



ICAO

International Civil Aviation Organization  
North American, Central American and Caribbean Office

INFORMATION PAPER

ANI/WG/4 — IP/12  
08/08/18

**Fourth NAM/CAR Air Navigation Implementation Working Group Meeting (ANI/WG/4)**  
Miami, United States, 21 – 24 August 2018

**Agenda Item 3: Global and Regional Air Navigation Plans**  
**3.4 Other Global/Regional Air Navigation Developments**

**SAN JUAN COMBINED CENTER/RADAR APPROACH CONTROL (CERAP) AIRSPACE DESIGNATION**

(Presented by United States)

**EXECUTIVE SUMMARY**

The Federal Aviation Administration (FAA) ATS facilities encompassed by the North American, Central American, and Caribbean (NACC) Region are actively involved in the ICAO/IATA/CANSO PBN Harmonization/Modernization/Implementation Working Group tasking. In recent PBN Harmonization meetings, the FAA agreed to provide this meeting with an update on the airspace designation of San Juan CTA/FIR, particularly, the oceanic and domestic offshore airspace volumes. This Information Paper specifies the current airspace classification and designation, the activities currently in progress to designate airspace appropriately in concurrence with available communication, navigation, and surveillance (CNS) capabilities, and the type of longitudinal separation San Juan CERAP can apply, currently, in non-surveillance airspace.

*Strategic Objectives:*

- Safety
- Air Navigation Capacity and Efficiency

*References:*

- Federal Registrar: DEPARTMENT OF TRANSPORTATION, Federal Aviation Administration [Docket No. FAA–2015–1497; Airspace Docket No. 15–AWA–4], RIN 2120–AA66: Designation of Oceanic Airspace <https://www.federalregister.gov/documents/2015/07/01/2015-16246/designation-of-oceanic-airspace>
- FAA Order JO 7400.11
- Code of Federal Regulations (CFR) Title 14, Part 71
- FAA Spectrum Engineering Communication and Surveillance Capability Report
- ANI/WG/3 WP/18

## 1. Introduction

1.1 The International Civil Aviation Organization (ICAO) has delegated the high seas airspace, charted as the San Juan Oceanic Flight Information Region (FIR), to the United States (U.S.) for the provision of Air Traffic Services (ATS). ATS in U.S. delegated airspace defined by the FAA as “Oceanic” are provided in accordance with (IAW) FAA Orders congruent with ICAO PANS ATM doc 4444. Depending on available CNS capabilities, ATS provided in oceanic airspace differs from services provided in domestic (continental) airspace.

1.2 The distinction between the application of domestic separation and oceanic separation is discussed in this paper. It is relevant to regional goals of the ICAO/IATA/CANSO PBN Harmonization/Modernization/Implementation Working Group for transitioning from time based longitudinal separation (approx. 80 miles) to distance-based separation (20 miles).

