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Second NAM/CAR Air Navigation Implementation Working Group Meeting (ANI/WG/2)
Puntarenas, Costa Rica, 1 to 4 June 2015

Agenda Item 4: Follow-up on the NAM/CAR Regional Performance Based Air Navigation Implementation Plan (NAM/CAR RPBANIP)

4.1 Progress reports of the Task Forces and the ANI/WG

**MIAMI AIR ROUTE TRAFFIC CONTROL CENTER,
MIAMI HIGH SECTOR 40: IMPROVING OPERATIONS**

(Presented by Federal Aviation Administration)

EXECUTIVE SUMMARY

This working paper provides an update on the mitigations that Miami Air Route Traffic Control Center (ARTCC) has implemented to improve operations in the **Miami High Sector 40**. This sector is located in the United States offshore airspace, east-southeast of the state of Florida, within the boundaries of Miami ARTCC. It spans over portions of the Bahamas and shares a common boundary with the Cuban Flight Information Region (FIR) and its vertical limits are flight level 240 and above.

Action:	Suggested actions are presented in Section 4.
<i>Strategic Objectives:</i>	<ul style="list-style-type: none">• Safety• Air Navigation Capacity and Efficiency• Environmental Protection
<i>References:</i>	<ul style="list-style-type: none">• Miami Air Route Traffic Control Center Mitigation Strategy Plan

1. Introduction

1.1 The traffic flow in the Miami High Sector 40 is not specific in terms of concise, directional, and streamlined patterns. Overflight aircraft traverse this sector in intersecting trajectories from north-eastern and north-western United States aerodromes, as well as east/west trajectories for flights originating in/destined to European aerodromes.

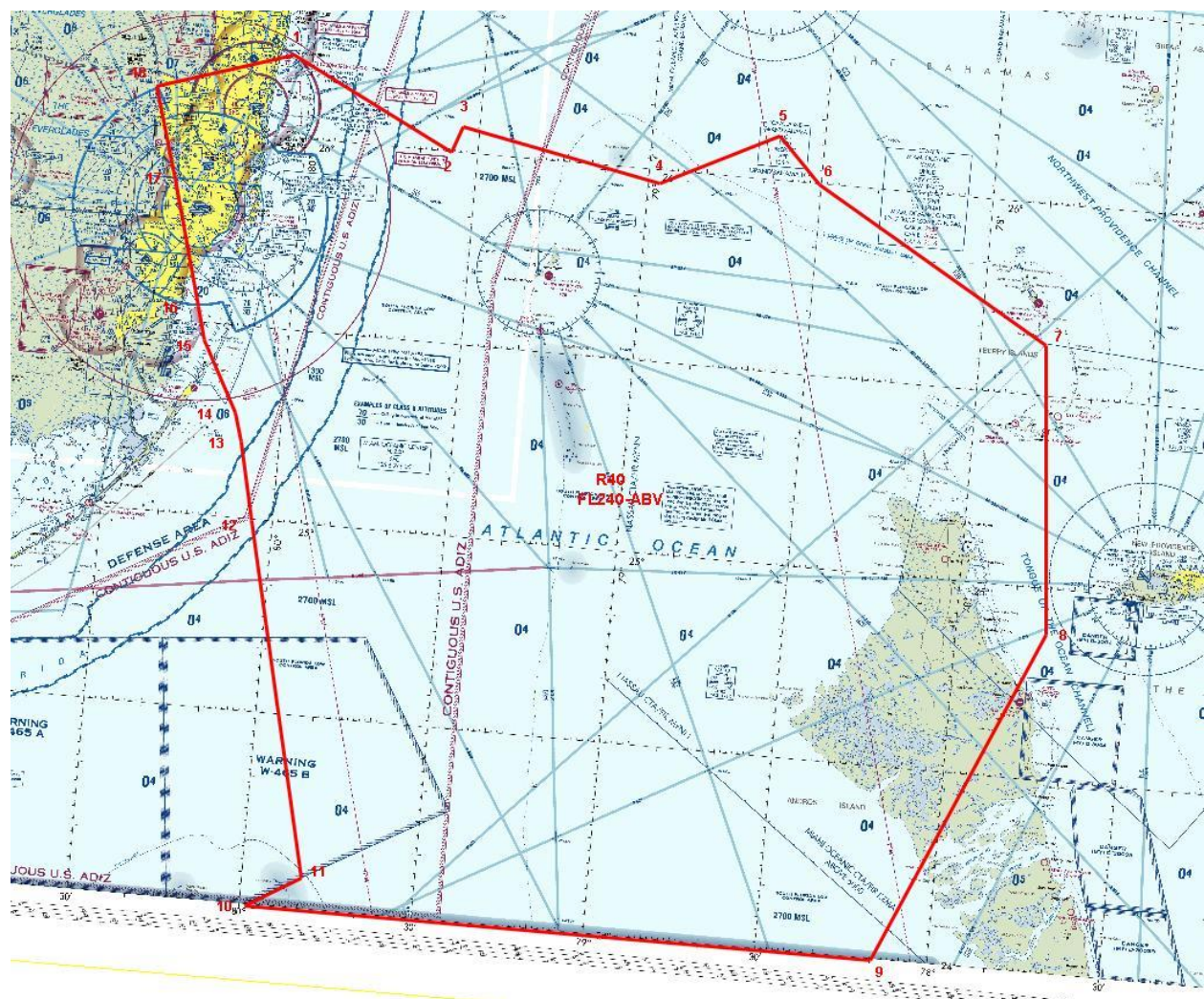
1.2 This sector provides service to aircraft climbing and descending to/from Bahamian aerodromes. Additionally, the Miami High Sector 40 is responsible for sequencing arrival traffic destined to South Florida aerodromes (e.g. Miami Intl and Ft. Lauderdale Intl) from the southeast. Inbound traffic from internal adjacent sectors directly east and southeast, must blend with northbound traffic from Cuba to the south. This sector also controls south and southeast bound departure traffic from South Florida airports.

