NAT OPS BULLETIN

Serial Number: **2015_003_ Revision4** Effective: 25 January 2017

Subject: RLatSM Special Emphasis Items – Phase 2 Update –

This bulletin updates North Atlantic Operations Bulletin (NAT OPS) Bulletin 2015_003 Revision 3. The purpose of the bulletin is to provide guidance to North Atlantic (NAT) operators on material to be included in pilot and dispatcher training programs and operations manuals to prepare them for operations in the North Atlantic under Reduced Lateral Separation of 25 Nautical Miles. (NAT RLatSM).

Note: Grey shading indicates modifications or additions to NAT OPS Bulletin 2015_003 Rev 3 text.

RLatSM Phase 2 start. The RLatSM Phase 2 start date has been delayed. It will not start on 10 November 2016 as previously planned. At least two months' notice will be given in advance of the new start date. RLatSM Phase 2 is still planned to be implemented in portions of the Gander, Shanwick and Reykjavik Oceanic Control Areas (OCA).

Re-naming NAT Minimum Navigation Performance Specifications (MNPS) Airspace as NAT High Level Airspace (HLA). Operators are reminded that NAT MNPS Airspace was re-named as NAT HLA on 4 February 2016. (See NAT OPS Bulletin 2016_01 (Re-naming of the NAT MNPSA to NAT HLA). It can be found on the ICAO EUR/NAT Office Website. See paragraph 6 below (Websites).

This Bulletin may be updated, as necessary, as progress is made toward the start date for **Phase 2** of the RLatSM trial.

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NAT OPERATIONS BULLETIN – RLATSM SPECIAL EMPHASIS ITEMS

1. Purpose of Bulletin – RLatSM Phase 2 Update. The purpose of this bulletin is to provide guidance to North Atlantic (NAT) operators on material to be included in pilot and dispatcher training programs and operations manuals to prepare them for operations in the North Atlantic under Reduced Lateral Separation of 25 Nautical Miles (NAT RLatSM operations). It also provides updated information on the start of RLatSM Phase 2 trials.

1.1 This Bulletin may be updated, as necessary, as progress is made toward the start date for Phase 2 of the RLatSM trial. Any necessary updates will be distributed through industry organizations and posted on the ICAO EUR/NAT Website. (See section 6).

1.2 Operator attention is directed to Attachment A. It provides a "quick reference" for the RLatSM Special Emphasis Items contained in this bulletin. It is intended to be used as a job aid for operators developing pilot and dispatcher training material.

1.3 The following is an explanation of the terms "should", "must" and "shall" as used in this bulletin.

a) "Should" is used to indicate a recommended practice or policy that is considered as desirable for the safety of operations.

b) "Shall" and "must" are used to indicate a practice or policy that is considered as necessary for the safety of operations.

2. RLatSM Project Plan Overview. Phase 1 of the NAT 25 NM Reduced Lateral Separation Minimum (RLatSM) trial commenced in portions of the Gander and Shanwick oceanic control areas (OCA) in December 2015. The RLatSM Phase 2 trial will not start on 10 November 2016 as previously planned. At least two months' notice will be given in advance of the new start date. RLatSM Phase 2 is still planned to be implemented in portions of the Gander, Shanwick and Reykjavik OCAs.

a) **During the RLatSM Phase 1 trial,** the 25 NM lateral separation minimum is implemented by applying ½ degree track spacing between **three core** NAT Organized Track System (OTS) tracks. 25 NM lateral separation is applied between flight level (FL) 350-390 (inclusive).

b) **During Phase 2 of the RLatSM trial,** the 25 NM lateral separation minimum will be implemented by applying ½ degree track spacing between **all NAT Organized Track System (OTS) tracks.** 25 NM lateral separation will be applied between flight level (FL) 350-390 (inclusive).

c) OTS tracks separated using the reduced lateral separation minimum are established by publishing OTS tracks defined by ½ degree waypoints (e.g., 54 degrees-30 minutes NORTH latitude/50 degrees WEST longitude) between two adjacent tracks defined by whole degree waypoints (e.g. 54 degrees NORTH latitude/50 degrees WEST longitude, respectively).