## 2. San Juan Airspace

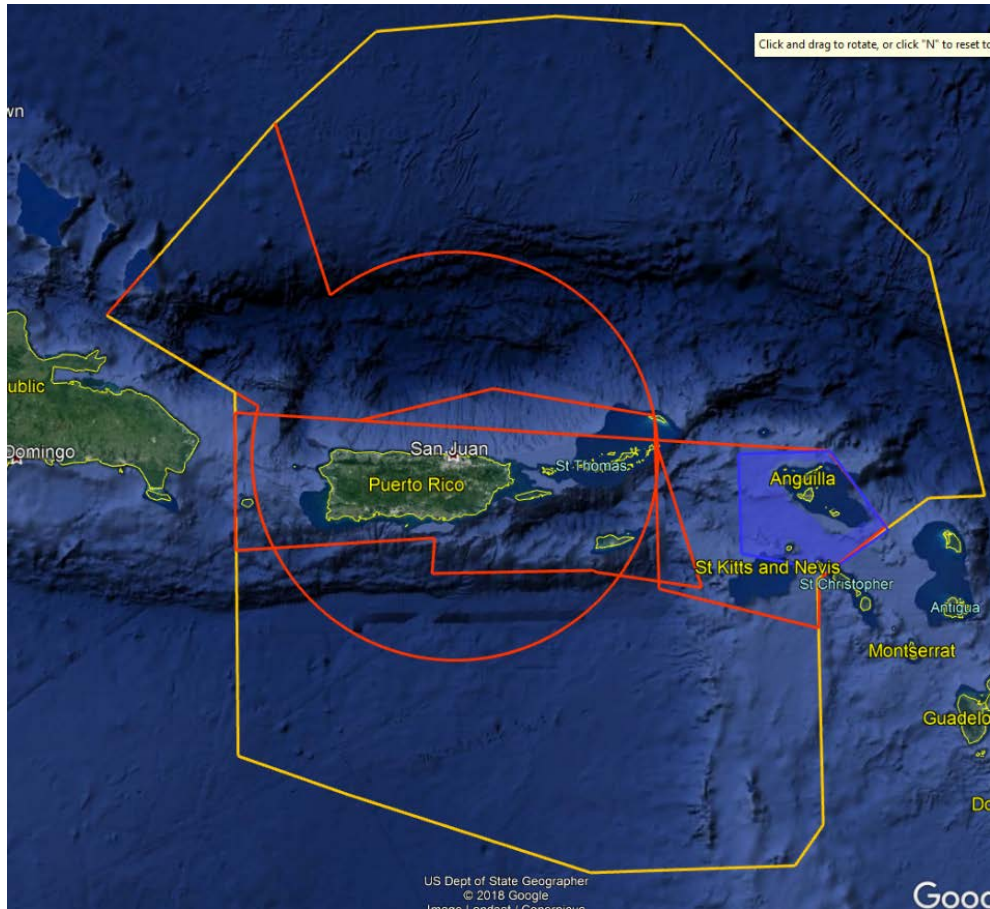
2.1 CAO designates all delegated high seas airspace as Oceanic for charting purposes. ICAO allows Air Navigation Service Providers (ANSP) to determine the designation of that airspace and the ATS provided within those airspace volumes contingent on CNS capabilities. The FAA has published designation of airspace in FAA Order JO 7400.11, Airspace Designations and Reporting Points. The authority of the information contained within the 7400.11 is found in Title 14 of the U.S. Code of Federal Regulations.

2.2 In FAA Order JO 7400.11, Airspace Designations and Reporting Points, Section 2003, the FAA has defined San Juan High, PR, as an Offshore Airspace Area. The lateral and vertical description is as follows:

### ***San Juan High, PR***

Fernando Luis Ribas Dominicci Airport, PR (lat. 18°27'25"N., long. 66°05'53"W.).

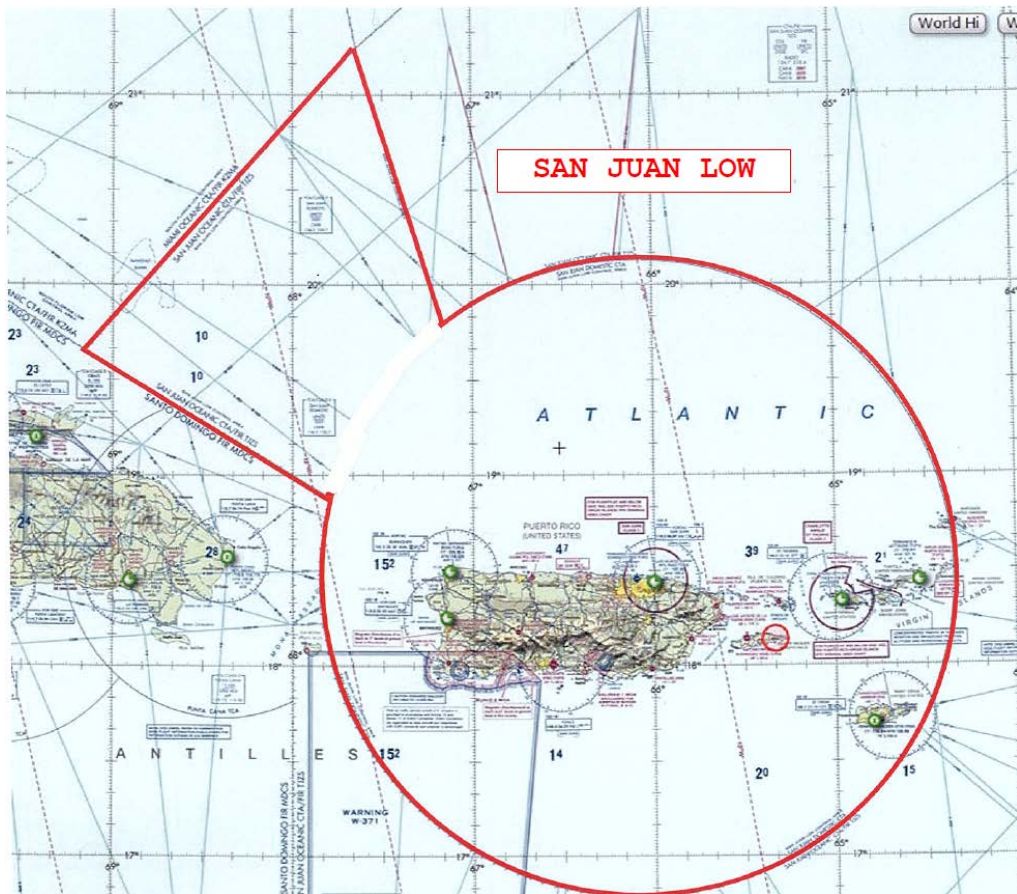
That airspace extending upward from 18,000 feet MSL to and including FL 600 within a 100-mile radius of the Fernando Luis Ribas Dominicci Airport. The red boundary lines depicted in the image below illustrate the San Juan High, PR, airspace.



