders, take-off weather limits apply. It also means that once the climb gradient is satisfied to the altitude indicated in the departure procedure restriction, thereafter, the minimum climb gradient of 200 feet per nautical mile can be applied. If the restrictions in the departure procedure narrative cannot be met, the Specified Minimum Take-off Visibility (SPEC VIS) IFR departure procedures apply; and

d. At military aerodromes, SIDs published in narrative form **without** a plan view diagram have **not been assessed** for obstacles and the pilot is responsible for obstacle clearance. SIDs depicted with a plan view diagram have been assessed for obstacles and following such SID procedures and required climb gradients will ensure obstacle clearance.

Note: Terrain and obstacle clearance responsibility also rests with the pilot when he/she chooses to deviate from published departure procedures while operating in VMC.

Note: The term "Before Proceeding On Course" (BPOC) is a term commonly used in GPH200 departure procedures. Quite often this term is both misused and misunderstood in the context of departure procedures. BPOC refers only to lateral guidance and not altitude. Currently BPOC is often used in conjunction with a climb gradient but without any reference to a HDG or track (or fix) to maintain during the climb out.

Example: St. John's Intl Newfoundland – departure reads –

Rwy 20–½ Requires minimum CLB gradient of 270 ft/NM to 900 BPOC

While lateral guidance is not specified in this procedure, the pilot is expected to Fly Rwy HDG at the specified climb gradient until reaching 900´ MSL. The correct wording in the example should read: "Rwy 20–½ Requires minimum CLB gradient of 270 ft/NM **on Rwy HDG** to 900´ BPOC" (straight forward interpretation) or "Rwy 20–½ Requires minimum CLB gradient of 270 ft/NM to 900´" (meaning if the aircraft can maintain the specified climb gradient to 900´, the pilot can turn in any direction at 400´ AAE). Nav Canada is aware of the problem and in conjunction with Transport Canada is in the process of correcting their publications to resolve the issue and correct the misuse of the term "BPOC". Until the problem is rectified the term "BPOC" must continue to be interpreted as lateral guidance even though the procedure may not refer to a HDG or track to maintain.

CHAPTER 7

ENROUTE

SECTION 1 GENERAL

701. SEPARATION BETWEEN FLIGHT LEVELS AND ALTITUDES ASL

When the altimeter setting is less than 29.92 inches there will be less than 1000 feet vertical separation between an aircraft flying at 17,000 feet ASL on the altimeter setting and an aircraft flying at Flight Level 180, therefore the lowest usable flight level will be assigned or approved in accordance with the following table:

Altimeter Setting	Lowest Usable Flight Level
29.92 or higher	180
29.91 to 28.92	190
28.91 to 27.92	200

702. IFR LATERAL SEPARATION

1. The following information is intended to acquaint pilots with basic non-radar lateral separation standards applied by Air Traffic Control, and thereby to facilitate flight planning and improved understanding of ATC techniques.

2. Lateral separation of IFR flights is provided by ATC in the form of “airspace to be protected” in relation to a holding procedure, instrument approach procedure or the approved track. The dimensions of protected airspace for a particular track take into account the accuracy of navigation which can be reasonably expected. For track segments within signal coverage of NDB, VOR or TACAN stations and along bearings/courses/radials of such facilities, protected airspace takes into account the accuracy of available track guidance, accuracy of airborne receiver and indicator equipment, and a small pilotage tolerance. Separation is considered to exist provided the airspaces protected for each aircraft do not overlap. It is essential therefore that accuracy capability of navigation equipment be maintained and that pilots of IFR or controlled VFR flights adhere as closely as practicable to the centreline of approved tracks.

3. In the low level airspace, the airspace to be protected is the full width of the airway. (Refer to figures in Article 304). In the high level airspace, all airspace is controlled within the Southern, Northern and Arctic control areas. As a result, a high level airway is “a prescribed track between specified navigation aids” and thus has no defined lateral dimensions. Therefore, the airspace to be protected for airways and/or tracks in the high level airspace is the same as that for low level airways. Along off-airway tracks the “airspace to be protected” for non-RNPC certified aircraft is 45 NM each side of that portion of the track which is beyond navigational and signal coverage range. Along off-airway tracks, the “airspace to be protected” for RNPC certified aircraft is 10 NM each side of the track.

4. Normally, the airspace to be protected for an approved track will be predicated on the premise that the changeover from one navigation reference to another will take place approximately midway between facilities. Where this is not possible due to a difference in the signal coverage provided by two adjacent navigation aids, a changeover point (COP) with mileage to the appropriate navigation aid on an airway segment will be published.

5. Additional airspace will be protected at and above FL 180 on the manoeuvring side of tracks which change direction by more than 15° overhead navigation aids or intersections (Figure 7.1). It is expected that pilots of aircraft operating below FL 180 will make turns so as to remain within the normal width of airways or airspace protected for off-airway tracks.

6. Where a Victor airway is established based on a VOR/VORTAC and NDB, the boundaries of that airway will be those of a LF/MF airway.

7. With Area Navigation (RNAV) systems, aircraft operations are being conducted along existing VOR and/or NDB airways utilizing a navigational signal other than the one defining the airway. It is generally accepted that RNAV systems exceed the accuracy of ground based navigation aids, therefore, maintaining the

aircraft within the VOR/NDB airway width boundaries is not an issue. However, because all databases of RNAV equipped aircraft program enroute navigation facilities and fixes as “fly-by waypoints”, aircraft operating in a RNAV mode will always “turn anticipate” an enroute waypoint. Turn anticipation for extreme changes in airway tracks i.e., in excess of 90 degrees, may cause the aircraft to exceed the protected lateral separation area of the VOR or NDB airway. Therefore, pilots operating aircraft in a RNAV mode on VOR or NDB airways are expected to make turns to remain within the width of the airway.

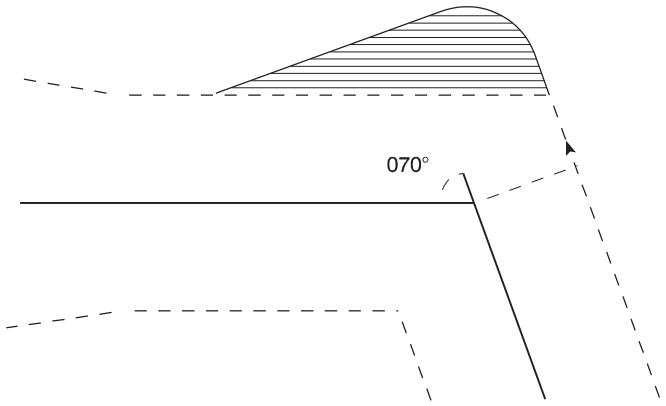


FIGURE 7.1

703. MINIMUM IFR ALTITUDES

1. Except when taking off or landing, aircraft in IFR flight shall be operated at least 1,000 feet above the highest obstacle within a horizontal radius of 5 NM of the aircraft. Exceptions to this are flights within designated mountainous regions, and designated airways and air routes.

Note: The established Minimum Obstruction Clearance Altitude (MOCA) for IFR operations provides obstacle clearance above the highest obstacle within the following areas:

a. 1,000 feet:

(i) airways and air routes outside of Designated Mountainous Areas,
(ii) certain airway and air route segments within Designated Mountainous Areas, which are used in the arrival or departure phase of flight,
(iii) Safe Altitude 100 NM outside of Designated Mountainous Areas,
(iv) all Minimum Sector Altitudes (MSA),
(v) instrument approach transitions (including DME arcs),
(vi) radar vectoring areas [except as in (c)(iii)], and
(vii) Area Minimum Altitude (AMA) as shown on the Enroute charts outside of Designated Mountainous Areas;

b. 1,500 feet:

(i) airways and air routes within Designated Mountainous Areas 2, 3, and 4;
(ii) Safe Altitudes 100 NM within Designated Mountainous Areas 2, 3, and 4; or

c. 2,000 feet:

(i) airways and air routes within Designated Mountainous Areas 1 and 5 with the exception of those segments described in (a)(ii),
(ii) Safe Altitudes 100 NM within Designated Mountainous Areas 1 and 5,
(iii) certain radar vectoring areas within Designated Mountainous Areas, and
(iv) Area Minimum Altitude (AMA) as shown on the Enroute charts within Designated Mountainous Areas.

2. Minimum Enroute Altitudes (MEAs) have been established for all designated low level airways and air routes in Canada. An MEA is defined as the published altitude ASL between specified fixes on airways or air routes which assures acceptable navigational signal coverage, and which meets IFR obstacle clearance requirements.

3. The minimum flight plan altitude shall be the nearest altitude or flight level consistent with the direction of flight that is at or above the MEA. Unless the MEA is one which is consistent with the direction of flight, it is not to be used in the flight plan or flight itinerary.

4. As different MEAs may be established for adjoining segments or airways or air routes, aircraft are, in all cases, to cross the specified fix at which a change in the MEA takes place, at the higher MEA.

5. To ensure adequate signal coverage, many of the MEAs on low level airways are established at altitudes which are higher than that required for obstacle clearance. When this occurs, a MOCA is also published to provide the pilot with the minimum IFR altitude for obstruction clearance. A MOCA is defined as that altitude between radio fixes on low level airways which meets the IFR obstruction clearance requirements for the route segment. Where the MOCA is lower than the MEA, the MOCA is published on the *Enroute Charts* in addition to the MEA. Where the MEA and MOCA are the same, only the MEA is published.

6. The MOCA, or the MEA when the MOCA is not published, is the lowest altitude for the airway or air route segment at which an IFR flight may be conducted under any circumstances. These altitudes are provided so that pilots will be readily aware of the lowest safe altitude which may be used in an emergency such as a malfunctioning engine or due to icing conditions. Under ICAO standard atmosphere conditions (ISA), they provide a minimum of 1,000 feet of clearance above all obstacles lying within the lateral limits of all airways and air routes, including those in designated mountainous regions.

7. Pressure altimeters are calibrated to indicate true altitude under ISA conditions, and any deviation from ISA will result in an erroneous altimeter reading. When temperatures are extremely cold, true altitudes will be significantly lower than indicated altitudes. Although pilots may fly IFR at the published MEA/MOCA, in the winter, when air temperatures are much lower than ISA, they should operate at altitudes of at least 1,000 feet above the MEA/MOCA.

   Note: When flying at a flight level in an area of low pressure, the true altitude will always be lower than the corresponding flight level. For example, this "pressure error", in combination with a temperature error, can produce errors of up to 2,000 feet while flying in the standard pressure region at FL100. Further, mountain waves in combination with extremely low temperatures may result in an altimeter over-reading by as much as 3,000 feet.

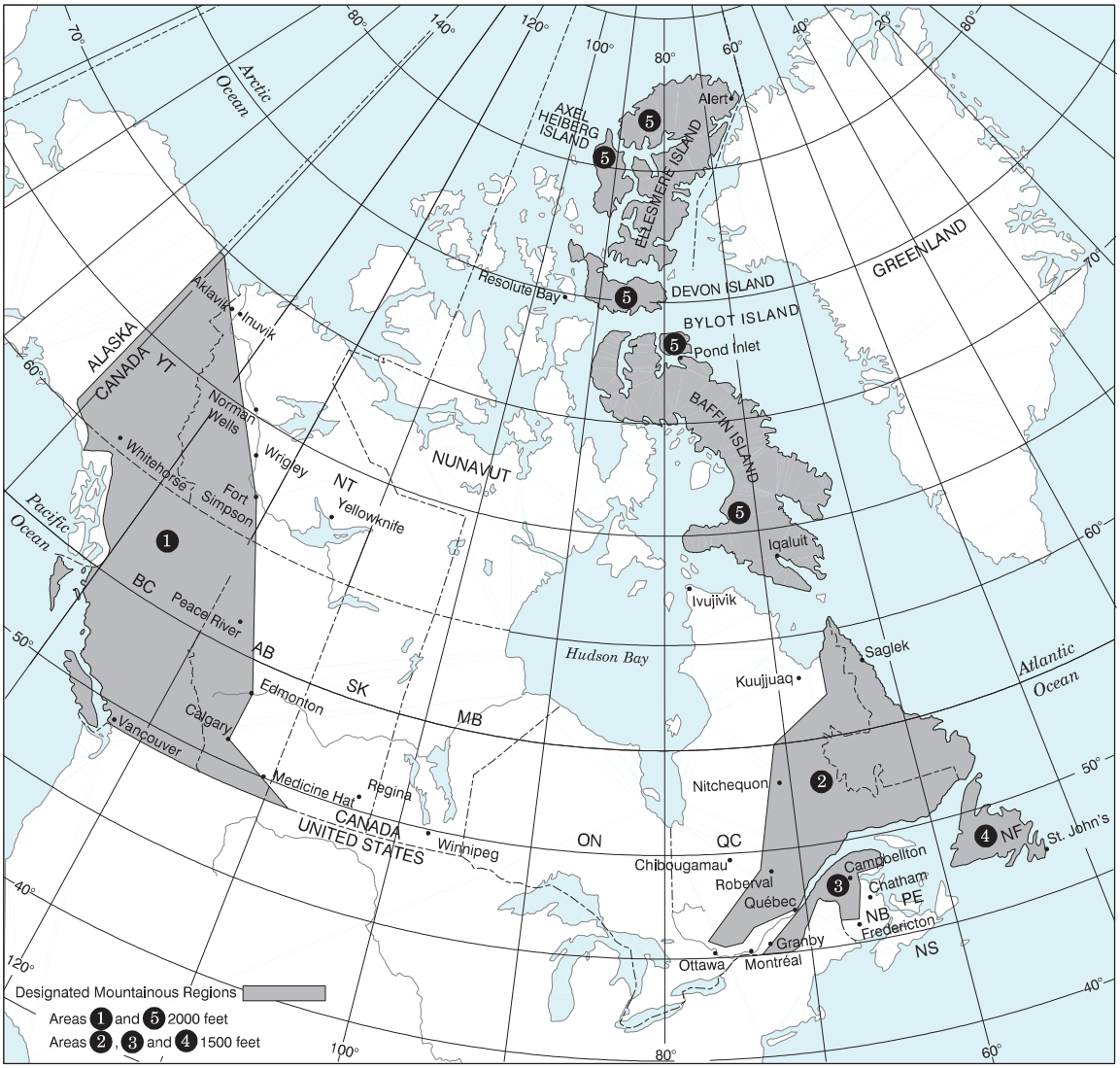
8. AREA MINIMUM ALTITUDES (AMA) have been established for use as an emergency minimum safe IFR altitude off airways and air routes in Canada. AMA's provide 1000 feet of clearance (2000 feet in mountainous areas), rounded up to the next highest 100′ increment over known obstacles or terrain, whichever is highest, within delineated geographic areas. South of 60° North, these areas are 2° of latitude by 4° of longitude and north of 60° North they are 2° of latitude by 8° of longitude and are depicted on the enroute charts. It should be noted that AMA's are safe altitudes and as such do not assure communications coverage.

704. ALTITUDES IN DESIGNATED MOUNTAINOUS REGIONS

1. The Designated Mountainous Regions of Canada are depicted on the chart on the next page.

2. IFR flights within Designated Mountainous Regions, but outside of areas for which minimum altitudes for IFR operations have been established (including minimum radar vectoring altitudes, MOCAs, transition altitudes, 100NM safe altitudes, MSAs and AMAs), shall be flown at an altitude which is at least 2000 feet above the highest obstacle within 5 NM of the aircraft when in areas 1 and 5 and 1500 feet when in areas 2, 3 and 4.

DESIGNATION OF MOUNTAINOUS REGIONS



Mountainous regions in Canada are designated as follows: The line joining two consecutive turning points is a great circle, unless otherwise stated, except where such points are on the same parallel of latitude when the line is along that parallel of latitude.

❶ The land area bounded by a line N69°35' W141°00' to N69°35' W140°00' to N68°14' W135°00' to N61°45' W121°14' to N53°34' W113°31' to N51°06' W114°01' to N49°00' W108°15', along the U.S.–Canada boundary to N48°29'38" W124°43'35"to N48°30' W125°00' to N52°00' W132°00' to N54°35' W134°30' to N54°30' W134°00' to N54°30' W132°30' to N54°42'30" W130°36'30"; along the Alaska–Canada boundary to N69°35' W141°00', the point of beginning.

❷ The area bounded by a line N59°00' W66°00' to N57°00' W66°00' to N55°00' W71°00' to 49°00' W73°00' to N46°00' W77°00' to N45°40' W76°00' to N45°40' W75°00' to N45°50' W74°00' to N46°30' W73°00' to N46°59' W71°00'; along the north shore of the St. Lawrence River, the north shore of the Gulf of St. Lawrence, and the coastline of Labrador and Quebec to N59°00 W66°00', the point of beginning.

❸ The area bounded by a line N48°30' W64°15' to N48°20' W65°00' to N48°20' W66°00' to N47°30' W65°50' to N46°15' W66°30' to N46°15' W67°47', along the U.S.–Canada boundary to N45°01' W73°00' to N46°00' W72°00' to N47°00' W70°30'; along the south shore of the St. Lawrence River and the west shore of the Gulf of St. Lawrence to N48°30' W64°15', the point of beginning.

❹ The Island of Newfoundland.

❺ The Islands of Baffin, Bylot, Devon, Ellesmere and Axle Heiberg.

705. ALTITUDE REPORTING PROCEDURES

1. Although it is not required for pilots to report altitude information to ATC, pilots, if not operating in radar airspace (i.e. radar-identified by ATC), should report reaching the altitude to which the flight has been initially cleared. When climbing or descending en route, pilots should report when leaving a previously-assigned altitude and when reaching the assigned altitude.

2. On initial contact with ATC, or when changing from one ATC frequency to another, when operating in radar or non-radar airspace, pilots of IFR and CVFR flights should state the assigned cruising altitude and, when applicable, the altitude through which the aircraft is climbing or descending.

3. In order for ATC to use Mode C altitude information for separation purposes, the aircraft Mode C altitude readout must be verified. The Mode C altitude is considered valid if the readout value does not differ from the aircraft reported altitude by more than 200 ft. The readout is considered invalid if the difference is 300ft or more. Therefore, it is expected that pilot altitude reports, especially during climbs and descents, will be made to the nearest 100-ft increment.

   Example:

   WINNIPEG CENTRE, GONZO 04, LEAVING 8 300 FEET, CLIMBING TO FLIGHT LEVEL 230.

   If the phrase "report level", "report leaving" or "report passing" is used by ATC, the pilot shall comply (B-GA-100, ATC Clearances and Instructions).

706. ALTITUDE ASSIGNMENT

1. Pilots will normally file flight plans and be assigned altitudes appropriate to the airway, air route or direction of flight.

2. **Minimum IFR Altitude**

   Within controlled airspace, ATC is not permitted to approve or assign any IFR altitude below the minimum IFR altitude. To ATC, the minimum IFR altitude is the lowest IFR altitude established for use in a specific airspace and, depending on the airspace concerned, this maybe:

   a. a Minimum Enroute Altitude (MEA);

   b. a Minimum Obstruction Clearance Altitude (MOCA);

   c. a Minimum Sector Altitude (see Note);

   d. a Safe Altitude 100 NM (see Note);

   e. an Area Minimum Altitude (AMA) (see Note); or

   f. a Minimum Vectoring Altitude.

   On an airway, altitudes below the MEA, but not below the MOCA, may be approved by a controller when specifically requested by the pilot of an IFR flight in the interest of flight safety (e.g., due to icing conditions). Pilots should note that the required signal coverage to navigate within the airspace protected for their route may not be adequate. This could result in conflict with adjacent air traffic or collision with terrain.

Note: Unless these areas are centered on a VOR/DME, TACAN, or other aid which provides distance information, pilots should be certain they are within the area for which they are being cleared before accepting the assigned altitude.

DME Intersections on a Minimum En route Altitude

3. The purpose of these fixes is to develop an airway segment where lower MEAs may be applied, thus reducing the high descent rates that otherwise are required when on initial approach to destination.

4. Pilots without DME normally will not be able to use these lower MEAs and may conceivably experience delays in receiving approach and departure clearances due to other traffic operating below the conventional MEA (i.e., the MEA required for non-DME equipped aircraft). However, in a radar environment, the non-DME equipped aircraft may be cleared at the lower MEA where it will be provided with radar service while operating below the conventional MEA.

5. ATC may assign an altitude not appropriate to the airway, air route or direction of flight if:

   a. a pilot requests it because of icing, turbulence, or fuel considerations provided:

      (i) the pilot informs ATC of the time or location at which he can accept an appropriate altitude; and
      (ii) the altitude has been approved by affected ATC units/sectors; or

   b. an aircraft is:

      (i) holding, arriving or departing;
      (ii) conducting a flight inspection of a NAVAID; or
      (iii) operating within an altitude reservation; or

   c. no alternative separation minima can be applied provided:

      (i) the altitude has been approved by affected ATC units/sectors; and
      (ii) the aircraft is cleared to an appropriate altitude as soon as possible; or

   d. the airspace is structured for a one-way traffic flow.

Note 1. In situation 2.a. the pilot will be requested to advise when able to accept an appropriate altitude. In situation 2.c. the aircraft will be recleared to an appropriate altitude as soon as operationally feasible. Due to safety implications, use of altitudes inappropriate for direction of flight must be limited and requests must not be made solely for fuel efficiency reasons. Pilots should make requests only to avoid a fuel situation that might cause an otherwise unnecessary refueling stop short of flight planned destination. ATC will not ask the pilot to substantiate a request and if ATC is unable to approve the request the controller will state the reason and request the pilot's intention.

Note 2. In the application of 2.a. or 2.b. above, in high level radar controlled airspace, aircraft at an altitude not appropriate for direction of flight will be issued radar vectors or off-set tracks to establish the aircraft at least 5 NM from the centre line of an airway or published track displayed on radar.

"Phraseology: FOR VECTORS (direction) OF (airway, track) TURN (left/right) TO HEADING (degrees).
ADVISE IF ABLE TO PROCEED PARALLEL OFFSET.
PROCEED OFFSET (number) MILES (right/left) OF CENTRE LINE (track/route) FROM (significant point/now) UNTIL (significant point/time).
CANCEL OFFSET."

Note 3. The pilot of an aircraft assigned an altitude not appropriate to the direction of flight will not be authorized by ATC to omit position reports when in a radar environment.

707. CANCELLATION OF IFR

1. Pilots may cancel IFR or change to VFR rules provided they are operating in VFR weather conditions and are outside Class A or Class B airspace.

2. When conditions indicate that the remainder of a flight can be conducted in accordance with VFR, the pilot will notify ATC by transmitting one of the following messages:

   a. To cancel IFR: "CANCEL IFR" or "CANCELLING IFR".

b. To change/revise an IFR flight plan to a VFR flight plan: “CHANGE FLIGHT PLAN TO VFR”.

Note: It is drawn to the attention of pilots that under conditions requiring the filing of a VFR flight plan, the phraseology in b) must be used. The phraseology in a) will only result in the discontinuation of IFR separation, but will not automatically close your flight plan or flight itinerary. Therefore SAR action will be initiated in accordance with Article 405 if an arrival report is not filed.

3. A pilot requesting to change an IFR flight to VFR flight will be instructed to contact the nearest FSS to file a VFR flight plan. In cases where an aircraft is not able to contact an FSS the ATC unit becomes responsible for ensuring the VFR flight plan is filed.

4. If using the phraseology in 2.a) above, the pilot can expect ATC to ask if your desire is to close the flight plan. If you do not want to close the flight plan, ATC should reply with: "BE ADVISED THAT AN ARRIVAL REPORT IS REQUIRED AFTER LANDING" (i.e. Your flight plan/itinerary must be closed after landing).

5. These procedures should not be used when IFR conditions are expected in a subsequent portion of a flight. If, however, following the use of either of these procedures, subsequent IFR operation becomes necessary, a new IFR flight plan must be filed and an ATC clearance received before encountering IFR conditions.

708. COMPOSITE FLIGHT PLAN PROCEDURES

1. A filed composite flight plan is only passed to the "destination unit", FSS or ACC, and all en route ACC through which controlled flight is planned. However, en route FSS units may not be aware of the flight plan when contacted after the IFR portion of the flight. It is not necessary to re-file a VFR flight plan with these FSS's because a composite flight plan is in effect until closed. Continue the flight, passing position reports as required and ensure the flight plan is closed with the "destination unit" after completion of the flight.

2. During the VFR portion of a composite flight and before the IFR portion, contact with an ATC unit should be made well in advance of reaching the change over point. If the ATC unit is not an ACC, or the "destination unit", they may not have the filed flight plan. Advise the ATC unit that a composite flight plan was filed and to contact their ACC for the required clearance.

3. Always ensure that a flight plan is closed after completion of the flight. ATC towers will close IFR flight plans and will usually close a VFR or composite flight plan after landing. However, pilots may be asked to close their own VFR flight plans, if traffic workload is heavy.

SECTION 2 ALTIMETER SETTING PROCEDURES WITHIN CANADA

709. GENERAL

IFR flights within controlled airspace must be operated at a cruising altitude which has been approved by the appropriate air traffic control unit, or elsewhere at an altitude or flight level appropriate for the direction of flight as required in GPH205.

710. ALTIMETER SETTING REGION

1. Definitions

a. Altimeter Setting (QNH) is the setting applied to an altimeter so that it will indicate altitude above sea level.

b. Altimeter Setting Region means low level airspace of defined dimensions, designated and defined in the *Designated Airspace Handbook (TP1820)* (depicted on Low Altitude Enroute Charts).

2. Procedure

a. Prior to taking off from an aerodrome within the Altimeter Setting Region, the aircraft altimeter shall be set to the current altimeter setting of that aerodrome or, if setting cannot be obtained, to aerodrome elevation.

b. During flight within the Altimeter Setting Region, the aircraft altimeter shall be set to the current altimeter setting of the nearest station along the route of flight or, if such stations are separated by more than 150 nautical miles, to the setting of the nearest station to the route of flight.

c. When approaching the destination aerodrome, while operating within the Altimeter Setting Region, the aircraft altimeter shall be set to the current altimeter setting of that aerodrome, if such setting is obtainable.

d. Except as otherwise authorized by Air Traffic Control, the altimeter of an aircraft flying from the Altimeter Setting Region into the Standard Pressure Region shall be set to 29.92 inches of mercury (1013.2 millibars) immediately upon entry into the Standard Pressure Region.