Note: operators are advised that due to pre-tactical considerations, standard laterally separated tracks (60nm) may be contained within the NAT OTS structure. RLatSM tracks will be designated tracks identified in "Remark 3" of the NAT Track Message.

d) Only those operators/aircraft eligible for RLatSM operations are allowed to operate on designated RLatSM tracks between FL 350-390 (inclusive). See Section 3 (Operator/Aircraft Eligibility).

e) Strategic Lateral Offset Procedures (SLOP) are to be used in accordance with NAT Doc 007, paragraph 8.5

f) Enhanced ATC surveillance and communication is provided via FANS 1/A (or equivalent) data link systems. Automatic Dependent Surveillance (ADS-C) provides route conformance monitoring, periodic aircraft reporting and controller alerts for Lateral Deviation Events (LDE) and vertical deviation events (Level Range Deviation Events (LRDE). Controller-Pilot Data Link Communications (CPDLC) enhances ATC intervention and communication capabilities.

3. Operator/Aircraft Eligibility. Operators do not need to apply to NAT ANSPs to be part of the trial, however, operators should consult with the State authority responsible for their operation prior to starting RLatSM operations. Operators are eligible to flight plan and fly RLatSM tracks provided the flights:

a) Meet Required Navigation Performance 4 (RNP 4) requirements

b) Are ADS-C and CPDLC equipped and, where applicable, authorized; and,

c) Operating required Communications, Navigation and Surveillance (CNS) systems

Note: Job Aids for RNP 4 and Data Link operations authorization are posted on the ICAO European and North Atlantic (EUR/NAT) Office website. See section 6 (**Websites**).

4. Flight Planning Provisions

4.1 Only those operators/aircraft eligible for RLatSM operations are allowed to operate on designated RLatSM tracks between FL 350-390 (inclusive). All RLatSM tracks and FLs are uniquely identified in Remark 3 of the OTS Track Message as shown below:

Westbound NAT Track Message Example: Phase 2 RLatSM Tracks

Note: See "Remark 3". Tracks A, B, C, D and E are designated as RLatSM tracks between FL 350-390.

FF CYZZWNAT
102151 EGGXZOZX
(NAT-1/3 TRACKS FLS 310/390 INCLUSIVE
FEB 11/1130Z TO FEB 11/1900Z
PART ONE OF THREE PARTS-
A PIKIL 57/20 58/30 59/40 58/50 DORYY
EAST LVLS NIL
WEST LVLS 310 320 330 340 350 360 370 380 390
EUR RTS WEST NIL
NAR NIL-
B ETARI 5630/20 5730/30 5830/40 5730/50 ENNSO
EAST LVLS NIL
WEST LVLS 350 360 370 380 390
EUR RTS WEST NIL
NAR NIL-
C RESNO 56/20 57/30 58/40 57/50 HOIST
EAST LVLS NIL
WEST LVLS 310 320 330 340 350 360 370 380 390
EUR RTS WEST NIL
NAR NIL-
END OF PART ONE OF THREE PARTS)
FF CYZZWNAT
102151 EGGXZOZX
(NAT-2/3 TRACKS FLS 310/390 INCLUSIVE
FEB 11/1130Z TO FEB 11/1900Z
PART TWO OF THREE PARTS-
D VENER 5530/20 5630/30 5730/40 5630/50 IRLOK
EAST LVLS NIL
WEST LVLS 350 360 370 380 390
EUR RTS WEST NIL
NAR NIL-
E DOGAL 55/20 56/30 57/40 56/50 JANJO
EAST LVLS NIL
WEST LVLS 310 320 330 340 350 360 370 380 390
EUR RTS WEST NIL
NAR NIL-
END OF PART TWO OF THREE PARTS)
FF CYZZWNAT
102152 EGGXZOZX
(NAT-3/3 TRACKS FLS 310/390 INCLUSIVE
FEB 11/1130Z TO FEB 11/1900Z
PART THREE OF THREE PARTS-
REMARKS.
1. TMI IS 042 AND OPERATORS ARE REMINDED TO INCLUDE THE
TMI NUMBER AS PART OF THE OCEANIC CLEARANCE READ BACK.
2. ADS-C AND CPDLC MANDATED OTS ARE AS FOLLOWS
TRACK A 350 360 370 380 390
TRACK B 350 360 370 380 390
TRACK C 350 360 370 380 390
TRACK D 350 360 370 380 390
TRACK E 350 360 370 380 390
END OF ADS-C AND CPDLC MANDATED OTS
3. RLATSM OTS LEVELS 350-390. RLATSM TRACKS AS FOLLOWS
TRACK A
TRACK B
TRACK C
TRACK D
TRACK E
END OF RLATSM OTS**...**

4.2 Operators must file the correct ICAO Flight Plan annotations in Items 10 and 18 to indicate that RLatSM required CNS systems are operational for the flight.

a) Item 10a (Radio communication, navigation and approach aid equipment and capabilities).

