

*NAM/CAR/SAM Workshop on the Development of the regulation for  
the implementation of Automatic Dependent Surveillance –  
Broadcast (ADS-B) (ADS-B-Imp)*

## Brazilian Airspace Surveillance

ADS-B Infrastructure and Implementation Plan

*Ciudad de México, July 2023*

# SCRIPT

1. SIRIUS Overview
2. Existing Aeronautical Surveillance
3. ADS-B Implementation Plan
4. Training Level and Certification Process
5. Regulation for the ADS-B implementation
6. Challenges

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## 1. SIRIUS Overview

2. Existing Aeronautical Surveillance

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# 1. SIRIUS Overview

The SIRIUS Program is based on strategic improvements that will provide continuous evolution of the Brazilian Air Traffic Management System.

**SIRIUS**  
BRASIL



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## 2. Existing Aeronautical Surveillance

### 2.1 Five Brazilian FIR



## 2. Existing Aeronautical Surveillance

### 2.2 Continental FIR

PSR/MSSR – FL250





## 2. Existing Aeronautical Surveillance

### 2.3 Atlantico FIR

ADS-C/CPDLC (FANS 1/A)





## 2. Existing Aeronautical Surveillance

### 2.4 Southeast Offshore Oil Exploration Basins

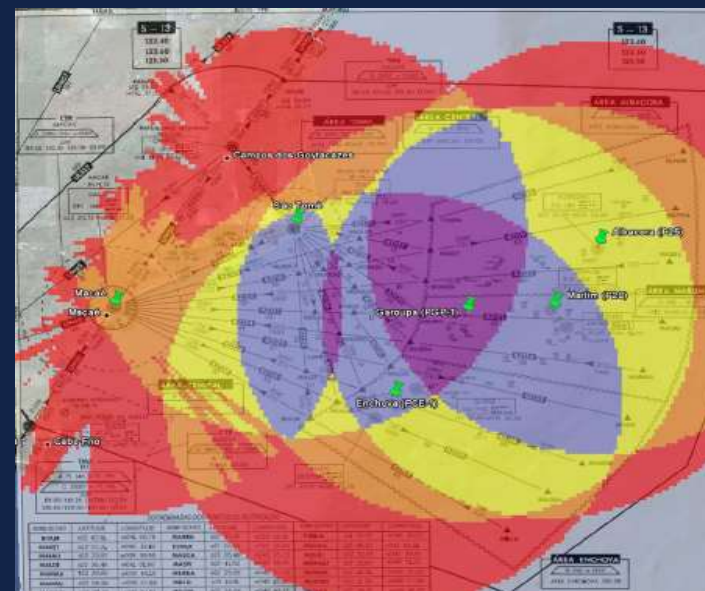
ADS-B / RTCA DO260, 260A, 260B



## 2. Existing Aeronautical Surveillance

### 2.5 Campos Basin

ADS-B / RTCA DO260, 260A, 260B



## 2. Existing Aeronautical Surveillance

### 2.6 Terminal/ Route – Continental Area

- PSR/MSSR (72)
- MSSR - autonomous (16)

