

Flight crew familiarization – the application of 5 minutes for climb/descent between GNSS equipped aircraft in parts of the North Atlantic (NAT) Region

NOTE: This is provisional guidance – please provide suggestions/comments/corrections to assist in the updating of this document (please see last paragraph)

Introduction On 15 January 2009, a new separation minimum will be introduced in the following North Atlantic (NAT) oceanic control areas (OCA): Gander, Reykjavik, Santa Maria and Shanwick. The information in this bulletin has been prepared to explain the separation minimum, explain how it will be applied, explain how to comply with the associated air traffic control instructions and explain possible issues that may arise from the implementation.

The minimum This “5 minutes GNSS” minimum is a variation of a standard that is applied in domestic airspace, outside areas of radar coverage. In domestic airspace, position reports are used to determine the time interval between a pair of aircraft passing over the same location, usually a NAVAID. Safety studies have confirmed that the accuracy of GNSS navigation and reporting is sufficient to safely use the position reports made by flights in the NAT Region to apply this standard in oceanic airspace.

To apply the standard, air traffic controllers must:

- a) Verify that the time interval between flights is at least 5 minutes and will be at least 5 minutes during the time when vertical separation does not exist; and
- b) Ensure that the climbing or descending aircraft will commence its vertical manoeuvre no later than 10 minutes after the second aircraft in the pair has passed the common reporting point.

Because wind effects can have a significant affect on relative speeds, some caution is required in the application of this standard to ensure that the 5 minute interval will be maintained.

This minimum is essentially a special case which allows air traffic controllers to temporarily reduce the usual longitudinal spacing between aircraft to allow one aircraft to climb or descend through the altitude of another.

Application In the NAT Region, it is recognized that the use of 3rd party HF communications makes it difficult for air traffic controllers to ensure that the altitude change will commence within the required 10 minute time frame. As a result, it was determined that restrictions would be included with the clearance if it was issued by a third party. There are two possible restrictions: one to instruct the flight to leave its current flight level no later than a specified time and one to instruct the flight to reach its new flight level no later than a specified time.

In some cases, air traffic controllers will not be permitted to apply this minimum unless the altitude difference between the flights concerned is no less than 4,000 feet.

In the case of the Reykjavik OCA, it has been determined that the clearances issued via CPDLC will be exactly the same as the clearances issued via voice when applying this minimum. Because of limitations in the CPDLC message set, this means that clearances issued by Reykjavik will include a restriction to “CLIMB TO REACH [altitude] BY [time]” or “DESCEND TO REACH [altitude] BY [time]”.

How to comply As explained above, it is very likely that flight crews will receive a conditional clearance (also known as a restricted clearance) when air traffic controllers are applying this minimum. A significant number of the vertical errors that occur each year in the NAT Region involve incorrect execution of conditional clearances. It is extremely important that flight crews ensure they understand and comply with every condition or restriction contained in the clearance.

Phraseology	What is expected
CLIMB TO REACH FL390 BY 1325	<p>Arrange the climb so that the aircraft is at or above FL390 no later than 1325 UTC. If it will not be possible to meet this restriction, do not commence climb and advise ATC of the situation.</p> <p>If this is a CPDLC clearance, do not ACCEPT the clearance; reply UNABLE and do not climb.</p>
DESCEND TO REACH FL320 BY 1403	<p>Arrange the descent so that the aircraft is at or below FL320 no later than 1403 UTC. If it will not be possible to meet this restriction, do not commence descent and advise ATC of the situation</p> <p>If this is a CPDLC clearance, do not ACCEPT the clearance; reply UNABLE and do not descend.</p>
CLIMB TO REACH FL370 NO LATER THAN TIME 1306.	<p>Arrange the climb so that the aircraft is at or above FL370 no later than 1306 UTC. If it will not be possible to meet this restriction, do not commence climb and advise ATC of the situation.</p> <p>If this is a CPDLC clearance, do not ACCEPT the clearance; reply UNABLE and do not climb.</p>
DESCEND TO REACH FL340 NO LATER THAN TIME 0910	<p>Arrange the descent so that the aircraft is at or below FL340 no later than 0910 UTC. If it will not be possible to meet this restriction, do not commence descent and advise ATC of the situation</p> <p>If this is a CPDLC clearance, do not ACCEPT the clearance; reply UNABLE and do not descend.</p>
LEAVE FL350 NO LATER THAN 1502	<p>Begin the climb or descent no later than 1502 UTC. If it is not possible to meet this restriction, do not commence the climb or descent and advise ATC of the situation.</p> <p>If this is a CPDLC clearance, do not ACCEPT the clearance; reply UNABLE and remain level.</p>

Possible issues There are some possible issues for flight crews that may arise from the application of this minimum.

Traffic Alert and Collision Avoidance System (TCAS) – This minimum allows air traffic controllers to temporarily reduce the longitudinal spacing by half. This means that it is possible that flights will detect other flights climbing or descending through their altitude, because the distance could reduce to approximately 40NM. If there is any concern regarding the proximity of another aircraft, flight crews must not hesitate to clarify the situation and take appropriate action to ensure safety of flight.

Differences in application Different ATC units will apply this minimum differently. This means that it is not possible to provide every potential clearance or restriction that may be used. As well, other operational circumstances may dictate that additional instructions be included with the clearance, making it even less possible to explain every possible clearance or instruction that may be issued. If there is any doubt about the intent of a clearance or a restriction, it is critical to contact ATC, via voice or CPDLC, to confirm the intent.

Comments and Suggestions Please provide comments/suggestions/corrections to the European and North Atlantic Office of ICAO:

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