- Inset "X" to indicate that the aircraft meets requirements for NAT HLA operations. (See page 1 for information on accessing NAT OPS Bulletin 2016_1. It contains guidance on NAT HLA requirements);
- Insert "J5" to indicate FANS 1/A (or equivalent) Inmarsat CPDLC SATCOM and/or "J7" to indicate FANS 1/A (or equivalent) CPDLC Iridium SATCOM data link equipage and operation;
- Insert "R" to indicate that aircraft navigation system equipage and operation meet Performance Based Navigation (PBN) levels specified in Item 18. See 4.2 c) below on the related Item 18 entry for RNP 4.

b) Item 10b (Surveillance equipment and capabilities)

- Insert "D1" to indicate FANS 1/A (or equivalent) ADS-C equipage and operation

c) Item 18 (Other information)

- Insert the characters "PBN/" followed by "L1" to indicate RNP 4 authorization.

5. Special Emphasis Items for RLatSM Operators. The Special Emphasis Items (SEI) listed below should be incorporated into operator training programs and operations manuals with the intent of raising pilot and dispatcher awareness of the importance of following procedures in an environment where ½ degree waypoints and a lateral separation minimum of 25 NM are applied. Each SEI is followed by an explanation of the factors leading it to be identified as an RLatSM SEI.

5.1 Requirement to use the CNS equipment that is indicated in the ICAO flight plan:

ATC uses the Flight Plan annotations in Items 10 and 18 to apply the reduced separation between aircraft. Therefore, before entering the NAT, the pilot must ensure that:

1. the aircraft is logged on when data link capability (J5, J7, D1) has been filed in the FPL; and
2. RNP 4 is inserted into the FMC, when RNP4 capability (L1) has been filed in the FPL. This is to enable aircraft navigation system monitoring and alerting against the required RNP 4 Navigation Specification.

5.2 Pilot Training on Map and FMC Displays of ½ Degree and Whole Degree Waypoints:

To mitigate misinterpretation of waypoint coordinates, operator initial and re-current training programs and operations manuals must incorporate training and guidance to enable pilots to understand map and FMC displays of ½ degree and whole degree waypoints regardless of the waypoint format being used for waypoint FMC input. See paragraph 5.3 below.

Explanation

5.2.1 Map displays and certain FMC pages generally do not display full waypoint degrees **and** minutes, e.g. when the full 13 latitude/longitude characters are used to insert ½ degree waypoints. See Figure 1 and Figure 2 in Attachment B.

5.3 Aircraft Navigation Database (NDB) Waypoint Identifiers:

In 2015, Canada, the United Kingdom (UK), and Iceland published Aeronautical Information Circulars (AIC) strongly advocating that aircraft NDB vendors and flight planning services **not** provide operators with half-degree waypoint identifiers in the ARINC 424, paragraph 7.2.5 "N-prefix" format (*e.g., N5250 = 52°30' NORTH 050°00'WEST).* (See Canada AIC 23/15 (23 July 2015, UK AIC 059/2015 (9 July 2015) and Iceland AIC A009/2015 (18 September 2015). The guidance in these circulars will be incorporated into the Aeronautical Information Publications (AIP) of the respective organizations in the future).

NAT operators should use a full latitude/longitude (e.g., 13-character) input for waypoints containing both half-degree and whole degrees of latitude and whole degrees of longitude.

NAT operators **with an operational need to populate the aircraft NDB** with a 5-character waypoint identifier should ensure that the aircraft NDB vendors and flight planning services use an alternate half-degree of latitude 5-character format such as Hxxyy, where xx = degrees and 30 minutes of NORTH latitude and yy = degrees of WEST longitude *(e.g., H5250 = 52°30' NORTH 050°00' WEST).* (It is recognized that, for whole degree waypoint inputs, such operators will likely continue using the ARINC 424, 7.2.5 "N-suffix" format *(e.g., 5250N = 52° 00' NORTH 050°00'WEST)).*

Rerouting of flights onto RLatSM identified tracks containing ½ degree coordinates will only be permitted using a CPDLC route clearance uplink. Aircraft will therefore not be re-routed onto ½ degree OTS tracks if ARINC 623 data link or voice is used for the issuance of the oceanic clearance.

The CPDLC route clearance will be uplinked in a full Lat/Long format that will be unfamiliar to the flight crews using an ARINC 424, 7.2.5 format. Operators **with an operational need to populate the aircraft NDB** with a 5-character waypoint identifier format need to ensure flight crews are properly trained on the use of the full Lat/Long waypoint format in uplink messages. They must also emphasize the necessity for proper waypoint verification procedures.