711. STANDARD PRESSURE REGION

1. Definitions

a. Standard Pressure (QNE) is the setting made to an altimeter so that it will indicate the flight level of an aircraft.

b. Standard Pressure Region includes:

(i) All airspace over Canada at and above 18,000 feet ASL.
(ii) All low level airspace over Canada, below 18,000 feet above sea level, lying outside the lateral limits of the Altimeter Setting Region.

c. Flight level is the indicated height of an aircraft when the altimeter is set to standard pressure of 29.92 inches or 1013.2 mbs expressed in hundreds of feet. Examples are

Altimeter Indication	Flight Level
1,000	10
1,500	15
2,000	20
5,000	50
10,000	100
15,000	150
20,000	200

2. Enroute Procedures

a. When in level cruising flight the pilot shall operate his aircraft at the appropriate flight level by reference to his altimeter which will be set to Standard Pressure (QNE) when the aircraft is operated within the Standard Pressure Region. When it is necessary to change the setting of an altimeter, as is required when a flight progresses from one region to another, such change shall always be made within the Standard Pressure Region prior to entering, or after leaving, the Altimeter Setting Region. In order to effect transition from Standard Pressure to Altimeter Setting (QNH), the pilot shall obtain the current altimeter setting from the nearest station along the route of flight as far as practicable before reaching the point at which the transition is to be made.

b. When transmitting position reports from within the Standard Pressure Region the altitude of the aircraft shall be reported as “Flight Level”. Example: “Flight Level 50 (five zero)”.

3. Arrival Procedures

In the event that no holding will be required and normal descent from cruising flight level to an airport within the Standard Pressure Region is possible, the descent shall be accomplished by reference to the altimeter set on altimeter setting (QNH). In this event, transition to altimeter setting is to be made immediately prior

to commencing descent.

4. Holding Procedures

When an aircraft is conducting a holding procedure at an airport within the Standard Pressure Region such holding shall be accomplished by reference to the Standard Pressure (QNE). If a holding procedure has been required prior to commencing an instrument approach procedure within the Standard Pressure Region, the transition from QNE to QNH shall be made immediately prior to descending below the lowest flight level at which holding has been conducted.

ALTIMETER SETTING AND STANDARD PRESSURE REGIONS

5. Departure Procedures

When departing from an airport within the Standard Pressure Region climb shall be conducted with reference to the altimeter set at QNH until immediately prior to reaching the flight level at which flight is to be maintained, at which time the altimeter will be set at 29.92 inches of mercury or 1013.2 millibars.

6. Transition Procedures

When climbing from the Altimeter Setting Region to the Standard Pressure Region, pilots shall set their altimeters to standard pressure (QNE) immediately after entering the Standard Pressure Region. When

descending into the Altimeter Setting Region, pilots shall set their altimeters to the appropriate station altimeter setting immediately prior to descending into the Altimeter Setting Region. Normally, the pilot will receive the appropriate QNH as part of his ATC clearance, prior to commencing descent. If, for any reason, the QNH is not incorporated in the clearance, the pilot shall obtain the station altimeter setting (QNH).

712. ALTIMETER SETTING PROCEDURES DURING ABNORMALLY HIGH PRESSURE WEATHER CONDITIONS

1. When barometric pressure settings exceed 31.00 inches of mercury (Hg) the following procedures are in effect:

   a. Altimeters of all IFR, CVFR and VFR aircraft are to be set to 31.00 inches for enroute operations below 18,000′ 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 altimeters above 31.00 inches will retain a 31.00″ setting through the entire approach. Aircraft on departure or missed approach will set 31.00″ prior to reaching any mandatory or fix crossing altitude, or 1500′ AGL whichever is lower.

   b. For aircraft operating IFR and unable to set the current altimeter setting, the following restrictions apply:

      (i) Increase the weather requirements for destination, alternate and take-off, as stated in B-GA-100-001/AA-000 Vol. 1 Chap 5 paras 16 to 29 inclusive. Add 100' and $^{1}/_{4}$ SM to the ceiling and visibility minima for each $^{1}/_{10}$ of an inch, or any portion thereof, the altimeter setting is over 31.00″

      Example: Destination altimeter setting is 31.28″ PAR wx minima is 200 & $^{1}/_{2}$, add 300 & $^{3}/_{4}$ for new wx minima of 500 & $1^{1}/_{4}$.

      (ii) During an instrument approach 31.00″ will remain set. DH or MDA will be deemed to have been reached when the published altitude is displayed on the altimeter.

      (iii) Authorized CAT II ILS operations are not affected by the above restrictions.

2. Although all military airfields, including ships, are capable of accurately measuring barometric pressures above 31.00″, some civil airfields do not have this capability. Those airfields which cannot report barometric pressures in excess of 31.00″ will report this pressure as “in excess of 31.00 inches of Hg.” Flight operations into and out of these airfields are restricted to VFR.

3. Pilots are reminded that the aircraft's true altitude will be higher than indicated. Maximum possible use should be made of visual approach aids during VFR and the final portion of IFR approaches.

4. ATC will issue actual altimeter settings and confirm with the pilot that 31.00″ Hg is set on the pilot's altimeters for enroute operations below 18,000′ ASL in the affected areas.

713. ALTIMETER SETTING PROCEDURES DURING APPROACHES

1. Cold Temperature Corrections

   Pressure altimeters are calibrated to indicate true altitude under ISA conditions. Any deviation from ISA will result in an erroneous reading on the altimeter. In a case when the temperature is higher than the ISA, the true altitude will be higher than the figure indicated by the altimeter. When the temperature is lower than the ISA, the true altitude will be lower than the figure indicated by the altimeter. The altimeter error may be significant, and becomes extremely important when considering obstacle clearances in very cold temperatures.

   In conditions of extreme cold weather (-30° Celsius or less), pilots shall add the values derived from the Temperature Correction Chart to all published procedure altitudes, including minimum sector altitudes, 100 NM safe altitudes, DME arcs, published missed approach altitudes, etc., to ensure adequate obstacle

clearance. Unless otherwise specified, the destination aerodrome elevation is used as the elevation of the altimeter source.

With respect to altitude corrections, the following procedures apply:

a. IFR assigned altitudes may be either accepted or refused. Refusal in this case is based upon the pilot's assessment of temperature effect on obstruction clearance;

b. IFR assigned altitudes accepted by the pilot shall not be adjusted to compensate for cold temperature, i.e., if a pilot accepts "maintain 3000", an altitude correction shall not be applied to 3000 ft;

c. radar vectoring altitudes assigned by ATC are temperature compensated and require no correction actions by pilots.

2. Procedure Altitudes and Current Altimeter Setting

All altitudes published in the GPH200 are minimum altitudes, which meet obstacle clearance requirements when international standard atmosphere (ISA) conditions exist, and when the aircraft altimeter is set to the current altimeter setting for that aerodrome. The altimeter setting may be a local or a remote setting when so authorized on the instrument approach chart. A current altimeter setting is one provided by approved direct reading or remote equipment, or by the most recent routine hourly weather report. These readings are considered current up to 90 minutes from the time of observation. Care should be exercised when using altimeter settings older than 60 minutes or when pressure has been reported as falling rapidly. In these instances, a value may be added to the published DH/MDA in order to compensate for falling pressure tendency (0.01 inches of mercury = 10 feet correction). For all flight operations, temperature corrections to the published altitudes shall be applied IAW the following temperature correction chart to ensure adequate obstacle clearance:

TEMPERATURE CORRECTION CHART

AERODROME TEMP °C															
	200	**300**	**400**	**500**	**600**	**700**	**800**	**900**	**1000**	**1500**	**2000**	**3000**	**4000**	**5000**	**HAA/HAT**
0	20	20	30	30	40	40	50	50	60	90	120	170	230	290	
-10	20	30	40	50	60	70	80	90	100	150	200	290	390	490	
-20	30	50	60	70	90	100	120	130	140	210	280	430	570	710	
-30	40	60	80	100	120	130	150	170	190	280	380	570	760	950	
-40	50	80	100	120	150	170	190	220	240	360	480	720	970	1210	
-50	60	90	120	150	180	210	240	270	300	450	600	890	1190	1500	
HAA/HAT	**200**	**300**	**400**	**500**	**600**	**700**	**800**	**900**	**1000**	**1500**	**2000**	**3000**	**4000**	**5000**	**HAA/HAT**

To ensure adequate obstacle clearance the values derived from this chart or via automated means using a FMS derived solution shall be:

a. added to the published DH or MDA and step-down fixes inside the FAF in the final approach segment, or, where no FAF is depicted, all step-down fixes inside the procedure turn whenever the outside air temperature is 0° Celsius or less;

b. added to ALL altitudes in the procedure within Designated Mountainous Regions, including MSA, 100 NM Safe Altitude, Missed Approach Altitude, whenever the outside air temperature is 0° Celsius or less;

c. added to ALL altitudes in the procedure, including MSA, 100 NM Safe Altitude, Missed Approach Altitude:

(i) whenever the outside air temperature is -30° Celsius or less; or

(ii) whenever the procedure turn, intermediate approach altitude HAT's/HAA are 3000 feet or more above the altimeter setting source;

d. ATC will continue to apply correction to Minimum Vectoring Altitudes.

Note: Pilots should advise ATC of corrections in excess of 80 ft.

Example: Published MDA 1180′ ASL
HAT 402
Temp -20°C
Correction 60′
MDA to use: 1180 + 60 = 1240′ ASL

3. Remote Altimeter Setting

Normally, approaches shall be flown using the current altimeter setting only for the destination aerodrome. However, at certain aerodromes where a local pressure setting is not available, approaches may be flown using a current altimeter setting for a nearby aerodrome. Such an altimeter setting is considered a remote altimeter setting, and authorization for its use is published in the top left-hand corner of the approach chart plan view.

If the use of a remote altimeter setting is required for limited hours only, an altitude correction will be included with the authorization. When the remote altimeter setting is used, the altitude correction shall be applied as indicated. If the use of a remote altimeter setting is required at all times, then the correction is incorporated into the procedure at the time it is developed.

Examples
1: When using Mont Joli altimeter setting add 200′ to all procedure altitudes.
2: Use London altimeter setting.

If the altitude correction results in the calculated rate of descent exceeding design parameters, the words “circling minima apply” will be added to the note in the top left-hand corner of the approach chart. The intent of this note is to draw attention to the pilot so that he/she cannot use straight-in minima when using the remote altimeter source. However, this does not prohibit the pilot from landing straight in if he/she has adequate visual reference at circling minima and is suitably located to land straight in.

Example: When using St-Hubert altimeter, add 120 ft to all procedure altitudes; circling minima applies

SECTION 3 PROCEDURES

714. IFR FLIGHT IN VFR WEATHER

An IFR clearance provides separation between IFR aircraft only. Pilots operating IFR must be aware of the need to provide their own separation visually from VFR aircraft when operating in VFR weather conditions.

715. "1000 ON TOP" IFR FLIGHT

1. “1000 on top” IFR flight may be conducted provided:

a. The flight is made at least 1000 feet above all cloud, haze, smoke, or other formation.

b. The flight visibility above the formation is at least 3 miles.

c. The top of the formation is well defined.

d. The altitude appropriate to the direction of flight is maintained when cruising in level flight if applicable. In military controlled airspace, aircraft conducting flight training manoeuvres with associated abrupt changes in altitude shall maintain a vigilant lookout at all times.

e. “1000 on top” flight has been authorized by the appropriate ATC unit.

f. The fuel reserve calculations shall be based upon the weather requirements for the airport of intended landing IAW B-GA-100-001/AA-000 and 1 Cdn Air Div Orders.

Note: "At least 1000 on top" IFR flight shall only be conducted in Class B airspace below 12,500 ASL, Class C, D or E airspace and above the applicable minimum IFR altitude.

2. ATC does not apply separation to aircraft operating 1000 on top except in the following conditions:

a. at night, separation is applied between an aircraft operating 1000 on top and other aircraft if any of the aircraft are holding; and

b. between aircraft operating 1000-ft on top and an aircraft operating on an altitude reservation approval

716. UNCONTROLLED AIRSPACE – RECOMMENDED OPERATING PROCEDURES

1. When aircraft are manoeuvring in the vicinity of uncontrolled airports, or cruising in uncontrolled airspace, the lack of information on the movements of other aircraft operating in close proximity may create a potential hazard to all concerned. To alleviate this situation, all pilots are advised that:

a. When operating in Class G airspace, they should continuously monitor the frequency 126.7 MHz, whenever practicable.

b. Position reports should be made over all navigational aids along the route of flight to the nearest station having air/ground communications capability. These reports should be made on frequency 126.7 MHz whenever practicable. If it is necessary to use another frequency to establish communications with the ground station, the report should also be broadcast on 126.7 MHz for information of other aircraft in the area. The report should contain: present position, track, altitude, altimeter setting in use, next position and estimated time of arrival.

c. Immediately before changing altitude, commencing an instrument approach, or departing, IFR pilots should broadcast their intentions on 126.7 MHz whenever practicable. Such broadcasts should contain adequate information to enable other pilots to be fully aware of the position and intentions so that they can determine if there will be any confliction with their flight paths.

d. At aerodromes where a frequency other than 126.7 MHz has been designated as the MF, arriving pilots shall first broadcast their intentions on 126.7 Mhz before changing to the MF. If conflicting IFR traffic becomes evident this change should be delayed until the confliction is resolved. Pilots departing IFR should broadcast their intentions on 126.7 MHz in addition to the MF prior to take-off. It is strongly recommended that 126.7 MHz be monitored along with the MF if the aircraft is equipped with dual radios.

e. The preceding reporting requirements are considered the minimum necessary. Pilots are encouraged to make additional reports whenever the possibility of conflicting IFR traffic is suspected. For example, reporting prior to overflying a facility where cross traffic is probable or where there is a published instrument approach procedure.

f. There is no frequency comparable to 126.7 Mhz for use by aircraft equipped only with UHF. However, pertinent UHF traffic information will be relayed on the MF by the flight service specialist

717. CLEARANCES – LEAVING OR ENTERING CONTROLLED AIRSPACE

1. ATC will use the phrase "while in controlled airspace" in conjunction with the altitude if an aircraft will be entering or leaving controlled airspace. In addition, ATC will specify the lateral point and altitude at which an aircraft is to leave or enter controlled airspace laterally if the instruction is required for separation purposes.

Example: LEAVE/ENTER CONTROLLED AIRSPACE (number) MILES (direction) OF (fix) AT (altitude).

2. Aircraft destined to airports which underlie controlled low level airspace and for which there is a published instrument approach procedure will be cleared out of controlled airspace (vertically) via the published instrument approach procedure.

Example: ATC CLEARS (aircraft identification) OUT OF CONTROLLED AIRSPACE VIA (name, type) APPROACH.

3. Aircraft destined to airports which underlie controlled low level airspace and for which there is not a published instrument approach procedure will be cleared to the minimum enroute altitude and asked to advise of its intentions.

Example: ATC CLEARS (aircraft identification) TO MAINTAIN (altitude) ADVISE YOUR INTENTIONS.

Pilots may elect to cancel IFR, depart controlled airspace laterally, or request clearance to another destination.

4. Aircraft destined to airports which underlie controlled high level airspace and where there is no minimum IFR altitude established that would prohibit such a manouver will be cleared out of controlled high level airspace.

Example: ATC CLEARS (aircraft identification) OUT OF (type of airspace).

718. VFR CLIMB AND DESCENT – IFR FLIGHTS

1. ATC may issue an IFR clearance for an aircraft to depart, climb or descend VFR until a specific time, altitude, or location provided:

a. the pilot requests it;

b. the aircraft is outside of Class A airspace;

c. the aircraft is within Class B airspace at or below 12,500 feet ASL or within Class C, D, or E airspace; and

d. the weather conditions permit.

2. Pilots are reminded that during such a VFR restriction they must provide their own separation from other IFR aircraft as well as the VFR traffic. Controllers normally issue traffic information concerning other IFR aircraft, particularly in marginal weather conditions. If compliance with the restriction is not possible, the pilot should immediately advise ATC and request an amended clearance.

719. VISUAL CLIMB AND DESCENT

1. General

Application of visual climbs and descents in VMC, under certain circumstances, provides both controllers and pilots an operational advantage in the conduct of safe and orderly flow of air traffic. A visual climb/descent is categorized in two different and distinct applications:

a. pilot visual separation from other aircraft; and

b. pilot visual separation from terrain and obstacles.

2. Visual separation from other aircraft

ATC may authorize the pilot of an IFR aircraft to conduct a visual climb or descent while maintaining visual separation with the appropriate traffic only if a pilot requests it. Controllers will not initiate or suggest a visual climb/descent in this application. During this altitude change in VMC, pilots must provide their own separation from all other aircraft. This application may be exercised in both radar and non-radar environments.

IFR separation is required for all altitude changes in Class A and in Class B above 12,500 feet ASL airspace. Accordingly, visual climbs or descents will not be approved for aircraft operating in these classes of airspace.

3. Visual separation from terrain and obstacles

When a pilot of an aircraft is being provided with radar vectors, ATC may authorize a visual climb/descent request made by the pilot. Also, a controller may suggest a visual climb/descent to the pilot. During this visual climb/descent phase of flight in VMC, the pilot accepts responsibility for terrain and obstacle clearance. ATC will continue to provide normal IFR separation between aircraft. This application of visual climb/descent is restricted to a radar environment only.

SECTION 4 RADAR

720. RADAR – GENERAL

1. The use of radar increases airspace utilization by allowing ATC to reduce the separation interval between aircraft. In addition, radar permits an expansion of flight information services such as traffic information, radar navigation assistance and information on chaff drops, bird activity and severe weather information. Due to limitations inherent in all radar systems, it may not always be possible to detect aircraft, weather disturbances, etc. Where radar information is derived from secondary surveillance radar (SSR) only (i.e., without associated primary radar coverage), it is not possible to provide traffic information on aircraft that are not transponder-equipped or to provide some of the other flight information.

   Example: (aircraft identification) PRIMARY RADAR OUT OF ORDER. RADAR INFORMATION AVAILABLE ON TRANSPONDER EQUIPPED AIRCRAFT ONLY.

2. Procedures

   a. Before providing radar service, ATC will establish identification of the aircraft concerned either through the use of position reports, identifying turns, or the use of transponders. Pilots will be notified whenever radar identification is established, or lost.

      Examples: RADAR IDENTIFIED; or
      RADAR IDENTIFICATION LOST.

   b. Pilots are cautioned that radar identification of their flight does not relieve them of the responsibility for navigation, collision avoidance or terrain (obstacle) clearance. Air traffic control will normally provide radar identified IFR and CVFR flights with information on observed radar targets. If practicable, radar separation will be provided between radar identified IFR aircraft and unknown traffic when requested by the pilot.

   c. Air Traffic Control assumes responsibility for terrain (obstacle) clearance when vectoring enroute IFR and CVFR flights and IFR aircraft being vectored for arrival until the aircraft resumes normal navigation.

   d. Radar vectoring is used when necessary for separation purposes, when required by noise abatement procedures, when requested by the pilot, or whenever vectoring will offer operational advantages to the pilot or the controller. When vectoring is initiated, the pilot will be informed of the location to which the aircraft is being vectored.

      Examples: TURN LEFT HEADING 050 FOR VECTORS TO VICTOR 300.
      MAINTAIN HEADING 020 FOR VECTORS TO THE VANCOUVER VOR 053 RADIAL.
      DEPART KLEINBURG BEACON ON HEADING 240 FOR VECTORS TO FINAL APPROACH COURSE.

   e. Pilots will be informed when radar vectoring is terminated, except when an arriving aircraft is vectored to the final approach course or to the traffic circuit.

      Example: RESUME NORMAL NAVIGATION

   f. When an aircraft is vectored to final approach or to the traffic circuit, the issuance of approach clearance indicates that normal navigation shall be resumed.

   g. Normally radar service will be continued until an aircraft leaves the area of radar coverage, enters uncontrolled airspace, or is transferred to an ATC unit not equipped with radar. When radar service is terminated the pilot will be informed accordingly.

Example: RADAR SERVICE TERMINATED.

3. Obstacle Clearance During Radar Vectors

a. The pilot of an IFR flight is responsible for ensuring that the aircraft is operated with adequate clearance from obstacles and terrain, as specified in CF Flying Orders, however, when the flight is being radar-vectored, air traffic control will ensure that the appropriate obstacle clearance is provided.

The pilot of a VFR aircraft remains responsible for maintaining adequate clearance from obstacles and terrain when the flight is being radar-vectored by ATC. If adequate obstacle or terrain clearance cannot be maintained on a vector, the pilot must inform the controller and take the following action:

(i) if practicable, obtain a heading that will enable adequate clearance to be maintained, or climb to a suitable altitude; or
(ii) revert to navigation without radar assistance

b. Minimum radar vectoring altitudes (MRVA) (lowest altitude, at which an aircraft may be vectored and still meet obstruction clearance criteria), which may be lower than minimum altitudes shown on navigation and approach charts, have been established at a number of locations to facilitate transitions to instrument approach aids. When an IFR flight is cleared to descend to the lower altitude, ATC will provide terrain and obstacle clearance until the aircraft is in a position from which an approved instrument approach or a visual approach can be commenced.

c. If a communication failure occurs while a flight is being vectored at an altitude below the minimum IFR altitudes shown in the instrument approach chart, the pilot shall climb immediately to the appropriate published minimum altitude, unless the flight is able to continue in VMC.

d. On occasion, particularly during radar vectored departures in mountainous regions, an aircraft's performance may be such that a climb to comply with a minimum vectoring altitude is not possible without manoeuvring the aircraft away from the desired track. Conversely on descent, issuance of a descent clearance may be delayed because a particular minimum vectoring altitude precludes a controller from issuing a lower altitude until such time as the aircraft enters the sector for which the lower minimum vectoring altitude applies. When the aircraft is operated in VMC, an operational advantage may be gained for all concerned by having the pilot request and ATC authorize a visual climb or a visual descent, as applicable, with respect to obstacles and terrain while on radar vectors. ATC authorization of a visual climb or descent under these circumstances constitutes acceptance by the pilot of the responsibility for terrain and obstacle avoidance. IFR separation normally provided between aircraft for the applicable classification of airspace will be maintained during the visual climb or visual descent phase of flight. Once the aircraft reaches (or passes) a minimum IFR altitude or an appropriate minimum vectoring altitude, responsibility for terrain and obstacle clearance reverts to ATC for as long as the flight is being radar vectored.

Visual climbs or descents should only be requested when the pilot is assured of continuous visual reference with the terrain and obstacles throughout that phase of flight. To aid in the flow of air traffic, a controller may suggest a visual climb/descent to the pilot. In this case, the pilot has the option of accepting or not accepting the suggestion.

Example: ARE YOU ABLE TO MAKE A CLIMB/DESCENT TO (altitude) WHILE MAINTAINING TERRAIN CLEARANCE VISUALLY
- followed by -
CLIMB/DESCENT VISUALLY FROM (altitude) TO (altitude)
- and, if necessary -
IF NOT POSSIBLE, (alternative instructions) AND ADVISE

721. SEVERE WEATHER INFORMATION

1. Whenever practicable, ATC will provide flights with severe weather information pertinent to the area concerned. Pilots may assist ATC by providing pilot reports of severe weather conditions which they

encounter. ATC will endeavour to suggest alternate routes or altitudes available in order to avoid area in which severe weather exists.

2. Radar-equipped ATC units can often provide information on the location and movement of areas of heavy precipitation. However, during severe weather conditions the radar may be adjusted to eliminate or reduce radar returns from heavy precipitation areas in order to permit the detection of aircraft. When requested by a pilot, and provided traffic conditions permit, controllers will provide the pilot with detailed information on the location of heavy precipitation areas.

722. TRANSPONDER OPERATION GENERAL

1. Military pilots that will be operating in U.S. airspace should familiarize themselves with the GPH270.

2. Transponder should be adjusted to "standby" while taxiing for take-off, to "on" (or "normal") as late as practicable before take-off, and to "standby" or "off" as soon as practicable after landing.

3. Pilots shall adjust their transponder to reply on Mode C when operating in Canadian airspace unless otherwise instructed by ATC.

4. The identification ("IDENT") feature shall be operated only when directed by ATC.

5. When the transponder or the automatic pressure altitude reporting equipment (Mode C) fails during flight where its use is mandatory, an aircraft may be operated:

   a. to the next airport of intended landing; and

   b. thereafter, to complete an itinerary or to a repair base, if so authorized by the appropriate air traffic control unit.

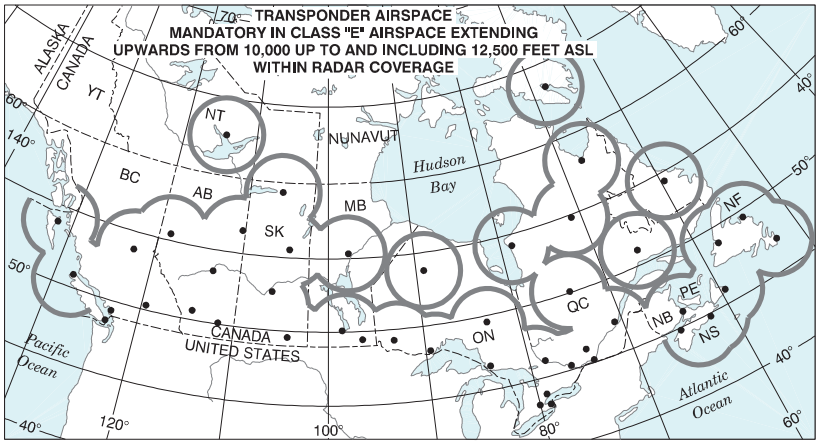
6. An air traffic control unit may, on receipt of a written request, authorize an aircraft that is not equipped with a serviceable transponder or Mode C to be operated in airspace where its use is mandatory subject to such conditions and limitations as may be deemed necessary for the safety of air traffic. (CAR 605.35)

7. Transponder airspace requirements

   When operating in Canadian Transponder airspace aircraft shall be equipped with a functioning transponder incorporating an automatic pressure reporting device.

   a. This airspace includes:

      (i) all Class A airspace;
      (ii) all Class B airspace;
      (iii) all Class C airspace; and
      (iv) all Class D and E airspace as specified as "Transponder Airspace" in the *Designated Airspace Handbook (TP1820)*. This includes all Class E airspace extending upwards from 10,000´ ASL up to and including 12,500´ ASL within radar coverage as shown below.



b. Unless otherwise instructed by ATC, pilots of IFR flights in controlled or uncontrolled low level airspace shall adjust their transponder to reply on Mode A code 1000 and Mode C.

c. Unless otherwise instructed by ATC, pilots of IFR flights in controlled or uncontrolled high level airspace shall adjust their transponder to reply on Mode A code 2000 and Mode C.