2.3 Additionally, in FAA Order JO 7400.11, Airspace Designations and Reporting Points, Section 6007, the FAA has defined San Juan Low, PR, as an Offshore Airspace Area. The lateral and vertical description is as follows:

***San Juan Low, PR***

That airspace extending upward from 5,500 feet MSL from the point of intersection of the San Juan Oceanic CTA/FIR and Miami Oceanic CTA/FIR boundary at lat. 21°14'21"N., long. 67°39'02"W., thence from that point southeast via a straight line to intersect a 100-mile radius of the Fernando Luis Ribas Dominicci Airport at lat. 19°47'28"N., long. 67°09'37"W., thence clockwise via a 100-mile radius of the Fernando Luis Ribas Dominicci Airport to lat. 18°53'05"N., long. 67°47'43"W., thence from that point northwest via a straight line to intersect the point where the Santo Domingo FIR turns northwest at lat. 19°39'00"N., long. 69°09'00"W., thence from that point northeast along the San Juan CTA/FIR and Miami CTA/FIR boundary to the point of beginning. The red boundary lines depicted in the image below illustrates the San Juan Low, PR, airspace.



2.4 In the U.S. Code of Federal Regulations (CFR), **Title 14 - Aeronautics and Space Chapter I - FEDERAL AVIATION ADMINISTRATION, DEPARTMENT OF TRANSPORTATION (CONTINUED) Subchapter E – AIRSPACE Part 71 - DESIGNATION OF CLASS A, B, C, D, AND E AIRSPACE AREAS; AIR TRAFFIC SERVICE ROUTES; AND REPORTING POINTS**, paragraph 71.33 Class A airspace areas, subparagraph (c), it states:

- (c) The airspace areas listed as offshore airspace areas in subpart A of FAA Order 7400.11B (incorporated by reference, see § 71.1) that are designated in international airspace within areas of domestic radio navigational signal or ATC radar coverage, and within which domestic ATC procedures are applied.

2.5 Additionally, in paragraph 71.71 Class E airspace, subparagraph (f), it states:

- (f) The airspace areas listed as offshore airspace areas in subpart E of FAA Order 7400.11A (incorporated by reference, see § 71.1) that are designated in international airspace within areas of domestic radio navigational signal or ATC radar coverage, and within which domestic ATC procedures are applied. Unless otherwise specified, each airspace area extends upward from a specified altitude up to, but not including, 18,000 feet MSL.

