

## NORTH AMERICA AREA

### NORTH ATLANTIC

### OCEANIC CONTROL AREA

Gander, Shanwick, New York, Santa Maria, Reykjavik. FL55 – Unlimited.

#### Minimum Navigation Performance Specification – North Atlantic

The MNPS airspace over the North Atlantic is that airspace:

- FL285 – FL420.
- The Southern portion of the Santa Maria Oceanic, thence from 27°N – The North Pole.
- Bounded in the E by the E boundaries of CTAs Santa Maria Oceanic, Shanwick Oceanic and Reykjavik.
- Bounded in the W by the W boundaries of CTAs Reykjavik, Gander Oceanic, New York Oceanic and Santa Maria Oceanic, excluding the area W of 60°W and S of 38° 30'N within New York Oceanic.

The area N of 54°N NW of Ireland is designated the NORTHERN OCEANIC TRANSITION AREA (NOTA) and is part of the MNPS airspace.

Control in this area is provided by Shannon ATC centre.

The area S of 51°N to the SW of Ireland is designated as the SHANNON OCEANIC TRANSITION AREA (SOTA) and is part of the MNPS airspace. Control in this area is provided by Shannon ATC Centre along standard published routes.

South of this area between 08°W and 08°45'W is the BREST OCEANIC TRANSITION AREA (BOTA) which is also part of MNPS airspace. Control is provided by Brest ACC, call sign 'Brest Control'.

Aircraft operating within the MNPS airspace are required to have a minimum navigation performance capability. This requirement is in principle two navigation systems in Nav mode – but see relevant manual for aircraft type.

Aircraft with reduced navigational capability may utilise special routes between NE Canada and Europe via Greenland and Iceland (Blue Spruce Route), and between the Azores and the Portuguese mainland.

#### Reduced Vertical Separation Minimum (RVSM)

Within MNPS airspace Reduced Vertical Separation Minimum (RVSM) is used. There is a minimum equipment requirement and an associated altimeter check before flight into RVSM airspace – see relevant manual for aircraft type. "W" is entered in Item 10 of the Flight Plan to indicate an aircraft is equipped and approved to operate in RVSM airspace.

**If failure results in the aircraft having less than the minimum equipment required to enter RVSM airspace, ATC must be informed immediately. Loss of all autopilots means non-compliance with RVSM equipment minima.**

The New York Oceanic FIR (WATRS area) West of 60W and South of 38°30'N FL 290 and 410 (inclusive) is designated as RVSM airspace.

**Strategic Lateral Offset Procedure**

The Strategic Lateral Offset Procedure is now implemented within North Atlantic Region Airspace including the New York Oceanic FIR (WATRS area) West of 60W and South of 3830N.

The procedure provides for the application of lateral offsets within the following guidelines:

- Strategic lateral offsets and those executed to avoid wake turbulence are to be made to the right of a route or track, never to the left;
- In relation to a route or track, there are three positions that an aircraft may fly: centreline, one or 2 NM right; and,
- Offsets are not to exceed 2 NM right of centreline.

The intent of this procedure is to reduce risk (increase the safety margin) by distributing aircraft laterally and equally across the three available positions. In this connection, pilots must take account of the following:

- Aircraft without automatic offset programming capability must fly the centreline;
- Aircraft capable of being programmed with automatic offsets may fly the centreline or offset one or 2 NM right of centreline to obtain lateral spacing from nearby aircraft;
- Pilots should use whatever means are available (e.g. TCAS, communications, visual acquisition, GPWS) to determine the best flight path to fly;
- Any aircraft overtaking another aircraft is to offset within the confines of this procedure, if capable, so as to create the least amount of wake turbulence for the aircraft being overtaken;
- For wake turbulence purposes, pilots are also to fly one of the three positions at 2 above and never offset to the left of centreline nor offset more than 2 NM right of centreline;

**Note:** It is recognized that the pilot will use his/her judgement to determine the action most appropriate to any given situation and has the final authority and responsibility for the safe operation of the aeroplane. The air-to-air channel, 123.45 may be used to co-ordinate the best wake turbulence offset option.

- Pilots may apply an offset outbound at the oceanic entry point but must return to centreline at the oceanic exit point;
- Aircraft transiting radar-controlled airspace, e.g. Bermuda, are to remain on their established offset positions;
- Pilots should use a random method to decide whether to offset 1 NM right, 2 NM right or fly the centreline, taking in to account the circumstances above;
- There is no ATC clearance required for this procedure and it is not necessary that ATC be advised; and,
- Position reports are to be based on the current ATC clearance and not the exact co-ordinates of the offset position. An example of a report when passing 54N 20W while being offset from track is *"Shanwick, Speedbird 175, position 54N 020W, 1222, estimate...etc"*.

**Standard Lateral Separation**

120 nm but with the following exceptions:

- 60 nm between aircraft complying with the requirements of MNPS in MNPS airspace.
- 90 nm between aircraft operating outside MNPS airspace.
  - Between the USA or Canada and Bermuda.
  - Between the USA, Canada or Bermuda and the Caribbean.
  - Between the Iberian Peninsula and the Azores.
  - Between Iceland and Scandinavia or the UK.

**Standard Longitudinal Separation**

Basically 10 mins for jet aircraft, provided the aircraft meet MNPS requirements, operate wholly or partly in MNPS airspace, use the Mach No Technique and have reported over the same entry point into the OCA and follow the same track or diverging tracks, or the required separation may be assured using ATC Radar. The separation may be reduced to 5 minutes if the preceding aircraft arriving at the OCEANIC entry point is flying at speed of Mach .06 greater than following aircraft.

Requirements when using the Mach No Technique:

- i. The planned True Mach Number for each portion of the route within the NAT shall be specified in item 15 of the Flight Plan.
- ii. The Mach number approved by ATC shall be adhered to as accurately as possible and approval shall be requested before making any change. If immediate temporary change is essential (e.g. due to turbulence), notify ATC as soon as possible and advise adjacent aircraft using 121.5. Clearance for a prolonged reduction in Mach number may not be possible if the 10 minute separation is compromised.
- iii. Advise ATC of any change in Mach number after leaving Oceanic airspace.

**ATC Use of 5 Minutes GNSS Climb/Descent Through Procedure**

Some NAT ATC units utilise a procedure which permits ATC to clear an aircraft to climb or descend through the level of another aircraft, with as little as 5 minutes longitudinal separation, provided that both aircraft are using GNSS (GPS) for position determination and reporting. The rule allowing ATC to use this procedure includes a caveat that the climb or descent needs to be undertaken within 10 minutes of the time that the second aircraft in the pair has passed a common reporting point.

**Importance of Accurate Time**

Preflight procedures for any NAT MNPS flight must include a UTC time check of the aircraft master clock(s).

**Organised Track System (OTS)**

As a result of passenger demands, time zone differences and airport noise restrictions, much of the North Atlantic air traffic contributes to one of two flows; a W-bound flow departing Europe in the morning, and an E-bound flow departing North America in the evening.

In order to provide the best service to the bulk of traffic, a system of organised tracks is constructed every 12 hours to accommodate as many aircraft as possible on or close to their minimum cost path.

The Oceanic Centre supervisor obtains from the principal operators, the “best time” routes for the day. For peak traffic periods, ATC select a primary, and three or more other tracks which parallel the primary at not less than 60 nm separation.

Shanwick is responsible for nominating tracks for the period 1130 - 1900Z when they are predominantly W-bound and these will be alphabetically identified ‘A’, ‘B’, ‘C’, etc from N to S. ATC will only publish those flight levels required to meet anticipated demand. However, other levels can be made available if requested. From 0100 - 0800Z when most of the traffic flow is E-bound the responsibility for track nomination lies with Gander who will identify tracks as ‘Z’, ‘Y’, ‘X’, etc from S to N. The time periods are times at 30°W and are those normally used. In all cases the hours of validity will be specified on the NAT Track Message.

These tracks are then notified to all main operators in the form of a Track Message. Since the Track structure changes daily, it is important to ensure that the Track Message relates to the correct date. Track Messages should be taken on all flights operating in Oceanic airspace during the relevant periods. The fact that a specific FL is not published for a particular Track does not necessarily mean that it cannot be made available on request. The Track Message is supplied on Simbrief and PFPX CIRRUS OFPs and can be separately obtained via <https://www.notams.faa.gov/common/nat.html>.

Prior to the organised track system coming into operation, E’ly and W’ly traffic can operate in RVSM; thus opposite direction traffic at only 1,000ft separation is a possibility.

Outside the organised track periods random routes are planned.

### **Organised Track System (OTS) Transition Periods**

It is recommended that random flights, planning to cross 30°W E-bound within the hour preceding the onset of the day track system or planning to cross 30°W W-bound within the hour preceding the onset of the night track system, flight plan to join a track of the OTS at or beyond 30°W in accordance with the flight levels published in the NAT Track Message, or flight plan to remain clear of the OTS.

### **Flight Planning**

During the period of OTS operation flights will normally be planned to follow a NAT. Note that this is not mandatory, a random track may still be filed, but ATC may reclear the flight along a NAT.

Flights South of 70°N, and predominantly East/West should normally flight plan so that specific ten° of longitude (20°W, 30°W, etc.) are crossed at whole° of latitude, and generally N-bound or S-bound aircraft should normally flight plan so that specific parallels of latitude spaced at five degree intervals (65°N, 60°N, etc.) are crossed at whole° of longitude.

If the flight is planned to operate along the whole length of one of the organised tracks, the intended organised track should be defined in Item 15 of the flight plan using the abbreviation “NAT” followed by the relevant code letter. The accumulated estimated elapsed time (EET) from take-off to either the OCA entry point for W-bound flights, or the commencement point of the Track for E-bound flights will be given in Item 18 of the Flight Plan.

For flights wishing to join or leave an organised track at some intermediate point, full track details are specified in the Flight Plan. (A route constructed using only part of a N Atlantic Track is a random route. “Abbreviated Read-back of Clearances”, described below, does not apply).

For flights conducted wholly or partly outside the OTS, accumulated estimated elapsed times from take-off to significant points on route should be specified in Item 18 of the flight plan.