8. While operating under IFR in airspace other than that described in 7.a. above, pilots shall reply on the following Mode A codes, unless otherwise directed by ATC:

a. flight in controlled or uncontrolled low level airspace, pilots shall reply on Mode A 1000 plus Mode C if available; or

b. flight in controlled or uncontrolled high level airspace, pilots shall reply on Mode A 2000 plus Mode C if available.

9. If an IFR flight plan is cancelled or changed to a VFR flight plan, the transponder should be adjusted to reply on the appropriate VFR code, as specified in the following paragraph, unless otherwise directed by ATC.

10. While operating under VFR, pilots shall reply on the following Mode A codes, unless otherwise directed by ATC.

a. code 1200, for operation at or below 12,500´ ASL;

b. code 1400, for operation above 12,500´ ASL.

Upon leaving the confines of an airspace in which a special code assignment was received, the pilot is responsible for changing to a code shown in a. or b. above, unless assigned a new code by ATC.

Note: When climbing above 12,500´ ASL, pilots should use code 1200 until they reach 12,500´ ASL, then select code 1400. When descending from above 12,500´ ASL, pilots should select code 1200 upon reaching 12,500´ ASL.

11. Notwithstanding paragraphs 7, 8 and 10 a transponder may, at any time, be adjusted to reply to Mode A interrogation with

a. a code 7700, to indicate an in-flight emergency;

b. code 7600, to indicate a communication failure; or

c. code 7500, to indicate hijacking of the aircraft.

CAUTION: Pilots should select transponder codes with care, so as to avoid inadvertent selection of emergency codes.

SECTION 5 POSITION REPORTS

723. IFR POSITION REPORTS

1. Pilots of IFR and controlled VFR flights are required to make position reports over compulsory reporting points specified on IFR charts and, over any other reporting points specified by an ATC unit.

2. The pilot of an aircraft assigned an altitude not appropriate to the direction of flight will not be authorized by ATC to omit position reports when in a radar environment.

3. Enroute IFR and controlled VFR flights should establish Direct Controller-Pilot Communications (DCPC) wherever possible. Peripheral (PAL) transmitter-receiver sites have been established at a number of locations to extend the communication coverage. However, it must be remembered that while the DCPC provides direct contact with the IFR unit, at locations where there is no VFR control and an FSS exists, pilots might also communicate with the FSS for local traffic information. Whenever DCPC cannot be

established, pilots should make-position reports to ATC through the nearest communications agency along the route of flight.

Note 1: After the initial progress and estimate of the next compulsory reporting point, give name only of next compulsory reporting point depicted on the route you intend to follow.

FOR EXAMPLE: if proceeding A-D via C, report over A give ETA for B and give D by name only. Report C only at the request of ATC.

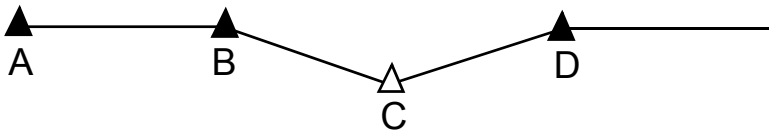


FIGURE 7-2

Note 2: Reporting points are indicated by a symbol on the appropriate charts. The “compulsory” reporting point is a solid triangle and the “on request” reporting point symbol is an open triangle. Reports passing an “on request” reporting point are only necessary when requested by ATC. Therefore, no mention of an “on request” reporting point need be made in any position report unless it has been requested by ATC.

4. IFR flights that have been radar identified are to discontinue position reports. Position reports shall resume once radar services are terminated, radar contact is lost, or, requested by the controlling agency.

5. In order that flight information and alerting service may be provided to all IFR flights outside controlled airspace, pilots should make position reports over all navigational aids along the route of flight to the nearest station having air/ground communications capability.

724. METEOROLOGICAL REPORTS – AIREPS/PIREPS

1. AIREPS

Canadian Forces aircraft transiting Canadian Domestic Flight Information Regions north of 60°N, and east of 80°W, and north of 55°N, and west of 80°W shall make, record and report to the appropriate Domestic or International FSS, routine meteorological observations at each designated reporting point or reporting line.

All aircraft operating in the Gander Oceanic Area should use the AIREP format and report routine meteorological observations at each designated reporting point or line. The exception is that aircraft cleared on a designated North Atlantic track will give these reports only if the phrase “SEND MET REPORTS” is included in their oceanic clearance.

Since the purpose of these reports is to obtain weather information for input to computers used to provide aeronautical meteorological forecasts, adherence to Standard Procedures of AIREPS Code is required.

2. PIREPS

Pilots flying in Canadian Domestic airspace are urged to provide pilot reports of significant in-flight weather conditions. These can be provided to any Flight Service Station, ATC facility or Weather Office. They should generally include the time of observation, type of aircraft, altitude, position and meteorological conditions observed. In addition to filing PIREPS from the air, pilots are urged to file post flight reports with destination Weather Offices or Flight Service Stations.

SECTION 6 PILOT REPORTS

725. PILOT REPORTS – GENERAL

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

Pilots are to advise ATC immediately if exposed to Laser and other directed bright light sources at any time during flight. Pilots are reminded that any such incident is to be reported through normal Flight Safety channels.

726. CIRVIS REPORTS – VITAL INTELLIGENCE SIGHTINGS

1. CIRVIS reports should be made immediately upon a vital intelligence sighting of any airborne, waterborne and ground objects or activities which appear to be hostile, suspicious, unidentified or engaged in possible illegal smuggling activity.

2. 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 area.

3. These reports shall be made to the nearest Canadian or U.S. government FSS or ATC unit.

   A report via A/G should include:

   CIRVIS CIRVIS CIRVIS

   a. Identification of reporting aircraft.

   b. Brief description of sighting: number, size, shape, etc.

   c. Position of sighted object or activity.

   d. Date and time of sighting in UTC.

   e. Altitude of object.

   f. Direction of movement of object.

   g. Speed of object.

   h. Any identification.

727. FIRE DETECTION – NORTHERN AREAS

1. The Department of Indian Affairs and Northern Development 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.

2. 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 telegram or telephone call to:

   a. Superintendent of Forestry, Fort Smith, Northwest Territories, for fires in the Northwest Territories and Wood Buffalo National Park.

   b. Superintendent of Forestry, Whitehorse, Yukon Territory, for fires in the Yukon Territory.

3. 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 a minimum delay and with the right type of equipment.

728. POLLUTION REPORTS

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

2. On the West and Eastern Coasts the waters extend to approximately 200NM from the coast line. In the north the area includes virtually all of the waters in the Canadian Arctic.

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

CHAPTER 8

ARRIVAL

SECTION 1 GENERAL

801. ATIS BROADCASTS

If ATIS is available, all pilots should obtain the basic arrival or departure and aerodrome information from this facility as soon as is practicable.

802. STANDARD TERMINAL ARRIVAL

1. General

In order to simplify clearance procedures at higher density airports, coded STARs have been designated at some airports. STARs are published in the appropriate volume of GPH200. No pilot is required to accept a STAR clearance; if any doubt exists as to the meaning, a detailed clearance should be requested.

2. Conventional STAR

A conventional STAR is defined as a STAR that can be flown by a pilot using ground-based NAVAIDs or specified headings. Most conventional STARs end with ATC providing radar vectors. A conventional STAR should be filed on a flight plan. If a conventional STAR is filed, ATC expects the aircraft to fly the STAR track as depicted and, once descent clearance has been received, to comply with any charted altitude restrictions above the assigned altitude, unless specifically cancelled by ATC.

3. RNAV STAR Procedure

Definition:

An RNAV STAR is an IFR air traffic control arrival procedure, coded and included in an aircraft's navigational database, published in graphic and textual form to be used by aircraft appropriately equipped and authorized to conduct this procedure.

General Procedures

The RNAV STAR defines a lateral route for an aircraft to fly from a significant point along the en route phase of flight to the approach phase without, or with minimal, ATC intervention. Altitude and speed restrictions may be depicted as required on any RNAV STAR. All altitude and speed restrictions, including those at the DTW or FACF, depicted on an RNAV STAR are mandatory at all times, unless specifically cancelled by ATC.

Altitude Restrictions

Altitude restrictions may be included in the STAR for terrain and obstacle clearance as well as for operational requirements. Although an aircraft is expected to follow the charted lateral track of the cleared STAR without further ATC clearance, such is not the case with the vertical profile. ATC will issue descent clearance, and once a lower altitude is issued by ATC, the pilot shall descend on the STAR profile to the assigned altitude. The pilot will comply with all charted altitude restrictions above the ATC-assigned altitude, unless specifically cancelled by ATC. When an approach clearance is received, all altitude restrictions on the STAR profile remain mandatory, unless specifically cancelled by ATC.

Example:

An aircraft maintaining 12 000 ft is cleared to descend to 6 000 ft and the next two (subsequent) waypoints along the RNAV STAR route have altitude restrictions of 9 000 ft and 7 000 ft or above, respectively. The altitude restrictions as depicted remain manadatory and must be adhered to. The aircraft must cross the first at 9 000 ft or above and the next at 7 000 ft or above, even though ATC has cleared the aircraft to descend to 6 000 ft.

Examples of ATC cancelled restrictions:

> “CFC4571 DESCEND UNRESTRICTED TO ONE-ZERO THOUSAND"
> "BISN28 DESCEND VIA STAR TO SEVEN THOUSAND. SPEED RESTRICTION AT ZABEL CANCELLED”.

Speed Restrictions

Speed restrictions may be included for operational reasons or because of design criteria. Similar to altitude restrictions, all speed restrictions are mandatory unless specifically cancelled ATC. The speed restriction depicted at all DTWs (example: max. 200 kt) is mandatory even after an approach clearance has been issued. It is the pilot’s responsibility to adhere to all depicted speed restrictions, unless specifically cancelled by ATC.

Flight Planning

An RNAV STAR should be included in a flight plan when filed. Any aircraft and crew meeting the RNAV Equipment List and authorized to fly RNAV procedures may include the RNAV STAR in their flight plan. When included in a flight plan, the RNAV STAR automatically becomes part of the flight-planned route. Since the RNAV STAR is considered an integral part of the route, it will be included in the initial ATC clearance. When a flight plan that includes an RNAV STAR has been filed, or the pilot receives and acknowledges a clearance that includes an RNAV STAR, the pilot is expected to fly the charted lateral track, without further clearance, from the entry point of the RNAV STAR to the end point (FACF or DTW). However, descent clearance must be obtained from ATC before commencing the vertical profile and, when a lower altitude or approach clearance is received, all charted altitude and speed restrictions remain mandatory, unless specifically cancelled by ATC.

Canceling an RNAV STAR

An RNAV STAR may be cancelled by ATC, if required. Receipt of a visual approach clearance automatically cancels the STAR procedure. An RNAV STAR that has been cancelled may be reinstated if ATC or the pilot wishes the aircraft to resume the STAR.

Examples:

> "STAR CANCELLED, FLY HEADING ZERO ONE ZERO FOR VECTORS TO FINAL."
> "STAR CANCELLED, PROCEED DIRECT HALIFAX V-O-R, EXPECT VISUAL APPROACH RUNWAY THREE TWO."

Amended Routes

Controllers may elect to amend (shorten) RNAV STAR routes by clearing the aircraft from one waypoint to another intermediate waypoint depicted within the RNAV STAR. ATC will confirm what to expect and the status of the STAR if initiating radar vectors or clearance via a waypoint that is not part of the RNAV STAR. If an amended route bypasses a fix over which there is a published altitude restriction then the altitude restriction at that fix is automatically cancelled.

Examples:

> "PROCEED DIRECT ROCTO, RESUME WATERLOO TWO ARRIVAL, CROSS ROCTO AT SIX THOUSAND OR ABOVE."
> "FLY HEADING THREE ONE ZERO FOR SEQUENCING, EXPECT DIRECT VERKO." (when vectors terminate)
> "PROCEED DIRECT VERKO RESUME YOUTH TWO ARRIVAL."
> "ALTITUDE RESTRICTION AT TETOS CANCELLED, PROCEED DIRECT ROCTO, CROSS ROCTO AT ONE ONE THOUSAND."

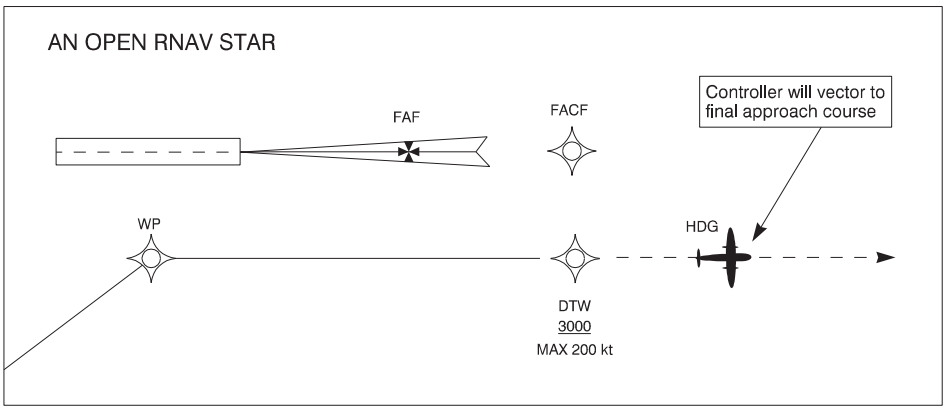
Aircraft may be cleared direct to a DTW or FACF in conjunction with an approach clearance. Even though an approach clearance has been issued, pilots are required to adhere to all depicted altitude and speed restrictions, unless specifically cancelled by ATC.

RNAV STAR Procedures

There are two types of RNAV STAR procedures: “open” and “closed.”

Definition:

An OPEN RNAV STAR terminates at a DTW. This procedure is used for aircraft approaching the landing runway via the downwind leg to the DTW.

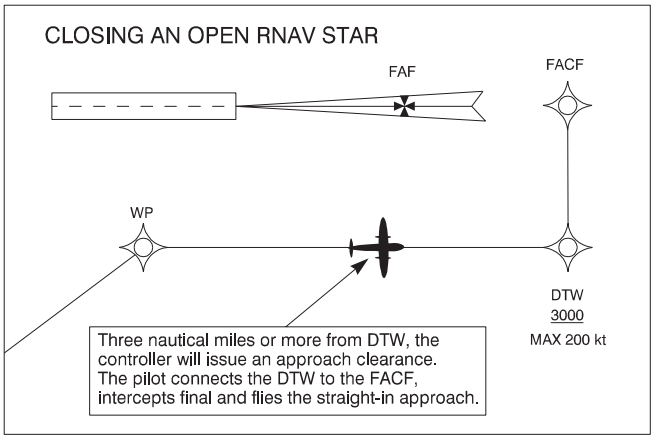


Open RNAV STAR Procedures

Open RNAV STAR procedures provide a continuous lateral route from the RNAV STAR entry point to the DTW, followed by a heading. Unless specifically cancelled by ATC, all charted altitude and speed restrictions are mandatory, even when a lower altitude or approach clearance is received from ATC. The pilot shall comply with all ATC-assigned altitudes in accordance with ATC clearances received and acknowledged by the pilot. The pilot is to maintain the depicted heading after passing the DTW, at which point ATC is responsible for providing vectors to the aircraft to a point from which the aircraft can fly the straight-in approach. In lieu of vectors, ATC may elect to clear the aircraft direct to the FACF after passing the DTW.

Closing the Open RNAV STAR

Controllers have the option of closing the Open RNAV STAR by issuing an approach clearance at least 3 NM prior to the DTW. In this case, the pilot is expected to fly the lateral RNAV STAR route to the DTW and then to the FACF (turn anticipation), intercept the final approach course, and fly the straight-in approach to the landing runway. This procedure is detailed in the “text box” on each RNAV STAR chart. If an approach clearance is not received prior to the DTW, the pilot shall proceed as per the Open RNAV STAR procedures stated above.

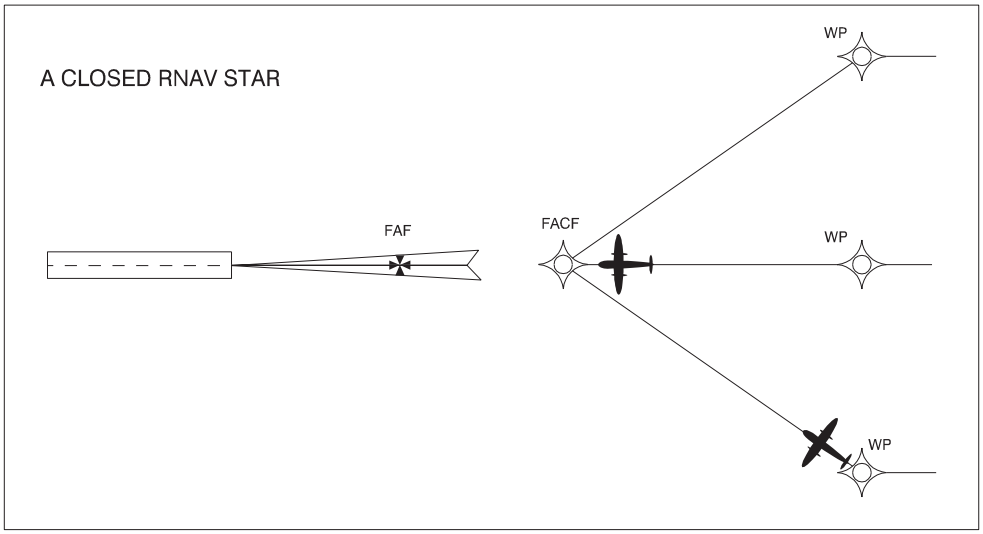


The pilot must comply with all charted altitude and speed restrictions, including those depicted at the DTW

and FACF, cross the DTW at 200 kt or less, as specified (depicted), unless specifically cancelled by ATC. This procedure does not include a procedure turn.

Definition:

A CLOSED RNAV STAR terminates at a FACF. This procedure is normally used when the inbound track is within plus or minus 90°, of the final approach course to the runway.



Closed RNAV STAR Procedures

A closed RNAV STAR procedure provides a continuous track from the en-route structure via the RNAV STAR entry point to the FACF. Unless specifically cancelled by ATC, all charted altitude and speed restrictions are mandatory, even when a lower altitude or approach clearance is received. The pilot shall comply with all ATCassigned altitudes in accordance with ATC clearances received and acknowledged. When an approach clearance is received, the pilot shall comply with all published altitude and speed restrictions and fly the charted track to the FACF, intercept the final approach course, and fly the straight-in approach. This procedure does not include a procedure turn.

Should the aircraft reach the end of the closed RNAV STAR prior to the pilot receiving an approach clearance, the pilot is expected to intercept the final approach course and fly inbound maintaining the last assigned altitude. If, upon reaching the end of the final approach track, further clearance has not been obtained, the pilot should track the lateral position of the missed approach procedure for the anticipated approach and maintain the last assigned altitude or climb to the anticipated missed approach altitude, if the missed approach altitude is higher.

Communications Failures

Upon reaching the entry point of the RNAV STAR, and communications with ATC cannot be maintained or established, the pilot is expected to fly the lateral route of the RNAV STAR associated with the runway specified on the ATIS. After indicating a loss of communications (Squawk 7600), the pilot is expected to comply with all assigned and depicted altitude and speed restrictions and conduct an approach as indicated below.

Open Procedure

When an aircraft has not received any additional clearances or instructions after commencing the Open RNAV STAR (leaving the en route), and prior to reaching the DTW, and communications with ATC can not be established, it is expected that the pilot will continue to the DTW, then to the FACF, intercept final, and fly the straight-in approach. All charted altitude and speed restrictions remain mandatory. All approaches from RNAV STARs are to be conducted as straight-in procedures with no associated procedure turns.

If an aircraft has passed the DTW and has not received any additional instructions or clearances, and communications with ATC cannot be established, it is expected that the pilot will proceed direct to the FACF, and fly the straight-in approach. All charted altitude and speed restrictions remain mandatory.

Closed Procedure

If an approach clearance has not been received by the time the aircraft reaches the FACF, and communications with ATC cannot be established, the pilot is expected to intercept the final approach course and fly the straight-in approach. All charted altitude and speed restrictions remain mandatory. All approaches from RNAV STARs are to be flown straight-in since procedure turns do not form part of this procedure and are not authorized.

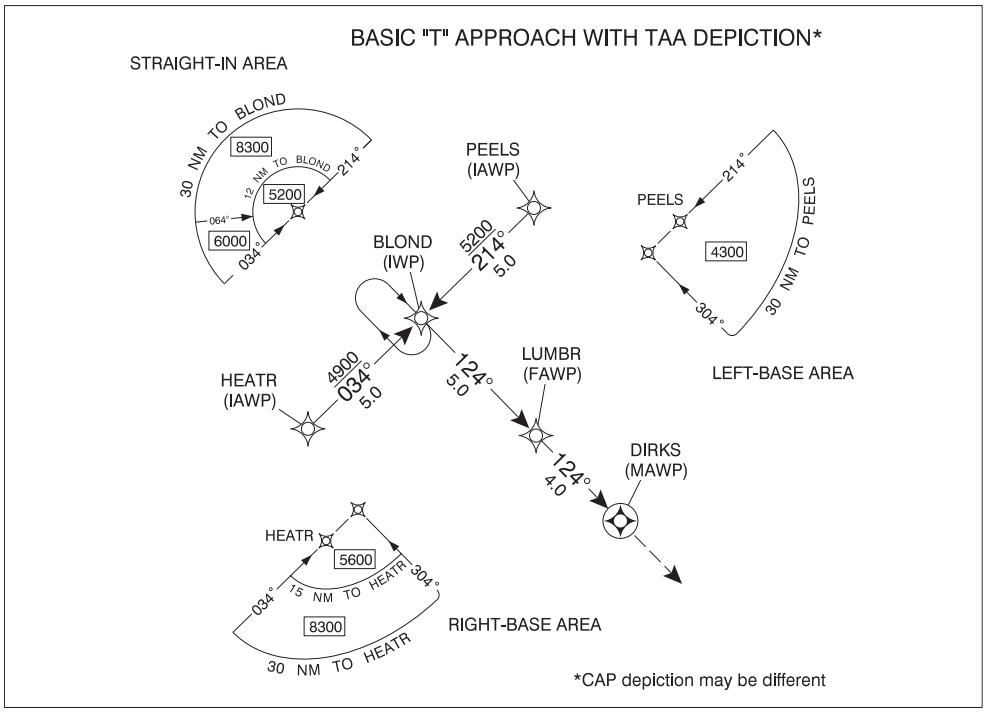
When an aircraft has not received any additional clearances or instructions after commencing the RNAV STAR (leaving the en route), and prior to reaching the DTW (Open Procedure), and loss of communications has been indicated, it is expected that the pilot will continue to the DTW, then to the FACF, intercept final, and fly the straight-in approach while adhering to all depicted altitude restrictions and speed constraints.

If an aircraft has passed the DTW (Open Procedure), and has not received any additional instructions or clearances, and after loss of communications has been indicated, it is expected that the pilot will proceed direct to the FACF, and fly the straight-in approach while adhering to the depicted altitude at the FACF.

All IAP from the RNAV STAR are to be flown straight-in; procedure turns do not form part of this procedure and, therefore, are not authorized.

803. TAA-TERMINAL ARRIVAL AREA

TAAs are developed for aircraft equipped with an FMS and/or a GNSS. When a TAA is published, it replaces the MSA depiction on the approach chart (see the CAP). The main advantage of the TAA over the MSA is that it can allow step-down arcs, based on RNAV distances, within its divided areas. This allows the aircraft to descend to lower minimum altitudes while still providing a minimum clearance of 1 000 ft above all obstacles. The standard TAA consists of three areas which are defined by the extension of the initial and intermediate approach segments. These are called the straight-in, left-base, and right-base areas.



Note: The standard “T” design of the approach courses may be modified by the procedure designer where required by terrain or for ATC considerations. For instance, the “T” design may appear

more like a regularly or irregularly shaped “Y”, or may even have one or both outboard initial approach waypoints (IAWP) eliminated, resulting in an upside down “L” or an “I” configuration. Prior to arriving at the TAA boundary, the pilot should determine which area of the TAA the aircraft will enter by selecting the intermediate approach waypoint (IWP) to determine the magnetic bearing TO the waypoint. That bearing should then be compared with the published bearings that define the lateral boundaries of the TAA areas.

CAUTION: Using the end IAWPs (instead of the IWP) may give a false indication of which area the aircraft will enter. This is critical when approaching the TAA near the extended boundary between the left- and right-base areas, especially where these areas contain different minimum altitude requirements. A standard racetrack holding pattern may be provided at the center IWP/IAWP and, if present, may be necessary for course reversal and for altitude adjustment for entry into the procedure. In the latter case, the pattern provides an extended distance for the descent required by the procedure.

804. TRANSMISSION OF METEOROLOGICAL INFORMATION TO ARRIVING AIRCRAFT

1. CAVOK refers to the simultaneous occurrence at an aerodrome of the following meteorological conditions:

   a. No cloud below 5000 feet or below the highest minimum sector altitude, whichever is higher, and no cumulonimbus;

   b. a visibility 6 statute miles or more;

   c. no precipitation, thunderstorms, shallow fog or low drifting snow.

2. This term, coupled with other elements of meteorological information such as wind direction and speed, altimeter setting and pertinent remarks, will be used in transmissions directed to arriving aircraft and, where applicable, in the composition of ATIS messages. A pilot, on receipt of CAVOK, may request that detailed information be provided.

3. CAVOK does not apply to enroute aircraft. ATC will not use that term when transmitting meteorological information to enroute aircraft.

805. RUNWAY SURFACE CONDITION (RSC) / CANADIAN RUNWAY FRICTION INDEX (CRFI)

1. General

   The accelerate-stop distance, landing distance and crosswind limitations (if applicable) contained in the aircraft flight manual are determined in accordance with specified performance criteria on bare and dry runways during the aircraft certification flight test program, and, unless some factor has been applied, are valid only when the runway is bare and dry. Whenever a contaminant such as water, snow or ice is introduced to the runway surface, the coefficient of friction between the aircraft tire and the runway is reduced. The stop portion of the accelerate-stop distance will increase, the landing distance will increase and a crosswind will present directional control difficulties. To address this problem, a system has been developed to identify, with some accuracy, the effect that the contaminant has on the runway coefficient of friction and to provide this information to the pilot along with a means of determining the additional landing distance required and the effects on crosswind limits.