1.3 The Miami High Sector 40 shares its southern boundary with Havana Area Control Center (ACC). Miami ARTCC and Havana ACC manage a bilateral, high volume radar operation that, on occasion, is highly complex due to the arrival/departure traffic to/from South Florida aerodromes, arrival/departure traffic to/from Cuban aerodromes, and north/south overflight traffic that traverses the common FIR boundary originating from aerodromes in North, Central, and South America.

1.4 The steady increase in traffic volume in an antiquated airway structure that handles intersecting overflight traffic, as well as transition traffic descending and climbing to/from Florida, Bahamian, and Cuban aerodromes, has contributed to an increase in traffic conflicts in the Miami High Sector 40. These conflicts have led to an increase in operational errors and proximity events.

1.5 This paper provides a summary of the improvements that have already been implemented, and describes the short term, intermediate, and long term mitigation strategies programed to reduce controller workload, enhance efficiency, optimize safety, and improve overall sector operations.

1.6 A depiction of the Miami High Sector 40 and legal description appears below:



Miami High Sector 40: from FL240 and above**Beginning at**

- 1: 26-13-00N/080-03-15W direct to**
- 2: 26-00-00N/079-34-30W direct to**
- 3: 26-04-00N/079-33-00W direct to**
- 4: 25-58-00N/078-58-00W direct to**
- 5: 26-07-01N/078-38-06W direct to**
- 6: 26-00-00N/078-30-30W direct to**
- 7: 25-38-00N/077-48-50W direct to**
- 8: 24-53-00N/077-44-30W direct to**
- 9: 24-00-00N/078-10-00W direct to**
- 10: 24-00-00N/079-59-00W direct to**
- 11: 24-05-00N/079-49-30W direct to**
- 12: 25-00-00N/080-03-30W direct to**
- 13: 25-12-00N/080-06-30W direct to**
- 14: 25-16-30N/080-08-00W direct to**
- 15: 25-27-30N/080-14-30W direct to**
- 16: 25-32-30N/080-16-00W direct to**
- 17: 25-57-00N/080-22-00W direct to**
- 18: 26-06-15N/080-26-30W direct to point of beginning.**

2. Discussion

2.1 In order to achieve optimized safety and increase efficiency in Miami High Sector 40 operations, Miami ARTCC has implemented several mitigations and has developed short, intermediate, and long term initiatives.

2.2 Mitigations already implemented:

2.2.1 Automated Data Exchange (ADE) between Miami ARTCC and Havana ACC, which allows automated transfer flight plan data, was implemented in December 2011. ADE reduces controller workload by minimizing manual voice coordination of flight plan data and associated revisions, boundary estimates, and altitude confirmation. The automation reduces the amount of hand written entries controllers make on paper flight progress strips and computer entries needed to activate proposed flight plans. This automated improvement has reduced the amount of controller “heads down” duties, which affords controllers additional time to pay more attention to the radar display and detecting potential traffic conflicts.

