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NAT RLATSM PHASE 2 UPDATE - GUIDANCE FOR U.S. OPERATORS: SPECIAL EMPHASIS ITEMS FOR OPERATION IN NORTH ATLANTIC REDUCED LATERAL SEPARATION MINIMUM (RLATSM) TRIALS

1. Purpose of Notice. The purpose of this notice is to provide guidance to U.S. North Atlantic (NAT) operators on material to be included in pilot and dispatcher training programs and operations manuals to prepare them for NAT RLatSM operations. This version of the notice provides information on RLatSM Phase 2.

a. Grey shading in this notice indicates modifications or additions to the August 19, 2015 FAA Notice that addressed RLatSM Phase 1.

Note: the “[FAA NAT Resource Guide for U.S. Operators](#)” provides information on NAT initiatives and programs, including this notice. It can be accessed at:

http://www.faa.gov/about/office_org/headquarters_offices/avs/offices/afs/afs400/afs470/media/NAT.pdf

b. **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.

c. The following is an explanation of the terms “should”, “must” and “shall” as used in this bulletin.

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

(2) “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. Phase 2 of the RLatSM trial is planned to be implemented in portions of the Gander, Shanwick and Reykjavik OCAs on or about 10 November 2016. The start date for RLatSM Phase 2 will be confirmed later this year when the assessment of RLatSM Phase 1 operations is completed.

a. **During Phase 1 of the RLatSM trial**, 25 NM lateral separation minimum is applied by establishing 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 continue to 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 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 will be allowed to operate on designated RLatSM tracks between FL 350-390 (inclusive). See paragraph 3 (Operator/Aircraft Eligibility).

e. Strategic Lateral Offset Procedures (SLOP) will continue to be used in accordance with NAT Doc 007 (NAT Operations and Airspace Manual), paragraph 8.5.

f. Enhanced ATC surveillance and communication will be provided via FANS 1/A (or equivalent) data link systems. Automatic Dependent Surveillance (ADS-C) will provide 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) will enhance ATC intervention and communication capabilities.

3. Operator/Aircraft Eligibility. U.S. operators do not need to apply to participate in the trial. Operators will be eligible to flight plan and fly RLatSM tracks provided the flights are:

- Authorized Required Navigation Performance 4 (RNP 4)
- ADS-C and CPDLC equipped and authorized; and,
- Operating required Communications, Navigation and Surveillance (CNS) systems

Note: Job Aids for RNP 4 and Data Link operations authorization are available. See paragraph 6.

4. Flight Planning Provisions

a. 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

b. 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.

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

- Insert “X” to indicate that the aircraft meets requirements for NAT HLA operations. (See FAA Notice “Re-designation of NAT MNPS Airspace As High Level Airspace (HLA);
- 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 are Performance Based Navigation (PBN) approved. See below for the related Item 18 entry for RNP 4.

(2) Item 10b (Surveillance equipment and capabilities)

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

(3) 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.

a. 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:

- the aircraft is logged on when data link capability (J5, J7, D1) has been filed in the FPL; and
- RNP 4 is inserted into the FMC, when RNP 4 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.

b. 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.

Explanation

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 2 in Attachment B.

c. Aircraft Navigation Database (NDB) Waypoint Identifiers

In 2015, Canada, the United Kingdom 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 unless they have the operational need discussed below.

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

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 5c 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.

d. 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.

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

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 5d 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.

e. 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.

Explanation

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.

f. 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 them 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.

g. 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

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:

- 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.
- 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.

h. 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. Pilots must use all the steps called for in the Contingency Procedures to avoid conflict with other aircraft.

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

The implementation of RLatSM (25 NM) separation and ½ degree track spacing significantly reduces the distance and time a diverting aircraft has to maneuver 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 500 ft. of vertical separation when executing In-flight Contingency Procedures.

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

- (1) Objective. The guidance provided in the paragraphs below applies during the RLatSM trials. 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).
- (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).
- (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).
- (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) 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.

(6) Altitude Reservation (ALTRV) Requests. ALTRV requests will be considered on a case by case basis (as is done today regarding NAT MNPS airspace), irrespective of the RLatSM eligibility status of the participating aircraft.

(7) Contingency Situations. NAT RLatSM airspace restrictions are not applicable to aircraft experiencing a contingency situation.

j. Domestic ATC Agency Contact

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

6. Websites

a. The “[FAA NAT Resource Guide for U.S. Operators](#)” provides information on NAT initiatives and programs, including this notice. It can be accessed at:

http://www.faa.gov/about/office_org/headquarters_offices/avs/offices/afs/afs400/afs470/media/NAT.pdf

b. Job Aid Templates.

(1) **B036 Job Aid and Application** – can be found in the table under “Additional Information” for RNP 2, RNP 4, and RNP 10 on the FAA, PBN website at:

https://www.faa.gov/about/office_org/headquarters_offices/avs/offices/afs/afs400/afs470/pbn/

(2) **Data Link Job Aid Template** (Operator Application to Conduct Data Link Operations) –found on the Data Link Authorization Page of the [NAT Resource Guide](#)

7. Contacts

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

Name	Title	Phone	E-mail
Roy Grimes	FAA Separation Standards Program Support, CSSI, Inc.	+1 202-863-3692	rgrimes@cssiinc.com
Kevin Kelley	FAA Performance Based Flight Systems Branch, AFS-470	+1 202-267-8854	Kevin.c.kelley@faa.gov
Madison Walton	FAA Performance Based Flight Systems Branch, AFS-470	+1 202-267-8850	Madison.walton@faa.gov

ATTACHMENT A – SUMMARY OF RLATSM SPECIAL EMPHASIS ITEMS CONTAINED IN THIS NOTICE

1. Operator/Aircraft Eligibility and Flight Planning Provisions:

Only operators that are authorized RNP 4 and 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. (Paragraph 4b 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 5a refers).