2. Description of Canadian Runway Friction Index (CRFI) and the method of measurement

   Runway coefficient of friction is usually determined via a decelerometer which is mounted in a test vehicle and measures the decelerating forces acting on the vehicle when the brakes are applied. The instrument is graduated in increments from 0 to 1, the top number being equivalent to the theoretical maximum decelerating capability of the vehicle on a dry surface. These numbers are referred to as CRFI at military aerodromes and civilian aerodromes in Canada. It is evident that small numbers represent low braking coefficients of friction while numbers on the order of 0.8 and above indicate the braking coefficients to be expected on bare and dry runways.

   In practice, the test vehicle braked, at 1000 ft. intervals along the runway and at a distance of 30 ft on either side of the centre line. The CRFI numbers recorded are then averaged to the nearest two decimal places. The average reading for the runway is reported. When the CRFI reading on a portion of the runway

is 0.10 or more different from the runway average, this will be identified in the CRFI report by providing a CRFI reading for each portion.

For those units equipped with the Grip Tester, the equipment takes continuous surface friction measurements and then averages the readings for every 100 meters increment. The equipment then calculates an average for the entire runway length, and for each third of the runway, designated A, B and C corresponding from the lowest to highest runway number (i.e. 08/26 will always be designated A, B and C from the 08 end). Units equipped with the Grip Tester convert this information to CRFI readings and provide a CRFI for the runway average and for each third, regardless of any significant differences from the runway average.

3. Aircraft Movement Surface Condition Reports (AMSCR)

AMSCRs are issued to alert pilots to natural surface contaminants such as snow, ice or slush, which could affect aircraft braking performance. The RSC section of the report provides information describing the runway condition in abbreviated plain language, while the CRFI section describes braking action quantitatively using the numerical format described in Para 2 above.

Because of the mechanical and operational limitations, runway friction readings produced by decelerometer devices may result in inaccurate readings under certain surface conditions. As a result, runway friction readings will not be taken and CRFI will not be provided to ATS or pilots when any of the following conditions are present:

a. the runway surface is simply wet with no other type of contaminant present;

b. there is slush on the bare runway surface with no other type of contaminant present; or

c. there is dry snow on the runway surface exceeding 2.5 cm (1 in.) in depth.

4. NOTAM

A NOTAMJ (AMSCR NOTAM) is provided when:

a. there is frost, snow, slush or ice on a runway;

b. there are snow banks, drifts or windrows on or adjacent to a runway;

c. sand, aggregate material, anti-icing or de-icing chemicals are applied to a runway;

d. the cleared runway width falls below published width.

e. the runway lights are obscured or partially obscured by contaminants;

f. there is a significant change in runway surface conditions including a return to bare and dry conditions.

When a deposit is present but the depth is not measurable, the word "TRACE" is used. Otherwise, the depth is expressed in inches or feet or both. Whole values are used when the depth is above 1 inch (1 INS). When the depth is less than 1 inch, the decimal system is used.

If provided by the Airport Authorities, conditions of taxiways and aprons are disseminated in the NOTAMJ.

The maximum validity of NOTAMJ is 24 hours. After this period, NOTAMJ are no longer

considered valid and a new NOTAMJ must be issued as required. If after 24 hours a NOTAMJ is not replaced or cancelled by the aerodrome authority, the NOTAMJ is cancelled by NAV CANADA.

When clearing is not under way or expected to commence within the next 30 minutes, a notation such as "Clearing expected to start at (time in UTC)" will be added to the RSC report. When the meteorological conditions are such that the runway surface conditions are changing frequently, the NOTAM will include the agency and telephone number to contact for the current runway conditions. RSC/CRFI information may be broadcasted on the ATIS or available as a voice advisory from the control tower at controlled aerodromes and from the FSS at uncontrolled aerodromes where airport advisory service or RAAS is

provided.

5. NOTAM Format

The format of the CRFI portion of the report is as follows: location identifier, title (CRFI), runway number, temperature in Celsius, runway average CRFI reading and time (UTC) when the readings were taken using a ten-figure group in the year-month-day-hour-minute (YYMMDDHHMM).

Examples of RSC/CRFI reports:

a. CYGK RSC ALL RUNWAYS COVERED 4 INS LIGHT SNOW 0601190630

CLEARING EXPECTED TO COMMENCE 0601191000

b. CYRB RSC 17T/35T COVERED 1 INS LIGHT SNOW 0601190630

CYRB CRFI 17T/35T -22 .34 0601190630

c. CYRB RSC 17T/35T SNOW DRIFTS 3-4 INS 0601191050

CYRB CRFI 17T/35T -10 .30 0601191055

d. CYRB RSC CANCELLED 0601191200

e. CYQB RSC ALL RUNWAYS SNOW COVERED PACKED AND SANDED 0601100415

CYQB CRFI 06/24 THR 06 TO TWY H -6 .27 0601100415
CYQB CRFI 06/24 TWY H TO THR 24 -5 .39 0601100415
CYQB CRFI 12/30 -6 .27 0601100415

f. CYOW RSC RWY CONDITIONS CHANGING RAPIDLY DUE HEAVY SNOW. CONTACT OPR AT 613-998-4971

6. Wet Runways

Runway friction values during the summer period and when it is raining are not provided at this time. Consequently, some discussion of wet runways is in order to assist pilots in developing handling procedures when these conditions are encountered.

A packed snow or ice condition at a fixed temperature presents a relatively constant coefficient of friction at various speeds, but this is not the case for a liquid state (water or slush). This is because water cannot be completely squeezed out from between the tire and the runway and as a result there is only partial tire-to-runway contact. As the aircraft speed is increased, the tire-to-runway contact time (per section of tire) is reduced further; thus braking friction coefficients on wet surfaces fall as the speed increases, ie., the conditions in effect become relatively more slippery, but will again improve as the aircraft slows down. This situation is further complicated by the susceptibility of aircraft tires to hydroplane on wet runways.

Hydroplaning is a function of water depth, tire pressure and speed. As well, the minimum speed at which a non-rotating tire will begin to hydroplane is lower than the speed at which a rotating tire will begin to hydroplane because a build up of water under the non-rotating tire increases the hydroplaning effect. Pilots should be aware of this since it will result in a substantial difference between the takeoff and landing roll braking performance under the same runway conditions. The minimum speed, in knots, at which hydroplaning will commence can be calculated by multiplying the square root of the tire presssure (PSI) by 7.7 for a non-rotating tire, or by 9 for a rotating tire. This equation gives an approximation of the minimum speed necessary to hydroplane on a smooth, wet surface with tires that are bald or have no tread. For example, the minimum hydroplaning speeds for an aircraft with tires inflated to 49 PSI are calculated as follows:

NON-ROTATING TIRE: $7.7 \times \sqrt{49} = 54$ KTS; or
ROTATING TIRE: $9 \times \sqrt{49} = 63$ KTS.

When hydroplaning occurs, the tires of the aircraft are completely separated from the actual runway

surface by a thin water film and they will continue to hydroplane until a reduction in speed permits the tire to regain contact with the runway. This speed will be considerably below the speed at which hydroplaning commences. Under these conditions, the tire traction drops to almost negligible values and in some cases the wheel will stop rotating entirely. The tires will provide no braking capability and will not contribute to the directional control of the aircraft. The resultant increase in stopping distance is impossible to predict accurately, but it has been estimated to increase as much as 700%. Further, it is known that a 10 K crosswind will drift an aircraft off the side of a 200 foot wide runway in approximately 7 seconds under hydroplaning conditions.

Notwithstanding the fact that CRFI readings cannot be given for wet runway conditions and that hydroplaning can cause serious problems, it has been found that the well drained runways at most major airports seldom allow pooling of sufficient water for hydroplaning to occur. If hydroplaning does not occur, the coefficient of friction in heavy rain on a well drained runway rarely falls below a CRFI equivalent of 0.28. The wet conditions associated with light rain normally produce friction values on the order of a CRFI of 0.3 to 0.55. These figures can be used as a guide in conjunction with pilot and other reports.

7. CRFI Application to Aircraft performance

The information contained in Tables 1 and 2 has been compiled and is considered to be the best data available at this time, because it is based upon extensive field test performance data of aircraft braking on winter-contaminated surfaces. This information should provide a useful guide to pilots in estimating aircraft performance under adverse runway conditions.

The onus for the production of information, guidance or advice on the operation of aircraft on a wet and/or contaminated runway rests with the aircraft manufacturer. The information published in this manual does not change, create any additional, authorize changes in, or permit deviations from regulatory requirements. These tables are to be used at the pilot's dicretion. Because of many variables associated with computing accelerate stop distances and balanced field lengths, it has not been possible to reduce the available data to the point where CRFI corrections can be provided, which would be applicable to all aircraft types. Consequently, only corrections for landing distances and crosswinds are included.

In all cases the tables are based on corrections to flight manual dry runway data, and the certification criteria does not allow consideration of the extra decelerating forces provided by reverse thrust or propeller reversing.

On dry runways, thrust reversers provide only a small portion of the total decelerating forces when compared to wheel braking. However, as wheel braking becomes less effective, the portion of the stopping distance attributable to thrust reversing becomes greater. For this reason, if reversing is employed when a low CRFI is reported, a comparison of the actual stopping distance with that shown in Table 1 will make the estimates appear overly conservative. Nevertheless, there are circumstances, such as crosswind conditions, engine-out situations or reverser malfunctions that, may preclude their use.

8. Difference between CRFI tables

Definition

Discing: Defined as a power lever position that results in a **propeller** blade angle giving zero or slightly positive/negative thrust at zero airspeed.

General

Table 1 gives recommended landing distances intended to be used for aeroplanes with no discing and/or reverse thrust capability and are based on statistical variation measured during actual flight tests.

Table 2 gives recommended landing distances intended to be used for aeroplanes with discing and/or reverse thrust capability and is based on the Table 1 recommended landing distances with additional calculations that give credit for discing and/or reverse thrust. In calculating the distances in Table 2, the air distance from the screen height of 50 ft to touchdown and the delay distance from touchdown to the application of full braking remain unchanged from Table 1. The effects of discing and/or reverse thrust were used only to reduce the stopping distance from the application of full braking to a complete stop. The recommended landing distances stated in Table 2 take into account the reduction in landing distances obtained with the use of discing and/or reverse thrust capabilty for a turboprop-powered aeroplane and

with the use of reverse thrust for a turbojet-powered aeroplane. Representative Low values of discing and/or reverse thrust effect have been assumed and; therefore, the data may be conservative for properly executed landings by some aeroplanes with highly effective discing and/or thrust reversing systems.

Table 3 shows crosswind limits for CRFI and contains a slightly different display range of runway friction index values from those listed for Tables 1 and 2. However, the CRFI values used for Table 3 are exactly the same as used for Tables 1 and 2 and are appropriate for the index value increments indicated.

9. Application of the Canadian Runway Friction Index (CRFI) - Table 1

The recommended landing distances in Table 1 are based on a 95 percent level of confidence. A 95 percent level of confidence means that in more than 19 landings out of 20, the stated distance in Table 1 will be conservative for properly executed landings with all systems serviceable on runway surfaces with the reported CRFI. Table 1 will also be conservative for turbojet and turboprop-powered aeroplanes with reverse thrust, and additionally, in the case of turboprop-powered aeroplanes, with the effect obtained from discing.

The recommended landing distances in the CRFI Table 1 are based on standard pilot techniques for the minimum distance landings from 50 ft, including a stabilized approach at Vref using a glideslope of 3° to 50 ft or lower, a firm touchdown, minimum delay to nose lowering, minimum delay time to deployment of ground lift dump devices and application of brakes, and sustained maximum antiskid braking until stopped.

Landing field length is the landing distance divided by 0.6 (turbojets) or 0.7 (turboprops). If the Aeroplane Flight Manual (AFM) or Aircraft Operating Instruction (AOI) expresses landing performance in terms of landing distance, enter the table from the left-hand column. However, if it expresses landing performance in terms of landing field length, enter the table from one of the right-hand columns, after first verifying which factor has been used in the AFM or AOI.

TABLE 1
CANADIAN RUNWAY FRICTION INDEX (CRFI)
RECOMMENDED LANDING DISTANCES
(NO DISCING / REVERSE THRUST)

Reported Canadian Runway Friction Index (CRFI)														
Landing Distance (Feet) Bare and Dry Unfactored	0.60	0.55	0.50	0.45	0.40	0.35	0.30	0.27	0.25	0.22	0.20	0.18	Landing Field Length (Feet) Bare and Dry	Landing Field Length (Feet) Bare and Dry
	Recommended Landing Distances (No Discing/Reverse Thrust)												60% Factor	70% Factor
1800	3120	3200	3300	3410	3540	3700	3900	4040	4150	4330	4470	4620	3000	2571
2000	3480	3580	3690	3830	3980	4170	4410	4570	4700	4910	5070	5250	3333	2857
2200	3720	3830	3960	4110	4280	4500	4750	4940	5080	5310	5490	5700	3667	3143
2400	4100	4230	4370	4540	4740	4980	5260	5470	5620	5880	6080	6300	4000	3429
2600	4450	4590	4750	4940	5160	5420	5740	5960	6130	6410	6630	6870	4333	3714
2800	4760	4910	5090	5290	5530	5810	6150	6390	6570	6880	7110	7360	4667	4000
3000	5070	5240	5430	5650	5910	6220	6590	6860	7060	7390	7640	7920	5000	4286
3200	5450	5630	5840	6090	6370	6720	7130	7420	7640	8010	8290	8600	5333	4571
3400	5740	5940	6170	6430	6740	7110	7550	7870	8100	8500	8800	9130	5667	4857
3600	6050	6260	6500	6780	7120	7510	7990	8330	8580	9000	9320	9680	6000	5143

Reported Canadian Runway Friction Index (CRFI)(Continued)														
3800	6340	6570	6830	7130	7480	7900	8410	8770	9040	9490	9840	10220	6333	5429
4000	6550	6780	7050	7370	7730	8170	8700	9080	9360	9830	10180	10580	6667	5714

10. Application of the Canadian Runway Friction Index (CRFI) – Table 2

The recommended landing distances in Table 2 are based on a 95% level of confidence. A 95% level of confidence means that in more than 19 landings out of 20, the stated distance in Table 2 will be conservative for properly executed landings with all systems serviceable on runway surfaces with the reported CRFI. The recommended landing distances in Table 2 take into account the reduction in landing distances obtained with the use of discing and/or reverse thrust capability for a turboprop-powered aeroplane and with the use of reverse thrust for a turbojet-powered aeroplane. Table 2 is based on the Table 1 recommended landing distances with additional calculations that give credit for discing and/or reverse thrust. Representative Low values of discing and/or reverse thrust effect have been assumed; hence the data will be conservative for properly executed landings by some aeroplanes with highly effective discing and/or thrust reversing systems.

The recommended landing distances in Table 2 are based on standard pilot techniques for the minimum distance landings from 50 ft, including a stabilized approach at Vref using a glide slope of three degress to 50 ft or lower, a firm touchdown, minimum delay to nose lowering, minimum delay time to deployment of ground lift dump devices and applications of brakes and discing and/or reverse thrust, and sustained maximum antiskid braking until stopped. In Table 2, the air distance from screen height of 50 ft to touchdown and the delay distance from touchdown to the appication of full braking remain unchanged from Table 1. The effects of discing/reverse thrust were used only to reduce the stopping distance from the application of full braking to a complete stop.

Landing field length is the landing distance divided by 0.6 (turbojets) or 0.7 (turboprops). If the AFM expresses landing performance in terms of landing distance, enter the table from the left-hand column. However, if the AFM expresses landing performance in terms of landing field length, enter the table from one of the right-hand columns, after first verifying which factor has been used in the AFM.

TABLE 2
CANADIAN RUNWAY FRICTION INDEX (CRFI)
RECOMMENDED LANDING DISTANCES
(DISCING / REVERSE THRUST)

Reported Canadian Runway Friction Index (CRFI)														
Landing Distance (Feet) Bare and Dry Unfactored	0.60	0.55	0.50	0.45	0.40	0.35	0.30	0.27	0.25	0.22	0.20	0.18	Landing Field Length (Feet) Bare and Dry	Landing Field Length (Feet) Bare and Dry
	Recommended Landing Distances (Discing/Reverse Thrust)												60% Factor	70% Factor
1200	2000	2040	2080	2120	2170	2220	2280	2340	2380	2440	2490	2540	2000	1714
1400	2340	2390	2440	2500	2580	2660	2750	2820	2870	2950	3010	3080	2333	2000
1600	2670	2730	2800	2880	2970	3070	3190	3280	3360	3460	3540	3630	2667	2286
1800	3010	3080	3160	3250	3350	3480	3630	3730	3810	3930	4030	4130	3000	2571
2000	3340	3420	3520	3620	3740	3880	4050	4170	4260	4400	4510	4630	3333	2857
2200	3570	3660	3760	3880	4020	4170	4360	4490	4590	4750	4870	5000	3667	3143
2400	3900	4000	4110	4230	4380	4550	4750	4880	4980	5150	5270	5410	4000	3429
2600	4200	4300	4420	4560	4710	4890	5100	5240	5350	5520	5650	5790	4333	3714

Reported Canadian Runway Friction Index (CRFI)(Continued)														
Landing Distance (Feet) Bare and Dry Unfactored	0.60	0.55	0.50	0.45	0.40	0.35	0.30	0.27	0.25	0.22	0.20	0.18	Landing Field Length (Feet) Bare and Dry	Landing Field Length (Feet) Bare and Dry
	Recommended Landing Distances (Discing/Reverse Thrust)												60% Factor	70% Factor
2800	4460	4570	4700	4840	5000	5190	5410	5560	5670	5850	5980	6130	4667	4000
3000	4740	4860	5000	5160	5340	5550	5790	5950	6070	6270	6420	6580	5000	4286
3200	5080	5220	5370	5550	5740	5970	6240	6420	6560	6770	6940	7110	5333	4571
3400	5350	5500	5660	5850	6060	6310	6590	6790	6930	7170	7340	7530	5667	4857
3600	5620	5780	5960	6160	6390	6650	6960	7170	7320	7570	7750	7950	6000	5143
3800	5890	6060	6250	6460	6700	6980	7310	7540	7700	7970	8160	8380	6333	5429
4000	6070	6250	6440	6660	6910	7210	7540	7780	7950	8220	8430	8650	6667	5714

TABLE 3 – CROSSWIND LIMITS FOR CRFI READINGS

The top chart provides information for calculating the head wind and crosswind components. The bottom chart enables a pilot to calculate the recommended minimum CRFI for the crosswind component.

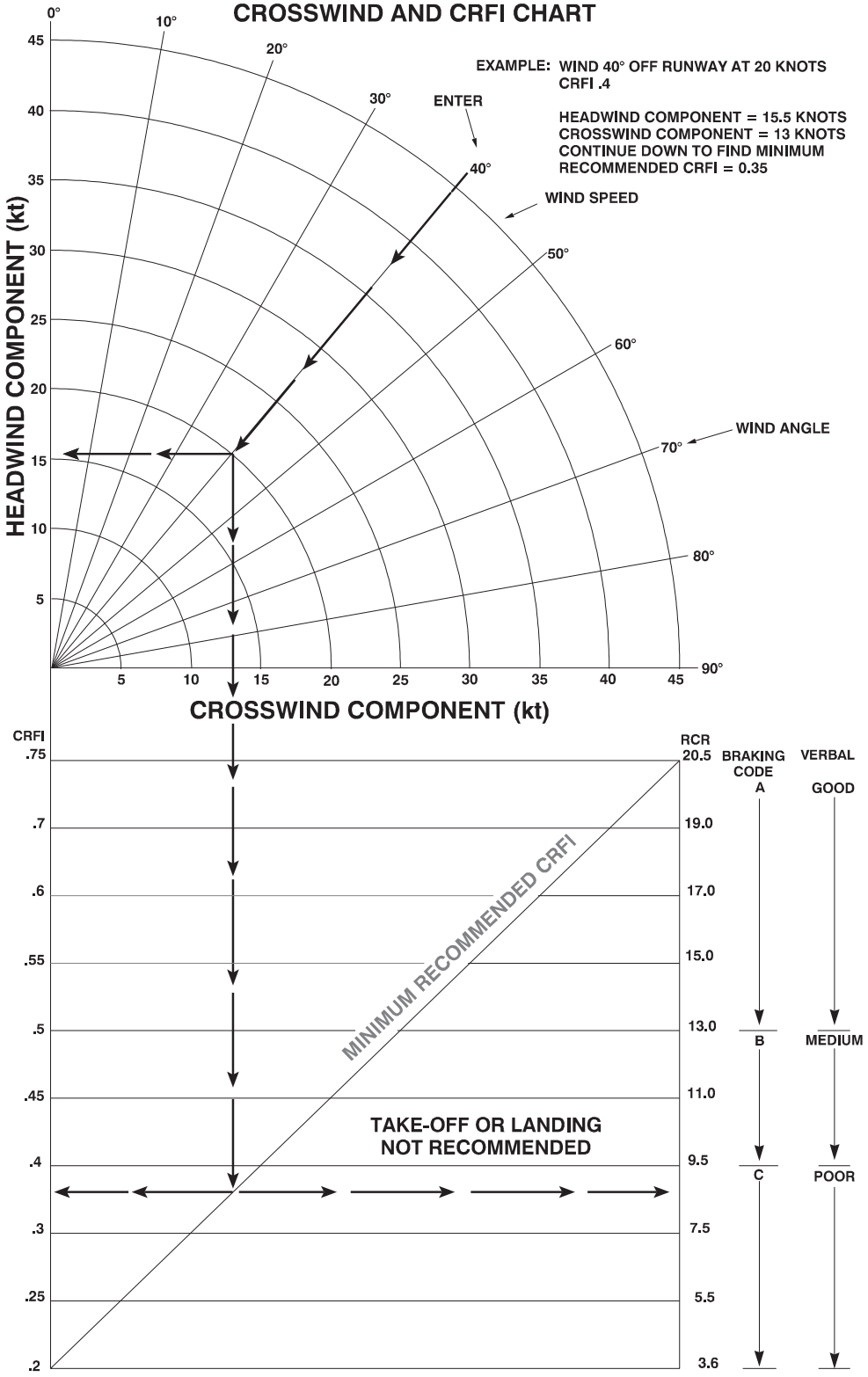
Example:

CYOW CRFI 07/25 -4 .3 9302231200
Tower Wind 110° 20 knots.

The wind is 40 degrees off the runway heading. The chart is entered at the 40° wind angle point and a line drawn to the 20 knot wind speed arc. This produces a head wind component of 15.5 knots and a crosswind component of 13 knots. By continuing the crosswind component line onto the bottom chart to the minimum recommended CRFI line the recommended minimum CRFI can be determined. In this example it is .35, therefore an attempted takeoff or landing with a reported CRFI of .3 could result in uncontrollable drifting and yawing.

Approximate RCR, Mu-meter and plain voice measurement equivalents are given on the right of the chart.

TABLE 3
CROSSWIND AND CRFI CHART



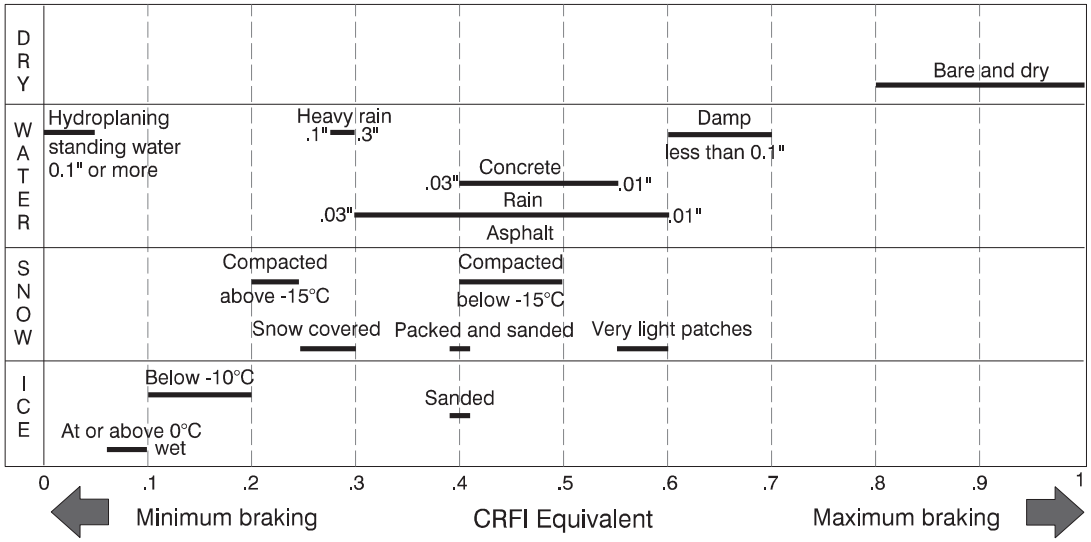


TABLE 4 – RUNWAY SURFACE CONDITION AND CRFI EQUIVALENT

This table contains average equivalent values of CRFI produced by typical runway surface condition and may be used as a guide when CRFI numbers are not available.