For all flights intending to operate within MNPS airspace for any portion of their flight, the letter “X” should be inserted immediately after the letter “S” in Item 10 of the flight plan, indicating that the flight is certified as being in compliance with the MNPS.

For turbojet aircraft, the Mach No planned to be used for each portion of the flight in the NAT region should be specified in Item 15 of the flight plan.

### **UK – N America**

BAV's North American services to/from the eastern seaboard and mid-west are usually planned to operate within the organised track structure. Routes will be analysed and determined on a best time/cost basis.

West Coast Operations follow a best time track, which may or may not encompass part or whole of the N. Atlantic Organised Track System.

### **Bermuda**

Bermuda is in the New York OCA.

New York provides ATC for Bermuda Approach; VHF and Radar cover are by remote facilities. Squawk 2100 while transiting the BDA TCA.

### **Clearances**

Initial clearance will be domestic only to the Oceanic entry point.

Pilots should request Oceanic clearances from the ATS unit responsible for the first Oceanic area within which they wish to operate not more than 90 mins and not less than 30 mins flying time from the Oceanic boundary when flying Westbound. Such clearances are applicable only from the Oceanic boundary/entry point. A full readback of an oceanic clearance, including track co-ordinates, is the standard requirement and is always required if the clearance is received on HF.

Note that on VATSIM it is normal practice during routine (non-event) operations for a single controller to cover both Shanwick and Gander OCAs. This controller may be logged on as either EGGX\_FSS or CZQX\_FSS and will normally handle Oceanic clearances from both sides of the Atlantic.

The clearance may give an expected FL (e.g. EXPECT F350) for the oceanic crossing; climb to this level will be subject to clearance to climb by the domestic controller. If the received clearance necessitates a revised domestic routing this too must be negotiated with the domestic controller.

### **Westbound Clearances**

Early information of ETA and flight level at the Oceanic boundary is of extreme importance to ATC for planning purposes. Therefore UK departures not using an ACARS clearance request should call for Clearance from Shanwick on VHF as soon as possible after take-off, keeping in mind the 90-30 minute rule mentioned earlier. If unable to contact Shanwick on VHF, clearance should be requested on HF.

It sometimes happens that aircraft are routed from LHR/LGW over France for their N Atlantic crossing. To obtain the Oceanic Clearance from Shanwick on VHF it is necessary to make the call as soon as possible, once again keeping in mind the 90-30 minute rule. Any delay will take the aircraft out of VHF range and HF will need to be used.

Westbound Oceanic Clearance through Shanwick and Gander to New York ACC – this does NOT apply to flts through Santa Maria ACC to New York ACC.

Shanwick will clear flights to the first NAMED fix in the New York ACC then say VIA FLIGHT PLANNED ROUTE TO DESTINATION. If the flight-planned route goes South and East of 20N60W Shanwick will clear the acft to the last set of coordinates filed that are North and East of 20N60W and then say VIA FLIGHT PLANNED ROUTE TO DESTINATION. If ATC change the original planned route they will issue a routing to put the acft back on the original planned route then say VIA FLIGHT PLANNED ROUTE TO DESTINATION. The named fixes or coordinates that Shanwick clear acft to

are NOT clearance limits. After those points the acft should proceed VIA FLIGHT PLANNED ROUTE TO DESTINATION.

### **Eastbound Clearances**

Gander clearance delivery procedures between 2330 and 0730 (DST 2230Z – 0630Z) require flights (in addition to monitoring the appropriate control sector frequency) to contact “Gander Clearance Delivery” not more than 90 mins and not less than 30 mins flying time from the Oceanic boundary for their Oceanic clearance.

Clearance delivery frequencies and locations are published daily in the eastbound Track Message. To reduce VHF radio transmissions during these hours the domestic control sector will not normally issue instructions for pilots to contact oceanic clearance delivery (nor is there a requirement for pilots to notify the domestic control sector that oceanic clearance has been received).

As in Westbound clearances above, remember that during routine operations a single controller logged on as EGGX or CZQX is likely to be covering the combined Shanwick/Gander OCA and will normally issue clearances for flights on both sides of the Atlantic.

### **Santa Maria Oceanic**

Ensure that the request for oceanic clearance is made at least 40mins prior to estimated arrival at the Santa Maria Oceanic boundary.

### **New York Oceanic**

The procedures used to issue Oceanic Clearances to eastbound traffic entering the New York Oceanic FIR from a FAA facility (eg Miami FIR) were modified effective January 2013. The last assigned route clearance, or that received at the departure aerodrome if not updated, is considered to be the route portion of the oceanic clearance with assignment of Altitude and Speed only occurring once airborne prior to entry into the New York Oceanic FIR.

### **Oceanic Clearance Request**

- i. Callsign.
- ii. Co-ordinates of OCA entry point (or first point of an organised track).
- iii. Most accurate possible estimate for OCA entry point.
- iv. Desired FL for Oceanic crossing.
- v. Desired Mach. No. for Oceanic crossing.
- vi. OCA entry point max possible Flight Level.
- vii. Next best Track and Flight Level.
- viii. Any change to flight plan affecting OCA.

E.g.: “Shanwick, Speedbird 175, request JFK via NAT BRAVO, estimate PIKIL time 1227Z, FL340 Mach .85. Maximum at PIKIL FL360, next best NAT CHARLIE FL350.”

To minimise R/T, initially GIVE ONLY THE CALLSIGN WHEN CALLING SHANWICK ON VHF WESTBOUND; they will tell you the information they require. Note that “entry points” occur at Longitudes 10W, 15W exiting Scottish and Shannon, named points on the Brest Oceanic Transition Area (BOTA) boundary at 0845W, named points on the Shanwick Oceanic boundary, e.g. MASIT and named points on the Shannon Oceanic Transition Area (SOTA) boundary, e.g. OMOKO.



After receiving the clearance, the forward estimate for the Oceanic entry point must be monitored, and any revised ETA passed to ATC. This is very important as longitudinal spacing is based on these estimates. Advise ATC if the ETA changes by 3 minutes or more.

If the aircraft is cleared on a North Atlantic Track not as flight planned the easiest way to provide the Oceanic Boundary ETA that will be immediately called for by ATC is to request, from the Domestic Controller, a direct routing to the new Oceanic Boundary point.

### **Non-receipt of Clearance**

If pilots have not received their Oceanic Clearance prior to reaching the Shanwick OCA boundary, they must contact Domestic ATC and request instructions to enable them to remain clear of Oceanic Airspace whilst awaiting such Clearance. This is not the case for other NAT OCAs into any of which flights may enter whilst pilots are awaiting receipt of a delayed Oceanic Clearance. Pilots should always endeavour to obtain Oceanic Clearance prior to entering these other NAT OCAs; however, if any difficulty is encountered the pilot should not hold while awaiting Clearance unless so directed by ATC.

### **Core NAT Tracks**

Changes are in effect for aircraft operating on selected NAT tracks at selected levels. This is known as ADS C and CPDLC mandated OTS. The remarks section of the track message will include ADS C and CPDLC tracks and levels. These NAT tracks require all acft to be carrying serviceable FANS/CPDLC equipment. In trail spacing will be correspondingly reduced.

Refuse incompatible clearances if you are not FANS/CPDLC equipped. All BAV aircraft currently operating on the North Atlantic can be assumed to be suitably equipped if fully serviceable.

### **“When Able Higher” (WAH) Reports**

Must be provided by all flights entering New York (MNPSA) and Santa Maria OCAs,

e.g. *“Global Air 543, 40N 40W 1010, FL350, 40N 50W 110, 40N 60W next, able FL360 at 1035, able FL370 at 1145, able FL390 at 1300”.*

ATC will interpret this message as an *ability* to climb, not a request.

### **Reykjavik Control Area (BIRD)**

Oceanic Clearance, when required, should be requested from Iceland Radio VHF 127.85 (BICC\_FSS) not more than 30 mins and not less than 10 mins prior to the Oceanic boundary. If crews are unable to get their clearance prior to entry they are expected to enter Reykjavik OCA at the flight level cleared by Scottish and contact Reykjavik Control on assigned frequency.

### **Abbreviated Read-back of Clearances**

A full co-ordinate read back is required unless a Track Message, complete with Track Message Identification (TMI) number, is held on the Flight Deck. In which case, if following the whole of a N Atlantic Track (NAT), read-back should only include TRACK LETTER, FL, MACH NO. and TRACK MESSAGE IDENTIFICATION.

*“Speedbird 175, cleared to JFK via NAT BRAVO, FL340 Mach .85, TMI is 273.”*

IF NOT FOLLOWING THE WHOLE LENGTH OF A NAT, FULL READ-BACK OF THE TRACK CO-ORDINATES IS REQUIRED INSTEAD OF THE TRACK MESSAGE IDENTIFICATION. The Track Message Identification number will have a suffix letter if the Track Message has been revised (e.g. 365A); this letter forms part of the identification number and must be quoted.

### **Automatic Climb Clearances**

These may be issued by Gander, Moncton or Montreal. The instruction will specify a time to leave the initial flight level and a time to reach the final level. No further clearance is required to commence the climb. If a possibility exists that the aircraft will be unable to comply then the clearance must be rejected.

### **Track Changes**

It often happens that the Oceanic Clearance will be for a Track other than that flight planned. For instance a westbound aircraft may have been flight planned to use Track A but when the clearance is received it is for Track B. This track change will necessitate loading the co-ordinates of Track B into the on-board navigation systems.

### **North American Domestic Routes (NAR)**

The NAR system comprises a series of pre-planned routes over existing airway/route systems from/to coastal fixes serving North Atlantic traffic.

Most routes are divided into two portions:

- i. Common Portion – That portion of the route between the coastal fix and a specified Inland Navigation Facility.
- ii. Non-Common Portion – That portion of the route between the specified Inland Navigation Facility and the relevant system airfield.

The routes are numbered and prefixed by “N”. Odd route numbers have E-bound applications, and even route numbers have W-bound applications. The NAR numbers have letter suffixes to indicate revisions to the route, e.g. NAR N102A becomes N102B with the first change and N102C with the second change and so on.