Explanation

5.3.1 Half-degree waypoint identifiers in the ARINC 424, paragraph 7.2.5 "N-prefix" format have led to a number of Gross Navigation Errors (GNEs) and Lateral Deviations. The guidance for waypoint insertion in paragraph 5.3 above is intended to remove the potential for such errors. They occur when a pilot intending to input a waypoint defined by a half-degree of latitude inadvertently loads a waypoint containing a whole-degree of latitude, or vice versa, because the "N" is not loaded in the correct pre-fix or suffix position.

5.4 Pilot Procedures for Verifying Waypoint Degrees and Minutes Inserted into Aircraft Navigation Systems:

Procedures must be used to display and verify the DEGREES and MINUTES loaded into the Flight Management Computer (FMC) for the "un-named" (Lat/Long) waypoints defining the route contained in the oceanic clearance. (The "Sample Oceanic Checklist" NAT OES Bulletin refers).

Regardless of FMC waypoint format and entry method, crew procedures should be designed to promote strong crew resource management techniques, to prevent opportunities for error occurring as a result of confirmation bias and to generally maintain an attitude of healthy suspicion. Accordingly, the waypoint verification procedures should be conducted as detailed below.

- During pre-flight LRNS programming, both pilots independently verify the full latitude and longitude coordinates of "un-named" (Lat/Long) waypoints defining the expected route of flight within oceanic airspace as entered in the FMC.

- Upon receipt of a revised oceanic clearance (i.e., one not conforming to the flight planned route), both pilots independently verify the full latitude and longitude coordinates of "un-named" (Lat/Long) waypoints defining the route contained in the revised oceanic clearance.

- Approaching an oceanic waypoint, one pilot should verify the full latitude and longitude coordinates of that waypoint in the FMC, the NEXT and NEXT +1 waypoints, while the other pilot crosschecks the latitude and longitude coordinates against the master flight plan/oceanic clearance.

Explanation

5.4.1 Due to the factors in the map and FMC display of ½ degree and whole degree waypoints, it is imperative that pilots follow the procedure in paragraph 5.4 above to avoid lateral errors caused by incorrect insertion of waypoints. Verification of the full DEGREES and MINUTES of oceanic waypoints loaded into the FMC is a critical step in ensuring a proper navigational load.

5.5 Pilot Track and Distance Check:

It is strongly recommended that pilot pre-flight and in-flight procedures call for the pilot to compare the track and distance between waypoints shown on the Computer Flight Plan (CFP) to those displayed by the FMC. (The NAT "Sample Oceanic Checklist" Bulletin refers).

Pilots should be aware that waypoint insertion errors of ½ degree of latitude may in some cases result in only small differences in track and distance, however, the track and distance check can help prevent waypoint insertion errors of one degree or more that have been observed in oceanic operations.

Note: `the currency of magnetic variation tables loaded into aircraft navigation databases and the point at which the track is measured affect the track displayed on the FMC by as much as ±3 degrees.

Explanation

5.5.1 This check remains valuable for RLatSM operations because waypoint insertion errors are **not** limited to ½ degree errors and waypoint insertion errors of one degree or more have been observed in oceanic operations. Waypoint insertion errors of ½ degree produce a small difference in leg segment track and distance, however, as noted above, waypoint insertion errors are not limited to ½ degree.

5.6 Pilot Action When Notified By ATC of Possible Deviation from Cleared Track:

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

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

CPDLC message example:

YOUR POSITION REPORT INDICATES INCORRECT ROUTING. CHECK FULL DEGREES AND MINUTES LOADED INTO FMC. YOUR CLEARED ROUTE IS [route]

When ATC notifies the pilot that the aircraft has indicated it has already deviated from the cleared track (UM169f: *ADS-C INDICATES OFF ROUTE. ADVISE INTENTIONS*), the pilot shall immediately display the full DEGREES and MINUTES loaded into the FMC for the NEXT waypoint, and verify against the cleared route.

5.7 Policy for Operational Airborne Collision Avoidance System II (ACAS II):

Prior to departure for flight on an NAT OTS track at a flight level where RLatSM is applied, the ACAS II system shall be fully operational for the pilot flying (i.e., the TA and RA visual display and audio function will be operative for the pilot flying). If the ACAS II system is not fully operational for the pilot flying, the operator has the option of requesting clearance to operate on a track and/or at a FL where RLatSM is not applied. **If the ACAS II system fails after departure,** the aircraft may continue on the cleared route.