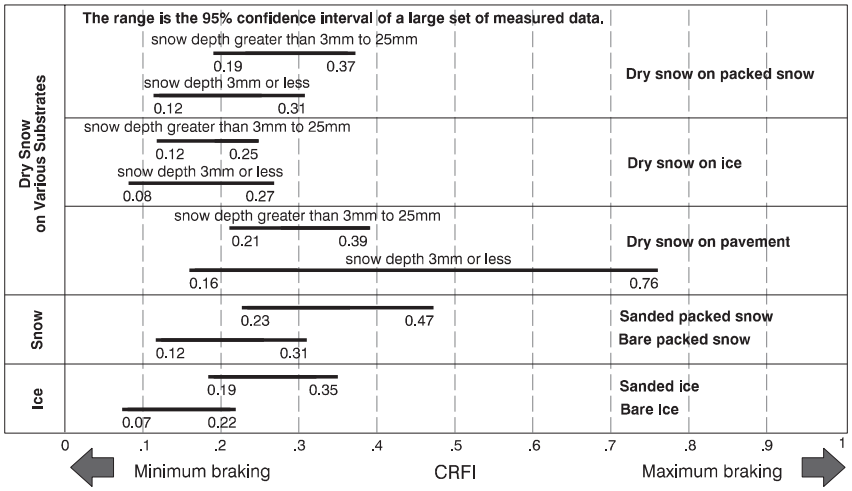


TABLE 4a – EXPECTED RANGE OF CRFIs BY SURFACE TYPE

SURFACE	LOWER CRFI LIMIT	UPPER CRFI LIMIT
Bare Ice	No Limit	0.3
Bare Packed Snow	0.1	0.4
Sanded Ice	0.1	0.4
Sanded Packed Snow	0.1	0.5
Dry Snow on Ice (depth 3mm or less)	No Limit	0.4
Dry Snow on Ice (depth 3 to 25mm)	No Limit	0.4
Dry Snow on Packed Snow (depth 3mm or less)	0.1	0.4
Dry Snow on Packed Snow (depth 3 to 25mm)	0.1	0.4
Dry Snow on Pavement (depth 3mm or less)	0.1	Dry Pavement
Dry Snow on Pavement (depth 3 to 25mm)	0.1	Dry Pavement

TABLE 4b – MINIMUM AND MAXIMUM CRFIs FOR VARIOUS SURFACES

11. Notwithstanding the foregoing, the final decision as to the suitability of a runway for a particular operation rests with the captain of the aircraft.

Note: For CRFI to RCR conversion table, see Section E Military Flight Data and Procedures – Canada Flight Supplement/GPH205.

12. Verbal descriptions of runway surface conditions to be used are contained in the following table:

SURFACE CONDITIONS TABLE	
BASIC CONDITIONS	DESCRIPTIVE CONDITIONS
1. Flooded	1. Wet
2. Ice	2. Loose
3. Snow	3. Frozen
4. Slush	4. Dry
5. Rubber deposits in areas	5. Compacted
6. Frost	6. Drifted
7. Ruts or ridges	7. Sanded
These descriptions will be qualified by the degree of coverage as PATCHES or COVERED and by a description of the conditions. Where there are significant differences in conditions along the runway length, description should be given for each third of the runway.	

806. APPROACH CLEARANCE

1. Pilots will be advised of the ceiling, visibility, wind, runway, altimeter setting and approach aid being used, immediately prior to or shortly after receiving descent clearance, when direct IFR controller – pilot communications are employed. Upon acknowledging receipt of the current ATIS broadcast, the pilot will be advised of the altimeter setting and current airport conditions only if they are changing rapidly.

2. Aircraft destined to airports which underlie controlled low level airspace and for which there is a published instrument approach procedure, will be cleared out of controlled airspace (vertically) via the published instrument approach procedure.

Example: ATC CLEARS (aircraft identification) OUT OF CONTROLLED AIRSPACE VIA (name,type) APPROACH.

3. Aircraft destined to airports which underlie controlled low level airspace and for which there is not a published instrument approach procedure will be cleared to descend out of controlled airspace and informed of the appropriate minimum IFR altitude.

Example: ATC CLEARS (aircraft identification) TO DESCEND OUT OF CONTROLLED AIRSPACE VICINITY OF (aerodrome name). THE (minimum IFR altitude) IS (number) FEET.

The pilot may elect to cancel IFR as soon as visual conditions permit continued flight under VFR, or remain on the IFR flight plan until the aircraft has landed and the pilot files an arrival report. Should the pilot anticipate that visual conditions to permit continued flight under VFR may not be achieved, the pilot may arrange with ATC to have the MEA protected, as specified in Article 810 paragraph 2.

4. Aircraft destined to airports which underlie controlled high level airspace and where there is no minimum IFR altitude established that would prohibit such a manoeuvre, will be cleared out of controlled high level airspace.

Example: ATC CLEARS (aircraft identification) OUT OF (type of airspace).

5. When an approach clearance is issued, the published name of the approach is used to designate the type of approach if adherence to a particular procedure is required. If visual reference to the ground is established before completion of a specified approach, the aircraft should continue with the entire procedure unless further clearance is obtained.

Examples: CLEARED TO THE OTTAWA AIRPORT, STRAIGHT-IN ILS RUNWAY 07 APPROACH.

CLEARED TO THE TORONTO AIRPORT, ILS RUNWAY 06 LEFT APPROACH.

6. The number of the runway on which the aircraft will land is included in the approach clearance when a landing will be made on a runway other than that aligned with the instrument approach aid being used.

Example: CLEARED TO THE OTTAWA AIRPORT, STRAIGHT-IN ILS RUNWAY 07 APPROACH/CIRCLING PROCEDURE SOUTH FOR RUNWAY 32.

Note: If the pilot begins a missed approach during a circling procedure, he shall fly the published missed approach procedure as shown for the instrument approach just completed. The pilot does not use the procedure for the runway on which the landing was planned.

7. At some locations during periods of light traffic, controllers may issue clearances that do not specify the type of approach. Example: CLEARED TO THE LETHBRIDGE AIRPORT FOR AN APPROACH.

When such a clearance is issued by ATC and accepted by the pilot, the pilot has the option of conducting any published instrument approach procedure. In addition, the pilot also has the option of proceeding by the route so cleared by ATC in a previous clearance, by any published transition or feeder route associated with the selected procedure, or by a route present position direct to a fix associated with the selected instrument approach procedure. Pilots who choose to proceed to the instrument procedure fix via a route that is off an airway, air route or transition are responsible for maintaining the appropriate obstacle clearance, complying with noise abatement procedures and remaining clear of Class F airspace. As soon as practicable after receipt of this type of clearance, it is the pilot's responsibility to advise ATC of the type of published instrument approach procedure that will be carried out, the landing runway and the intended route to be flown.

This clearance does not constitute authority for the pilot to execute a contact or visual approach. Should the pilot prefer to conduct a visual approach (published or non-published) or a contact approach, he or she must specifically communicate that request to the controller.

Upon changing to the Tower or FSS frequency, pilots should advise the agency of the intended route and published instrument approach procedure being carried out.

The pilot should not deviate from the stated instrument approach procedure or route without the concurrence of ATC because such an act could cause dangerous conflict with another aircraft or a vehicle on a runway.

807. DESCENT OUT OF CONTROLLED AIRSPACE

ATC may not clear an aircraft to operate below the MEA of an airway, nor below the minimum IFR altitude in other controlled low level airspace. The pilot, however, may operate at the MOCA, and ATC will approve flight at the MOCA at the pilot's request. If unable to cancel IFR at the MEA, the pilot may advise that he/she intends to descend to the MOCA. By prior arrangement with ATC, the MEA will be protected in the event that the pilot does not encounter visual conditions at the MOCA. Under this arrangement, the MEA will be protected:

a. until the pilot files an arrival report;

b. for 30 min; to allow descent to the MOCA and return to the MEA when communication is restored with ATC; or

c. if ATC does not hear from the pilot under a. or b. until the aircraft is estimated to have arrived at the filed alternate plus 30 min.

808. ADVANCE NOTICE OF INTENT IN MINIMUM WEATHER CONDITIONS

1. ATC can handle missed approaches more efficiently if the controller knows the pilot's intentions in advance. They can use the extra time to plan for the possibility of a missed approach and thus provide better service in the event of an actual missed approach.

2. Pilots should adopt the following procedures as the occasion arises.

On receipt of approach clearance, when the ceiling and visibility reported at the destination airport is such

that a missed approach is probable, the pilot should advise the controller as follows:

IN THE EVENT OF MISSED APPROACH REQUEST (altitude or level) VIA (route) TO (airport).

3. Implementation of this procedure increases the amount of communications, but the increase can be minimized if pilots employ it only when there is a reasonable chance that a missed approach may occur.

809. PROTECTED AIRSPACE FOR IFR INSTRUMENT APPROACH PROCEDURES

It is the pilot's responsibility to remain within the limits of airspace-to-be-protected. This can be accomplished by following the approved instrument approach procedures. Should a pilot operating in controlled airspace anticipate being unable to conduct the approved approach, he should inform ATC in order that separation from other aircraft concerned can be increased as necessary.

810. OBSTACLE CLEARANCE DURING TRANSITION TO APPROACH

1. The pilot is reminded that it is his responsibility to determine and maintain the required obstacle clearance altitude as prescribed in CF Flying Orders.

2. Within controlled airspace, controllers are not permitted to approve or assign any IFR altitude which is below the “minimum IFR altitude”. This is the lowest IFR altitude established for use in a specific airspace and depending upon the airspace concerned, may be the MOCA, MEA, Minimum Sector Altitude, Minimum Vectoring Altitude or Emergency Safe Altitude. On a VHF/UHF airway, altitudes below the MEA but not below the MOCA may be approved by the controller when specifically requested by the pilot of an IFR flight in the interest of flight safety (e.g. due to icing conditions). However, the required signal coverage necessary to assist pilots in avoiding aircraft or obstacles lateral to the intended flight path may be inadequate during flight below the MEA.

   Note: If ATC has advised an aircraft that it is being radar vectored, ATC will assume obstacle clearance responsibility until the aircraft is told to resume "normal navigation", or is cleared for an approach or hold. These vectoring altitudes may be at the MVA and if communication failure occurs, the pilot shall immediately climb to the appropriate published MEA for that area and carry out the required "lost communication procedures".

3. On occasion, a clearance for an approach may not include any altitude instructions. This clearance may be received while the aircraft is still a considerable distance from the approach facility in either a radar or non-radar environment, and within or outside Controlled airspace. In such cases, the pilot is responsible for determining the minimum altitude that will provide the required obstacle clearance. Depending on the circumstances, it will be one of the following minimum altitudes:

   a. minimum enroute altitude (MEA).

   b. transition Altitude.

   c. minimum safe altitude 25 NM specified on the approach plate.

   d. safe altitude 100 NM specified on the approach plate or

   e. minimum reception altitude (MRA).

   f. when in airspace for which the Minister has not specified a higher minimum, an altitude of at least 1000 feet above the highest obstacle within a horizontal radius of five miles from the established position of the aircraft. (In mountainous regions - 2000 feet and 5 nautical miles when in areas 1 and 5, and 1500 feet when in areas 2, 3 and 4 - see Article 704 “ALTITUDES IN DESIGNATED MOUNTAINOUS REGIONS”)

   When a pilot receives and accepts an ATC clearance to descend to a minimum sector altitude or a 100 NM safe altitude during normal IFR operations, descent below the MEA for the preceding enroute phase should not commence until his position can be positively identified by means of a bearing, radial, DME, radar or visual means.

811. SPEED LIMITS ON ARRIVAL

The Aircraft Speed Limit Order as outlined in Article 537 applies to IFR and VFR arrivals outside of military controlled airspace.

812. AIRCRAFT CATEGORIES

The aircraft category operating characteristics shall be used to determine turning radii, minimums, and obstacle clearance areas for circling and missed approach.

Category A – Speeds up to 90 knots (including all rotorcraft)
Category B – Speeds 91 to 120 knots
Category C – Speeds 121 to 140 knots
Category D – Speeds 141 to 165 knots
Category E – Speeds above 165 knots

Note: Category E aircraft are not provided for in civil instrument approach procedures.

If it is necessary to manoeuvre an aircraft at a speed in excess of the upper limit of the speed range for its category, the minimum for a higher category shall be used.

813. RADAR ARRIVALS

1. General

Radar separation is applied to arriving aircraft in order to establish and maintain the most desirable arrival sequence to avoid unnecessary “stacking”. In the approach phase, radar vectoring is carried out to establish the aircraft on an approach aid. Aircraft are vectored so as to intercept the final approach course approximately 2 miles from the point at which final descent will begin. In the case of a precision radar approach, the aircraft is vectored by surveillance radar to a predetermined position, at which point control is transferred to the precision radar controller for the “talk-down”.

Examples: HOOKER 01, ARRIVAL, 3 MILES FROM THE OUTER MARKER. TURN LEFT HEADING 170 TO INTERCEPT FINAL APPROACH COURSE. CLEARED TO THE COLD LAKE AIRPORT FOR A PRECISION RADAR APPROACH, RUNWAY 31R.
or, for radar approach –
HOOKER 01, ARRIVAL, TURN LEFT HEADING 170 FOR FINAL APPROACH. 8 MILES FROM THE AIRPORT. CLEARED TO THE WINNIPEG AIRPORT FOR A PRECISION RADAR APPROACH, RUNWAY 36.

2. Radar Required

a. Traditionally, instrument approach procedures have been developed to include a procedure turn initial approach segment. Procedure turns permitted the pilot to “self-navigate” the aircraft within the procedure in order to place the aircraft in a position to conduct a normal landing. Introducing DME and other feeder routes or transitions permitted the pilot to conduct a straight-in procedure without conducting the procedure turn. Most instrument procedures today are accomplished without conducting a procedure turn.

b. Instrument approaches at Canada's major airports are conducted by radar vectors to the final approach course. While procedure turns are depicted on the instrument approach procedures at these airports, procedure turns are rarely flown. ATC route and space all aircraft within the terminal area in order to provide a systematic flow of the air traffic.

c. Instrument procedures are being introduced eliminating the procedure turn as well as including a statement “RADAR REQUIRED” as part of the procedure. The initial approach segment of these instrument procedures is being provided by ATC radar vectors. Without ATC radar vectoring, the instrument procedure may not have a published initial approach segment.

Note: Should an aircraft communication failure occur while being vectored for one of these approaches, refer to the communications failure procedures detailed in Section F of Canada Flight Supplement.

814. SPEED ADJUSTMENT – RADAR-CONTROLLED AIRCRAFT

Note: This sub-section is for information only. It describes directives to controllers and in no way alters the application of Article 811 sub-para 1.b), which prescribes maximum speeds for operation below 10000 feet.

1. To supplement or minimize radar vectoring, controllers may request pilots of radar-controlled aircraft to adjust aircraft speed. While ATC will take every precaution not to request speeds beyond the capability of the aircraft, it is the pilot's responsibility to ensure that he does not operate his aircraft at a speed below the minimum safe manoeuvring speed. If an ATC unit should request a speed reduction below the aircraft's safe manoeuvring speed, the pilot must inform ATC when unable to comply.

2. Speed adjustment requests will be expressed in units of ten knots or multiples of ten knots based on indicated airspeed (IAS). Pilots complying with speed adjustment requests are expected to maintain a speed within plus or minus ten knots of the specified speed.

   Pilots may be asked to:

   a. maintain present speed; or

   b. increase or reduce speed to a specified speed or by a specified amount.

3. Unless prior concurrence in the use of a lower speed is obtained from the pilot, the following minimum speeds will be adhered to:

   a. For aircraft operating 20 miles or more from destination airport, and

      (i) at or above 10,000 feet ASL – Not less than 250 knots IAS.
      (ii) below 10,000 feet ASL – Not less than 210 knots IAS.

   b. For turbo-jet aircraft operating less than 20 miles from destination airport – Not less than 160 knots IAS.

   c. For propeller-driven aircraft operating less than 20 miles from destination airport – Not less than 120 knots IAS.

4. Pilots of aircraft which cannot attain speeds as high as the minimum speeds specified above may be requested to:

   a. maintain a specified speed equivalent to that of a preceding or succeeding aircraft; or

   b. increase or decrease speed by a specified amount.

5. Issuance of an approach clearance normally cancels a speed adjustment, however, if the controller requires that a pilot maintain a speed adjustment after issuance of the approach clearance, ATC will restate it. Otherwise, ATC may use the phrase “resume normal speed” to advise a pilot that previously issued speed restrictions are cancelled. Unless specifically stated by ATC, an instruction to “resume normal speed” does not cancel speed restrictions that are applicable to published procedures of upcoming segments of flight.

815. STRAIGHT-IN-APPROACHES

1. General

   a. ATC uses the term “straight-in-approach” to indicate: An instrument approach wherein final approach is begun without first having executed a procedure turn.

b. Transition procedures from the enroute phase of flight are depicted on instrument approach charts where a straight-in approach may be carried out. A transition is achieved via an arc, radial, track, heading, holding pattern or combination thereof to the Intermediate Fix (IF).

c. Intermediate fixes are usually located on the final approach track at the procedure turn distance specified in the profile view. This distance, which is normally 10NM, is the distance within which the procedure turn should be executed. Accordingly, after passing the fix and manoeuvring the aircraft onto the proper inbound track, descent may be made to the appropriate published altitude that would apply as if a procedure turn had been completed.

d. The abbreviation "NO PT" is used to denote that no procedure turn is necessary from the point indicated and will normally be shown adjacent to the IF. However, if the minimum altitude IF to the final approach fix (FAF) is not readily apparent, the "NO PT" abbreviation may be shown at some point between the fix and FAF, along with an altitude applicable for this segment.

e. For transitions via a radar vector, ATC ensures that appropriate obstacle clearance is provided to the “IF” from which the “straight-in approach” is commenced.

f. If the aircraft is badly positioned, laterally or vertically, after being cleared by ATC for the straight-in approach, pilots should climb to the procedure turn altitude, or the minimum altitude at the facility if one is depicted, and proceed to the FAF requesting clearance for a procedure turn. If the FAF is behind the aircraft, the pilot must conduct a missed approach and request further clearance from ATC.

2. Straight-In Landing Minima

a. Minima for a straight-in landing are published when a normal rate of decent can be made from the FAF to the runway threshold, and when the final approach track intersects the extended runway centre line within 30° and a prescribed distance from the threshold. When either the normal rate of descent or the runway alignment exceeds the criteria, straight-in landing are not published and circling minima only apply. The fact that circling minima only are published does not preclude a pilot from landing straight-in if the required visual reference is available in sufficient time to make a normal approach and landing.

Note: The term straight-in used in connection with landing should not be confused with its use in straight-in approach minima. An ATC clearance for a straight-in approach merely clears the aircraft for an approach without first completing a procedure turn. The minima that will subsequently be used will be based on considerations such as the runway in use, published minima, aircraft category, etc.

b. The use of straight-in landing minima is predicated upon the pilot having weather and runway condition reports required to conduct a safe landing. At an uncontrolled aerodrome where the pilot may lack the necessary information, the pilot is expected to verify the runway is unobstructed prior to landing. In some cases, this can only be accomplished by conducting a circling approach utilizing the appropriate circling minima.

At an uncontrolled aerodrome runway conditions, including any temporary obstructions such as vehicles, may be determined by the pilot by:

(i) contacting the appropriate FSS or UNICOM at the destination;
(ii) a pre-flight telephone call to the destination to arrange for making the necessary information available when required for landing;
(iii) a visual inspection;
(iv) a NOTAM issued by the aerodrome operator; or
(v) any other means available to the pilot, such as message relay from preceding aircraft at the destination.

816. SIMULTANEOUS PRECISION INSTRUMENT APPROACHES – PARALLEL RUNWAYS

When simultaneous precision instrument approaches are in progress, ATC will vector arriving aircraft to one or the other of the parallel localizers for a straight-in final approach. (When cleared for a straight-in approach a procedure

turn is not permitted.) Each of the parallel approaches have a “high side” and a “low side” for vectoring and to allow for vertical separation until each aircraft is established inbound on their respective parallel localizers.

The pilot will be instructed to change and report on tower frequency prior to reaching the outer marker inbound. If an aircraft is observed to overshoot the localizer during turn to final, the pilot will be instructed to return to the correct localizer course immediately. After an aircraft is established on the localizer, the controller monitoring the final approach will only issue control instructions if an aircraft deviates or is expected to deviate by 1,500 ft. from the localizer centre line. Information or instructions issued by the monitoring controller will be aimed at returning the aircraft to the localizer course. If the aircraft fails to take corrective action, the aircraft on the adjacent localizer may be issued appropriate control instructions. Monitoring of the approach is terminated without notification to the pilot when the aircraft is 1 NM from the runway threshold. If considered necessary, appropriate missed approach instructions will be issued.

THE APPROACH CLEARANCE WILL INCLUDE AN ALTITUDE THAT MUST BE MAINTAINED UNTIL INTERCEPTING THE GLIDE PATH. If the glide path is inoperative, the pilot will be cleared to maintain an altitude to a specified DME distance before commencing the descent.

When informed by ATIS or by the arrival controller that simultaneous precision instrument approaches are in progress, pilots shall advise the arrival controller immediately of any avionics unserviceabilities having an impact on their capabilities to accept this procedure.

817. SIMULTANEOUS PRECISION INSTRUMENT APPROACHES – CONVERGING RUNWAYS

ATC may clear pilots for precision instrument approaches simultaneously to converging runways at airports where this procedure has been approved.

Aircraft will be informed through ATIS or by the arrival controller as soon as feasible after initial contact when simultaneous precision instrument approaches to converging runways are in progress. When simultaneous approaches are in progress, ATC will vector arriving aircraft to the appropriate runway localizer for a straight-in final approach. Pilots shall advise the arrival controller immediately of any malfunctioning or inoperative equipment making this procedure undesirable.

These are the restrictions for simultaneous precision approaches to converging runways:

— Converging runways (defined as an included angle between 15 and 100 degrees).
— Radar available.
— Precision instrument approach systems (ILS/MLS) operating on each runway.
— Non-intersecting final approach courses.
— Missed approach points at least 3 NM apart.
— Non-overlapping primary missed approach protected airspace.
— Separate instrument approach charts denoting the procedures.
— Ceiling and visibility at least 700 feet and 2 SM.
— If runways intersect, tower controllers must be able to apply visual separation as well as intersecting runway separation criteria.
— Only straight-in approaches and landing are authorized.

To emphasize the protection of active runways and to aid in preventing runway incursions, landing instructions which include the words “HOLD SHORT” shall be acknowledged by a readback of the hold point by the pilot.

818. CONTACT APPROACH

A contact approach is an approach wherein an aircraft on an IFR flight plan or flight itinerary having an ATC clearance, operating clear of clouds with at least 1 NM flight visibility and a reasonable expectation of continuing to the destination airport in those conditions, may deviate from the instrument approach procedure and proceed to the destination airport by visual reference to the surface of the earth. The aircraft shall be flown at an altitude of at least 1,000 feet above the highest obstacle located within a horizontal radius of 5 miles from the estimated position of the aircraft in flight until the required visual reference is acquired in order to conduct a normal landing. Descent below minimum safe IFR altitudes may not be commenced until in VMC. Pilots are cautioned that conducting a contact approach in minimum visibility conditions introduces hazards to flight not experienced when flying IFR procedures. Familiarity with the aerodrome environment, including local area obstacles, terrain, noise sensitive areas, Class F airspace and aerodrome layout, is paramount for a successful contact approach in minimum visibility

conditions. Pilots are responsible for the adherence to published noise abatement procedures and compliance with any restrictions that may apply to Class F airspace when conducting a contact approach.

Note: This type of approach will only be authorized by ATC when:

1. the pilot requests it; and

2. there is an approved functioning instrument approach for the airport.

ATC will ensure IFR separation from other IFR flights and will issue specific missed approach instructions if there is any doubt that a landing will be accomplished. Pilots are cautioned that when any missed approach is initiated while conducting a contact approach, obstacle and terrain avoidance is the pilot's responsibility, even though specific missed approach instructions may have been issued by ATC. ATC only ensures appropriate IFR separation from other IFR aircraft during contact approaches.

Note: ATC will not issue an IFR approach clearance which includes clearance for a contact approach, unless there is a published instrument approach procedure (IAP) or a company instrument approach procedure (CIAP) authorized by Transport Canada for the airport.

819. VISUAL APPROACH

1. A visual approach is an approach wherein an aircraft on an IFR flight plan, operating in VMC, under the control of ATC and having ATC authorization, may proceed to the airport of destination in VMC.

2. In a radar environment, to gain operational advantages, the pilot may request or ATC may initiate a radar vectored flight to conduct a visual approach, provided that:

   a. the reported ceiling is at least 500 feet above the established minimum IFR altitude and the ground visibility is at least 3 SM; and

   b. at a controlled airport: the pilot reports sighting the airport and the preceding aircraft and is instructed by ATC to follow or maintain visual separation from that aircraft; or

   c. at a controlled or uncontrolled airport: the pilot reports sighting the airport but not the preceding aircraft, in which case ATC will ensure separation from the preceding aircraft until:

      (i) the preceding aircraft has landed; or
      (ii) the pilot has sighted the preceding aircraft and been instructed to follow or maintain visual separation from it.

3. The controller considers acceptance of a visual approach clearance as acknowledgement that the pilot shall be responsible for:

   a. at controlled aerodromes, maintaining visual separation from traffic that the pilot is instructed to follow;

   b. maintaining adequate wake turbulence separation;

   c. navigation to the final approach;

   d. adherence to published noise abatement procedures and compliance with any restrictions that may apply to Class F airspace; and

   e. at uncontrolled aerodromes, maintaining appropriate separation from VFR traffic that, in many cases, will not be known to ATC.

4. A visual approach is not an instrument approach procedure and therefore has no missed approach segment. If a go around is necessary for any reason, aircraft operating at controlled airports will be issued an appropriate advisory/clearance/instruction by the tower. At uncontrolled airports, aircraft are required to remain clear of clouds and are expected to complete a landing as soon as possible. If a landing cannot be accomplished, the aircraft is required to remain clear of clouds and are expected to contact ATC as

soon as possible for further clearance. ATC separation from other IFR aircraft is only assured once further ATC clearance has been received and acknowledged by the aircraft.

820. CONTROL TRANSFER IFR UNITS TO TOWERS

1. When an aircraft has been cleared for an instrument approach there is a point in time where control of the aircraft is transferred from the IFR unit to the tower. Transfer of control does not cancel the IFR flight plan but only indicates the aircraft is provided with the type of air traffic control service provided by that unit. Occasionally, the tower may issue instructions which supersede previous instructions or clearances received from the IFR unit; the acknowledgment of these instructions indicates to the tower that these instructions will be complied with. A pilot must not assume that the control tower has radar equipment or that radar service is being provided.

2. Pilots conducting an instrument approach to, or landing at a controlled airport shall only make position reports that are requested by the appropriate ATC unit. As an example, pilots may expect ATC to request a report by the Final Approach Fix (FAF) or a specified distance on final. Position reports made under these circumstances are expected to be stated by reporting the position only.

821. INITIAL CONTACT WITH AIR-TO-GROUND (A/G) FACILITY AT UNCONTROLLED AERODROMES

Pilots shall establish communications with the A/G facility (FSS, RCO, CARS or UNICOM) on the appropriate frequency if in direct communication with an ACC or a TCU, when directed to do so by the ACC or TCU.

