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CAR/SAM Regional Planning and Implementation Group (GREPECAS)

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Agenda Item 2: Global and inter-regional activities

2.1 Inter-regional and intra-regional CNS/ATM activities and coordination

WEST ATLANTIC ROUTE SYSTEM PLUS (WATRS PLUS) ROUTE STRUCTURE REDESIGN AND SEPARATION REDUCTION PROJECT POST-IMPLEMENTATION REVIEW

(Presented by the United States of America)

SUMMARY

This paper reviews the implementation of the West Atlantic Route System Plus (WATRS Plus) Route Structure Redesign and Separation Reduction Project and provides an overview of lessons learned. The paper suggests that the valuable experience gained in the WATRS Plus Project be used to pursue the expansion of Area Navigation (RNAV) route systems into other areas in the Caribbean (CAR) and South America (SAM) regions. Significant tasks required for the implementation are provided in the attachment.

1. Introduction

1.1 On June 5, 2008, with guidance and coordination from the ICAO North American, Central American and Caribbean (NACC) Office, the United States Federal Aviation Administration (FAA), in conjunction with the Air Traffic Service providers of Canada, the Dominican Republic, Haiti and Piarco, introduced a redesigned route structure and a reduced lateral separation standard on oceanic routes or areas in the WATRS Plus Control Areas (CTA).

1.2 The WATRS Plus CTAs are: the Atlantic portion of the Miami Oceanic CTA, the CTA of the San Juan FIR and the West Atlantic Route System (WATRS). New WATRS Plus route segments also extend into the airspace of Canada, the Dominican Republic, Haiti and Piarco. In addition, New York Oceanic airspace outside WATRS is considered transition airspace where reduced lateral separation may be applied between appropriately authorized aircraft.

1.3 On June 4 – 5, 2008, the FAA WATRS Plus Task Force established a WATRS Plus Implementation Cell at the FAA Air Traffic Control System Command Center (ATCSCC). An open bridge line was established that allowed ready communication between the four FAA facilities directly involved, the other ATS providers and the customers.

1.4 The implementation was conducted in accordance with the “Sequence of Events” published in the April FAA “Transition Plan” NOTAM. The implementation sequence started with an international telephone conference (telecon) during the evening of 4 June. The telecon included the ATS providers from the Caribbean, North Atlantic and Eurocontrol, as well as operator organizations and individual operators. The transition to “WATRS Plus Transition Routes” and then to new WATRS Plus routes went smoothly with no major implementation problems.

2. Discussion

2.1 The operation continues to run smoothly. The WATRS Plus Task Force is, however, tracking and following up on certain issues that affected a small number of flights in the initial period following implementation:

- a) Some flights did not use the correct AFTN address for their ICAO flight plan in accordance with the FAA “WATRS Plus Operational Policy & Procedures” Notice.
- b) Some flights did not make the correct entries in field 18 of the ICAO flight plan to inform ATC oceanic automation and controllers of the aircraft status as to RNP 10 or RNP 4 authorization.
- c) A few operators filed fixes from the old WATRS route system
- d) Some operators requested the flexibility to flight plan direct, off-airway routing. The FAA facilities have evaluated the requests in relation to the new route system and provided flexibility when possible.

2.2 The FAA WATRS Plus Task Force is continuing to monitor the operation and assess and correct any issues that arise.

2.3 The WATRS Plus Project accomplished the following:

- a) reduced lateral separation in oceanic areas from 90 nautical miles (NM) to 50 NM between aircraft authorized Required Navigation Performance 10 (RNP 10) or RNP 4;
- b) redesigned the WATRS Plus route structure to make approximately 40% more routes available to enhance operator access to time/fuel efficient routes and altitudes and to enhance enroute capacity;
- c) harmonized the WATRS Plus route structure with that in the Caribbean and North Atlantic regions;
- d) has approximately 98% of WATRS Plus flights conducted by aircraft authorized RNP 10 or RNP 4 by the appropriate State authority; and,
- e) accommodates operation of the approximately 2% of flights not authorized RNP 10 or RNP 4.

2.4

The following provides a list of lessons learned in the WATRS Plus initiative:

- a) The assistance and leadership provided by the ICAO NACC Office in Mexico City was invaluable in progressing the project and coordinating the efforts of the ATS providers and industry.
- b) Early development of the WATRS Plus Task List allowed project planners to track and manage the effort and to inform ATS providers, authorities and industry on the tasks and timelines required to implement.
- c) Early action on preparing ATC automation for the implementation of a new route structure and separation standard is imperative.
- d) Various factors led to late changes in the route structure re-design plan. It is recommended that, to the maximum extent possible, route, fix and waypoint data be finalized by a firm date to allow for publication of the data in a timely manner without extraordinary effort.
- e) The WATRS Plus Webpage proved valuable in providing a central point for operators and authorities to obtain information on project plans and requirements. Address is: http://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/enroute/oceanic/WATRS_Plus/
- f) A high percentage of the operators responded to the WATRS Plus initiative by obtaining RNP 10 or RNP 4 authorization by the implementation date. This indicates that the operators will respond and take necessary action when they are informed as to the operational benefits provided to them by an initiative.
- g) Most operators did not obtain RNP 10 or RNP 4 authorization a month in advance of the implementation date as requested. The intent of the request was to provide a period of time prior to implementation for ATS providers to observe operators making the correct entries on the ICAO flights plans to show eligibility for 50 NM lateral separation (i.e., RNP 10 or RNP 4 authorization). Most operators waited until just prior to implementation to obtain authorization.
- h) The FAA developed a “Transition Plan” that established requirements for operator and ATS provider action in the period leading to implementation. In some cases, tasks were required to be completed up to three months prior to the implementation date (e.g., publication of the waypoints that defined transition routes). Advance development of the transition plan and educating operators and ATS providers on its requirements was key to the smooth transition.
- i) Despite all the efforts involved, charting errors occurred that necessitated publishing NOTAMS to make corrections. ATS providers must be prepared for this eventuality.
- j) The FAA “WATRS Plus Implementation Cell” established at the FAA ATCSCC proved valuable in enabling a smooth transition to the new route structure and separation standard. The cell provided a central point for identifying and resolving problems quickly during the transition period.