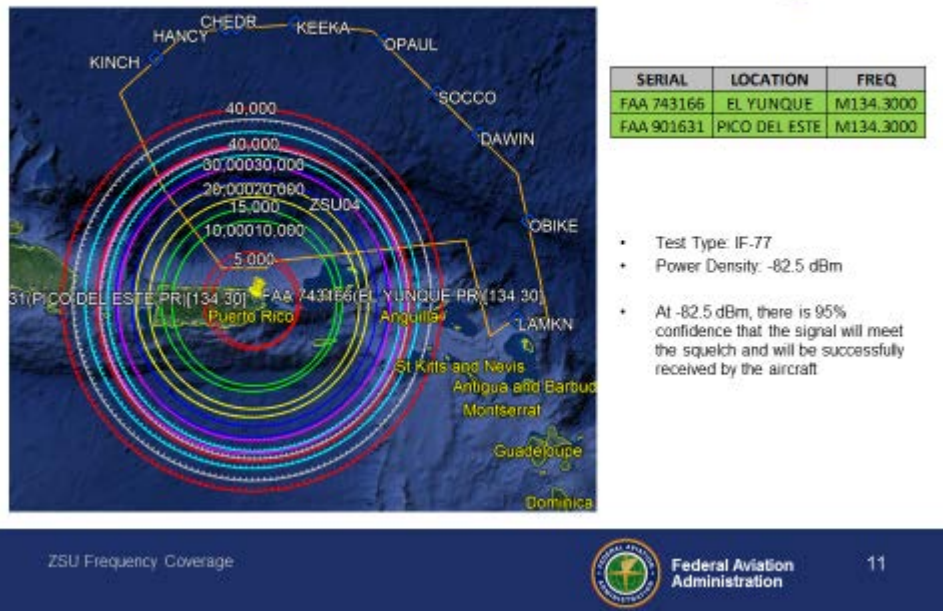


2.6 The references made in FAA Order JO 7400.11 and the CRFs allow provisions to San Juan CERAP for the application of domestic separation in offshore airspace. Conversely, the remaining airspace designation outside of **San Juan High, PR**, and **San Juan Low, PR**, is oceanic airspace where oceanic separation, IAW FAA Orders and ICAO PANS ATM doc 4444, must be applied.

**3. Reducing Longitudinal Separation**

3.1 As specified in ANI/WG/3 WP/18, the FAA embraces the work of the PBN Harmonization Work Group as it relates to reduction of longitudinal separation and actively participates in the work group tasking and activities. Currently, the FAA is working with Mexico and Haiti to implement cross-boundary longitudinal separation reductions. However, two impediments prevent San Juan CERAP from implementing distance-based longitudinal separation IAW ICAO Document 4444, paragraph 5.4.2.3.1, with neighboring FIRs. One impediment is the current designation of San Juan’s airspace along the San Juan Oceanic (TJZS)-Piarco FIR (TTZP) common FIR boundary. This airspace is designated oceanic, and as such, domestic separation cannot be applied. The other impediment is the lack of direct controller-pilot Very High Frequency (VHF) voice communication that is required to establish and maintain such separation. It should be noted that even if the airspace were designated as offshore airspace where domestic rules could be applied, the lack of two-way pilot controller radio communication would prevent the application of distance-based separation. The images below depict the current VHF radio range of San Juan Sectors 4 and 8, which share boundaries with TTZP.

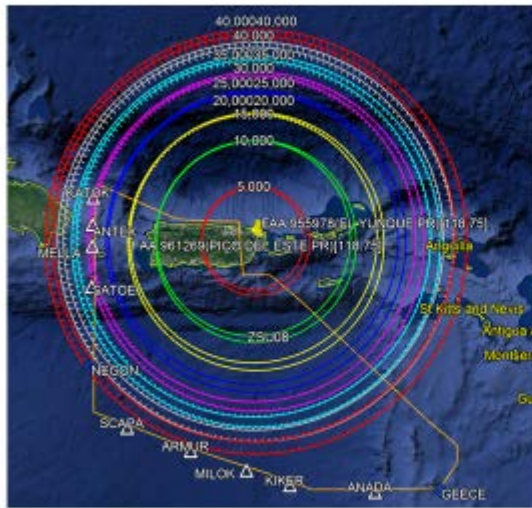
**ZSU04: VHF Limits of Coverage**



or

— END —

## ZSU08: VHF Limits of Coverage



SERIAL	LOCATION	FREQ
FAA 955978	EL YUNQUE	M118.7500
FAA 961269	PICO DEL ESTE	M118.7500

- Test Type: IF-77
- Power Density: -82.5 dBm
- At -82.5 dBm, there is 95% confidence that the signal will meet the squelch and will be successfully received by the aircraft