Notwithstanding this, in accordance with Article 533 and Article 822 pilots shall establish communication with the facility on the appropriate frequency no later than five minutes prior to the estimated time of commencing the approach procedure. If the ATC approach clearance has not already been received, it should be obtained from the agency listed on GPH200 approach plates, unless otherwise directed by ATC.

Note 1: If a pilot is instructed to remain on the ATC frequency rather than being transferred to the appropriate frequency for the uncontrolled aerodrome, it remains the pilot's responsibility to notify the associated destination aerodrome ground station, or to broadcast where no ground station exists, and report in accordance with Article 533 and Article 822. This may be accomplished by taking one of the following actions:

a. if the aircraft is equipped with more than one two-way communication radio, the pilot is expected to make the report on the appropriate frequency with the secondary radio, while monitoring the ATC frequency on the primary radio; or

b. if the aircraft is equipped with a single two-way communication radio, the pilot must first request and receive permission to leave the ATC frequency in order to transmit this directed or broadcast report and then return to the ATC frequency; or, if this is not possible, the pilot should specifically request ATC to notify the associated ground station of their approach intentions and estimated time of landing.

Note 2: At aerodromes where RAAS is provided via an RCO and where AWOS (or LWIS) weather information is also broadcast via a voice generator module (VGM), it is recommended that pilots listen to the broadcast prior to contacting the A/G facility, and upon contact, advise that they have the wind and altimeter information.
Because a VGM weather broadcast contains up-to-the-minute weather, it will be more current and may differ slightly from the most recently disseminated aviation routine weather report (METAR) or aviation selected special weather report (SPECI). The latest METAR or SPECI for the remote aerodrome will be provided, upon request, from the ATS unit controlling the RCO.

822. IFR ARRIVAL PROCEDURES AT UNCONTROLLED AERODROMES

1. Pilots operating IFR in uncontrolled airspace should, whenever practical, monitor 126.7 Mhz and broadcast their intentions on this frequency immediately prior to changing altitude or commencing an approach. Therefore, when arriving at aerodromes where another frequency is designated as the MF, descent and approach intentions should be broadcast on 126.7 Mhz before changing to the MF. If conflicting IFR traffic becomes evident this change should be delayed until the conflict is resolved. Once established on the MF, the pilot shall make the reports listed in Article 822 sub-para 2. The same reporting

pertains on a designated UNICOM frequency or on 123.2 MHz where UNICOM does not exist.

2. The pilot-in-command of an aircraft operating under IFR and intending to conduct an approach at an uncontrolled aerodrome shall, unless otherwise instructed by air traffic control, transmit the following directed or broadcast reports:

   a. five minutes prior to estimated time of commencing the approach procedure; including in this report approach intentions and estimated time of landing;

   b. upon passing the fix outbound (away from the airport) with the intention of conducting a procedure turn, or, if no procedure turn is intended, upon first interception of the final approach track;

   c. upon passing the final approach fix during the final approach or three minutes before the estimated time of landing where no final approach fix exists (approach facility on the aerodrome);

   d. upon commencing a circling procedure advise intentions;

   e. when turning onto the final approach leg advise position; and

   f. in the event of a missed approach, as soon as is practical after commencing the missed approach, including in this report a statement of intentions.

3. A straight-in landing should not be used at uncontrolled airports where air-to-ground advisory is not available to provide the necessary weather and runway condition reports required to conduct a safe landing. The pilot should determine the wind and verify the runway is unobstructed before landing. Where pilots lack any necessary information, they are expected to ensure a visual inspection of the runway is completed prior to landing. In some cases, this can only be accomplished by conducting a circling approach utilizing the appropriate circling MDA.

4. It is the pilots responsibility to notify the associated destination aerodrome or ground station, or to broadcast where no ground station exists, the necessary reports in accordance with para 1. ATC will transfer the pilot to the MF at the appropriate time. An approach clearance or clearance out of controlled airspace where an MF exists does not imply automatic transfer to the MF. In some cases ATC will instruct the pilot to remain on a control frequency rather than transferring him to the MF. Reports should therefore be passed through the use of dual radios, by requesting ATC clearance to leave the frequency to make the necessary directed or broadcast reports, or specifically requesting ATC to notify the associated ground station of their approach intentions and estimated time of landing.

5. In addition to the requirements stated above, pilots operating aircraft under IFR into uncontrolled aerodromes when the weather conditions at the aerodrome could permit VFR circuit operations, are expected to approach and land on the active runway that may be established by the aircraft operating in the VFR circuit. Pilots operating aircraft IFR at uncontrolled aerodromes do not establish any priority over aircraft operating VFR at that aerodrome. Should it be necessary for the IFR aircraft to approach to and/or land on a runway contrary to the established VFR operation, it is expected that appropriate communications between pilots, or pilots and the FSS, as appropriate, will be effected in order to ensure there is no conflict of traffic.

SECTION 2 CIRCLING PROCEDURES

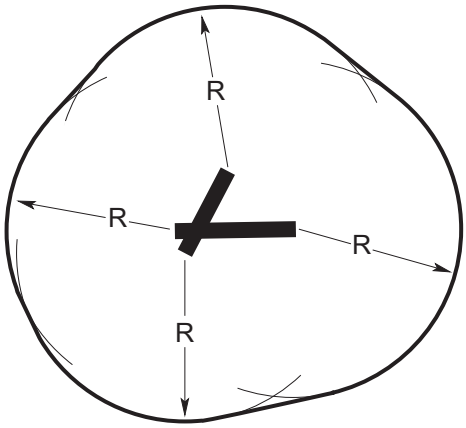
823. GENERAL

1. Circling is the term used to describe an IFR procedure that is conducted by visually manoeuvring (refer to Article 819) an aircraft, after completing an instrument approach, into position for landing on a runway which is not suitably located for a straight-in landing (not usually applicable to rotorcraft).

2. The visual manoeuvring area for a circling approach is determined by drawing arcs centred on each runway threshold, and joining those arcs with tangent lines. The radius (R) of the arcs are related to the aircraft category as follows: A, 1.3 NM; B, 1.5 NM; C, 1.7 NM; D, 2.3 NM; E, 4.5 NM. (Category E circling minima are published at DND aerodromes only.) The circling MDA provides a minimum of 300 feet above all obstacles within the visual manoeuvring area for each category. If it is necessary to manoeuvre an aircraft at a speed in excess of the upper limit of the speed range for its approach category, the circling

minima for the next higher category should be used in order to ensure appropriate protection from obstacles.

VISUAL MANOEUVRING (CIRCLING) AREA



3. Circling restrictions are published at some locations to prevent circling manoeuvres in certain sectors or directions where higher terrain or prominent obstacles exist. This practice allows the publication of lower minima than would otherwise be possible. In such cases, the circling MDA DOES NOT PROVIDE OBSTACLE CLEARANCE WITHIN THE RESTRICTED SECTOR.

4. An air traffic controller may specify manoeuvring in a certain direction or area due to traffic considerations; however, the selection of the procedure required to remain within the protected area and to accomplish a safe landing rests with the pilot.

824. MISSED APPROACH FROM A CIRCLING PROCEDURE

A pilot may have to conduct a missed approach in this manoeuvre. The applicable missed approach in this situation is the one associated with the instrument approach just completed. Although there is no standard procedure that a pilot can apply in order to get established in the missed approach, it is recommended that:

1. a climb be initiated;

2. the aircraft be turned towards the centre of the aerodrome; and

3. the aircraft be established, as closely as possible, in the missed approach procedure as published.

SECTION 3 HOLDING PROCEDURES

825. GENERAL

1. Since lateral separation is provided by ATC in the form of airspace to be protected in relation to holding procedures, it is essential that pilots adhere to the aircraft entry and holding manoeuvres, as described.

2. A holding clearance issued by ATC will include at least the following information:

   a. clearance to the holding fix;

   b. direction to hold from the holding fix;

   c. on specified, radial, course, inbound track;

   d. if DME is used, the DME distances at which the fix end and outbound end turns are to be commenced. (e.g., “Hold between (number of miles) and (number of miles)”);

Note: In the absence of an outbound DME being issued by ATC, pilots are expected to time the holding pattern in accordance with Article 828

e. the altitude or flight level to be maintained; and

f. time to expect further clearance, time to expect approach clearance, or time to leave the fix in the event of communications failure.

3. During entry and holding, all turns are to be made so as to achieve an average bank angle of at least 25° or a rate of 3° per second, whichever requires less bank.

4. Unless the clearance issued by ATC contains instructions to the contrary, or a non-standard holding pattern is published at the holding fix, pilots are expected to make all turns to the right after initial entry into the holding pattern.

5. Occasionally, a pilot may reach a clearance limit before obtaining further clearance from ATC. In this event, where a holding pattern is published at the clearance limit, the pilot is to hold as published. Where no holding pattern is published the pilot is to hold in a standard pattern on the inbound track to such clearance limit and request further clearance. If communication cannot be established with air traffic control, the pilot should then proceed in accordance with communication failure procedures as described in GPH205 as appropriate.

Example

1:A westbound flight on V300, cleared to Uplands NDB reaches Uplands before obtaining further clearance. The pilot is to hold at Uplands on an inbound track of 286° and request further clearance.

Example

2:The published missed approach procedure for an ILS RWY 24 approach at Halifax is: “CLIMB to 2200 feet on track of 237° to GOLF NDB.”
A pilot missing an ILS approach to RWY 24, and not in receipt of further clearance is to proceed directly to the GOLF NDB, make a right turn and hold at the GOLF beacon on an inbound track of 237°, one minute pattern at 2200 feet and request further clearance.
If for any reason a pilot is unable to conform to these procedures, he should advise ATC as early as possible.

826. TACAN CONSIDERATIONS

1. When a TACAN facility has been specified as a clearance limit, special procedures are required because of the cone of ambiguity. If no further clearance has been received by the time 10 DME is reached, the pilot is to commence a standard hold on the inbound radial, between 10 DME and 15 DME, and request further clearance. The 10 DME will be considered the holding fix.

827. ENTRY PROCEDURES

1. The pilot shall enter a holding pattern according to the aircraft's heading in relation to the three sectors shown in Figure 8-1 Entry Sectors, recognizing a zone of flexibility of 5° on either side of the sector boundaries.

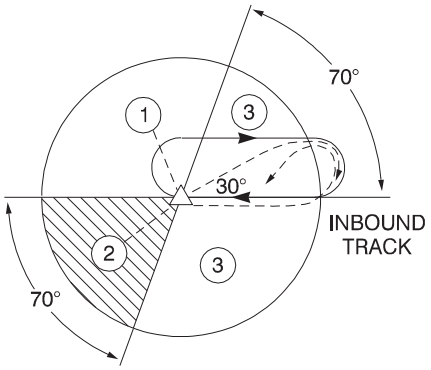


FIGURE 8-1 ENTRY SECTORS

2. Sector 1 procedures (parallel entry) are:

   a. Upon reaching the fix, turn onto the outbound heading of the holding pattern for the appropriate period of time.

   b. Turn left to intercept the inbound track or to return directly to the fix.

   c. On the second arrival over the fix, turn right and follow the holding pattern.

3. Sector 2 procedures (offset entry) are:

   a. Upon reaching the fix, turn to a heading that results in a track having an angle of 30° or less from the inbound track reciprocal on the holding side.

   b. continue for the appropriate period of time, then turn right to intercept the inbound track and follow the holding pattern.

4. Sector 3 procedure (direct entry) is:

   a. Upon reaching the fix, turn right and follow the holding pattern.

5. Entry procedures to a non-standard pattern requiring left turns are oriented in relation to the 70° line on the holding side (Figure 8-2 Left Hand Pattern Entry), just as in the standard pattern.

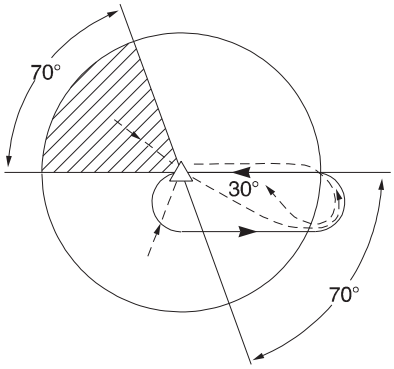


FIGURE 8-2 LEFT HAND PATTERN ENTRY

6. When entering a holding pattern, the appropriate ATC unit should be advised. The ATC unit may also request that the pilot report “established in the hold”. In this case the pilot is to report as established when crossing the fix after having completed the entry procedure.

7. Correction for Wind

Crosswind Correction – After entering the holding pattern the pilot is expected to compensate for a known effect of wind in order to arrive at an outbound position from which a turn inbound will place an aircraft on the holding course. This may be accomplished by shallowing the turns into the wind and steepening the turns downwind 1° for each degree of drift correction necessary to maintain the inbound course. In no case, however, should the angle of bank be shallowed to less than 15° (helos excepted) nor steepened more than 30°.

8. RNP/RNAV Holding Procedures

Where an RNP/RNAV holding capability is provided the system shall, with the minimum of flight crew intervention:

a. Enable the aircraft to remain within the protected airspace during the hold entry and maintain the aircraft within the holding airspace during and after entry; and

b. The entry procedure may be any one of the examples provided above but this does not exclude the provision of an alternative entry procedure in which the aircraft is not required to fly over the hold waypoint during entry. However, in all cases, the aircraft is required to fly over the hold waypoint along the defined inbound track once established in the hold

828. STANDARD HOLDING PATTERN

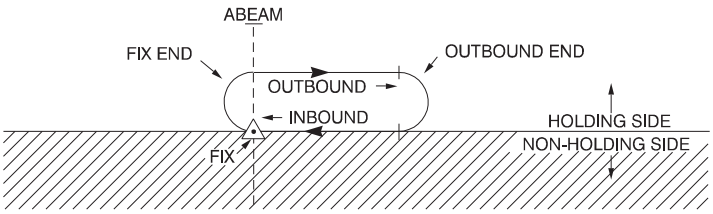


FIGURE 8-3 STANDARD HOLDING PATTERN

1. A standard holding pattern is depicted above and described below in terms of still air conditions.

a. Having entered the holding pattern, on the second and subsequent arrivals over the fix, execute a right turn to fly an outbound track which will most appropriately position the aircraft for the turn onto the inbound track.

b. Continue outbound for one minute if at or below 14,000 feet ASL or for $1^{1}/_{2}$ minutes if above 14,000 feet ASL.

Note: Distance will be specified by ATC instead of time when a DME fix is to be used for holding.

c. Turn right so as to realign the aircraft on the inbound track.

2. When holding at a VOR, pilots should begin the turn to the outbound leg at the time of the complete reversal of the TO-FROM indicator.

829. NON-STANDARD HOLDING PATTERN

1. A non-standard pattern requires that:

a. Fix end and outbound end turns be made to the left, and/or

b. Time along the inbound track will be other than the 1 – minute or $1^1/_2$ – minute leg appropriate for the altitude being flown.

830. TIMING

1. 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, or $1^1/_2$ minutes if above 14,000 feet ASL. However, due allowance should be made in both heading and timing to compensate for the effects of known wind, except when turning. Outbound timing begins (1) over the fix on initial entry, (2) abeam the fix or (3) attaining the outbound heading, whichever occurs last. When using TACAN for holding, the outbound leg will not exceed the specified length in nautical miles.

2. After initial circuit of the pattern, timing should begin from abeam the fix or on attaining the outbound heading, whichever occurs later. Outbound times should be increased or decreased, in recognition of wind conditions, to effect 1 minute or $1^1/_2$ minutes (appropriate to altitude) inbound to the fix. Inbound timing begins when the aircraft crosses the holding track inbound, or at wings level, whichever occurs first.

3. When ATC clearance is received specifying the time to depart the holding pattern, adjustments should be made to the flight pattern within the limits of the established holding pattern in order to leave the fix as close as possible to the time specified.

831. SPEED LIMITATIONS

1. Holding patterns must be entered and flown at or below the following airspeeds:

a. Propeller-driven aircraft (including turbo-prop)

(1) MHA to 30,000 ft.	175K IAS

b. Civil Turbo-jet (including military models of civil turbo-jet)

(1) MHA to 14,000 ft.	230K IAS
(2) above 14,000 ft.	265K IAS

c. Military Turbo-jet

(1) all except those aircraft listed in (2)	265K IAS
(2) CT-114	175K IAS

d. Climbing while in the holding pattern:

(1) turbo-prop aircraft	normal climb speed
(2) turbo-jet aircraft	310K IAS or less

Note: The Airspeed Limit Order applies in civilian airspace. 250 KIAS must be observed below 10 000ft ASL and 200 KIAS below 3 000 ft AGL within 10 NM of a controlled aerodrome.

Minimum Holding Altitude (MHA) – The lowest altitude prescribed for a holding pattern which assures navigational signal coverage, communications and meets obstacle clearance requirements.

2. Pilots shall advise ATC immediately if airspeeds in excess of those specified above become necessary for any reason, including turbulence, or if unable to accomplish any part of the holding procedure. After such higher speed is no longer necessary, the aircraft should be operated at or below the specified airspeeds, and ATC notified.

Note: Airspace protection for turbulent air holding is based on a maximum of 280K IAS or Mach 0.8, whichever is lower. Considerable impact on the flow of air traffic may result when aircraft hold at speeds which are higher than those specified above.

3. After departing a holding fix, pilots should resume normal speed subject to other requirements, such as speed limitations in the vicinity of controlled airports, specific ATC requests, etc.

832. DME PROCEDURES

1. DME holding is subject to the same entry and holding procedures previously described except that distances, in nautical miles are used in lieu of time values.

2. In describing the direction from the fix on which to hold and the limits of a DME holding pattern, an ATC clearance will specify the DME distance from the navigation aid at which the inbound and outbound legs are to be terminated. The end of each leg is determined by the DME indications.

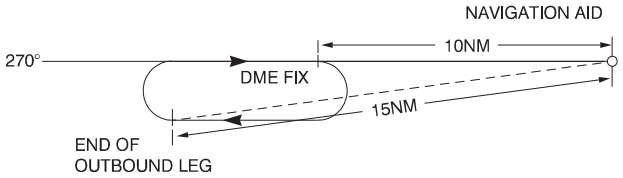


FIGURE 8-4

Example: An aircraft cleared to the 270 RADIAL 10 MILE DME FIX, to HOLD BETWEEN 10 AND 15 MILES, will hold inbound on the 270° radial, commence turn to the outbound leg when the DME indicates 10 NM and commence turn to inbound leg when the DME indicates 15 NM.

833. SHUTTLE PROCEDURE

1. A shuttle procedure is defined as a manoeuvre involving a descent or climb in a pattern resembling a holding pattern. Shuttles are generally prescribed on instrument procedures located in mountainous areas. In the approach phase, it is normally prescribed where a descent of more than 2,000 ft. is required during the initial or intermediate approach segments. It can also be required when performing a missed approach or departure procedure from certain airports. A shuttle procedure shall be executed in the pattern as published unless instructions contained in an ATC clearance direct otherwise.

2. To ensure that the aircraft does not exceed the obstacle clearance protected airspace during a shuttle climb or descent, the aircraft must not exceed:

   a. the airspeed limit, as published on instrument procedure charts; and/or

   b. the normal climb or descent airspeed for aircraft type and airspace classification; and/or

   c. the outbound/inbound still air time restrictions; and/or

   d. the DME holding restrictions

   Note: 250K IAS must be observed below 10 000 ft ASL and 200 KIAS below 3 000 ft AGL within 10NM of a controlled aerodrome.

834. HOLDING PATTERNS DEPICTED ON ENROUTE AND TERMINAL CHARTS

At some high traffic density areas holding patterns are depicted on the enroute IFR charts and on the IFR terminal area charts. When pilots are cleared to hold at a fix where a holding pattern is published, or if clearance beyond the fix has not yet been received, pilots are to hold in accordance with the depicted pattern using normal entry procedures as described in Article 827 and timing in the hold as described in Article 830 ATC will use the following phraseology when clearing an aircraft to hold at a fix which has a depicted holding pattern;

CLEARED to the (fix), HOLD (direction)
EXPECT FURTHER CLEARANCE AT (time)

Note: The holding direction means the area in which the hold is to be completed in relation to the holding fix, e.g., North, East, North West etc. If the required pattern is different than that depicted a detailed holding instruction will be issued by ATC.

SECTION 4 RUNWAY VISUAL RANGE (RVR) AND HIGH INTENSITY APPROACH LIGHTING (HIAL)

835. DEFINITIONS

1. Prevailing Visibility: The maximum visibility value common to sectors comprising one-half or more of the horizontal circle.

   Note: Prevailing Visibility is determined by human observations.

2. Runway Visual Range: The maximum distance in the direction of take-off or landing at which the runway or the specified lights or markers delineating it can be seen from a specified point above its centreline from a height corresponding to the average eye-level of pilots at touchdown.

   Note: Runway Visual Range is determined from information provided by a transmissometer located near the touchdown point on a runway.

836. GENERAL

1. Ground Visibility will continue to be reported and used in the application of take-off and landing minima, execpt that, for those runways equipped with a transmissometer and digital readout equipment, or other suitable means, pilots may use Runway Visual Range (RVR) in lieu of Prevailing Visibility in determining the visibility minima. In such cases the following comparative scale shall be used unless otherwise authorized:

Ground Visibility	RVR
1 mile	= 5000 ft.
$^3/_4$	= 4000 ft.
$^1/_2$ mile	= 2600 ft.
$^1/_4$ mile	= 1200 ft.

2. The normal RVR reading is predicated on a runway light setting of strength 3; however, if the light settings are increased to strength 4 or 5, a relative increase in the RVR reading will be evident. No decrease in the RVR reading will be evident for light settings of less than setting 3. Pilots will be advised when the runway light setting is adjusted to 4 or 5.

3. In all cases, it is the prerogative of the pilot to request a light setting suitable to his requirements. Where more than one aircraft is conducting an approach, the pilot of the second aircraft may request a change in the light setting if he so desires after the first aircraft has completed its landing.

837. OPERATIONAL USE OF RUNWAY VISUAL RANGE

1. RVR information is available in the ATC Arrival Control Sector, the PAR position, the Control Tower, the Flight Service Station, and some AES weather stations.

2. When applicable, Runway Visual Range information will be passed to the pilot as a matter of routine and may only be used in the determination or application of visibility minima if the active runway is the one served by the transmissometer. RVR information found in the remarks section of surface weather reports is not to be used for operational purposes and is superseded by any RVR information from ATS personnel.

3. Pilots will be provided with the actual RVR reading if the RVR is less than 6,000 feet. Any significant changes in RVR either upwards or downwards will be passed to the pilot.

Note: Runway Visual Range reports are intended to provide an indication of how far the pilot will be able to see along the runway in the touchdown zone; however, the actual visibility at other points along the runway may differ due to the siting of the transmissometer. This should be taken into account when decisions based on reported RVR must be made.

838. HIGH INTENSITY APPROACH LIGHTING - DEFINITION

High Intensity Approach Lighting (HIAL) is normally installed on runways served by CAT I or CAT II precision approaches. HIAL may be a separate system or a combination of two or more systems and are depicted and explained in GPH205/CFS and the Landing Chart on approach plates (e.g. AE, AC, AL). Other systems may be installed or embedded in HIAL systems, such as SF (Sequential Flashing strobes) or Medium/Low Intensity Lighting Systems.

839. HIAL VISIBILITY CREDIT

Visibility minima is predicated upon the Height Above Touchdown (HAT) and provides the pilot with sufficient time/distance to acquire runway environment and commence descent from MDA/DH to execute a safe landing. With HIAL, a visibility credit (reduction) may be incorporated into the published visibility minima for Straight-In approaches due to better visual cues to aid the pilot to acquire runway environment earlier. In low visibility, this provides an operational advantage for flight planning purposes.

840. HIAL INOPERATIVE (HIAL INOP)

1. If HIAL is INOP, the visibility credit is not applicable and published visibility values must be adjusted (increased) to compensate for reduced visual cues (+¼ SM Precision and +½ SM for Non-Precision). Normally, adjusted values are provided by NOTAM and indicate the revised visibility limits for Straight-In approaches until the HIAL system is serviceable. Pilots must apply revised visibility values when planning destination/alternate weather requirements.

2. If a HIAL is INOP and revised visibility values are not available by NOTAM or other means, apply the criteria from the table below:

HAT AND CORRESPONDING VISIBILITIES IN STATUTE MILES (SM)

Approach Type	*HAT	HIAL (published)	HIAL **INOP**
Precision	200	½ (RVR 26)	¾ (RVR 40)
Non-Precision (Straight-in)	up to 347	1	1
	348 - 434	1	1¼
	435 - 521	1	1½
	522 - 608	1¼	1¾
	609 - 695	1½	2
	696 - 782	1¾	2¼
	783 - 869	2	2½
	870 - 956	2¼	2¾
	957 and above	2½	3

*HAT values obtained from GPH209, Chapter 3, Tables 3-1 and 3-2

Example: Published HAT/visibility (SM) for approach/runway with HIAL = **455 ft/1 SM**. If HIAL INOP visibility increased to **1½ SM.**

SECTION 5 MISSED APPROACH PROCEDURES

841. GENERAL

To ensure obstacle and terrain clearance in event of a missed approach, the pilot is to carry out the published missed approach until at an appropriate minimum IFR altitude, prior to complying with further instructions or clearances issued by ATC. If weather or local area knowledge permit, it is acceptable for a pilot to accept a revised missed approach instruction such as "on the missed approach, climb runway heading to 3000 feet" that differ from

the published missed approach. In this case, it is the pilot's responsibility to ensure terrain and obstacle avoidance, if in doubt the pilot shall refuse and follow the published missed approach. Examples of appropriate minimum IFR altitudes are: missed approach termination altitude, Minimum Sector Altitude (MSA), and Minimum Enroute Altitude (MEA). (Refer to Article 703)

Note: A minimum climb gradient of 200 ft/nm is required for all missed approaches unless a climb gradient in excess of 200 ft/nm has been specified.

842. PUBLISHED MISSED APPROACH INSTRUCTIONS

1. Whenever a pilot conducts a published missed approach from an instrument approach procedure, the aircraft must continue along the published final approach course to the published missed approach point (MAP) and follow the published missed approach instructions. The pilot may climb immediately to the altitude specified in the missed approach procedure or assigned by ATC.