The pilot must also confirm that RNP 4 is inserted into the FMC to enable aircraft navigation system monitoring and alerting against the required RNP4 Navigation Specification (Paragraph 5a refers).

3. Aircraft Navigation Database (NDB) Waypoint Identifiers:

Canadian AIC 23/15, UK AIC 059/15 and Iceland AIC A009/2015 strongly advocate that aircraft NDB vendors and flight planning services should **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 5c 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 5b and Attachment B Figure 1 and 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 each waypoint defining the cleared route of 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 5d 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 5e 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 cleared route. (Paragraph 5f refers)

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 5g 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* (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. Pilots must use all the steps called for in the Contingency Procedures to avoid conflict with other aircraft.

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 5h 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 5i. 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.

11. Domestic ATC Agency Contact:

Pilots are reminded to ensure that they contact the appropriate **domestic** ATC agency **BEFORE** exiting oceanic airspace. (Paragraph 5j refers)

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## ATTACHMENT B – EXAMPLE FMC AND MAP DISPLAYS

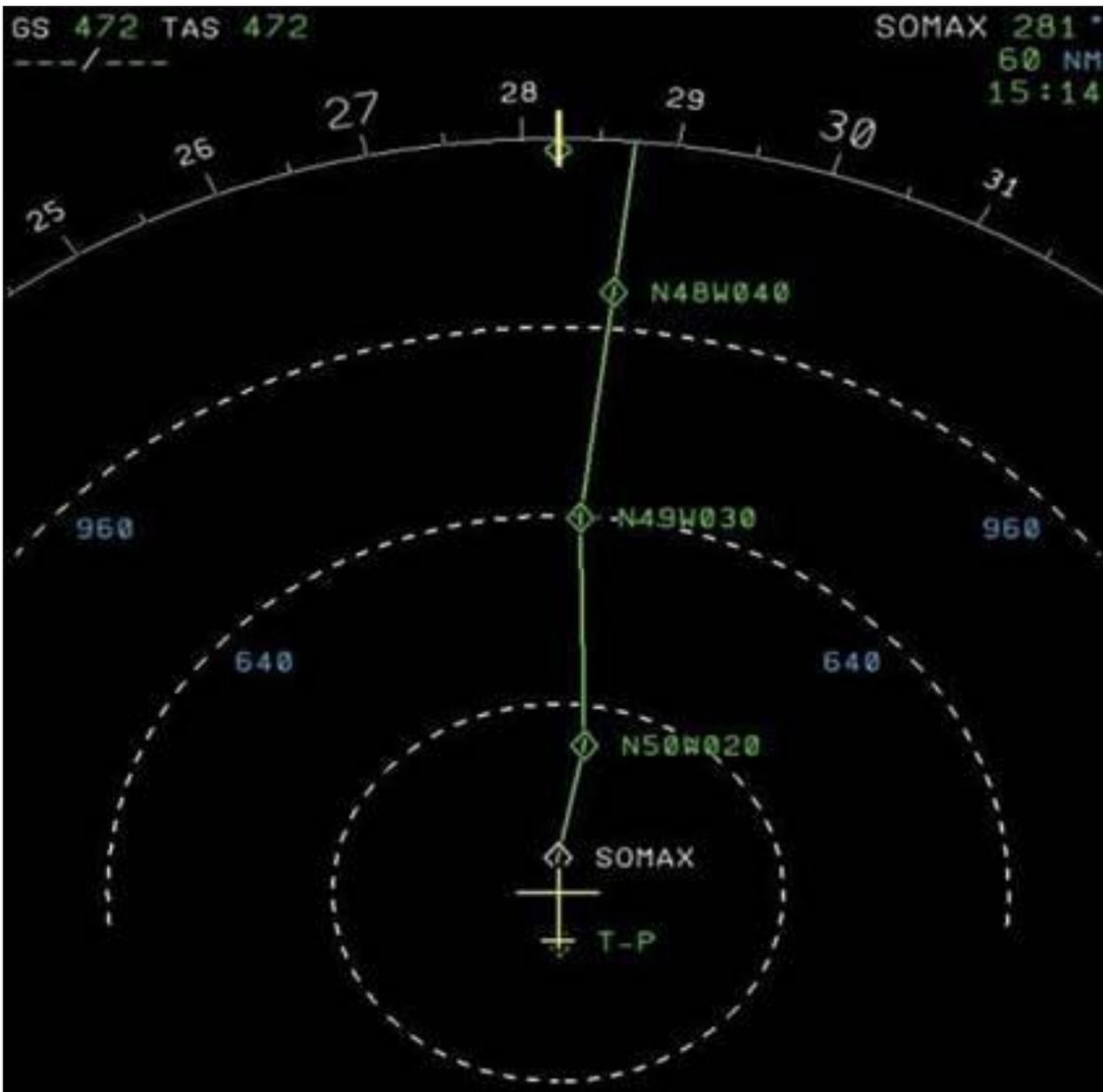
**Note:** Figure 1 and 2 are intended to support paragraph 5b (Pilot Training on Map and FMC Displays of ½ Degree and Whole Degree Waypoints). **The figures emphasize that for a large number of aircraft, the input of waypoints containing whole degrees of latitude and waypoints containing half-degrees 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: Full Waypoint Latitude and Longitude (13-characters) Inserted into FMC**



1. 50 degrees-30 minutes North, 20 degrees West displayed is displayed in 7 characters. (N50W020)
2. Minutes of latitude are not displayed.
3. The Map display would be the same for 50 degrees North, 20 degrees West.

**(Performance Based Flight Systems Branch, AFS-470, 7/22/16)**

— END —