

## Implementation of the 23nm Lateral Separation Minimum Trial using ½ degree Latitude/Full degree longitude waypoints in the Gander and Shanwick Oceanic Areas

### ISSUE 1

The RLatSM Trial Phase 1, which commenced in December 2015, introduced ½ degree spacing between the two core tracks of the NAT organized track structure (OTS) from FL350 to FL390 inclusive. Any flight, meeting the following requirements as filed in their ICAO flight plan, could be routed or re-routed by ATC on an RLatSM track:

- a. be High Level Airspace (HLA) approved
- b. be RNP4 approved;
- c. be ADS-C and CPDLC equipped and, where applicable, authorized; and
- d. having the required CNS systems operational.

IFALPA has always strongly advocated for alternative methods for data entry of lat/long waypoints. Attendance at the ICAO North Atlantic (NAT) Scrutiny Group Meetings, which review all NAT Navigation and/or Vertical Errors, has routinely shown 10 - 12 events every year of “mis-typing” 13-character lat/long waypoints.

As a result, the NAT Systems Planning Group (SPG) (main oversight body) agreed during the Reduced Lateral Separation Minima (RLatSM) trials that NO aircraft would be “re-routed” onto a HALF degree NAT track unless the full oceanic route could be uplinked directly to the aircraft FMC. Currently the primary NAT ANSPs (Gander and Shanwick) do NOT utilize the direct FMC uplink feature.

There is an ARINC 424 5-character waypoint naming convention for lat/long waypoints. Use of this format would allow all lat/long waypoints to become “named” waypoints contained in the FMC database - thus eliminating the need for manual entry of all 13-characters. The current formats for WHOLE degree waypoints 5020N or 50N20 - while similar produce course/distance values significantly different if the improper format is utilized. (5020N is located at N50W020 and 50N20 is located at N50W120).

Unfortunately, the ARINC 424 format for HALF degree waypoints is N5020 - N5030W020. A flight crew “manually” entering the FMC named oceanic waypoints could easily mistake N5020 for 5020N resulting in a very SMALL difference in course/distances between waypoints. This would naturally produce a Gross Navigation Error (GNE) of approximately 30 NM. In a 60 NM separation standard, an undesirable result but still with a margin of safety. With advent of Reduced Lateral Separation - this becomes a collision risk as the aircraft will impinge on the adjacent oceanic track.

Back in 2014, a navigation database provider inadvertently inserted the ARINC 424 HALF degree named waypoints in the FMC databases without clear notification to operators. As a result, over 30 GNEs occurred in about six weeks until the waypoints could be removed from the databases.

In response, when the NAT ANSPs issued the AICs to implement the Phase 1 RLatSM trial - they specifically cautioned all operators to AVOID use of the ARINC 424 format for HALF degree waypoints.

While IFALPA was supportive of this caution, we expressed dissatisfaction that flight crews had to revert to “manual entry of 13-characters” when utilizing lat/long waypoints no differently than when INS systems were first introduced over 50 years ago. IFALPA, with the assistance of some operators and the FAA, suggested an alternative lat/long naming convention using the “H” format. In this manner N5030W020 would become H5020. This would allow use of the FMC database and provide flight crews with visual situational awareness - H for HALF, 5020 for the lat/long reference. Unfortunately, few operators have adopted the Hxxxx format, requiring flight crews to manually enter the full 13-character lat/long waypoint.

Within the NAT Working Group meetings, when this issue is discussed the response is twofold;

1. the problem has always existed and the use of “proper” waypoint verification procedures mitigate the error (even though they are “clumsy” and “prone to error”) and
2. this “problem” then is NOT unique to the introduction of HALF degree oceanic tracks, thus is not a reason to delay the (RLatSM) trials.

The most recent statistics that indicate over 400,000 NAT operations occurred in 2015 or about 100,000 quarterly. If less than 8000 operations occurred on the HALF degree track during the 3-month reporting period, the resulting utilization rate is 8%. It is estimated that approximately 1/3 of ALL NAT OTS flights are using the RLatSM tracks (two WHOLE degree tracks, one HALF degree) and of these flights 1/3 are using the HALF degree track – this equates to 10% of all OTS flights. If operators are avoiding the HALF degree track when there is only one, what will be the impact on the NAT flights when there are multiple half degree tracks daily?

IFALPA believes that there should be three phases of action:

Short term: Encourage all operators to adopt the “H” naming convention format to allow use of “stored named” waypoints in the FMC database:

Medium term: Encourage the industry waypoint naming convention working group to develop a more logical naming convention for all lat/long waypoints; and

Long term: Determine the feasibility of displaying the full 13-character lat/long waypoint name on both FMCs and Navigation Displays.

## ISSUE 2

ICAO diversion procedures for aircraft experiencing technical or operational contingencies in remote airspace were developed based on the 60 nm lateral separation standard between aircraft on parallel courses. In all instances, aircraft are expected to make every attempt to contact air traffic control for a modified ATC clearance before initiating a diversion.

If unable to obtain an ATC diversion clearance in a timely manner, these ICAO contingency procedures provide a level of safety to minimize the risk of collision between aircraft on parallel tracks.

During the last 5-year period the average number of diversions has been 150 per year.

In scenarios requiring a 180 degree turnback to a diversion airport, many air carrier aircraft require 23 – 32 NM to complete this course reversal. In a 60 NM separation standard, an appropriate level of safety remains between aircraft on parallel oceanic tracks. In a reduced separation environment of 15 – 30 NM, this course reversal would impinge on the adjacent parallel track.

A number of operators have chosen to modify the standard ICAO procedure by initiating an offset from the assigned oceanic track, descending to an altitude below the oceanic track structure (for RLatSM this would be FL350) and then initiating the turnback.

In the above example the ICAO contingency procedure requires an offset of 15 NM. This would result in a traffic conflict between aircraft on parallel courses when operating in reduced separation airspace. Before reduced separation standards can be expanded throughout NAT airspace appropriate ICAO contingency procedures should be developed to ensure an appropriate level of safety is maintained.

**IFALPA believes there should be three phases of action:**

1. Allow completion of the safety evaluation of NAT oceanic contingency procedures within RLatSM airspace before starting the RLatSM Phase 2 trial (expansion to all NAT Oceanic tracks).
2. Encourage modification of the NAT contingency procedure for 180 degree turnbacks when Air Traffic Control clearance has not been received to require descent below the level of the oceanic track structure (below FL280) while maintaining course, then initiate the turnback.
3. Consider appropriate modifications of all other NAT contingency procedures to accommodate RLatSM airspace.

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