All aircraft that enter/exit the North Atlantic via the identified coastal fixes should use the NAR system if their domestic route requirements are compatible – those relevant to the particular entry/exit point are given on the Track Message.

Westbound traffic entering Canadian domestic airspace will not routinely receive onward en route clearance if proceeding as per flight plan. Flights that have been re-routed and enter Canadian domestic airspace within 120 nm of the flight planned Oceanic Exit Point can expect to be re-cleared to regain their flight planned route by the Inland Navigation Fix.

Other re-routed flights will be tactically re-routed by ATC. Re-clearance may be a specified route in full or expressed as a North American Route (NAR) comprising Common and Non Common Portions.

### **Met Reports**

Occasionally aircraft may be nominated by ATC to make met reports. This is done by ATC when delivering clearance, adding the phrase “send met reports”. Met reports should also be sent by any aircraft which encounters abnormal weather conditions or not following one of the organised tracks.

If you are asked to send met reports, add the temperature and spot wind for both the current position **and** the mid-point of the leg just flown to the end of a position report. For example:

*“Speedbird 175, position 57N 20W time 1228Z, FL350 Mach .85. Estimate 57N 30W time 1341Z, next 56N 40W. Minus 56 220/55, Minus 60 270/80 5630N 15W.”*

### **Adherence to Track and ETA**

It is essential to check that the aircraft is setting off towards the correct next way point at each turning point. Ten minutes after each turning point check that the aircraft is on track. Waypoints uplinked may



be interrogated by line selecting the waypoint and checking the co-ordinates in the Scratchpad, or on the Nav Data page of the FMS.

### **Reclearance**

A change in your filed clearance (i.e. different from the oceanic route requested with the flight plan) is the most probable cause of Gross Navigation Error. Crews must be particularly cautious when receiving a reclearance. Strict adherence to fleet SOPs in this situation will mitigate the risk of GNE and concomitant risk of mid-air collision.

### **Step Climbs in North Atlantic MNPS Airspace**

#### **Planned Step Climbs**

Due to current ATC restrictions, flights operating on North Atlantic Organised Track Structure cannot file flight plans containing step climbs within the NAT segment. This restriction is also contained in the Lido Flight planning system and as a result, OFPs will not display step climbs within the NAT segment even if it is economic to do so.

#### **En-route Step Climbs**

Within the NAT system, the OCA controller will endeavour to allow flight climbs on a tactical basis. To make the most of this service crews should review FMC performance predictions to determine optimum cruise levels. Climb requests should then be made via HF radio or CPDLC to the appropriate OCA.

### **Communications**

As HF is not simulated in MSFS/P3D etc, VATSIM uses VHF frequencies in the Oceanic Control Area.

In normal operations, the positions covering the MNPS area are:

<b>Position Designation</b>	<b>RTF Callsign</b>	<b>Frequency</b>
EGGX_FSS	SHANWICK RADIO	131.800
CZQX_FSS	GANDER RADIO	131.700
NY_JBC_FSS	NEW YORK RADIO	125.925
LPPO_FSS	SANTA MARIA RADIO	127.900
BICC_FSS	ICELAND RADIO	127.850

During large events such as Cross The Pond additional frequencies will be opened, often split via NAT Track and/or level.

121.5 should be monitored continuously on long over-water flights.

Although Shanwick is responsible for the area west of 30W and Gander is responsible for the area east of 30W, it is routine for one controller to cover the whole combined Shanwick/Gander area during normal operations. The controller may be logged on as EGGX\_FSS or CZQX\_FSS and should be contacted for Oceanic clearance in the usual way (i.e. prior to the Oceanic Entry Point) whether you are heading westbound or eastbound.

When approaching the Canadian coast, the Oceanic Controller, on HF or VHF will give a frequency on which to call the appropriate centre, for onward airways clearance. Remember that on HF you are talking to a radio operator so there may be a delay for requests to be actioned. The aircraft SELCAL code is included in Item 18 of the Flight Plan and can be found for each aircraft in the fleet in the Flight Operations section of the BAV Forums.

**Transponders**

While in the North Atlantic/NAT/Flight Information Region, and unless otherwise directed by ATC, select A2000. However, the last assigned code should be retained for a period of **30 mins** after entry into NAT Airspace. However, for all SSR equipped aircraft operating on routes T9 and T213 the last assigned code shall be retained for a maximum of **ten minutes** after entry into NAT Airspace.

**Flight Planning Minima for Alternate Aerodromes**

When flight planning certain aerodromes as the nominated alternate, the forecast weather at the alternate must be above specified limits which are much higher than those for use of the aerodrome as a destination.

**En Route Diversion Aerodromes**

- KEFLAVIK (Iceland) H24.
  - If a KEF SNOWTAM is reporting 40 m wide cleared runway, a wider width can be provided within a short time period (10–20 mins) if reqd. Contact KEF tower as soon as possible to request 45 m cleared width.
- IQALUIT (Baffin Is) H24.
- GANDER (Newfoundland) H24.
- SANTA MARIA (Azores) H24.
- SHANNON (Ireland) H24.
- THULE (Greenland) Limited Hours.
- KANGERLUSSUAQ (Greenland) Limited Hours.
  - However Kangerlussuaq will be available within 60 mins (usually less) in an emergency and may be used H24 for Non ETOPS planning purposes, e.g. ferry flights of two engined aircraft.
- GOOSE BAY (Labrador) H24.
- HALIFAX (Nova Scotia) H24.
- LAJES (Azores) H24.

**Weather Deviation Procedures**

The following procedures are intended to provide guidance for deviations around thunderstorms. All possible circumstances cannot be covered and therefore the pilot's judgment shall ultimately determine the sequence of actions taken.

If the aircraft is required to deviate from track to avoid weather and prior clearance cannot be obtained, an air traffic control clearance shall be obtained at the earliest possible time.

When the pilot initiates communications with ATC, rapid response may be obtained by stating "WEATHER DEVIATION REQUIRED" to indicate that priority is desired on the frequency and for ATC response.

If a revised air traffic control clearance cannot be obtained and deviation from track is required to avoid weather, the pilot should take the following actions:

1. If possible, deviate away from an organized track or route system.
2. Establish communication with and alert nearby aircraft by broadcasting, at suitable intervals: identification, flight level, aircraft position (including the ATS route designator or the track code) and intentions (including the magnitude of the deviation expected) on the frequency in use, as well as on UNICOM frequency 122.800 MHz (or, as a back-up, the VHF inter-pilot air-to-air frequency 123.45).
3. Watch for conflicting traffic both visually and by reference to TCAS.
4. Turn on all aircraft exterior lights (commensurate with appropriate operating limitations).
5. For deviations of less than 10 nm, aircraft should remain at the level assigned by ATC.
6. For deviations of greater than 10 nm, when the aircraft is approximately 10 nm from track, initiate a level change based on the following criteria:

Route Centreline Track	Deviation >10M	Level Change
EAST (000-179 magnetic)	LEFT	DESCEND 300ft
	RIGHT	CLIMB 300ft
WEST (180-359 magnetic)	LEFT	CLIMB 300ft
	RIGHT	DESCEND 300ft

*Simple rule of thumb: if deviating North of Track Descend 300ft, South of Track Climb 300ft.*

7. 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.
8. When returning to track, be at its assigned flight level, when the aircraft is within approximately 10 nm of centre line.

**Note:** 2 and 3 above call for the pilot to: broadcast aircraft position and pilot's intentions, identify conflicting traffic and communicate air-to-air with near-by aircraft. If the pilot determines that there is another aircraft at or near the same FL with which his aircraft might conflict, then the pilot is expected to adjust the path of the aircraft, as necessary, to avoid conflict.

#### IN-FLIGHT CONTINGENCIES

The following procedures are intended for aircraft unable to maintain assigned level due to:

- a) Weather (for example severe turbulence);
- b) Aircraft performance problems; or
- c) Pressurisation failure.

They are applicable primarily when rapid descent, turn-back, or diversion to an alternate aerodrome is required. The pilot's judgement will determine the specific sequence of actions taken, having regard to the prevailing circumstances.

An aircraft unable to continue flight in accordance with ATC clearance

should obtain a revised clearance prior to initiating any action USING THE DISTRESS (MAYDAY) OR URGENCY (PAN) PREFIX as appropriate.

### **General Procedures**

If prior clearance cannot be obtained, an ATC clearance should be obtained at the earliest possible time and, in the meantime, the aircraft should broadcast its position (including the ATS Route designator or the Track Code as appropriate) and its intentions, at frequent intervals on 122.8 MHz (with 123.45 MHz as a back-up frequency). It must be recognised that due to the types of communications used in North Atlantic operations (e.g. CPDLC, station-to-station SATCOM Voice and SELCAL with HF), pilots' situation awareness, of other potentially conflicting traffic, may be non-existent or incomplete. If, however, the aircraft is in an area where ATC communications are being conducted on VHF, pending receipt of any re-clearance, the position and intentions should be broadcast on the current control frequency, rather than 122.8 or 123.45 MHz.

In general terms, the aircraft should be flown at a flight level and/or on a track where other aircraft are least likely to be encountered. Maximum use of aircraft lighting should be made and a good lookout maintained. If ACAS/TCAS is carried, the displayed information should be used to assist in sighting proximate traffic.

### **Specific Procedures**

The general concept of these Oceanic in-flight contingency procedures is, whenever operationally feasible, to offset from the assigned route by 15 NM and climb or descend to a level which differs from those normally used by 500ft if below FL410 or by 1000ft if above FL410.

The aircraft should leave its assigned route or track by initially turning at least 45° to the right or left whenever this is feasible. The direction of the turn should, where appropriate, be determined by the position of the aircraft relative to any organised route or track system (e.g. whether the aircraft is outside, at the edge of, or within the system). Other factors which may affect the direction of turn are: direction to an alternate airport, terrain clearance, levels allocated on adjacent routes or tracks and any known SLOP offsets adopted by other nearby traffic.