Note: The ACAS II (TCAS II) system must be a Version 7.0 or more recent version).

Explanation

5.7.1 ACAS II provides a valuable situational awareness tool and safety net for pilots operating in NAT airspace including those where aircraft separation standards have already been reduced in the vertical and longitudinal dimensions. The carriage and operation of ACAS II is emphasized here in the context of RLatSM trials for the following reasons:

a) The introduction of ½ degree OTS waypoints is an operational change that introduces the use of ½ degree waypoints into NAT OTS operations. Although both pilot procedures and ADS-C conformance monitoring capabilities should mitigate the occurrence of lateral deviations related to ½ degree waypoints, ACAS II provides an independent margin of safety should lateral deviations occur during the RLatSM trial period.

b) ACAS II will provide a situational awareness tool that will enable pilots to be better prepared to safely execute weather deviation and contingency procedures necessitating lateral deviations (e.g., diversions and turn-backs). In the RLatSM operational environment, such deviations will occur in airspace where the minimum lateral separation is to be 25 NM.

5.8 Pilot In-flight Contingency Procedures and Weather Deviation Procedures (Diversions, Turn-backs, etc.):

In training and checking programs, operators shall place special emphasis on pilot knowledge of and preparation to execute the *Special Procedures for Inflight Contingencies in Oceanic Airspace* published in ICAO Doc 4444, paragraph 15.2 and *Weather deviation procedures* (paragraph 15.2.3).

Pilots must be aware that when crossing adjacent tracks without an ATC clearance, the potential vertical separation provided by the In-flight Contingency Procedure is 500 ft may not be adequately accounting for the allowed RVSM altimetry system error. Pilots must use all the steps called for in the Contingency Procedures to avoid conflict with other aircraft. Consideration should be given to intercepting the 15 NM lateral offset in the same direction of flight and then descending below FL 280 or climbing above FL 410 prior to crossing adjacent tracks or making a 180° turn back.

Pilots must also be aware that when unable to obtain an ATC clearance, Weather Deviation Procedures call for a climb or descent of 300 ft. based on direction of flight and direction of deviation, and, in addition, guidance to the pilot is to adjust the path of the aircraft, if necessary, to avoid aircraft at or near the same flight level.

Pilots must stringently follow all measures for avoiding conflict with other aircraft provided for in the Doc 4444 Contingency and Weather Deviation Procedures.

Explanation

5.8.1 The implementation of RLatSM (25 NM) separation and ½ degree track spacing significantly reduces the distance and time a diverting aircraft has to manoeuvre when executing a diversion, turn-back or weather deviation without an ATC clearance before approaching adjacent tracks. It also reduces the time that a pilot has to obtain an ATC clearance. (An aircraft deviating from track can be in the proximity of aircraft on an adjacent track within approximately 4 minutes, depending on the angle of deviation from cleared track). In addition, as discussed above, the margin for safety for aircraft crossing adjacent tracks is 150 m (500 ft.) of vertical separation when executing In-flight Contingency Procedures.

5.9 RLatSM Operational policies (aircraft CNS system failure, data link system failure, etc.):

5.9.1 **Objective.** The guidance provided in section 5.9 is intended to apply during the RLatSM trials that started on 12 November 2015. It is intended to supplement the Global Operational Data Link Document (GOLD) guidance to controllers and flight crew on data link service failures and aircraft data link system failures (GOLD paragraphs 4.9.4 and 5.9.4 respectively).

5.9.2 **RLatSM Required CNS System Failure Prior to Departure.** If a flight experiences a failure of an RLatSM required CNS system **PRIOR TO DEPARTURE,** the flight should flight plan so as to remain clear of NAT RLatSM tracks between FL 350-390 (inclusive).

5.9.3 **RLatSM Required CNS System Failure After Departure But Prior to Entering On To RLatSM Tracks Between FL 350-390 (Inclusive).** If a flight experiences a failure of an RLatSM required CNS system **AFTER DEPARTURE BUT PRIOR TO ENTERING RLATSM AIRSPACE,** the flight should contact ATC and request a revised clearance that will keep it clear of NAT RLatSM tracks between FL 350-390 (inclusive).

5.9.4 **RLatSM Required CNS System Failure After Entering On To RLatSM Tracks Between FL 350-390 (Inclusive).** If a flight experiences a failure of an RLatSM required CNS system **WHILE OPERATING IN RLATSM AIRSPACE**, ATC must be immediately advised. 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. (GOLD paragraph 4.9.4.8 refers).