ZSU Frequency Coverage

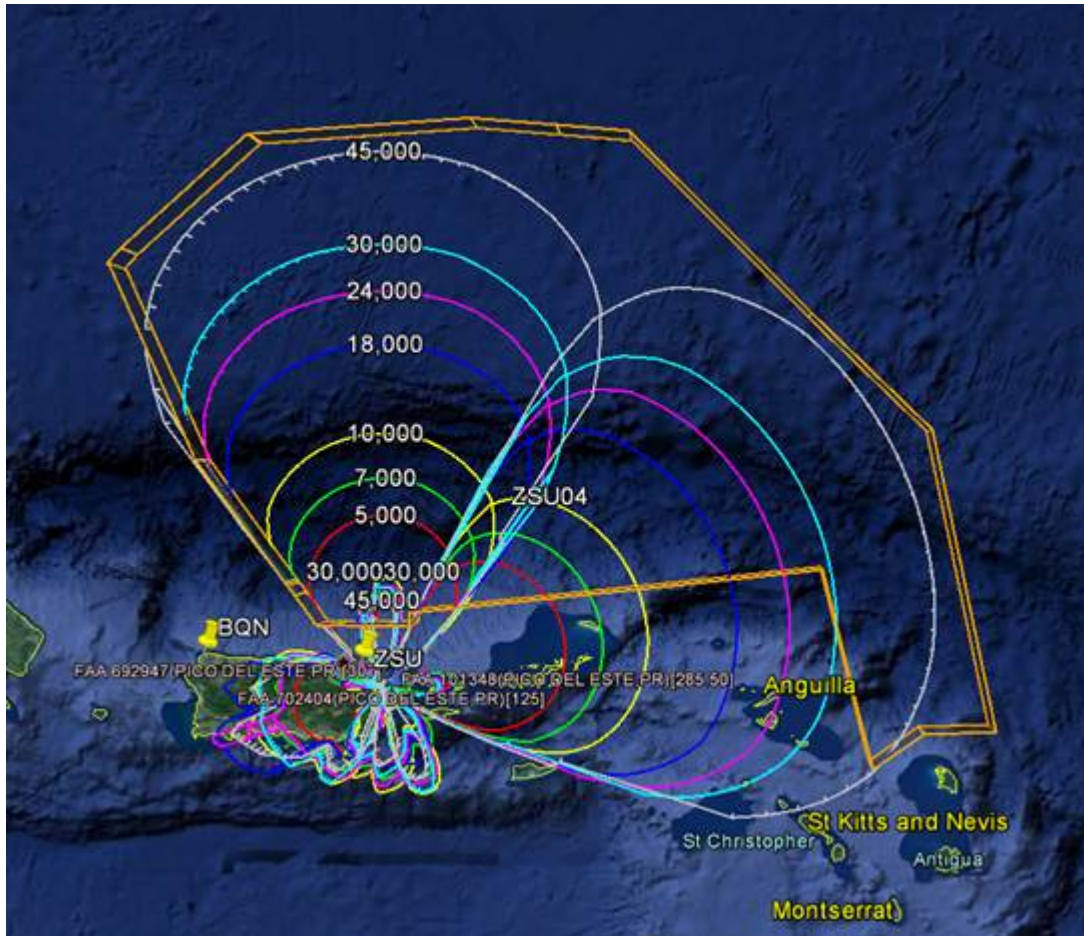


Federal Aviation Administration 22

**Note:** The depiction accentuates the lack of radio coverage that exists in the area most critically needed to implement cross-boundary distance-based separation.

### 4. Radio Coverage Improvements

4.1 The FAA’s Spectrum Engineering Office recently reported that, in September 2018, the Remote Communication Air to Ground (RCAG) sites that provide San Juan VHF capability would be moved and/or realigned which will result in significant increase in coverage. Although this will increase radio coverage, it is yet to be determined if it will yield sufficient coverage to reach and exceed the lateral limits of San Juan’s FIR boundaries. The image below depicts the projected radio coverage resulting from Spectrum Engineering improvements.



## 5. San Juan CTA/FIR Designation: Oceanic vs Domestic Offshore

5.1 The FAA has done preliminary evaluations of the current airspace designation, and the current and projected CNS capabilities. The FAA office of Oceanic and Offshore Air Traffic Standards and Procedures has established a tasking to analyse and identify the scope of work that changing the designation of San Juan oceanic airspace to domestic offshore would entail. From initial conclusions, it was determined that the process would entail numerous steps and phases. At a minimum, it would include notification and collaboration with San Juan CERAP, establishing labor-management protocols, coordination with ICAO NACC Office, coordination and collaboration with neighboring ATS providers, publishing changes in all FAA orders, publishing changes in FAA aeronautical charts, updating U.S. AIS information and publications, developing training for San Juan CERAP operational personnel, and amending Operational Letters of Agreements. These formidable tasks would require a lengthy and methodical process for successful implementation.

5.2 The FAA has already taken some of the steps detailed in paragraph 5.1. The work is estimated to be completed by spring 2019.

**6. Conclusion**

6.1           6.1     With safety being at the forefront, the FAA takes action that best improves operations and increases efficiency within the National Airspace System. This project is no different. Whether it is upgrading RCAG sites, reducing longitudinal separation, or changing the designation of a volume of airspace, the FAA will make every effort to affect seamless cross boundary procedures, improve overall operations in San Juan CERAP, and support regional harmonization.

6.2           The FAA agrees to communicate with the ICAO NACC Office and neighboring ANSPs that have a stake in the outcome, the results of the September 2018 RCAG upgrade, and any progress on the San Juan CERAP airspace designation.