- k) The FAA post-implementation effort to identify problems and take action with operators and ATS providers to make corrections was absolutely necessary. Direct contact was necessary with the small number of operators that were not complying with WATRS Plus flight planning policy or were not filing the new WATRS Plus routes correctly.

2.5 **Appendix A** provides the significant tasks required for WATRS Plus Project implementation.

3. Conclusion

3.1 The U.S. and its partner ATS providers acquired valuable experience in developing and managing the program to implement RNAV routes, reduce lateral separation and implement Performance Based Navigation standards (RNP 10 and RNP 4) in WATRS Plus airspace. The U.S. is prepared to work with the appropriate CAR/SAM groups, other authorities and industry to help develop RNAV routes in other areas of the CAR and SAM regions.

4. Action by the Meeting

4.1 The meeting is invited to:

- a) Take note of the processes that enabled the successful implementation of WATRS Plus and take action on the lessons learned as appropriate to mitigate their reoccurrence in future airspace projects in the region.
- b) Support the work of appropriate ICAO working groups to continue harmonization and expansion of RNAV routes and Performance Based Navigation in the CAR and SAM regions.

APPENDIX A

Significant WATRS Plus Implementation Tasks

<u>SUBJECT</u>	<u>STATUS</u>	<u>DISCUSSION</u>
WATRS Plus Webpage	Posted	Webpage being maintained to provide current information to States, organizations and operators. See paragraph below for address.
Regional Supplementary Procedures (Doc 7030) Amendment.	Complete	Endorsed by NAT and CAR regional groups in June-July 2007 meetings. Final comments provided by 11 April 08.
Safety Assessment	Complete	Available for review during Doc 7030 amendment comment period.
NAT/CAR ATS Routes WG	Work completed	Final meeting held 13-15 November 07.
U.S. Dept of Navy controlled Special Use Airspace around Puerto Rico	Disestablished	U.S. Department of the Navy disestablished Special Use Airspace around Puerto Rico determined to be no longer needed, allowing WATRS Plus routes in the area to be designed to maximize aircraft operating efficiency.
Route Structure Redesign	Complete	Final route structure redesign plan agreed by NAT/CAR ATS WG participants. New route information/data published in U.S. National Flight Data Digest for Canada, the Dominican Republic, Haiti, Piarco and the U.S. in April 2008.
CAR/SAM Air Navigation Plan revision	In progress	NACC Office distributed proposed revision for State and organization comment.
Transition Plan	Complete	In April, the U.S. FAA published and distributed a Transition Plan NOTAM containing plan for transition to new WATRS Plus routes and 50 NM lateral separation on 5 June.
Air Traffic Control tasks	Complete	1. ATC automation systems updated with new separation standard and route system. 2. ATC policy documents updated. 3. Controller training projected complete.
RNP 10 and RNP 4 Authorization Job Aids	Complete	Job Aids with ICAO Performance Based Navigation (PBN) Manual references posted on WATRS Plus Webpage.
ICAO NACC Office WATRS Plus letter to States and organizations	Distributed Oct 2007	Letter provided project overview, advocated that U.S. FAA WATRS Plus Webpage be consulted for current information; advocated operator and State use of the RNP 10 and RNP 4 Authorization Job Aids.
WATRS Plus Operational Policy & Procedures Document	Complete	U.S. FAA Notice published initially in September 2007 and updated as required prior to implementation. Reviewed at NAT/CAR ATS WG/3 in November 2007. Posted on U.S. FAA WATRS Plus Webpage.
Simulations	Complete	Fast-time simulations completed to assess route and flight level usage on the new route structure. Dynamic Simulation used for controller training.

Cost Benefit and Emissions Analysis	Scenario 1 complete	Scenario 1 assumed all flights authorized RNP 10 or 4. Projected 15 year fuel savings of U.S. \$741 million (constant dollars) and annual CO2 fuel emissions reduction of 161,800 metric tons.
Operator readiness assessment	Scenario 2 in progress	Scenario 2 examined effect of 10% of flights conducted by non-RNP 10 aircraft for a three year period. Fuel savings projected to be \$719 million U.S. dollars.
Post-implementation Monitoring Plan	Complete	Operator readiness survey completed on 30 April.
	Planned	FAA Oceanic Separation Reduction Work Group to direct post-implementation reviews 30 days and 90 days after implementation and then at quarterly intervals for the first year.