Note: aircraft may be cleared to climb above FL 390 or descend below FL 350 and remain on half-degree tracks. However, 60 NM lateral separation will then be applied.

5.9.5 **Continuous Climb or Descent of Aircraft Not RLatSM Eligible.** Any aircraft that is not RLatSM eligible may request continuous climb or descent without intermediate level off through the vertical extent of the NAT RLatSM airspace. Such requests will be considered on a tactical basis.

5.9.6 **Altitude Reservation (ALTRV) Requests.** ALTRV requests will be considered on a case by case basis (as is done today regarding NAT High Level Airspace (HLA)), irrespective of the RLatSM eligibility status of the participating aircraft.

5.9.7 **Contingency Situations.** NAT RLatSM airspace restrictions are not applicable to aircraft experiencing a contingency situation.

5.10 Domestic ATC Agency Contact:

Pilots are reminded to ensure that they contact the appropriate **domestic** ATC agency BEFORE exiting oceanic airspace.

6. Websites

6.1 The ICAO EUR/NAT Office Website is at: **www.icao.int/eurnat**. Click on **EUR & NAT Documents** >> **NAT Documents** to obtain NAT Operations and NAT Region Update Bulletins and related project planning documents.

6.2 Job Aid Templates. Click on **EUR & NAT Documents** >> **NAT Documents** >> Job Aid

Templates for:

a) RNP 4 Job Aid Template (Application to conduct RNP 4 operations), and,

b) Data Link Job Aid Template (Operator Application to Conduct Data Link Operations).

7. Contacts

7.1 The following individuals may be contacted for information or to provide feedback on RLatSM operations:

UK NATS
Martin Donnan
GM Prestwick Operations

E-mail: **martin.DONNAN@nats.co.uk**

NAV CANADA
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P.O. Box 328
Gander, NL A1V 1W7
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Manager, ACC Operations
Direct line: +1 709-651-5223

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ATTACHMENT A – SUMMARY OF RLatSM SPECIAL INTEREST ITEMS CONTAINED IN THIS NAT OPS BULLETIN

1. ***Operator/Aircraft Eligibility and Flight Planning Provisions:***

Only operators that meet RNP 4 requirements and are equipped with and operating CPDLC and ADS-C will be eligible for RLatSM operations. In addition, the ICAO Flight Plan must be correctly annotated to indicate that RLatSM required CNS systems are operational for the flight (section 4 refers).

2. ***Requirement to use the CNS equipment that is indicated in the flight plan:***

The pilot must use that CNS systems indicated on the ICAO Flight Plan because ATC uses the Flight Plan annotations in Items 10 and 18 to apply the reduced separation between aircraft (paragraph 5.1 refers).

The pilot must also confirm that RNP4 is inserted into the FMC to enable aircraft navigation system monitoring and alerting against the required RNP4 Navigation Specification (paragraph 5.1 refers).

3. ***Aircraft Navigation Database (NDB) Waypoint Identifiers:***

Canadian AIC 23/15, UK AIC 059/2015 and Iceland AIC A009/2015 strongly advocate that aircraft NDB vendors and flight planning services **not** provide operators with **half-degree** waypoint identifiers in the ARINC 424, paragraph 7.2.5 "N-prefix" format (e.g., *N5250 = 52°30' NORTH 050°00'WEST).* (These AICs will be incorporated into State AIPs in the future).

NAT operators should use a full latitude/longitude (e.g., 13-character) input for waypoint coordinates. NAT operators **with an operational need to populate the aircraft NDB** with a 5-character waypoint identifier should ensure that the aircraft NDB vendors and flight planning services use an alternate half-degree of latitude 5-character format e.g., H5250 = *52°30' NORTH 050°00' WEST* (paragraph 5.3 refers)

4. ***Pilot Training on Map and FMC Displays of ½ Degree and Whole Degree Waypoints:***

Operator initial and re-current training programs and operations manuals must have incorporated training and guidance to enable pilots to understand map and FMC displays of ½ degree and whole degree waypoints (paragraph 5.2 and **Attachment B** Figure 1 and Figure 2 refer).

5. ***Pilot Procedures for Verifying Waypoint Degrees and Minutes Inserted into Aircraft Navigation Systems:***

Pilot Pre-flight and In-flight procedures must call for each pilot to independently display and verify the DEGREES **and** MINUTES loaded into the Flight Management Computer (FMC) for the "un-named (Lat/Long) waypoints defining the cleared route of oceanic flight. This procedure is necessary regardless of the FMC waypoint input format being used. Procedures must call for both pilots to independently verify the waypoint coordinates inserted and concur on their accuracy prior to route activation (paragraph 5.4 refers).