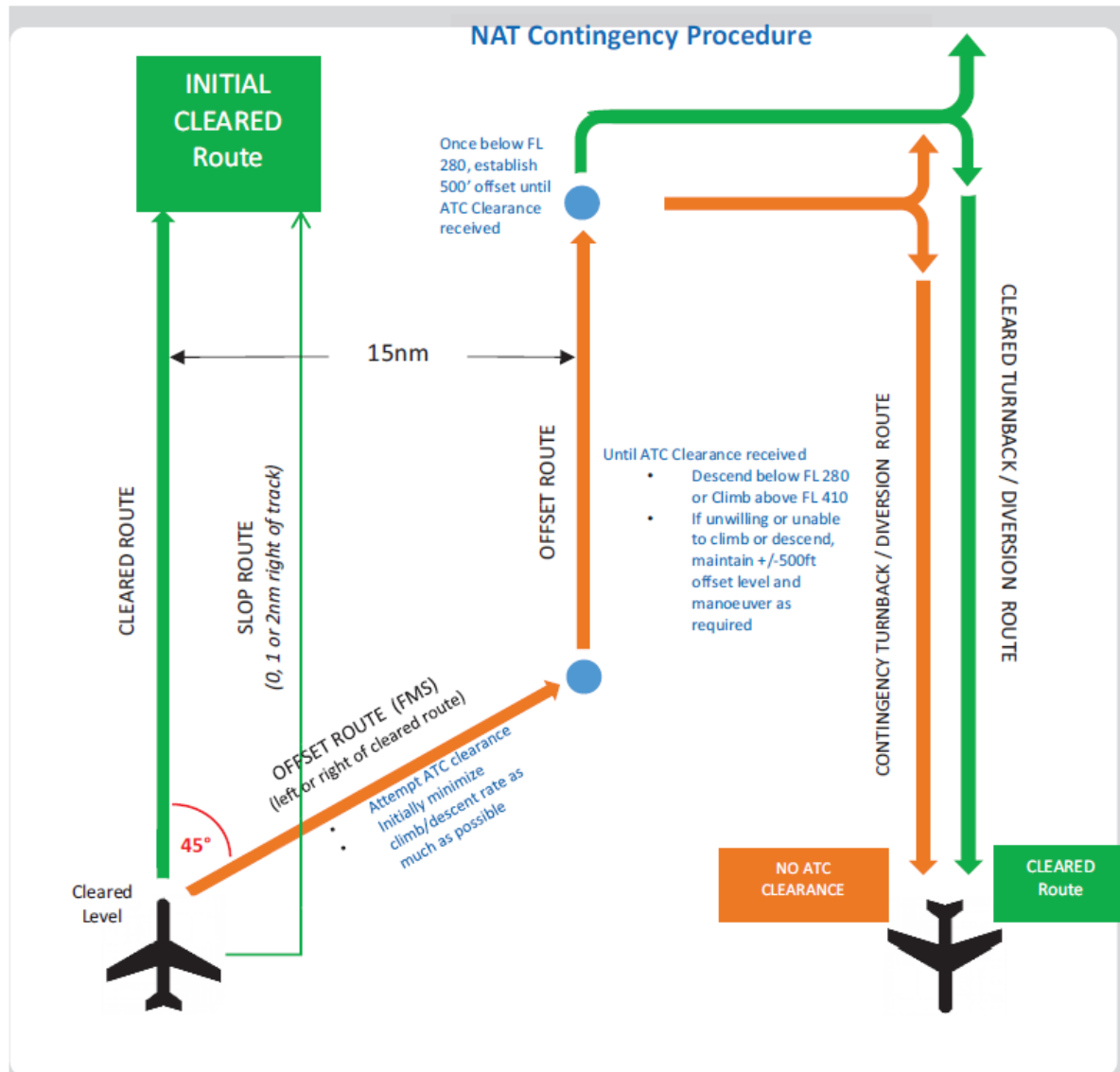
An aircraft that is unable to maintain its assigned flight level (e.g. due to power loss, pressurization problems, freezing fuel, etc.) should, whenever possible, initially minimise its rate of descent when leaving its original track centreline and then when expected to be clear of any possible traffic following the same track at lower levels and while subsequently maintaining a same direction 15 NM offset track, descend to an operationally feasible flight level, which differs from those normally used by 500ft if below FL410 (or by 1000ft if above FL410).

Before commencing any diversion across the flow of adjacent traffic, or before initiating any turn-back (180°), aircraft should, whilst subsequently maintaining a same direction 15 NM offset track, expedite climb above or descent below the vast majority of NAT traffic (i.e. to a level above FL410 or below FL280), and then maintain a flight level which differs from those normally used: by 1000ft if above FL410, or by 500ft if below FL410.

However, if the pilot is unable or unwilling to carry out a major climb or descent, then any diversion or turn-back manoeuvre should be carried out at a level 500ft different from those in use within the NAT HLA, until a new ATC clearance is obtained.

**TWIN-ENGINE AIRCRAFT** – Using these procedures as a result of engine shutdown or primary system failure should advise ATC as soon as possible giving aircraft type and requesting expeditious handling.

The graphic overleaf illustrates the procedure:



### Navigation Equipment Failure

A minimum number of navigation systems depending on aircraft type (e.g. 2 INS) must be serviceable to enter MNPS airspace. If failure reduces the number below the minimum ATC must be informed. If total navigation system failure occurs, ATC must be informed. If no instructions from ATC consider climbing/descending 500ft, broadcast action on frequency/121.5, and advise ATC as soon as possible.

### NORTHERN ORGANISED TRACK SYSTEM (NOROTS)

NOR OTS consists of a number of daily flexi tracks from the Reykjavik/Edmonton boundary at 60° West to the West coast of Canada/Northern USA.

Valid from 1300–2300 UTC at 60° West.

Affects westbound traffic from Europe to Western Canada/USA.

Tracks will be designated NOR1 through to NOR9.

Like the North Atlantic OTS, the TDM (track definition message) will have a TMI (track message identifier) number, which is to be included in any abbreviated route clearance readback to ATC.

The TDM and associated TMI number will be included in the briefing given by Network Operations Flight Planning (NOFP).

Tracks will be described using named fixes, Navaids and whole° of latitude and longitude, which should be used in position reports when required.

#### **REDUCED LATERAL SEPARATION MINIMA (RLATSM)**

Commencing in November 2015, Reduced Lateral Separation (RLatSM) will be offered in the NAT OTS between FL350 and FL390 inclusive (co-incident with airspace subject to the NAT Region Datalink Mandate).

All aircraft operating on the published RLatSM tracks will be subject to the trial, other published OTS flight levels and tracks are not part of the trial.

There are no additional crew requirements associated with trial participation.

For further information, pilots should view the NATS briefing video about RLatSM available at <https://www.nats.aero/rlat/>

#### **Eligibility**

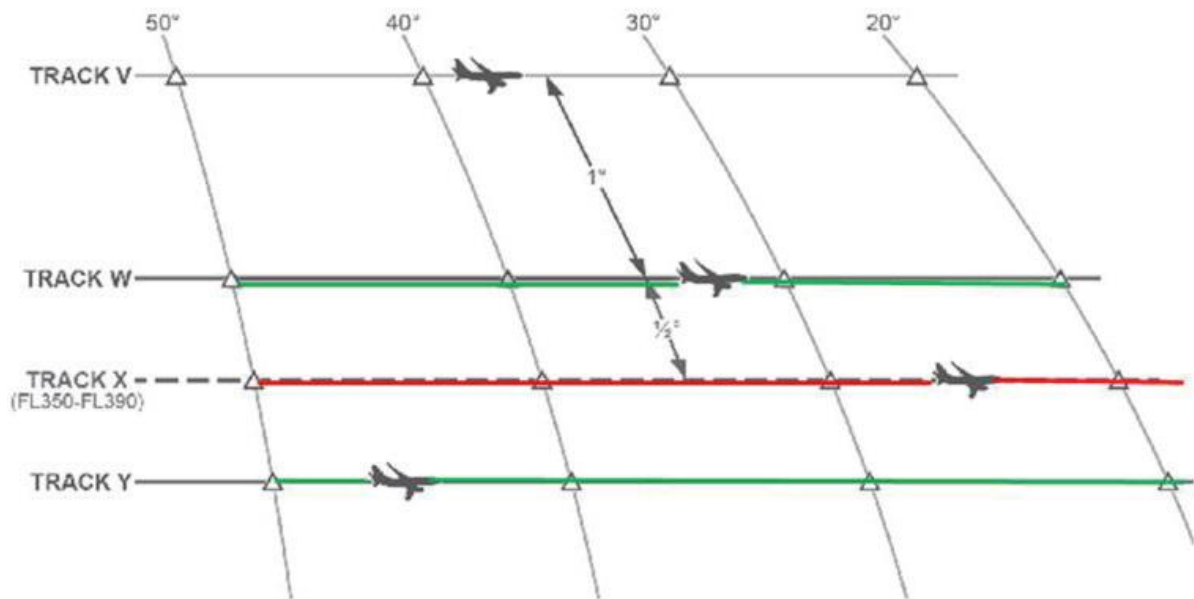
BAVirtual aircraft are eligible to operate on RLatSM tracks providing they are:

- Approved for RNP 4; and
- Equipped with Automatic Dependent Surveillance-Contract (ADS-C); and
- Equipped with Controller-Pilot Data Link Communications (CPDLC).

The required Communications, Navigation and Surveillance (CNS) systems must be operational, and flight crew must report any failure or malfunction of GPS, ADS-C, or CPDLC equipment to Air Traffic Control as soon as it becomes apparent.

In order to be able to utilise a track defined by half-degree waypoints, the flight crew must have uplinked the relevant route into the FMS, either via CPDLC (when the Oceanic Control Centres are appropriately equipped) or from Simbrief/PFPX etc as part of flight preparation. **Manual entry into the FMS of a track defined by half-degree waypoints is not permitted.**



**Flight Planning**


Only those operators/aircraft eligible for RLatSM operations will be allowed to operate on designated RLatSM tracks between FL 350-390 (inclusive). All RLatSM tracks will be underlined in the OTS Track Message, with RLatSM tracks and FLs uniquely identified in Remark 3. In the above graphic, tracks W, X and Y are all RLatSM tracks.