2. If ATC has not issued further clearance or instructions prior to reaching the missed approach clearance limit or holding fix, the pilot shall:

   a. hold in a standard holding pattern on the inbound track used to arrive at the fix;

   b. hold in a standard holding pattern inbound to the fix on the published missed approach track to the fix

   c. hold in a published shuttle or holding pattern at the fix, regardless of the missed approach track to the fix; or

   d. hold in accordance with published missed approach holding instructions.

      Note: If the missed approach termination altitude is below MSA, obstacle and terrain clearance is provided for the applicable holding pattern.

3. Obstacles and terrain, type of instrument approach, navigation aids, approach aids, airspace restrictions (e.g. other aerodromes, noise sensitive areas, etc) and/or ATC requirements for traffic flow, etc are considered in published missed approach instructions. Published missed approach instructions include altitude(s), routing (heading and/or track), and normally a clearance limit (holding fix). A missed approach may be straight, turning or a combination of both, but with respect to obstacle and terrain assessment criteria, there are only two types of missed approaches, described as follows:

   a. Positive Track Guidance - Requires at least one electronic NAVAID/Approach aid to fly specific track(s) to or from a NAVAID or Fix. In some cases, a turn may be specified in the procedure to track outbound/inbound to a NAVAID or Fix. Examples are as follows:

      Examples:
      1.'Climb to 2200 on track of 235° to "ZHZ" NDB'.
      2.'Climb on track of 267° to "MB" NDB. Track outbound on 303° to 2500 then RIGHT turn direct to "AP" NDB at 3500'.
      3.'Climb to 3000 on track of 133°. RIGHT turn to "LF" NDB on track of 217°'.

      Note: Provided that the missed approach track and identification of the missed approach clearance limit (holding fix) can be achieved with NAVAIDs or Approach Aids other than the one(s) specified in the missed approach procedure, "Positive Course Guidance" criteria is achieved. However, the NAVAIDS or Approach Aids must be depicted on the planview of the approach plate being used for the purpose of the missed approach and must clearly define the clearance limit.

      Examples: Halifax ILS Rwy 24: 'Climb to 2200 on track of 235° to "ZHZ" NDB' can also be flown using the localizer and/or "ZNS" NDB to the 6.3 DME Fix (co-located with "ZHZ" NDB).

   b. Nil Track Guidance -All, or a portion of the procedure specifies heading and may include a NAVAID or fix. Divergence from approach track and/or runway centreline, due to crosswind/drift, is compensated for in the obstacle and terrain clearance assessment. Generally, these procedures are

used when ground or aircraft NAVAID availability/limitations precludes flying a specific track. Some examples are as follows:

Examples:

1.'Climb runway heading to 2200. Expect radar vectors'.
2.'Climb runway heading 114° to 2200, then left to "QQ" NDB climbing to 3000'.

843. OBSTACLE AND TERRAIN CLEARANCE

1. Canadian civil and military air traffic control procedures do not require the air traffic controller to provide terrain and obstacle clearance in their missed approach instructions. Instructions that differ from those published, such as "...on go-around/missed approach.../right turn climb on course/climb runway heading to 3000 before proceeding on course/climb straight head to "B" NDB before proceeding on course/etc..." do not guarantee required obstacle and terrain clearance during the climb from the missed approach point.

2. Pilots shall not accept an altitude that is below a published minimum IFR altitude unless they are "Radar Identified" by ATC and Radar Vectors are acknowledged.

3. Obstacle clearance responsibility also rests with the pilot when choosing to climb in visual conditions in order to accommodate ATC variances to the published missed approach (e.g. when able, left turn to 250 degrees and climb to 2500 feet, to allow for sequencing of VFR traffic). Unless able to ensure clearance over obstacles and terrain, the pilot shall not accept missed approach instructions from ATC that are different than published unless weather or local knowledge permit. If unable to comply, the pilot shall advise ATC of their intentions **prior** to the missed approach to ensure traffic separation is not compromised. (Example: "Sabre 12 will be following the published missed approach until XXX altitude").

Note: Pilots shall not accept a non-published missed approach ATC clearance they do not intend to carry out.

844. FURTHER CLEARANCE AND INSTRUCTIONS

1. The purpose of the missed approach is to enable safe transition from the missed approach point to an IFR altitude that will enable safe manoeuvring for a subsequent phase of flight specified by further clearance and/or instructions. The missed approach routing may be terminated in order to comply with further clearance or instructions issued by ATC, provided that the aircraft is at an appropriate minimum IFR altitude.

2. If ATC has issued further clearances or instructions, such as clearance to another destination, a hold or an instrument approach, the pilot shall ensure adequate obstacle clearance prior to complying with further instructions or clearance (e.g. "...on missed approach.../left turn climb on course/right turn 330° to 5000 feet before proceeding on course/left turn direct the "J" NDB to hold/left turn 250° for Radar Vectors, maintain 2000 feet/cleared BCRS Rwy 06/etc...").

CHAPTER 9

EMERGENCIES

SECTION 1 GENERAL

901. DECLARATION OF EMERGENCY

An emergency condition is classified in accordance with the degree of danger or hazard being experienced, as follows:

Distress: A condition of being threatened by serious and/or imminent danger and requiring immediate assistance.

Urgency: A condition concerning the safety of an aircraft or other vehicle, or of some person on board or within sight, which does not require immediate assistance.

The radiotelephone distress signal MAYDAY and the radiotelephone urgency signal PAN PAN must be used at the commencement of the first distress and urgency communication, respectively, and, if considered necessary, at the commencement of any subsequent communication.

Note 1: Whenever pilots are faced with an emergency situation, ATC expects the pilot will take whatever action is considered necessary. ATC will assist pilots in any way possible whenever an emergency is declared. Pilots are requested to advise ATC as soon as practicable of any deviations from altitude or route necessitated by an emergency situation, in order that every effort can be made to minimize confliction with other aircraft. Pilots are reminded that they may be asked by ATC for a written report concerning the nature of a declared emergency.

Note 2: Pilots of transponder equipped aircraft, when experiencing an emergency and unable to establish communications immediately with an air traffic control unit, may indicate “Emergency” to ATC by adjusting the transponder to reply on Code 7700. Thereafter, radio communications should be established with ATC as soon as possible.

902. ACTION BY THE PILOT DURING EMERGENCY CONDITIONS

1. Pilots should:

   a. Precede the distress or urgency message by the appropriate radiotelephone distress signal, preferably spoken three times.

   b. Transmit on the air-to-ground frequency in use at the time.

   c. Include in the distress or urgency message as many as possible of the following elements:

      (i) the name of the station addressed (time and circumstances permitting),
      (ii) the identification of the aircraft,
      (iii) the nature of the distress or urgency condition,
      (iv) the intention of the person in command, and
      (v) the present position, altitude or flight level, and heading.

      Note: The above procedures do not preclude the possibility of the following courses of action:
      a. The pilot making use any available frequency, or of broadcasting the message;
      b. The pilot using any means at his/her disposal to attract attention and make known his/her conditions;
      c. Any person taking any means at his/her disposal to assist the emergency aircraft.

2. The station addressed will normally be that station communicating with the aircraft. International emergency frequencies are 121.5 and 243.0 MHz. In Canada, 126.7 MHz should, whenever practicable,

be continuously monitored in uncontrolled airspace. When aircraft are equipped with dual VHF equipment, it is strongly suggested that frequency 121.5 MHz be monitored at all times.

3. 121.5 MHz may also be used to establish communications when the aircraft is not equipped with the published frequencies or when equipment failure precludes the use of normal channels.

903. REPORTING MALFUNCTIONS OF NAVIGATION AND COMMUNICATIONS EQUIPMENT

1. The pilot-in-command of an aircraft in IFR flight within controlled airspace shall report immediately to the appropriate air traffic control unit any malfunction of navigation or air/ground communications equipment.

2. Having received this information, Air Traffic Control will take into account any limitations in navigation or air/ground communications equipment and control the aircraft accordingly.

904. RADAR ASSISTANCE TO AIRCRAFT (MILITARY EARLY WARNING)

1. The Canadian Forces can provide assistance in an emergency to aircraft operating within the Air Defence Identification Zone (ADIZ).

2. No responsibility for the direct control of aircraft is accepted and radar assistance does not absolve the captain of the responsibility to comply with air traffic control clearances or other required procedures. Assistance consists of:

   a. Track and groundspeed checks — speeds in knots.

   b. Position of the aircraft in GEOREF or by bearing and distance from the ADIZ station — distances are in nautical miles and bearings in degrees true.

   c. Position of heavy cloud in relation to the aircraft.

3. To obtain assistance, call “Radar Assistance” on 126.7 or 364.2 MHz. Initial contact should be made at the highest practicable altitude. When circumstances require a Mayday call, use 121.5 or 243.0 MHz giving all the details necessary to enable assistance. If air defence commitments preclude the granting of radar assistance, the ground station will transmit the word “UNABLE”, and no further explanation will be given.

905. UNLAWFUL INTERFERENCE (HIJACK)

Canada along with other States has adopted a special SSR transponder code for use by pilots whose aircraft are being subjected to unlawful interference. This code (7500) will not be assigned by ATC unless information has been received from the pilot that the aircraft is being subjected to unlawful interference.

906. BIRD STRIKE

Most major airports in Canada have a plan to identify and control the hazards birds present to flight operations. This situation generally is a problem during the spring and autumn migrations; however, some airports are continuously subjected to bird hazard. Pilots should monitor ATIS during the migratory season for information concerning this hazard. Pilots whose aircraft experience a bird strike are to complete the form CF218 and forward it to the Unit or Base Flight Safety Officer.

SECTION 2 SEARCH AND RESCUE

907. SEARCH AND RESCUE SERVICE

1. The Canadian Forces is responsible for co-ordinating Search and Rescue (SAR) resources and for conducting Search and Rescue operations. The service is available 24 hours per day in all parts of Canada and over the Atlantic and Pacific Coasts. SAR units are equipped not only to conduct searches but also to provide complete rescue service including trained parachute rescue personnel who can render

first aid and supply any necessary emergency supplies. The Canadian Forces can also provide specially equipped ground searchers who are capable of operating over any terrain to effect rescue.

2. This service is provided through three Rescue Co-ordination Centres (RCC) located at Victoria, Trenton and Halifax. The RCCs control all rescue units in their area and have an extensive communications network of civil and military facilities at their disposal.

3. In order to become more fully informed about the work of the Search and Rescue Service and how it can help those in distress, the Canadian Forces invites anyone to visit a Rescue Co-ordination Centre and get acquainted.

908. FLIGHT PLANNING

1. The Flight Plan or Flight Itinerary is the primary document from which information can be obtained to organize direct Search and Rescue operations. It is in a pilot's best interest to follow these two rules to ensure early detection and rescue:

   a. File a Flight Plan or Flight Itinerary. File the Flight Plan or Flight Itinerary either directly with an air traffic control unit or through a Flight Service Station, Airport Manager's Office or Canadian Forces Base Operations Centre. If unable to file either directly or indirectly with an air traffic unit, a Flight Itinerary may be filed with a responsible person. A Flight Plan or Flight Itinerary must contain the information specified in Chapter 4 “Flight Planning”.

   b. Adhere to your Flight Plan or Flight Itinerary. Since the initial search is based on your last known position, failure to adhere to your plans will delay a search or even preclude your being found.

909. REQUEST FOR SEARCH AND RESCUE

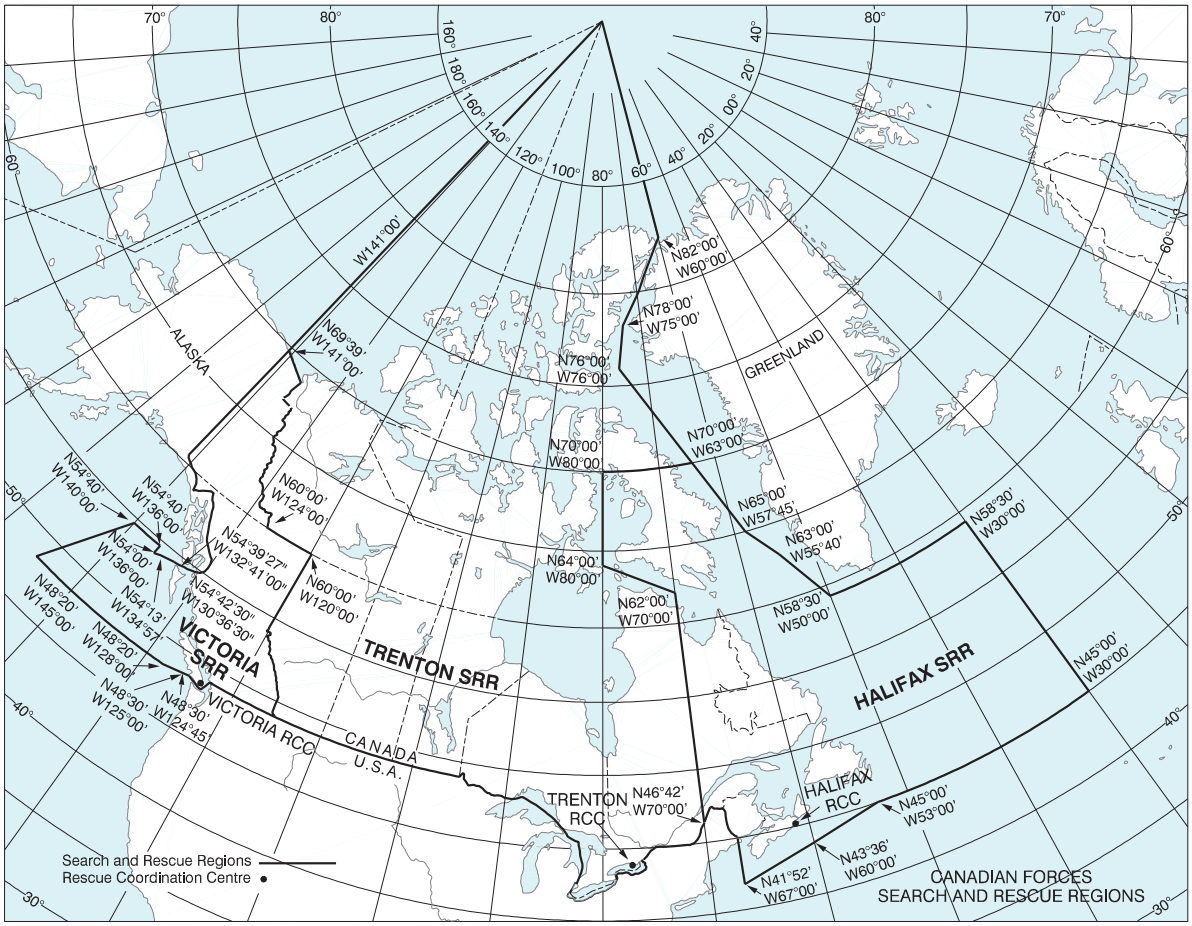
1. As soon as information is received that an aircraft is overdue, operators or owners should immediately alert the nearest Search and Rescue Co-ordination Centre, giving all the known details of the incident. They should not conduct a small scale private search first since such action could deprive those in need of assistance at a time when it is needed most. The following are the Canadian Forces Rescue Co-ordination Centres and telephone numbers:

Victoria Rescue Co-ordination Centre —	1-800-567-5111 or (250) 413-8933 or cellular #SAR or #727
Trenton Rescue Co-ordination Centre —	1-800-267-7270 or
Trenton	(613) 965-3870
Halifax Rescue Co-ordination Centre —	1-800-565-1582 or Halifax (902) 427-8200

Note: All Rescue Co-ordination Centres will accept collect telephone calls dealing with missing or overdue aircraft.

Mailing Addresses:

VICTORIA	TRENTON	HALIFAX
Joint Rescue Co-ordination Centre	Joint Rescue Co-ordination Centre	Joint Rescue Co-ordination Centre
P.O. Box 17000	P.O. Box 1000	P.O. Box 99000
Station Forces	Station Forces	Station Forces
Victoria, BC	Astra, ON	Halifax, NS
V9A 7N2	K0K 3W1	B3K 5X5



910. PILOT RESPONSE TO ELT SIGNAL

1. Should you hear an ELT tone, immediately report the following information to the nearest Air Traffic Control Unit Service Station:

   — position, altitude and time when signal first heard.
   — ELT signal strength – when first received and when contact lost.
   — position, altitude and time when contact lost.
   — whether ELT signal ceased suddenly or faded.

2. Resist the urge to start your own search. If unable to contact anyone, continue to transmit and land at the nearest suitable aerodrome or strip where you know there is a telephone. Time is critical; the downed person may be injured or exposed to severe weather.

911. MISSING AIRCRAFT NOTICE (MANOT)

1. When an aircraft is reported missing, the appropriate RCC will issue a Missing Aircraft Notice to Flight Service Stations, control towers and area control centres providing service in or near the search area. MANOTS will be made available to pilots planning to overfly the search area by notices posted on flight information boards, orally during the filing of flight plans, or by radio.

2. Pilots receiving notice of a missing aircraft are requested to maintain as thorough a visual and radio watch as practicable on 121.5 MHz when operating in this area of the missing aircraft.

INITIAL MANOT MESSAGE

Required Information		Example	
A.	MANOT number – SAR Operation – (pilot's surname) Type – RCC	A.	MANOT six – SAR HEFNER
B.	Type of Aircraft – Registration – Color	B.	Cessna 180 – CF–SOX red with white wings and black lettering
C.	Number of Crew and/or Passengers	C.	Pilot plus 3
D.	Route	D.	Fort St. John to Abbotsford
E.	Departure Date/Time (local)	E.	1 May 74 – 1000 hours
F.	LKP (Last Known Position)	F.	Prince George 1 May 74 – 1131 hrs
G.	Estimated Air Time Remaining from LKP	G.	4 hrs
H.	Frequency of ELT	H.	121.5 MHz and 243.0 MHz

On termination of the search, another MANOT will be issued and designated as final.

912. AIDING PERSONS IN DISTRESS

1. When a pilot observes an aircraft, ship or vessel in distress, the pilot shall, if possible:

   a. keep the craft in sight until such time as his presence is no longer necessary;

   b. if his position is not known, attempt to establish it;

   c. report to the joint rescue coordination centre (JRCC) or air traffic service (ATS) the following information:

      — time of observation;
      — position of craft;
      — general description of scene;
      — apparent physical condition of survivor(s)

913. WATERCRAFT EMERGENCIES

Pilots should be familiar with the distress signal which may be used by small craft and the procedures for directing a watercraft toward a craft in distress. It consists of a rectangular, fluorescent orange-red cloth panel on which a black square and disc are displayed. Refer to GPH205, Section F, Search and Rescue Procedures.

SECTION 3 EMERGENCY LOCATOR TRANSMITTER (ELT)

914. ELT TESTING AND EMERGENCY OPERATIONS PROCEDURES

ELT testing is prohibited except during the first five minutes of any hour GMT and is restricted in duration to not longer than five seconds.

In case of emergency, do not delay ELT activation until flight-planned times expire, as such delays will only delay rescue. Do not cycle the ELT through “OFF” and “ON” positions to preserve battery life, as irregular operation reduces localization accuracy and will hamper homing efforts. Once your ELT has been switched to “ON”, do not

switch it to “OFF” until you have been positively located, and the SAR forces have directed you to turn it off.

If you have landed to wait out bad weather, or for some other non-emergency reason, and no emergency exists, do not activate your ELT. However, your aircraft will be reported overdue, and a search will begin if the delay will extend beyond:

a. 1 hr past the estimated time of arrival (ETA) filed on a flight plan; or

b. the SAR time specified, 24 hr after the duration of the flight, or the ETA specified on a flight itinerary.

To avoid an unnecessary search, notify the nearest ATS unit of your changed flight plan or itinerary. If you cannot contact an ATS unit, attempt to contact another aircraft on one of the following frequencies in order to have that aircraft relay the information to ATS:

a. 26.7 MHz;

b. local visual flight rules (VFR) common frequency;

c. 121.5 MHz; or

d. high frequency (HF) 5 680 kHz, if so equipped.

If you cannot contact anyone, a search will begin at the times mentioned above. At the appropriate time, switch your ELT to “ON”, and leave it on until search crews locate you. Once located, use your aircraft radio on 121.5 MHz (turn the ELT off if there is interference) to advise the SAR crew of your condition and intentions. ELTs and the COSPAS-SARSAT system work together to speed rescue. The ELT “calls for help”; COSPASSARSAT hears that call and promptly notifies SAR authorities, who then dispatch help.

CHAPTER 10

SECURITY CONTROL OF AIR TRAFFIC

1001. GENERAL

1. To permit identification and control of aircraft in the interest of National Security, an Air Defence Identification Zone (ADIZ) has been established.

2. The rules governing the security control of air traffic apply to all aircraft operating into or within the ADIZ. Command/Group/Squadron Orders may have additional procedures which apply to their aircraft on operational flights and pilots will comply with those orders as applicable.

1002. GENERAL PROVISIONS

1. No person shall operate an aircraft into or within the ADIZ unless:

   a. that aircraft is equipped with a two-way capable of permitting the communications required by these regulations.

   b. that person maintains a listening watch on a frequency that will permit the receipt of the instructions issued pursuant to these regulations.

2. No deviation shall be made from a flight plan or flight itinerary filed for a flight into or within an ADIZ unless:

   a. prior notification is given to the Air Traffic Control Unit or the Command Group Operation Centre responsible for that flight.

   b. where prior notification is not possible, the deviation is reported to an appropriate Air Traffic Control Unit or the Command Group Operation Centre responsible for that flight as soon as practicable.

3. The pilot-in-command of an aircraft who, because of communications failure, is unable to comply with paragraph 1. or 2. above shall:

   a. if operating in, or cleared to enter, controlled airspace in IFR flight, comply with the COMMUNICATION FAILURE PROCEDURES as set out in GPH205 (Canada Flight Supplement) or;

   b. if in VFR flight, or in IFR flight other than IFR flight referred to in sub-paragraph a. above, proceed in accordance with his flight plan or flight itinerary or;

   c. land at the nearest suitable aerodrome or;

   d. comply with appropriate Command/Group/Squadron Orders.

1003. AIR DEFENCE IDENTIFICATION ZONE (ADIZ) RULES

1. The pilot in command of an aircraft departing from a location that is his last location before the aircraft penetrates the ADIZ, and that has facilities for the immediate transmission of flight plan information shall:

   a. before take-off, submit an IFR flight plan, a DVFR flight plan or a defence flight itinerary to an appropriate Air Traffic Services Unit or Command/Group Operation Centre;

   b. include in such flight plan or flight itinerary the estimated time and place of ADIZ penetration;

   c. establish radio telephone communication with an appropriate Air Traffic Services Unit or Command/Group Operation Centre as soon as possible and make a position report including the estimated time and place of ADIZ penetration; and

   d. upon request by an Air Traffic Services Unit or Command/Group Operation Centre advise that facility as to the difference in time and distance between any revised estimated time and place of ADIZ penetration and the time and place of ADIZ penetration indicated on the flight plan or flight itinerary.

e. the provisions of subpara b. c. and d. above do not apply to an aircraft on an IFR flight except that the pilot-in-command shall provide positions reports or estimates required by the instrument flight rules.

2. The pilot-in-command of an aircraft departing from a location that is within the ADIZ and that has facilities for the immediate transmission of flight plan information, shall:

a. before take-off submit an IFR flight plan, a DVFR flight plan or a defence flight itinerary to an appropriate Air Traffic Services Unit, and

b. as soon as possible after take-off, establish radio telephone communications with an Air Traffic Services Unit and make a position report.

3. The pilot-in-command of an aircraft departing from a location that is his last location before the aircraft penetrates the ADIZ, or is within the ADIZ and does not have facilities for the immediate transmission of flight plan information, shall:

a. as soon as possible after take-off, establish radio telephone communications with an, appropriate Air Traffic Services Unit and submit an IFR flight plan, a DVFR flight plan, or a defence flight itinerary;

b. include in such flight plan or flight itinerary the estimated time and place of ADIZ penetration, and

c. when requested to do so by an appropriate Air Traffic Services Unit or Command/Group Operation Centre respond to all request for identification which may include a request to fly at a speed of less than 150 knots for a period of not less than 5 minutes for positive identification.

4. The pilot-in-command of an aircraft shall revise his estimate with an appropriate Air Traffic Services Unit or Command/Group Operation Centre when the aircraft will not be within:

a. a time tolerance of plus or minus 5 minutes of the estimated time over:

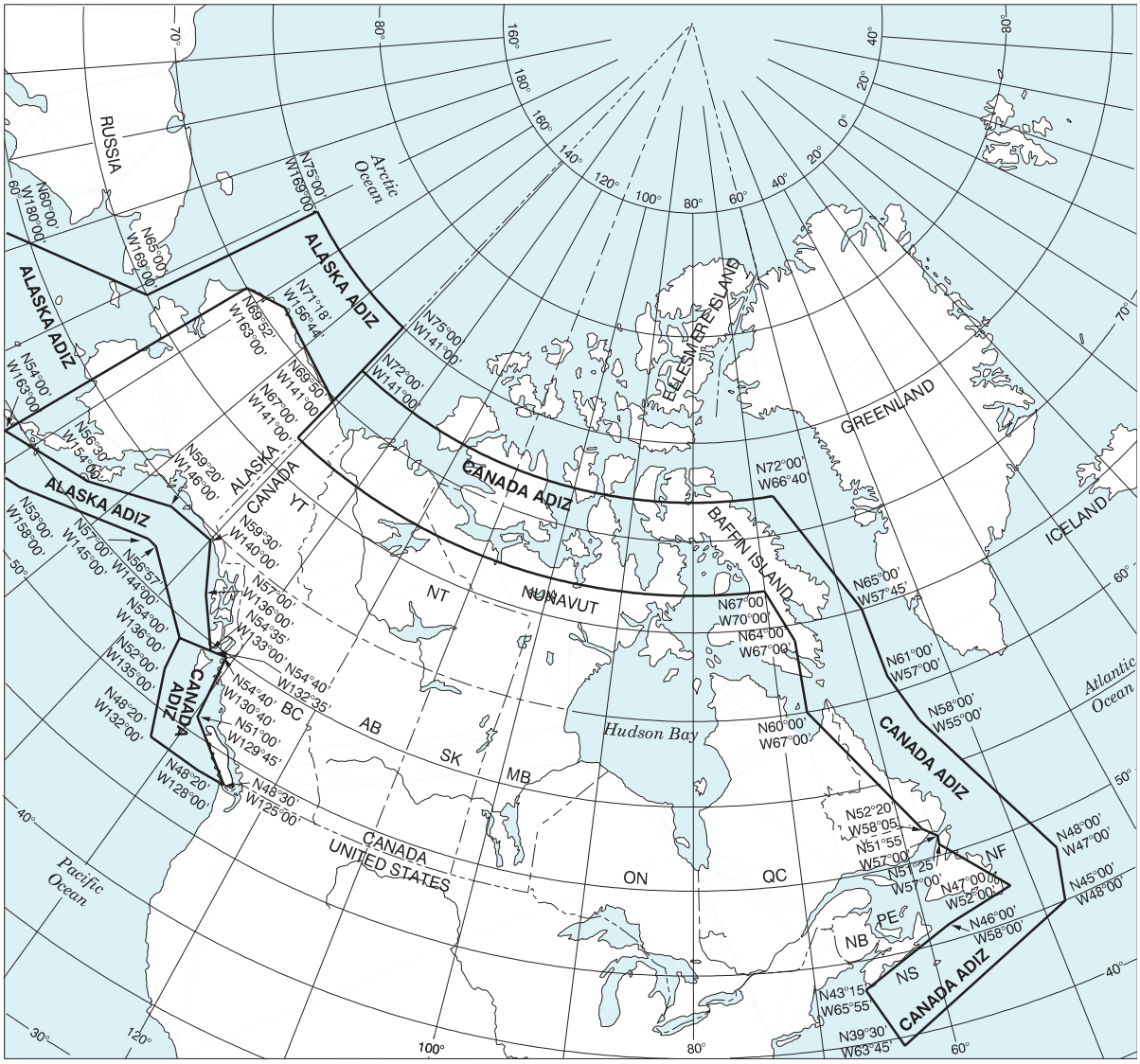
(i) a reporting point,
(ii) the point of penetrating the ADIZ,
(iii) the point of destination within the ADIZ.

b. a distance of 20 nautical miles from:

(i) the estimated point of penetrating the ADIZ,
(ii) the centre line of the route of flight indicated in the flight plan or flight itinerary.