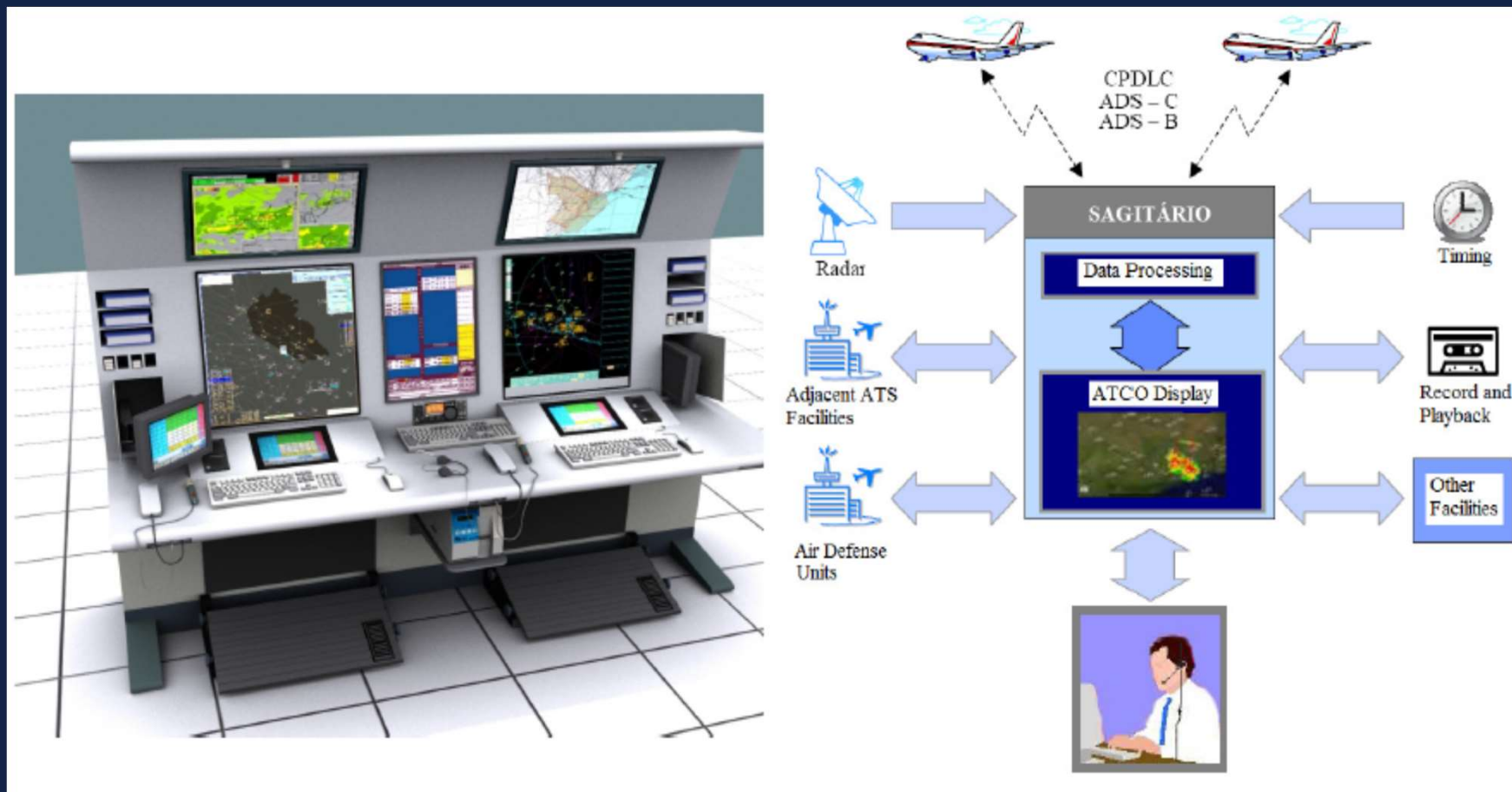
### 2.7 ADS-C ( Atlantico FIR)

### 2.8 ADS-B (Campos Basin)

- Receivers (6)
- Processing Center (APP MACAÉ)

## 2. Existing Aeronautical Surveillance

### 2.9 ATM Automation System (SAGITARIO)



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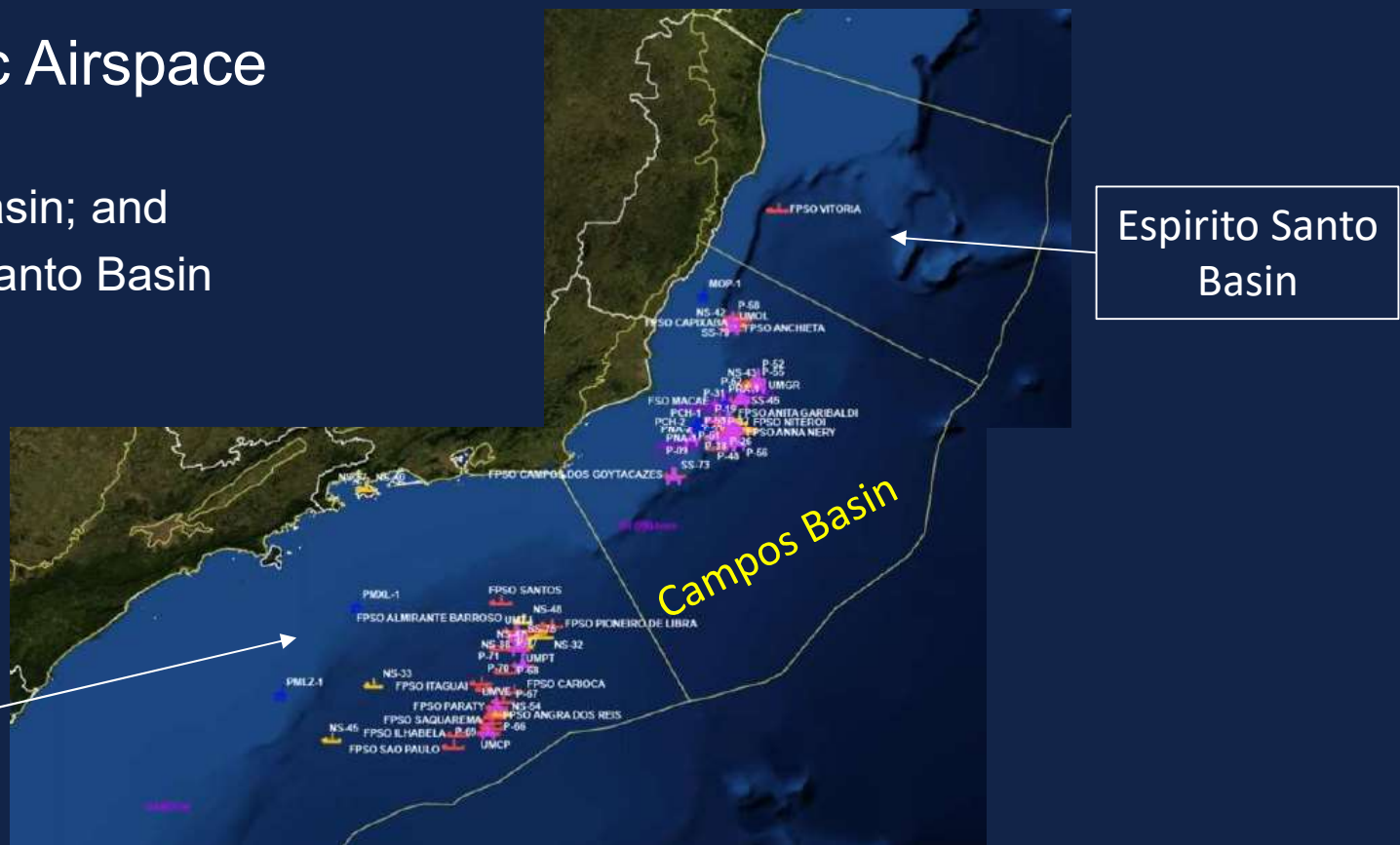