The following ICAO Flight Plan annotations in Items 10 and 18 indicate that required RLatSM CNS systems are operational for the flight.

- Item 10a (Radio communication, navigation and approach-aid equipment and capabilities): 'J5' indicates Inmarsat CPDLC SATCOM and 'J7' indicates CPDLC Iridium SATCOM data link equipage and operation;
- Item 10b (Surveillance equipment and capabilities): 'D1' indicates ADS-C equipage and operation;
- Item 18 (Other information): 'PBN/' followed by 'L1' indicates RNP 4 authorisation.

**Clearance onto an RLatSM Track**

Initially, aircraft will only be issued a clearance onto the RLatSM track which uses half-degree latitude waypoints if that track has been requested in the flight plan, and uplinked direct in to the FMS via Company Route request/ACARS etc.

If a flight is planned on a half-degree track, but the flight crew are unable to uplink the route during flight preparation, they should request a re-route onto a whole-degree track, or a non-RLatSM track.

**Manual entry into the FMS of a track defined by half-degree waypoints is not permitted.**

In the graphic example above:

- Only flights which had been flight-planned onto Track X would be given a clearance onto that track; however, they could be re-routed onto Tracks W or Y
- A flight which had been flight-planned onto Track W could not be re-routed onto Track X, but could be re-routed onto Track Y

When CPDLC uplink of routes (in the appropriate ARINC format) is available to ATC, aircraft may be cleared onto an RLatSM track, defined by half-degree waypoints, other than that which was flight-planned. As a precaution against possible waypoint-insertion errors, rerouting of flights onto RLatSM identified tracks containing half-degree coordinates will only be permitted via CPDLC route-uplink from the relevant Oceanic Control Centre.

Aircraft will not be cleared to join an RLatSM track after the OCA boundary, but may be cleared to leave such a track before OCA exit.

### **Waypoints and Navigation Errors**

Existing navigation displays truncate waypoints consisting of latitude/longitude to a maximum of seven characters; minutes of latitude are not displayed. To mitigate the possibility of gross navigational errors resulting from incorrect waypoint insertion, it is imperative that established procedures are followed for route insertion and checking.

Flight crew are further advised that, should they be notified by ATC that systems indicate the aircraft is not flying the cleared route, they should immediately display the full° and minutes loaded in to the FMC for the NEXT and NEXT+1 waypoints, and verify against the cleared route before responding.

ATC Notifications of possible track deviation will be in the following format:

Voice message example: 'SHANWICK CONFIRMS YOUR POSITION REPORT INDICATES INCORRECT ROUTING. CHECK FULL° AND MINUTES LOADED INTO FMC. YOUR CLEARED ROUTE IS [route]'

CPDLC message example: 'YOUR POSITION REPORT INDICATES INCORRECT ROUTING. CHECK FULL° AND MINUTES LOADED INTO FMC. YOUR CLEARED ROUTE IS [route]'

### **TCAS**

Operative TCAS is required at dispatch for flight in RLatSM airspace. If the TCAS fails after dispatch, the flight can continue as planned.

### **Failure of Communication, Navigation or Surveillance Systems**

If a flight experiences a failure of a CNS system required for RLatSM PRIOR TO DEPARTURE, the flight should be planned so as to remain clear of NAT RLatSM tracks between FL 350-390 (inclusive).

If a flight experiences a failure of a CNS system required for RLatSM AFTER DEPARTURE BUT PRIOR TO ENTERING RLATSM AIRSPACE, the flight crew should contact ATC and request a revised clearance which will keep the flight clear of NAT RLatSM tracks between FL 350- 390 (inclusive).

If a flight experiences a failure of a CNS system required for RLatSM WHILE OPERATING IN RLATSM AIRSPACE, ATC must be advised immediately. Such flights may be re-cleared to exit RLatSM airspace, but consideration will be given to allowing the flight to remain in the airspace, based on tactical considerations.

### **Contingency Procedures**

Contingency procedures for NAT operations (see [In Flight Contingencies](#) above), including procedures for SLOP and weather deviation, are unchanged during operations in RLatSM airspace. However, flight crew should be particularly vigilant if flying 15 nm offset, because of the potential proximity of other traffic.

If a flight experiences an Urgency situation or an Emergency whilst flying in datalink airspace, it is recommended that flight crew set the CPDLC to Emergency mode. Doing so will alert the controller to the flight's situation in the shortest time.

Moreover, if the Commander determines that a diversion across the Organised Track System, or a turn-back, is required, it is highly advisable to contact ATC first (if practicable) to determine a suitable level at which to fly. If it is not possible to contact ATC, it is strongly recommended to exit the OTS by climbing above FL410 or descending below FL285 before crossing the OTS or turning back.

**CANADA****AIRSPACE DESCRIPTION****High Level Airspace**

- Within Southern Control Area Controlled Airspace – At and above 18,000ft.
- Within Northern Control Area Controlled Airspace – At and above FL230.
- Within Arctic Control Area Controlled Airspace – At and above FL270.

Airways referred to as Jet Routes.

**Low Level Airspace**

- Low Level Airways up to but not including 18,000ft.

Airways referred to as Victor Routes.

**RVSM (Reduced Vertical Separation Minimum)**

Canadian Airspace between FL290–410 is now designated as RVSM; vertical separation is reduced from 2,000ft to 1,000ft. There is a minimum equipment requirement and an associated altimeter check before flight into RVSM airspace – see relevant manual for aircraft type.

**Northern Track System**

A Northern Track System in the Northern Control Area interacts with the established Airway System in the Southern Control Area. This system consists of Primary Tracks and a number of secondary Laterals. 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: For a flight on NCA Track BRAVO where it crosses 80°W—“*SIX SEVEN THREE ZERO NORTH, ZERO EIGHT ZERO WEST AT (time)*”.

**Southern Control Area Track System – Winnipeg/Montreal FIRs**

To expedite traffic flow, a system of commonly used routes has been designated from 18,000ft asl and above, for use by traffic between the Mid-West/Western USA and Europe. Each route has been assigned a code letter.

**VORs in Northern Canada**

Many VORs are orientated on True North. These are generally in the magnetic compass unusable or erratic areas. The charts are marked to indicate this.

**PROCEDURES****Altimeter Setting Procedures**

Canadian airspace is divided into two regions for altimeter settings:

1. Altimeter Setting Region – QNH up to 18,000ft. Aircraft use the altimeter setting of the nearest station along the route of flight.

Above 18,000ft altimeter is set to 29.92 inches (1013.2 mbs).

2. **Standard Pressure Region** - Aircraft in **uncontrolled** airspace within the Standard Pressure Region set Standard Pressure, except for take-off and landing. The Standard Pressure

Region is the sparsely-populated area of Canada where pressure data is generally not available.

Altimeter settings are given in inches.

### **Runway Heading**

When cleared to “fly or maintain runway heading”, pilots are expected to FLY THE RUNWAY HEADING WITH NO DRIFT CORRECTION applied.

### **Cruising Levels**

Pilots may request flight levels not appropriate to the airway or direction of flight but should make the reason for the request known to ATC, e.g. icing, turbulence or fuel considerations.

### **Mach No**

Advising ATC prior to any change of Mach No is particularly important in Canadian Domestic Airspace; this includes the change to economy Mach No after a N Atlantic crossing at a fixed Mach No.

### **Cruising Levels in the Northern Control Area**

In this airspace, TRUE track is used to determine cruising altitude for direction of flight.

### **Temperature Correction to Minimum Operating Altitude**

See [Cold Temperature Corrections](#) section of this manual.

The AIPs of Canada and the USA suggest that in cold conditions pilots should operate at least 1000ft above the published minimum en-route altitude.

### **Heavy Aircraft**

Pilots of heavy aircraft are required to use the word “HEAVY” on initial contact with each ATC unit. After communication has been established and when there is no likelihood of confusion, the word “HEAVY” may be omitted in Canada.

**Note:** There is no such alleviation in the USA, although custom and practice is similar.

### **Reduced Position Reporting**

In areas of Radar coverage, position reports may be discontinued when authorised by ATC. Pilots will be informed when to resume normal reporting procedures.

### **Flight Planning**

For flights planning to operate on a Northern Track or Lateral, the route is defined in the Flight Plan by the abbreviation NCA followed by the letter(s) and/or number(s) of the Tracks requested, e.g.:

Lateral 3 = NCA3

Northern Track Bravo = NCAB

For flights planning to operate on a “Southern Control Area Track” in the Winnipeg/Montreal FIRs, the route should be defined in the Flight Plan by the abbreviation SCA followed by the letter of the Track requested, e.g:

Southern Track Juliet = SCAJ

**Aerodrome Operating Minima (AOM) in Canada and the USA**

Special rules apply. See table below.

Canada Takeoff Minima	
Facilities	Ceiling/Visibility/RVR
High Intensity Runway Lights or Runway Centreline lights or Runway Centreline Markings	Nil/0.25SM or RVR 1200ft
High Intensity Runway lights and Runway Centreline lights and Runway Centreline Markings and Touchdown and Mid-point RVR reporting systems (both of which are required and controlling)	Nil/RVR 600ft

**Denial of ATC Clearance in Canada**

In Canada, ATC may deny take-off or landing clearance to crew if arrivals and departures on the active runway are suspended or restricted following implementation of a Reduced or Low Visibility Operating Plan.

Example phraseology:

“ATC: XYZ123, LVOP in effect, state your intentions.”

If the pilot persists with the intention to land or take-off, ATC will inform the pilot that a landing/take-off clearance cannot be issued and provide required information, which may include traffic, hazards, obstructions, runway exit or wind.

Example phraseology:

“ATC: Since landing/take-off clearance cannot be issued, you are landing/taking off on your own responsibility.”

Pilots should clarify any ambiguity with ATC.

**Communications**

Over Canada monitor 121.5 without Selcal.

VHF is used whenever possible supplemented by HF facilities.

**Arctic Radio/Baffin Radio**

Arctic Radio, centred near Cambridge Bay and Baffin Radio, centred near Iqaluit, are VHF networks supplementing the international HF network.