6. ***Pilot Track and Distance Check:***

It is strongly recommended that pilot pre-flight and in-flight procedures call for the pilot to compare the track and distance between waypoints shown on the Computer Flight Plan (CFP) to those displayed by the FMC.

Pilots should be aware that waypoint insertion errors of ½ degree of latitude may in some cases result in only small differences in track and distance, however, the track and distance check can help prevent waypoint insertion errors of one degree or more that have been observed in oceanic operations.

Note: the currency of magnetic variation tables loaded into aircraft navigation databases and the point at which the track is measured affect the track displayed on the FMC by as much as +/- 3 degrees (paragraph 5.5 refers)

7. ***Pilot Action When Notified By ATC of Possible Deviation From Cleared Track:***

When ATC notifies the pilot that ATC systems indicate that the aircraft is not flying the cleared track, the pilot shall immediately display the full DEGREES and MINUTES loaded into the FMC for the NEXT waypoint, and verify against the oceanic clearance.

8. ***Policy for Operational Airborne Collision Avoidance System II (ACAS II):***

Prior to departure for flight on in airspace where RLatSM is applied, the ACAS II system shall be fully operational for the pilot flying (i.e., the TA and RA visual display and audio function will be operative for the pilot flying). If the ACAS II system is not fully operational for the pilot flying, the operator has the option of requesting clearance to operate on a track and/or at a FL where RLatSM is not applied. **If the ACAS II system fails after departure,** the aircraft may continue on the cleared route.

Note: The ACAS II (TCAS II) system must be a Version 7.0 or more recent version) (paragraph 5.7 refers)

9. ***Pilot In-flight Contingency Procedures and Weather Deviation Procedures (Diversions, Turn-backs, etc.):***

In training and checking programs, operators shall place special emphasis on pilot knowledge of and preparation to execute the *Special Procedures for Inflight Contingencies in Oceanic Airspace* published in ICAO Doc 4444, paragraph 15.2 and *Weather deviation procedures* (PANS-ATM, paragraph 15.2.3).

Pilots must be aware that when crossing adjacent tracks without an ATC clearance, the potential vertical separation provided by the In-flight Contingency Procedure is 500 ft may not be adequately accounting for the allowed RVSM altimetry system error. Pilots must use all the steps called for in the Contingency Procedures to avoid conflict with other aircraft. Consideration should be given to intercepting the 15 NM lateral offset in the same direction of flight and then descending below FL 280 or climbing above FL 410 prior to crossing adjacent tracks or making a 180° turn back.

Pilots must also be aware that when unable to obtain an ATC clearance, Weather Deviation Procedures call for a climb or descent of 300 ft. based on direction of flight and direction of deviation, and, in addition, guidance to the pilot is to adjust the path of the aircraft, if necessary, to avoid aircraft at or near the same flight level.

Pilots must stringently follow all measures for avoiding conflict with other aircraft provided for in the Doc 4444 contingency procedures (paragraph 5.8 refers).

10. ***RLatSM Operational policies (aircraft CNS system failure, data link system failure, etc.):***

Operators must be aware of the RLatSM operational policies posted in paragraph 5.9 In particular, operators must be aware that all RLatSM required aircraft CNS systems must be operational PRIOR TO DEPARTURE and PRIOR TO ENTRY on to RLatSM tracks between FL 350-390 (inclusive). In addition, if RLatSM required aircraft systems fail WHILE OPERATING IN RLATSM AIRSPACE, ATC must be advised immediately so that an appropriate course of action can be determined (paragraph 5.9 refers).

11. ***Domestic ATC Agency Contact:***

Pilots are reminded to ensure that they contact the appropriate **domestic** ATC agency BEFORE exiting oceanic airspace (paragraph 5.10 5.11 refers).