5. The pilot in command of an aircraft operating on an IFR flight plan and in accordance with an ATC clearance, on a flight that will penetrate the ADIZ, is not required to include estimated time and place of ADIZ penetration in the filed flight plan or in a routine in-flight report.

AIR DEFENCE IDENTIFICATION ZONE (ADIZ)



1004. EMERGENCY SECURITY CONTROL OF AIR TRAFFIC (ESCAT) PLAN

1. In Canadian airspace, the ESCAT Plan provides security control of civil and military air traffic to ensure effective use of airspace when an air defence emergency or any situation involving aerial activities that threatens national security or vital Canadian interests is declared by the appropriate authority. The Plan outline highlights responsibilities, procedures, and instructions for the security control of civil and military air traffic with respect to diversion, landing, grounding and dispersal. . It was developed in co-ordination with the DND, Transport Canada, and NAV CANADA.

2. The Commander, Canadian NORAD Region (CANR), is responsible for testing and implementing the ESCAT Plan. When the ESCAT Plan is implemented or tested, the appropriate NAV CANADA ACCs (through ATS units), under the direction of the National Defence Command Centre (NDCC), will take actions to broadcast instructions through civil and military ATS units as necessary.

3. Testing

   To ensure effectiveness of communications during implementation of the ESCAT Plan, periodic tests may be conducted without any prior notice.

The test message will read as follows:

"ATTENTION-THIS IS AN ESCAT TEST. I SAY AGAIN, THIS IS AN ESCAT TEST."

As these tests are considered essential to national security, co-operation of all pilots and agencies is necessary.

4. Implementation

In an emergency situation, the appropriate NAV CANADA ACC (through their respective ATS units), under directions of the Commander, CANR, will broadcast the following message:

"ATTENTION ALL AIRCRAFT-AIR DEFENCE EMERGENCY-ALL AIRCRAFT WILL COMPLY WITH THE PROCEDURES FOR THE EMERGENCY SECURITY CONTROL OF AIR TRAFFIC. VFR TRAFFIC ON THIS FREQUENCY MUST LAND AT THE NEAREST SUITABLE AIRFIELD AND FILE AN IFR OR DVFR FLIGHT PLAN."

The pilot-in-command of an aircraft that is notified by an ATS unit of the implementation of the ESCAT Plan shall

a. before take-off, obtain approval for the flight from the appropriate ATC unit or FSS;

b. comply with any instruction to land or to change course or altitude that is received from the appropriate ATC unit or FSS; and

c. provide the appropriate ATC unit or FSS with position reports

(i) when operating within controlled airspace, or as required; and
(ii) when operating outside controlled airspace, at least every 30 min.

ESCAT PHASES:

ESCAT may be executed in phases to facilitate a smooth transition from normal peacetime air traffic identification and control procedures to the more restrictive identification and control procedures that accompany the full implementation of ESCAT. When ESCAT has been implemented, the movement of civil and military aircraft is governed by the implementation of an ESCAT Air Traffic Priority List (EATPL) and/or a Security Control Authorization (SCA).

There are two phases in the implementation process.

Phase One: Requires all aircraft in designated areas to file IFR/DVFR flight plans in accordance with GPH204A and the established procedures detailed in the GPH205 Canada Flight Supplement.

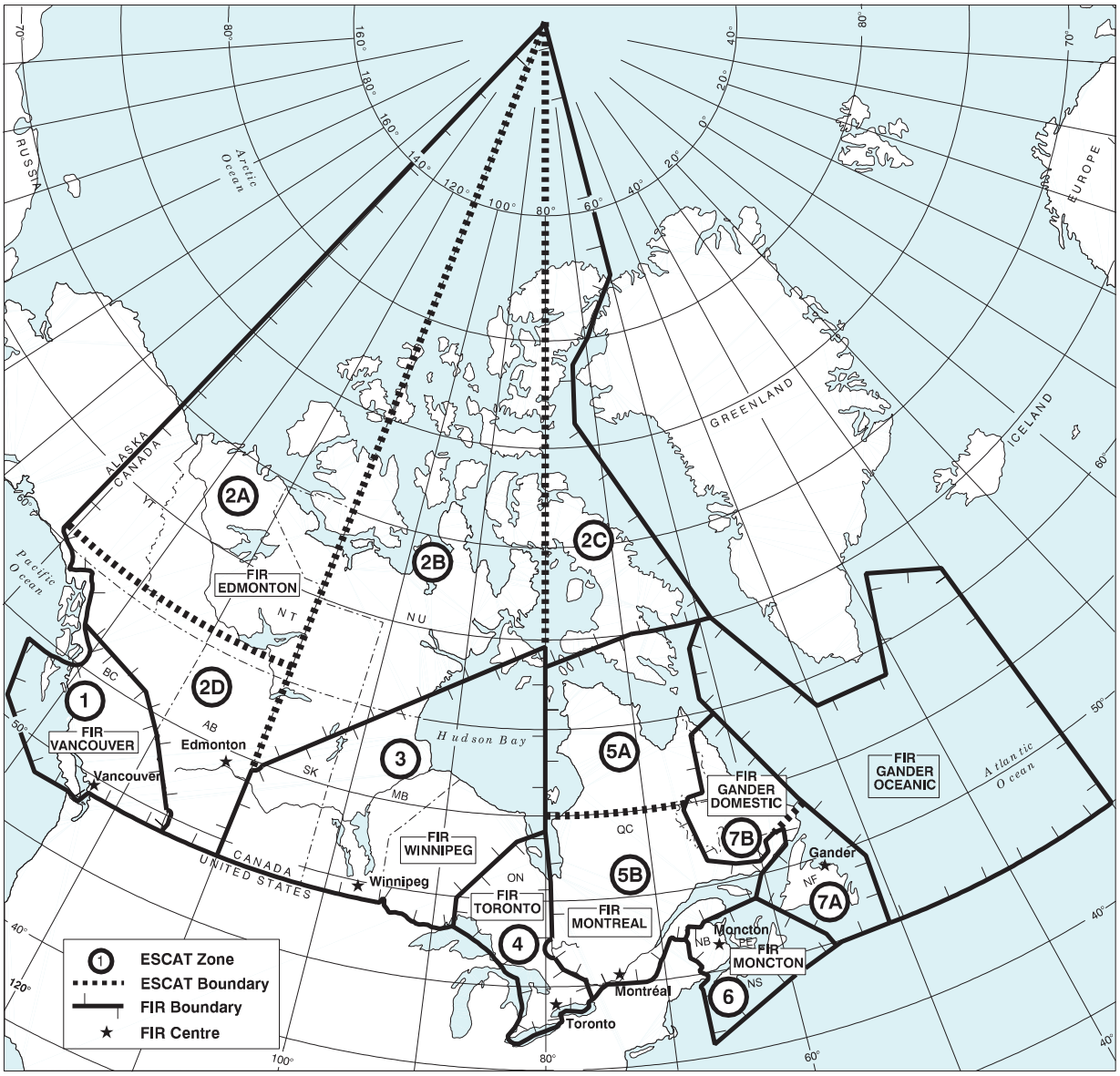
Phase Two: The Commander CANR restricts aircraft movement within designated areas through implementation of the ESCAT Air Traffic Priority List (EATPL) and Security Control Authorization (SCA) process.

Note: EATPL and SCA approval request procedures will be promulgated by NOTAM.

5. ESCAT ZONES:

For the purpose of implementing ESCAT, Canadian airspace has been divided into seven zones. These zones may be activated by one or more zones or portions of zones. (See Map of ESCAT Zones)

MAP OF ESCAT ZONES



Note: Coordinates for ESCAT Zones are published in the *Designated Airspace Handbook (TP1820)*

6. Termination

The appropriate NAV CANADA ACC (through their respective ATS units),will broadcast the following message:

a. "ATTENTION ALL AIRCRAFT-EMERGENCY SECURITY CONTROL OF AIR TRAFFIC HAS BEEN TERMINATED. ROUTINE AIRSPACE PROCEDURES ARE NOW IN EFFECT."

b. Wait two (2) minutes, and broadcast the message again.

c. Wait two (2) minutes, and broadcast the message again.

d. Relay the message that ESCAT has been terminated to the agencies previously notified, using the following phraseology:
"ESCAT IS TERMINATED"

For information about ESCAT, please contact Transport Canada Civil Aviation Contingency Operations (CACO) at 1 877 992-6853 or (613) 992-6853 or NAV CANADA National Operations Centre: (613) 563-7047.

7. Emergency Air Traffic Priority List

Purpose

a. To establish a process for the movement of air traffic when ESCAT has been implemented, and to provide policy guidance for the practical application of the system. The EATPL shall be the primary means of controlling the volume of air traffic. The SCA process will be used as a supplement to the EATPL.

Policy

b. The use of the EATPL shall commence upon implementation of ESCAT Phase Two. Precedence shall be from priority one to priority eight. There is no precedence within each priority.

8. Priorities

Priority One

a. Canadian and NORAD aircraft engaged in active defence missions, including anti-submarine aircraft, interceptors, air refuelling tankers and airborne early-warning and control aircraft;

b. Canadian and approved allied aircraft on military offensive missions other than defence operations;

c. Canadian and approved allied airborne command element aircraft that provide backup to command and control systems for the combat forces; and

d. Aircraft transporting the Prime Minister of Canada, the President of the United States, their respective cabinet or staff members essential to national security, and other members, as approved or designated by the Minister of Defence or the CDS. Depending on the nature of the emergency, heads of state of other allied countries may also be designated by the same means.

Priority Two

a. Canadian and approved allied air forces being deployed for, or in direct support of, combat operations, including any civil augmentation aircraft that they may be used for those purposes;

b. Approved allied aircraft in direct and immediate support of Emergency War Orders (EWO); and

c. SAR aircraft operating in support of military activities.

Priority Three

a. Canadian and approved allied air forces being deployed in support of combat operations;

b. Canadian and approved allied aircraft in direct support of immediate combat operations;

c. SAR aircraft not included in priority two; and

d. Flight inspection aircraft flights in connection with emergency restoration of airway and airport facilities, in support of immediate combat operations.

Priority Four

a. Dispersal of Canadian and approved allied tactical military aircraft;

b. Dispersal of civil air carrier aircraft supporting Canadian and approved allied military activities;

c. Dispersal of TC, FAA, NAV CANADA, DND, and approved foreign flight inspection aircraft; and

d. Dispersal of foreign civil air carrier aircraft in Canada and/or the US in accordance with specific international agreements.

Priority Five

a. The air transport of Canadian and allied military commanders, their representatives, and DND- and DoD-sponsored key civilian personnel who are of the utmost importance to national security, or who will have an immediate effect upon combat operations of the Armed Forces;

b. Dispersal of non-tactical military aircraft for their protection; and

c. Public aircraft assigned to TC, the FAA, and other Canadian and US federal agencies.

Priority Six

a. Flight operations in accordance with approved federal or provincial emergency airlift plans, whose immediate missions involve alleviating the effects of disaster; saving human life; air evacuation; restoring essential services; and transporting medical personnel, equipment and supplies pertinent thereto;

b. Flight operations in Canada essential to the development, production and delivery of equipment, personnel, materials and supplies essential to the defence effort;

c. Canadian and allied flight operations in support of disaster airlift operations;

d. Humanitarian and emergency flight, meaning:

(i) An air ambulance flight;
(ii) An aerial fire fighting flight;
(iii) A SAR flight;
(iv) A flight in support of police or military activities;
(v) A flight to or from a location in Canada requiring designated northern or remote services;
(vi) A flight incidental to any declared international, national, provincial or local emergency; or
(vii) Any other flight, or class of flights, declared by the Minister (MTC or MND) in accordance with the Aeronautics Act to be a humanitarian or emergency flight; and

e. Other essential Canadian and approved allied aircraft missions.

Priority Seven

a. Other military flight operations.

Priority Eight

a. All other flight operations not specifically listed above.

9. Procedures

General

a. The EATPL shall be the primary instrument used by the Commander CANR to control the volume of air traffic operating within their area of responsibility when ESCAT has been implemented. Depending on the severity of the situation, the Commander CANR may decide to entertain SCA requests;

b. EATPL and SCA approval request procedures will be promulgated by NOTAM;

c. The restrictions embodied in the EATPL shall apply to all aircraft, except those in receipt of an SCA;

d. The pilot-in-command shall be responsible for determining under which EATPL number the flight will request to operate. The pilot-in-command shall include the EATPL priority number in the "Remarks" section the flight plan;

e. The pilot-in-command operating a flight under a military SCA shall include the SCA approval number in the "Remarks" section of the flight plan;

f. The EATPL priority number or SCA number shall be posted on ATS flight strips and passed with flight plan data from one ATS facility to the next, and to the appropriate air defence control facilities;

g. Operational test flights will take the priority of the mission for which the aircraft is being tested; and

h. Situations may occur that cannot be addressed by the EATPL or an SCA. Aircraft emergencies and inbound international flights that have reached the point of no return are examples of such situations. These incidents must be treated individually through coordination between ATS units and appropriate military agencies, taking into consideration the urgency of the in-flight situation and existing tactical military conditions.

CHAPTER 11

RADIO TELEPHONY PROCEDURES

SECTION 1 GENERAL

1101. GENERAL

1. Radio telephony messages should be delivered clearly and concisely. Use only acceptable phraseology and enunciate precisely.

2. Plan the content of the message to be transmitted before pressing the “transmit” button.

3. Precede every transmission with a brief but careful listening-out period to avoid undue interference with other transmissions.

4. Always acknowledge instructions to change frequency when being transferred from one controller or control agency to another. This avoids confusion and eliminates additional time consuming radio or other communications by the controller to confirm the instruction has been received and complied with.

5. Pilots shall comply with and acknowledge clearances by “Read Back”, as appropriate for ATC convention, and shall comply with and acknowledge all other instructions unless safety is a consideration.

Note: Military Formation Flights:

a) Initial contact: The aircraft call sign followed by "Flight", "Formation of (number of aircraft)"
e.g. GRFN 11 Flight, Formation of 3

b) Subsequent communications: The number of aircraft may be eliminated. All subsequent communications to and from the formation should include the word "Flight".

1102. USE OF THE PHONETIC ALPHABET

The ICAO phonetic alphabet, as shown in the Canada Flight Supplement (GPH205), shall be used when pronouncing individual letters.

1103. USE OF NUMBERS

1. Numbers in radio telephony transmissions are pronounced as shown in the Canada Flight Supplement (GPH205).

2. Except as provided in para 3. and 4. all numbers except whole thousands shall be transmitted by pronouncing each digit separately.

Example:	572	Five Seven Two
	11000	One One Thousand

3. Altitude above sea level may be expressed in thousands plus hundreds of feet. Separate digits shall be used to express flight levels.

Example:	2700	Two Thousand Seven Hundred
	FL 260	Flight Level Two Six Zero

4. Aircraft identification flight numbers, aircraft type numbers and wind speed numbers may be expressed in group form.

Example:	Air Canada 420	Air Canada Four Twenty
	DC 10	DC Ten
	WIND 270/10	WIND Two Seven Zero at Ten

5. Time-Coordinated Universal Time (UTC or Z) and the 24 hour clock system are used for all operational purposes. Time is normally expressed in four figures, the first two indicating the hour past midnight, the last two indicating the minutes. When no misunderstanding is likely to occur, time may be expressed in minutes only.

   Example: 0920Z – Zero Nine Two Zero Zulu
   09 – Nine minutes past the hour

6. Heading-aircraft headings are given in groups of three digits. If operating within the Southern Domestic Airspace degrees are expressed in "magnetic". If operating within the Northern Domestic Airspace degrees are expressed in "True".

   Example: 005 degrees – Heading Zero Zero Five
   350 degrees – Heading Three Five Zero

7. Aerodrome elevations are expressed in feet, prefixed by the words "Field Elevation".

   Example: 150 – Field elevation One Five Zero
   3500 – Field elevation Three Thousand Five Hundred

8. Transponder codes are given in number.

   Example: code 1200 – CODE ONE TWO ZERO ZERO

9. Numbers containing a decimal point are expressed with the decimal point in the appropriate sequence by the word DECIMAL, except that in the use of VHF or UHF frequencies, the decimal point may be omitted if the omission is not likely to cause any misunderstanding.

1104. STANDARD RADIO TELEPHONY USAGE

1. On initial contact, a radio telephone transmission is composed of the following phrases:

   a. Full designation of agency called.

      Examples: "Ottawa Ground", "Winnipeg Centre", "Kingston Radio".

   b. Full designation of aircraft call sign.

      Examples: "CANFORCE 4613", "Lark 41".

   c. Text of message.

      Examples: "Radio check", "Request landing instructions", "Request weather".

2. Provided communication has been established and no likelihood of confusion exists, the call signs may be abbreviated as follows:

   a. For designation of the agency called, the location name may be omitted.

      Examples: "(Ottawa) GROUND", "(Winnipeg) CENTRE", "(Kingston) RADIO".

   b. Standard phraseologies shall be used in the text of messages. If non-standard phraseologies are required, abbreviate to expedite transmissions, but ensure that messages are understood.

1105. COMMUNICATION CHECKS

The readability scale from one to five has the following meaning:

1. unreadable;
2. readable now and then;
3. readable with difficulty;
4. readable; and

5. perfectly readable.

The strength scale from one to five used in HF communications has the following meaning:

1. bad;
2. poor;
3. fair;
4. good; and
5. excellent

Communications checks are categorized as follows:

Signal Check	-	if the test is made while the aircraft is airborne.
Pre-flight Check	-	if the test is made prior to departure.
Maintenance Check	-	if the test is made by ground maintenance.

Pilot: THOMPSON RADIO, CESSNA FOXTROT ALFA BRAVO CHARLIE, RADIO CHECK ON FIVE SIX EIGHT ZERO.

Radio: FOXTROT ALFA BRAVO CHARLIE, THOMPSON RADIO, READING YOU STRENGTH FIVE, OVER.

SECTION 2 REPORTING PROCEDURES-IFR

1106. GENERAL

1. ATC clearances shall be read back for confirmation.

2. When altitude changes are given they shall be acknowledged by giving the aircraft call sign and the new altitude, e.g., “CANFORCE 4613, 4000”.

3. Radar vectors shall be acknowledged by using aircraft call sign, direction, and new heading, e.g., “CANFORCE 4613, left 280”.

4. Other messages shall be acknowledged by using the full or abbreviated aircraft call sign only. Examples of messages requiring acknowledgement are: weather, traffic information, and frequency changes.

1107. POSITION REPORTS

Whenever possible, position reports shall be made to the ATC centre concerned using direct controller-pilot communications (DCPC). If the report is made to an IFR control agency, e.g., departure, arrival, terminal control, or a centre, the type of flight plan shall be omitted.

1108. HOLDING

When entering a holding pattern, the appropriate agency shall be advised, e.g., “Centre, CANFORCE 4613, is entering the hold”.

1109. APPROACH POSITION REPORTS - CONTROLLED AIRPORTS

Pilots conducting an instrument approach to or landing at a controlled airport shall only make position reports that are requested by the appropriate air traffic control unit. As an example, pilots may expect ATC to request a report by the Final Approach Fix (FAF) or a specified distance on final. Position reports made under these circumstances are expected to be stated by reporting the position only.

1110. AIR-TO-AIR FREQUENCIES

For air-to-air communications between pilots within the Canadian Southern Domestic Airspace, the correct frequency to use is 122.75 MHz; in the Northern Domestic Airspace and the North Atlantic, the frequency allocated by ICAO is 123.45 MHz.

1111. USE OF FREQUENCY 5680 KHZ

This frequency provides air-to-ground long range communications operations in the remote areas of Canada outside of designated airways when VHF communications cannot be established.

The frequency is assigned on a basis of non-interference to its world-wide application as outlined in Appendix 27 to the *Radio Regulations*, Geneva 1968. It is assigned to FSSs in remote areas to provide adquate area coverage. Aircraft must use SSBs when communicating with an FSS.

FREQUENCY SUMMARY TABLE	
USE	**ALLOCATED FREQUENCY**
All Aeronautical (Civil)	118.0 MHz to 136.0 MHz
Emergency	121.5 MHz
Soaring	123.4 MHz
Air-to-Air	122.75 MHz in Southern Domestic Airspace 123.45 MHz in Northern Domestic Airspace and North Atlantic
ATF	123.2 MHz where a UNICOM does not exist

1112. DATA LINK

1. Data Link Applications

The generic term "data link" encompasses different types of applications that can transfer data to and from an aircraft. In Canada, data link applications used by air traffic service (ATS) include data link automatic terminal information service (D-ATIS), pre-departure clearance (PDC) via the airline host, departure clearance (DCL), oceanic clearance (OCL), automatic dependent surveillance waypoint position reporting (ADS WPR) and controller-pilot data link communications CPDLC).

2. Data Link Networks

Traditionally, analog very high frequency (VHF) was the most commonly used medium to transmit aircraft communications addressing and reporting system (ACARS) messages. This medium of ACARS transmission is known as plain old ACARS (POA). The low-speed characteristics of a POA data link require a number of frequencies to fully service all users. For example, almost a dozen VHF frequencies are required in North America in order to provide a reliable service. As the number of analog VHF data link transmissions continues to increase across busy areas, available channels in the aeronautical VHF band are approaching saturation.

New high speed digital data link systems transmitting in the VHF range are known as VHF digital link (VDL). Different forms of VDL (Mode 1 through 4) have been defined. This new digital architecture is called ACARS Over AVLC (AOA), where the term AVLC refers to aviation VHF link control, which is the protocol used over the VHF link for the relatively common VDL Mode 2 system.

To access VDL service, aircraft must be fitted with a communications management unit (CMU) that is equipped with a digital connection to a VHF data radio (VDR) transceiver. The CMU processes all the ACARS applications and can be upgraded to integrate both VDL and ATN functionality. The CMU automatically switches between AOA and POA according to service availability.

While VDL may provide faster message response times (two to eight seconds) than analog VHF, the system is still limited to line-of-sight coverage. When beyond line-of-sight of a VDL ground station, some aircraft may also have the capability for HF data link (HFDL) and/or communications through satellite data link (SATCOM).

Satellite data links provide greater coverage, although except for Iridium they are limited in the polar regions since most of the satellites are stationary over the equator. Satellite data links are also slower than VHF in response time (12.25 s). Service providers with near-global coverage include Inmarsat (GEO satellites) and Iridium (low earth orbiting [LEO] satellites in polar orbits for worldwide coverage); others

provide coverage in particular regions, such as the multifunctional transport satellite (MTSAT) over the Pacific Ocean.

HFDL provides near global coverage including over the polar regions, but message transit times (approximately 80 s) are much lengthier than other mediums.

3. Aircraft Communications Addressing And Reporting System (ACARS) Initialization

The core of the airborne data link system is called the aircraft communications addressing and reporting system (ACARS) management unit (MU) or communications management unit (CMU). At the initiation of a flight, one of the first flight crew actions is to perform the ACARS system initialization. This INIT REQUEST establishes a link with the airline ground system, and informs it that the aircraft is being prepared for departure.

4. Automatic Dependent Surveillance Waypoint Position Reporting (ADS WPR)

Position reporting is required in oceanic and remote airspace where there is no other means of surveillance. Automatic dependent surveillance - contract (ADS-C) waypoint position reporting (WPR) via data link can overcome issues with voice reporting. Automatic dependent surveillance (ADS) is a surveillance technique for use by air traffic services (ATS) in which aircraft automatically provide, via data link, information derived from on-board position-fixing and navigation systems. ADS allows controllers to obtain position data from future air navigation system (FANS) equipped aircraft in a timely manner, thereby facilitating route conformance monitoring in non-radar airspace. An ADS-C is initiated by the ATS facility and it identifies the types of information and the conditions under which reports are to be sent by the aircraft. Some types of information are included in every report, while other types are provided only if specified in the ADS.C request. There are three types of ADS-C:

a. periodic (a time interval at which the aircraft system sends an ADS-C report),

b. demand (a single ADS-C periodic report), and

c. event (triggered by a particular event such as a waypoint change event).

ADS-C are managed by ATS facilities based on their surveillance requirements, and ADS reports are sent automatically without notification to, or action required by, the flight crew. In the event that an ADS report is not received, air traffic control (ATC) would attempt to contact the flight crew to obtain the position report via voice. In the event of ADS service interruptions, aircraft equipment failures or loss of signal coverage, flight crews are expected to resume voice reporting. Flight crews should be aware of the limitations associated with available aircraft equipment and the signal coverage over the intended route.