They accept IFR position reports and relay ATC clearances. They also provide weather and NOTAM information.

Initial contact is on 126.7.

**Holding**

Right hand turns are standard, adjusted to achieve 1 min at or below 14,000ft or 1½ min above 14,000ft inbound to the fix. Speeds are:

Up to 14,000ft	230 kt or less
Above 14,000ft	265 kt or less



**Speed Control**

Aircraft flying in controlled airspace and below 10,000ft asl are limited to maximum speed of 250 kts. Below 3,000ft agl and within 10 nm of an airport speed is limited to 200 kts for jets. Aircraft unable to manoeuvre safely at these speeds should operate at minimum safe speed.

Aircraft may operate at more than 250 kts below 10,000ft on departure.

**Other Traffic Information**

Radar Control advise aircraft of unidentified traffic in the near vicinity; they will also, on request, provide vectors to avoid this traffic.

**Visual Approach**

A "visual approach" is an approach by an IFR flight in which all or part of the instrument approach is not completed. Whenever the cloud ceiling is at least 500ft above the maximum radar vectoring altitude and the visibility at least 5 statute miles, IFR aircraft may be vectored to the airport traffic circuit and asked to complete a visual approach provided:

- The pilot has the airport in sight.
- The pilot reports sighting preceding IFR or VFR traffic.

Radar service is terminated when the pilot is told to contact Tower.

**LAHSO**

BAV are not authorised to operate LAHSO in Canada, see under USA for Land and Hold Short Operations (LAHSO) details.

**Weather Reports**

In N America/Canada visibility and RVR are recorded using statute miles and feet.

**Flight Service Station (FSS)**

A network of Flight Service Stations exists in Canada to provide weather and NOTAM information. It is particularly useful after a North Atlantic crossing for updates to weather information. Relay of IFR position reports and ATC clearances is also available. Initial contact is on 126.7 VHF, 5680 HF; the request can then be directed to the station coming in with the greatest clarity. The call should be something like:

"Any Flight Service Station this is Speedbird 185" and then in the case of Stephenville FSS responding first and with greatest clarity, the subsequent transmission would be:

"Stephenville Flight Service, Speedbird 185 requesting....."

FSSs usually operate H24 but may be difficult to raise during the 10 mins before each hour – at this time the operator is probably outside taking weather observations and then typing them into the network computer.

**ATIS**

Wind direction, as usual, will be °M.

Note: Magnetic variation in Canada can be in excess of 30°.

**Canadian Runway Friction Index (CRFI)**

Canadian aerodromes may report a Canadian Runway Friction Index (CRFI) value when reporting the state of contaminated runways.

The CRFI does not reflect the stopping performance of BAVirtual aircraft and therefore should not be used to compute take-off/landing performance. The Runway Condition Code (RWYCC), contaminant type and depth, and/or braking action should be provided alongside the CRFI and used instead for the computation of take-off/landing performance.

**En Route Diversion Aerodromes in N Canada**

The following are well equipped airfields N of about 50°N:

YYR	Goose	53 19N 60 25W
YFB	Iqaluit	63 45N 68 33W
YYQ	Churchill	58 44N 94 04W
YWG	Winnipeg	49 55N 97 14W
YZF (Limited Hrs)	Yellowknife	62 28N 114 27W
YXE	Saskatoon	52 10N 106 42W
YEG	Edmonton	53 19N 113 35W
YYC	Calgary	51 06N 114 01W

**USA****AIRSPACE DESCRIPTION****Aeronautical Information Manual (AIM)**

Published by the FAA; it is a pilot's guide to procedures in the USA. AIM references below are paragraph numbers or pilot/controller glossary (PCG) page numbers. Available here:

[http://www.faa.gov/air\\_traffic/publications](http://www.faa.gov/air_traffic/publications)

**Airways/Route Systems**

US airspace is divided into a two-level structure:

- a) Federal Airways – (Victor Routes) up to, but not including 18,000ft.
- b) Jet Route – From 18,000ft to FL450 inclusive.

Clearances are often given direct from present position over long distances.

National Route Program (NRP) enables more flexible use of US airspace. At the flight planning stage, the number of reporting points is reduced to a minimum over long distances using published guidelines; the abbreviation NRP is added to Item 18 of the ATC Flight Plan.

Uncontrolled VFR Traffic operating below 18,000ft is a problem for IFR flights in US airspace. The aircraft are not necessarily Transponder equipped and traffic information from ATC may be very late. **AIM 4-4-11.**

(Transponders are not mandatory below 10,000ft outside TMAs).

**RVSM (Reduced Vertical Separation Minimum)**

US airspace, including Alaska, Houston and Miami Oceanic and San Juan FIR between FL290–410 is now designated as RVSM. There is the standard minimum equipment requirement and an associated altimeter check before flight into RVSM airspace – see relevant manual for aircraft type. "W" is entered in Item 10 of the Flight Plan to indicate an aircraft is equipped to operate in RVSM airspace.

**ATCAA – ATC Assigned Airspace**

Is temporarily reserved airspace for military activity, which is not published internationally by NOTAM but is controlled by ATC. As these temporary areas are not published, flight planning cannot take account of them so 'on the day tactical' re-routes may be required, which will be managed by the ARTCC controlling the area. Deviations should be minor with some level capping or vectors provided.

**VATSIM 'Contact Me' Notifications**

Many VATSIM ATC units in the USA will **not** automatically send 'Contact Me' requests to aircraft entering their airspace or to aircraft in their airspace when they log in. Instead the pilot is expected to monitor regularly for ATC presence or be aware of when they are crossing a boundary from UNICOM in to a controlled sector and contact the controller on their own initiative. **VATSIM CoC B3.**

**PROCEDURES****VFR Traffic in TMAs**

Expect such traffic to be separated from your aircraft by as little as 500ft vertically and 1½ miles laterally (and, as a result, expect relatively frequent TCAS warnings). **AIM 3-2-3.**

Traffic Advisories – below 18,000ft and outside TMAs ATC will give information on VFR traffic but will not necessarily give radar vectors around the traffic unless requested. **AIM 5-5-10.**

During an arrival an aircraft may be vectored outside the TMA for spacing. ATC should (but might not) advise the aircraft that it is leaving Class B airspace; the inference is that vectors should probably be requested following a Traffic Advisory.

### **Altimeter Setting Procedures**

Altimeter settings are given in inches mercury.

- a) For cruise below 18,000ft – Altimeter to be set according to the reported altimeter setting of a station along the route (QNH). **ENSURE DESTINATION QNH IS SET ONCE IN CONTACT WITH APPROACH CONTROL**; they may not issue a specific instruction to do so.
- b) For cruise at or above 18,000ft – Altimeter to be set to 29.92 ins/1013.2 mbs.

### **Vacating Altitudes/FLs**

Vacating any previously assigned altitude/FL for a newly assigned altitude/FL must be reported to ATC. Reaching an assigned altitude/FL is not subject to a report. **AIM 5-3-3.**

### **Speed Control**

In accordance with Federal Aviation regulations:

- a) Aircraft speed shall not exceed 250 kts IAS during flight below 10,000ft asl, unless otherwise authorised.  
  
**Note:** That maintaining a speed above 250 kts, level at 10,000ft, is acceptable. The practice of (a) maintaining high speed on arrival or (b) increasing speed above 250 kts on departure, while the aircraft is below 10,000ft and more than 12 nm off the coast (e.g. JFK) **MUST** be co-ordinated with ATC.
- b) Airport Traffic Area (4.34 nm radius of an airport, ground level to, but not including 3,000ft). Aircraft speed shall not exceed 200 kts.
- c) If the minimum airspeed for safe manoeuvrability is greater than the above, the aircraft may be operated at that speed (controllers advise that this should be co-ordinated with ATC). Notify ATC if flying more than 10 kts LESS than planned speed.

## **CLEARANCES**

“MAINTAIN” – The altitude/FL instructions in an ATC clearance will normally require that a pilot “MAINTAIN” an altitude/FL. When ATC has not used the term “AT PILOT’S DISCRETION” nor imposed any climb or descent restrictions, pilots should initiate climb or descent promptly on acknowledgement of the clearance.

Descend or climb at an optimum rate consistent with the operating characteristics of the aircraft to 1,000 feet above or below the assigned altitude, and then attempt to descend or climb at a rate of between 500 and 1,500 fpm until the assigned altitude is reached. Optimum rate can be interpreted as the best rate commensurate with a fuel efficiency. If ATC require a different rate, they will tell you. If you cannot achieve a rate of at least 500 feet a minute, advise ATC.

If it is necessary to level off at an intermediate altitude during climb or descent, advise ATC, except when leveling off at 10,000 feet MSL on descent, or 2,500 feet above airport elevation (prior to entering a Class C or Class D surface area), when required for speed reduction. **AIM 4-4-10**

“DESCEND VIA” Clearance – Authorises pilots to vertically and laterally navigate in accordance with a depicted procedure, e.g. “Descend via the Civit One Arrival.” **AIM 5-4-1.**

**“CRUISE”** Clearance – The term CRUISE may be used for a cruise climb or descent. The pilot may level off at any intermediate level between the minimum IFR level and the altitude specified in the clearance. Climb/descent within the block is to be made at the discretion of the pilot. However, once the pilot starts descent and verbally reports leaving an altitude in the block, he may not return to that altitude without additional ATC clearance. **AIM 4-4-3.**

At times controllers will ask pilots to verify that they are at a particular altitude. The phraseology used will be: “VERIFY AT (altitude).” In climbing or descending situations, controllers may ask pilots to “VERIFY ASSIGNED ALTITUDE AS (altitude).” Pilots should confirm that they are at the altitude stated by the controller or that the assigned altitude is correct as stated. If this is not the case, they should inform the controller of the actual altitude being maintained or the different assigned altitude. **AIM 5-3-1.**

### **Heavy Aircraft**

Pilots of heavy aircraft in the USA should always suffix their callsign with the word “HEAVY”. Note that there is no alleviation to limiting this to first contact. **AIM 7-3-8.**

### **Callsigns**

Are spoken using group form for the numbers:

BAW05	Heavy is transmitted as SPEEDBIRD FIVE HEAVY (not Zero Five)
BAW11	Heavy is transmitted as SPEEDBIRD ELEVEN HEAVY (not One One)
BAW178	Heavy is transmitted as SPEEDBIRD ONE SEVENTY EIGHT HEAVY (not One Seven Eight)
BAW1423	Heavy is transmitted as SPEEDBIRD FOURTEEN TWENTY THREE HEAVY (not One Four Two Three). <b>AIM 4-2-4.</b>

### **Reduced Position Reports**

When informed by ATC that their aircraft is in “RADAR CONTACT”, pilots will discontinue position reports over compulsory reporting points. Pilots must report when vacating any previously assigned altitude/flight level for a newly assigned altitude/flight level.