2.2.2 Additional Traffic Management Initiatives (TMI) comprised of Miles in Trail (MIT), altitude restrictions for traffic inbound from adjacent internal Miami ARTCC sectors, and coordination with Havana ACC to initiate specific bilateral TMIs were initiated in late 2014. The Miami ARTCC Traffic Management Unit (TMU) has increased the involvement of the TMU in daily sector operations, and enhanced the quality of the partnership with the operations (controllers and supervisors) to operate in a more effective and integrated manner so that projected high traffic periods are detected earlier and managed more effectively.

2.2.3 In the third quarter of 2014, the operational area in Miami ARTCC that controls the offshore airspace where Miami High Sector 40 is located was divided into two separate operational areas; Caribbean and Ocean Areas. Each area was designated a separate set of supervisors with the objective of establishing increased oversight of Miami High 40 and adjacent sector operations. This achievement has improved the “real time” coordination between controllers and TMU ensuring a proactive approach to establishing Air Traffic Flow Measures (ATFM) that anticipate high traffic volume, and take appropriate measures to meet the demand.

2.3 Short and intermediate term mitigations:

2.3.1 Since mid-2014, Miami ARTCC controllers have been receiving robust supplemental training which has emphasized the utilization of the automated conflict probe function of the En-route Decision Support Tool (EDST). This system detects potential traffic conflicts and displays the involved aircraft and their trajectories. This training has resulted in an enhanced working knowledge of the system and its capabilities, which has been instrumental in reducing separation errors and providing better service to operators. Enhanced tracker training is also being provided to controllers. Trackers, which work in conjunction with the radar controller during peak traffic periods, will be better equipped to provide assistance as needed to the radar and assistant radar controllers, as well as coordinate with adjacent sectors, facilities, TMU, and operational supervisors.

2.4 Long term mitigations:

2.4.1 Longer term initiatives and future changes to airspace and route structure will continue to improve the efficiency and effectiveness of the operation in the Miami High Sector 40 and adjacent Miami ARTCC sectors. One such initiative currently being implemented is Metroplex. The Metroplex project entails the restructuring of arrival and departure procedures, the development of optimized profile descent, and establishing Performance Based Navigation (PBN) routes. PBN routes will replace or supplement existing routes and harmonize the en-route airway structure with terminal airways and associated arrival/departure procedures.

3. Air Traffic Control System Command Center Assistance

3.1 The FAA Air Traffic Control System Command Center (ATCSCC) assists Miami ARTCC by balancing demand with sector capacity using Airspace Flow Programs (AFP's). By using historical data, we have determined that Saturdays, between mid-December to mid-April, Traffic Management Initiatives (TMIs) are needed to help manage Miami High Sector 40 and surrounding sectors. This action allows Miami ARTCC the opportunity to make necessary adjustments between sectors, assign appropriate controller staffing, and balance sector workload. Over the past few years, ATCSCC created Flow Constraint Areas (FCA) that are used to routinely monitor Miami offshore traffic and work in concert with Miami ARTCC to establish acceptable northbound and southbound throughput rates per hour. These values may fluctuate based on scheduled and unscheduled customer demand. To further assist Miami ARTCC, the ATCSCC takes the following action:

- Ensures harmonization of TMI restrictions with Santo Domingo Area Control Center and San Juan Combined/Center Radar Approach Control
- Implements Flow Evaluation Areas (FEA) from KCLT and KATL airports to the Caribbean region
- Implement departure restrictions on KCLT airport for aircraft filed L451

3.2 In an effort to reduce the overall controller workload and optimize efficiency and safety, Miami ARTCC is pursuing an airspace redesign for the Miami High Sector 40 and surrounding sectors. This will require internal collaboration from Miami ARTCC Automation, Technical Operations, Caribbean and Ocean Operational Areas, Operations Support, FAA Headquarters, and the ATCSCC. Additionally, Miami ARTCC will collaborate with adjacent facilities in an effort to develop a more seamless and efficient transition of traffic that harmonizes with the redesigned airspace. A study team has been assigned the task of analyzing Miami High Sector 40 and surrounding airspace operations and is currently developing a long term plan focused on airspace redesign. The following are the issues that the study team is focusing their efforts on:

- Current traffic flows;
- Projected traffic volume and flow;
- Potential increase in arrival/departure traffic from Cuban aerodromes as a result of changes to the U.S. travel policies for Cuba;
- Infrastructure, such as additional sector hardware, radios, landlines, and radar displays;
- Revised sector operating procedures to harmonize traffic flows; and
- Amendment to procedures established in bilateral Miami ARTCC-Havana ACC Letter of Agreement

4. Suggested actions

4.1 The meeting is invited to:

- a) note the information provided in this paper; and
- b) engage in being proactive in establishing regional ATFM initiatives