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ATTACHMENT B – EXAMPLE FMC AND MAP DISPLAYS (paragraph 5.2 refers)

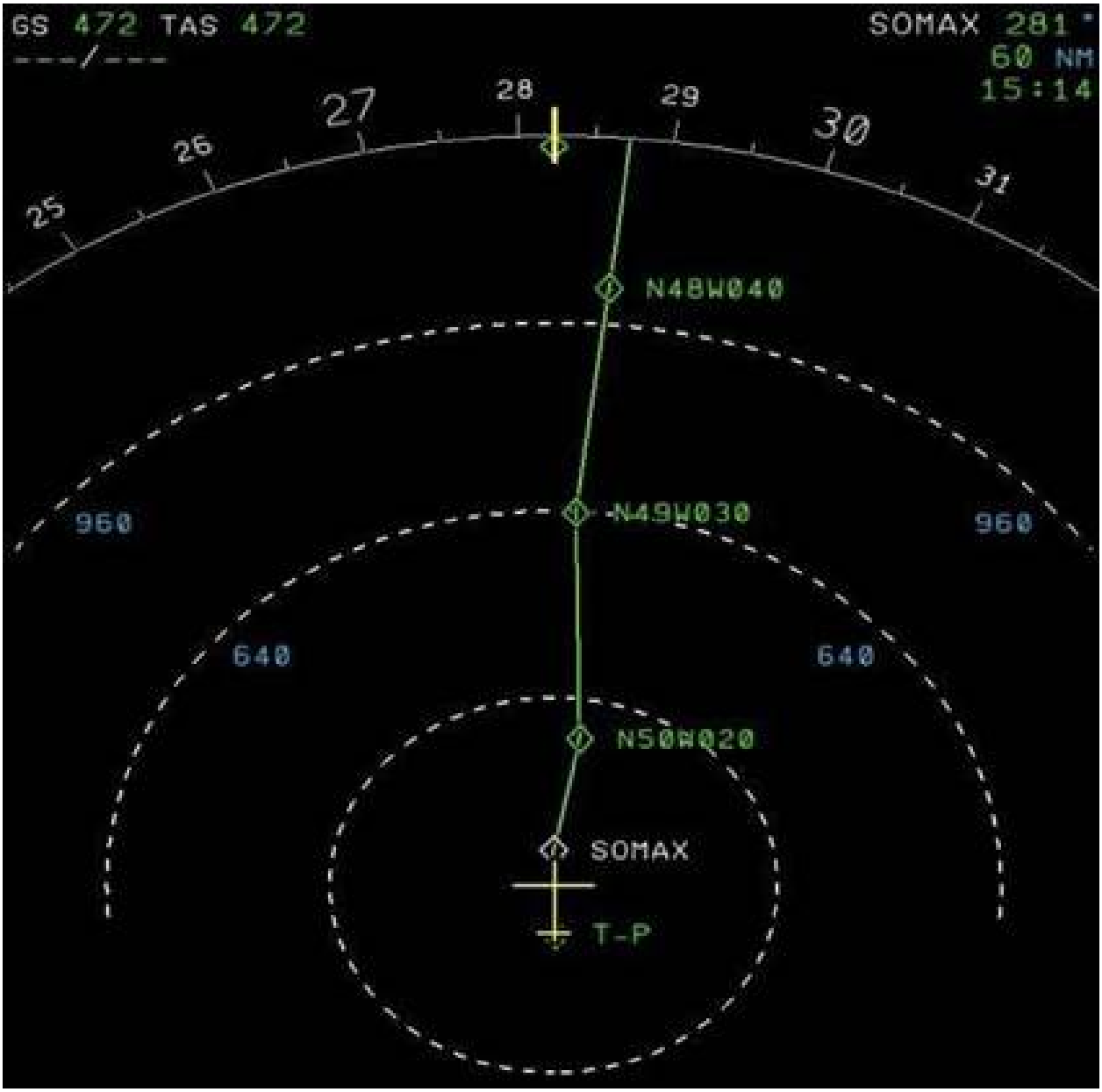
Note: Figure 1 and Figure 2 are intended to support paragraph 5.2 (Pilot training on Map and FMC Displays of ½ and Whole Degree Waypoints). **The figures emphasize that for a large number of aircraft, the input of waypoints containing whole degrees of latitude and waypoints containing half-degrees of latitude will result in identical 7-character FMC and waypoint map displays.**

Figure 1. Example FMC Display: Full Waypoint Latitude and Longitude (13-characters) inserted into FMC

1. 52 degrees-30 minutes North latitude, 20 degrees West longitude inserted into the FMC using full latitude and longitude degrees, minutes and seconds (i.e., 13 characters)

2. The waypoint IDENT is truncated to 7 characters with **no display of minutes of latitude.**

Figure 2. Example Map Display: 13-characters Inserted into FMC (Full Waypoint Latitude and Longitude)



1. 50 degrees-30 minutes North, 20 degrees West is displayed in 7 characters (N50W020).

2. **Minutes of latitude are not displayed.**

3. The Map display would be the same for 50 degrees-00 minutes North, 20 degrees West.

— END —