Pilots must resume normal position reporting when ATC advise “RADAR CONTACT LOST” or “RADAR SERVICE TERMINATED”. **AIM 5-3-2.**

### **Holding**

Right hand turns standard, adjusted to achieve 1 min at or below 14,000ft or 1½ min above 14,000ft inbound to the fix. Speeds are:

Above 6,001ft to 14,000ft	230kt or less 210kt or less when published as an exception
Above 14,000ft	265kt or less

An ATC clearance requiring an aircraft to hold at a fix where the pattern is not charted will include the following information:

1. Direction of holding from the fix in terms of the eight cardinal compass points (i.e., N, NE, E, SE, etc.).
2. Holding fix (the fix may be omitted if included at the beginning of the transmission as the clearance limit).

3. Radial, course, bearing, airway or route on which the aircraft is to hold.
4. Leg length in miles if DME or RNAV is to be used (leg length will be specified in minutes on pilot request or if the controller considers it necessary).
5. Direction of turn if left turns are to be made, the pilot requests, or the controller considers it necessary.
6. Time to expect further clearance and any pertinent additional delay information. **AIM 5-3-8.**

**Minimum Fuel Advisory**

Advise ATC when fuel has reached a state where any undue delay at destination is unacceptable. This call does not declare an emergency and does not imply a need for traffic priority. On initial contact the term "MINIMUM FUEL" should be used after your callsign, e.g. "*Philadelphia Approach, Speedbird 219, Minimum Fuel, ----.*" IF TRAFFIC PRIORITY IS REQUIRED YOU MUST DECLARE AN EMERGENCY, reporting fuel remaining in minutes. **AIM 5-5-15.**

**Speed Control**

Aircraft operating between F280 and 10,000 feet must maintain a minimum of 250 Kts. Arriving turbojet aircraft operating below 10,000 feet must maintain:

- a) A speed not less than 210 knots, except;
- b) Within 20 flying miles of the airport of intended landing, a speed not less than 170 knots. **AIM 4-4-12.**

**ILS Critical Area Protection**

At or above ceiling 800ft and/or visibility 2 sm:

1. No critical area protective action is provided under these conditions.
2. A flight crew under these conditions should advise the tower that it will conduct an AUTOLAND or COUPLED approach to ensure that the ILS critical areas are protected when the aircraft is inside the ILS MM. **AIM 1-1-9.**

Pilots are cautioned that vehicular traffic not subject to ATC may cause momentary deviation to ILS course or glide slope signals. **AIM 1-1-9.**

Crews should be cautious of localiser and glidepath signals during an ILS approach in weather conditions of ceiling 800ft and/or 2 sm or better. In conditions below this, the localiser is protected inside the middle marker.

**Parallel ILS Approaches**

Airports having parallel runways separated by at least 2,500ft may operate parallel ILS approaches to both runways. Aircraft will be given staggered separation from aircraft on the adjacent localiser. **AIM 5-4-13.**

**Simultaneous Parallel ILS Approaches**

Airports having parallel runways separated by at least 4,300ft may operate a system of simultaneous ILS approaches to both runways. The 4,300ft limit may be reduced with increased ATC monitoring of aircraft on final approach; the term ILS Precision Runway Monitor (ILS PRM) may be used. SIMULTANEOUS CLOSE PARALLEL APPROACH is the term used to describe this reduced separation. **AIM 5-4-15.**

**ILS PRM – Simultaneous Converging Approaches**



When the ATIS broadcast advises ILS PRM approaches are in progress (or ILS PRM and LDA PRM approaches in the case of SOIA), pilots should brief to fly the ILS PRM. Pilots will be informed on initial contact or via the ATIS. It is worth briefing the communications and breakout procedures associated with these approaches. **AIM 5-4-16.**

### **Radar Vectors**

Be aware that the Airport Surveillance Radar can be referred to as 'ASR'. By implication an 'ASR to ILS' would be radar vectors to ILS.

### **DME ARC Procedures**

The procedure is to fly at the DME range as specified on the chart or as given by ATC to intercept the relevant approach, e.g. "*SPEEDBIRD 175 Arc 10 to Rwy 07R*". The requirement is to fly a constant DME range of 10 nm until intercepting the final approach to Rwy 07R.

### **Side-step Manoeuvre**

ATC may authorise an approach procedure which serves either one of parallel runways that are separated by 1,200ft or less followed by a straight-in landing on the adjacent runway, e.g. "Cleared for ILS runway 07 left approach, side-step to runway 07 right". Pilots are expected to commence the side-step manoeuvre as soon as possible after visual contact. **AIM 5-4-19.**

### **Land and Hold Short Operations (LAHSO)**

Landing and holding short of an intersecting runway, taxiway or designated point on a runway. Yellow, parallel hold-short lines will be painted across the runway and in-pavement lighting may be included. **AIM 4-3-11.**

**BAV (along with other international operators) policy is NOT TO PARTICIPATE in LAHSO for landing or departure, neither actively (cleared to land and hold short), nor passively (other aircraft cleared to land and hold short). If ATIS advises LAHSO in use, advise ATC "UNABLE TO PARTICIPATE" on first contact. Crews should refuse any LAHSO offered by ATC.**

**If in doubt confirm with ATC that other aircraft will not carry out LAHSO on any intersecting runway that may be in use for your arrival or departure.**

It should be born in mind that if LAHSO are underway at an airport, an aircraft landing on another runway may fail to 'hold short'.

Even though not taking part in LAHSO lighting for such operations, white strobes at intersecting runways, may be left on during your approach.

### **Visual Separation**

Acceptance of instructions to follow another aircraft or to maintain visual separation from it is an acknowledgement that the pilot will avoid the other aircraft or maintain in-trail separation and accept responsibility for wake turbulence separation. **AIM 5-5-12.** (Visual separation instructions are used at night. During a climb out from Phoenix at night a BA aircraft was given visual separation instructions; a TCAS incident resulted).

### **Visual Reference Lost while Circling from an Instrument Approach**

Same as the rest of the world. The missed approach for the instrument let down just flown should be carried out. To establish on the missed approach course, make a climbing turn towards the landing runway and then continue the turn until established on the missed approach course. This ensures that the aircraft remains within the circling area while climbing to a safe altitude. **AIM 5-4-21.**

### **Visual Approach**

May be conducted on an IFR Flight Plan and authorises a pilot to proceed visually to the airport, often reducing track miles to landing. The pilot must have either the airport or the preceding aircraft in sight. If the pilot has the airport in sight but cannot see the aircraft to be followed, declare this.

ATC may clear your aircraft for a visual approach; however, ATC retains both separation and wake vortex separation responsibility. When visually following a preceding aircraft, acceptance of the visual approach clearance constitutes pilot acceptance of separation and wake vortex separation responsibility. Be aware that if radar service is being received, it may be automatically terminated when told to contact the tower. **AIM 5-5-3.**

If not familiar with an airfield, be certain the correct airfield is identified before accepting a visual clearance, and be aware of the consequences of doing so.

### **Visual Approach Go Around**

A visual approach has no missed approach segment. If a Go Around is necessary, instructions from ATC should be given. However, IF ATC FAIL TO GIVE INSTRUCTIONS THEN THEY MUST BE IMMEDIATELY REQUESTED.

### **Go Arounds**

A clearance for an instrument approach procedure includes a clearance to fly the published missed approach procedure, unless otherwise instructed by ATC. The published missed approach procedure provides obstacle clearance only when the missed approach is conducted on the missed approach segment from or above the missed approach point, and assumes a climb rate of 200 feet/NM or higher.

In the event a balked (rejected) landing occurs at a position other than the published missed approach point, the pilot should contact ATC as soon as possible to obtain an amended clearance. If unable to contact ATC for any reason, the pilot should attempt to re-intercept a published segment of the missed approach and comply with route and altitude instructions. If unable to contact ATC, and in the pilot's judgment it is no longer appropriate to fly the published missed approach procedure, then consider maintaining visual conditions. **AIM 5-4-21.**

### **Landing Clearance**

Expect to receive landing clearances with one or more aircraft still ahead of your aircraft. The clearance you are receiving is to land in sequence if it is safe to do so. This sort of landing clearance requires special vigilance at night.

### **Gate Number**

Obtain parking gate number on the company frequency before landing.

### **Taxiing after Landing**

Taxi clear of the runway unless otherwise directed by ATC. An aircraft is considered clear of the runway when all parts of the aircraft are past the runway edge and there are no restrictions to its continued movement beyond the runway holding position markings. In the absence of ATC instructions, the pilot is expected to taxi clear of the landing runway by taxiing beyond the runway holding position markings associated with the landing runway, even if that requires the aircraft to protrude into or cross another taxiway or ramp area. Once all parts of the aircraft have crossed the runway holding position markings, the pilot must hold unless further instructions have been issued by ATC. **AIM 4-3-20.**

### **Ground Movement**

#### **Taxi Clearances**

After an incident involving a BAV aircraft, the UK CAA, prompted by the FAA, give the following warning:

Crews are reminded of the importance of strictly adhering to all taxi clearances at US airports. All runway hold short instructions should be read back to ATC when requested. The FAA will levy substantial fines on pilots violating taxi clearances especially any runway incursion. Extra care must be taken during periods of reduced visibility such as fog, heavy rain or snow. If in doubt about any taxi clearance stop and request clarification from ATC.

**IFR Clearances**

If using R/T, call clearance delivery or ground control not more than 10 minutes before proposed taxi time. **AIM 5-2-1.**

**Expect Departure Clearance Time (EDCT).**

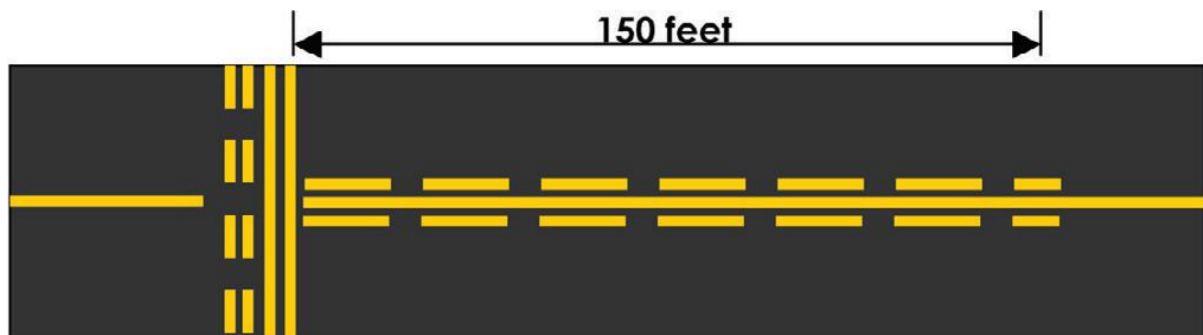
The EDCT is the runway release time assigned to an aircraft included in traffic management programs. Aircraft are expected to depart no earlier than 5 minutes before, and no later than 5 minutes after the EDCT. Similar to TSAT in Europe. **AIM 5-2-6.**

**TAXI TO Clearance**

When issuing taxi instructions to any point other than an assigned take-off runway, ATC will specify the point to taxi to, issue taxi instructions, and state any hold short instructions or runway crossing clearances if the taxi route will cross a runway. **AIM 4-3-18.**

**Taxiway Centreline Markings**

Standard Taxiway centreline markings are being progressively changed at US airports to provide a visual clue to pilots that they are approaching a runway holding position. Dashed yellow lines are placed on both sides of the taxiway centreline starting 150ft prior to the holding point.

**ILS Critical Area Holding Signs**

'ILS' in white on a red sign confirms the hold markings on the taxiway, indicating the proximity of the ILS critical area. **AIM 2-3-28.**

**Runway Centreline Lighting System (RCLS)**

Installed on some precision approach runways. Lights are spaced at 50ft (15.24 m) intervals. **AIM 2-1-5.**

**Changing to Tower Frequency before Take-off**

Unless otherwise instructed, remain on ground control frequency until ready to request take-off, then change to tower frequency. Pilots are encouraged to monitor the local tower frequency as soon as practical consistent with other ATC requirements. **AIM 4-3-14.**

**Use of Landing Lights Prior to and for Take-off**

Pilots are encouraged to turn on their landing lights when taxiing on, across, or holding in position on any runway and either after take-off clearance has been received or when beginning the take-off roll. **AIM 4-3-23.**

**Wake Turbulence Separation**

Timed OR radar distance separation is applied between departing aircraft. **AIM 7-3-9.**

If a timed separation is to be insisted upon rather than accepting radar distance separation, ATC must be informed before the aircraft enters the runway for take-off.

**Departure Control**

When cleared to “fly or maintain runway heading”, pilots are expected to FLY THE RUNWAY HEADING WITH NO DRIFT CORRECTION applied. When a departure is to be vectored immediately following take-off, the pilot will be advised prior to take-off of the initial heading to be flown but may not be advised of the purpose of the heading. **AIM 5-2-7.**

**Omission of Departure Control Frequency**

Controllers may (and normally do) omit the departure control frequency if an assigned departure procedure has a published frequency. **AIM 5-2-7.**

**Runway Distance Remaining Signs**

A white numeral on a black sign indicates the number of thousands of FEET remaining to the end of the runway, e.g. 3 indicates 3,000ft remaining. These signs may be installed along one or both sides of the runway. **AIM 2-3-13.**

**Abbreviation of Frequencies**

Ground frequencies may be abbreviated to the decimal number, e.g. 121.7 becomes “point seven”. **AIM 4-3-14.**

**Delay/ATC Flight Plan**

To ensure that a flight plan remains active pilots, whose actual departure time will be delayed by more than 1 hour, should inform ATC of the new ETD. **AIM 5-1-11.**

**Airways Clearance Read-back**

At most USA airfields it is not necessary to read back the full airways clearance IF the route is as flight planned. Read back only the assigned transponder code.

**EFC (Expect Further Clearance) Time**

The time a pilot can expect to receive clearance beyond a clearance limit.

At an approach holding point this is equivalent to an EAT.

**Departure Clearance**

Clearances may be given without a transition being assigned from ATC. ATC assume you will fly to the transition given as the first point on the flight plan (e.g. MERIT out of JFK). If the SID has changed from what was expected on the OFP then the crew may miss this and join the legs to a point further down route.

**Departure Procedure**

There are two types of DP: Obstacle Departure Procedures (ODPs), printed either textually or graphically, and Standard Instrument Departures (SIDs), always printed graphically. All DPs, either textual or graphic, may be designed using either conventional or RNAV criteria.

ODPs are only used for obstruction clearance and do not include ATC related climb requirements. SIDs may contain ATC climb requirements and are either pilot nav or vector SIDs. Pilot nav SIDs may be either RNAV-based or using conventional navigation aids. **AIM 5-2-8.**

**Transition**

A point at which a DP (Departure Procedure) is left and a STAR joined.

**Aerodrome Operating Minima (AOM) in the USA and Canada**

Special rules apply. See table below.

<b>USA Takeoff Minima</b>	
<b>Facilities</b>	<b>Ceiling/Visibility/RVR</b>
High Intensity Runway lights or Runway Centreline lights or Runway Centreline Markings or (if daylight) the runway is marked such that the pilot can maintain adequate visual reference throughout the take-off run	Nil/Visibility 0.25SM or 1600ft RVR (Note 1)
Runway Centreline lights and two RVR reporting systems (both are required and are controlling)	Nil/RVR1200ft (Stop-end RVR1000M) (Note 2)
Runway Centreline lights and Runway Centreline markings and two or three RVR reporting systems (all are required and are controlling)	Nil/Touchdown Zone 600ft, Mid Point and Stop-end RVR 600ft (Note 3)

**Note 1:** The Touchdown zone RVR Report if available is controlling

**Note 2:** Mid-point RVR may be substituted for Touchdown Zone RVR or Stop-end RVR if either is available

**Note 3:** Where only 2 RVR systems are installed the touchdown zone and rollout RVRs are required and controlling.

**Diversions from New York**

ATC advise that it takes 10–15 minutes to process a diversion clearance.

Aircraft should therefore make their request early so that clearance is readily available should it be required.

**Windsor Locks (Bradley Intl) KBDL**

A well-equipped airfield situated midway between New York and Boston. Useful to know about during periods of wide spread poor weather along the eastern seaboard.

**Wind Shear**

Pilots are requested to volunteer reports to controllers of WINDSHEAR conditions they encounter. Avoid the use of “negative” or “positive” WINDSHEAR. Report loss/gain of airspeed and the altitude(s) at which it was encountered, e.g. *“Kennedy Tower, Speedbird 193 Heavy encountered WINDSHEAR, loss of 20 kts at 400ft”*. **AIM 7-1-21.**

**Weather**

ATC are mandated to vector you clear of severe weather. PIREPs contribute to the effectiveness of the US “Flight Watch” service. This service is designed to provide aircraft with timely weather advisories pertinent to the type of flight intended, route of flight, and altitude.

**Automated Weather Observing**

The onset of automation in N America has added new groups to forecasts and actuals. The important data remains in the recognisable format. **AIM 7-1-10.**

**LLWS (Low Level Wind Shear Alert System)**

Through ATC, provides pilots with details of hazardous WINDSHEAR and microburst activity near the airport. **AIM 7-1-23.**

Experience has shown that it may be necessary to ask ATC for information they have available on Cb and microburst activity, for instance while assessing conditions for a take-off.

**SCATANA**

See under Canada.

**Braking Action Advisories**

BA ADVYS on ATIS is abbreviation for BRAKING ACTION ADVISORIES and is associated with degraded braking action or runway surface contamination. Crew must contact the TWR for confirmation of actual braking action or runway surface contamination when ATIS includes BA ADVYS.

**NEAR MID-AIR COLLISION (NMAC)**

An NMAC in the USA is defined as an incident associated with the operation of an aircraft in which a possibility of a collision occurs as a result of proximity of less than 500ft to another aircraft or the crew member feels that a collision hazard existed between two or more aircraft (e.g. ~IFR/VFR conflict).

Crews should report such incidents immediately on the frequency in use, using the term “near mid-air collision”. **AIM 7-6-3.**

**SWAP (SEVERE WEATHER AVOIDANCE PLAN)**

These are formalised plans in areas that are particularly susceptible to severe weather. They are developed, co-ordinated and implemented to reduce ATC restrictions associated with rerouting aircraft around areas of severe weather.

If SWAP is annotated on the METAR delays can be expected on arrival into the TMA due to extended track miles and/or reroutes. On departure ground delays may be experienced.

**CONSTRUCTION ATIS RECORDINGS**

For runways that are undergoing construction or have recently completed construction, operators and pilots can expect to hear the following messages via the ATIS recording. In situations where the runway has been shortened, operators will hear “WARNING” and “SHORTENED”.

- For example: “WARNING, RUNWAY (number) has been SHORTENED, (length in feet) FEET AVAILABLE.”

In addition, it states that, “SHORTENED” will be used as part of the take-off (or line up and wait) and landing clearance...’

- For example: “RUNWAY (number) SHORTENED, CLEARED FOR TAKE-OFF.”

**Note:** These procedures will apply for the duration of works or until a permanent shortening of the runway is reflected accordingly in aeronautical publications. **FAA Info notice 11015.**