### 3. ADS-B Implementation Plan

#### 3.1 Improvement of Aeronautical Surveillance Services Project

- Oceanic Airspace

Santos Basin; and  
Espírito Santo Basin





### 3. ADS-B Implementation Plan

#### 3.1 Improvement of Aeronautical Surveillance Services Project

- **Oceanic Airspace** (Santos Basin and Espírito Santo Basin)

ADS-B 1090 Extended Squitter NRA

- Annex 10 Vol.III; Vol.IV
- Doc. 9871
- RTCA/ DO260, 260A, 260B
- Low Altitude Coverage

#### Santos Basin

- 6 more ADS-B Stations
- Mandate: **OCT 2024**

Esprito Santo Basin: Project **not started**



### 3. ADS-B Implementation Plan

#### 3.1 Improvement of Aeronautical Surveillance Services Project

- Continental Airspace



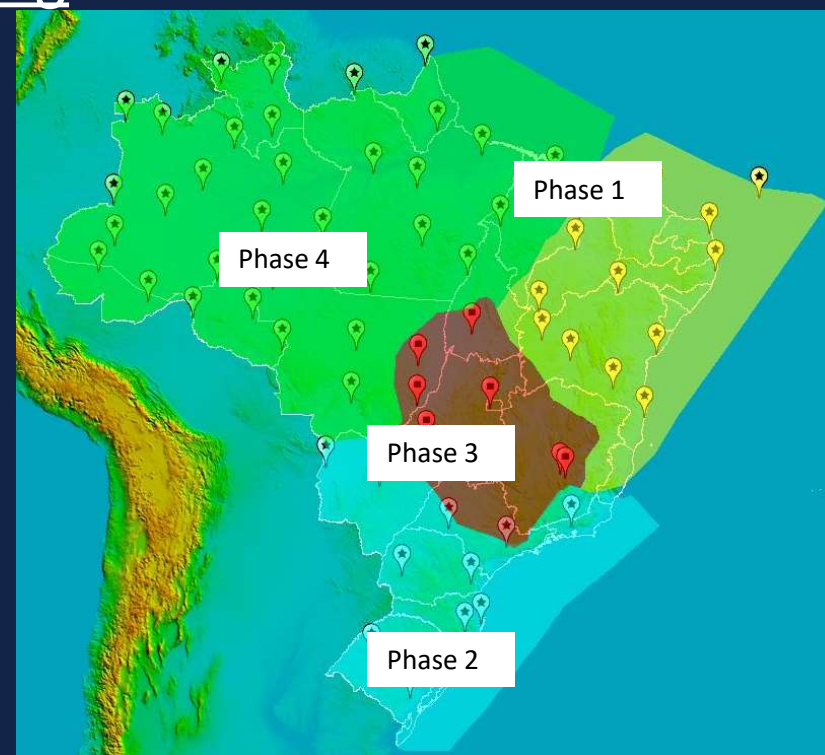
### 3. ADS-B Implementation Plan

#### 3.1 Improvement of Aeronautical Surveillance Services Project

- Continental Airspace - Planning

Phase	Start	End
1	JAN/23	JUL/24
2	MAR/24	DEC/24
3	DEC/24	AUG/25
4	SEP/24	MAY/26

- ❖ 66 ADS-B receivers (4 Phases)
- ❖ 5 stations for central processing
- ❖ 5 regional monitoring stations
- ❖ 1 station for national monitoring



### 3. ADS-B Implementation Plan

#### 3.1 Improvement of Aeronautical Surveillance Services Project

- Continental Airspace - Planning

Coverage FL 245:

- ❖ ADS-B OUT 1090 ES
- ❖ Version RTCA DO-260B

**Mandate:**

- ❖ Brazilian AIC A 14/23
- ❖ **February 25, 2027**



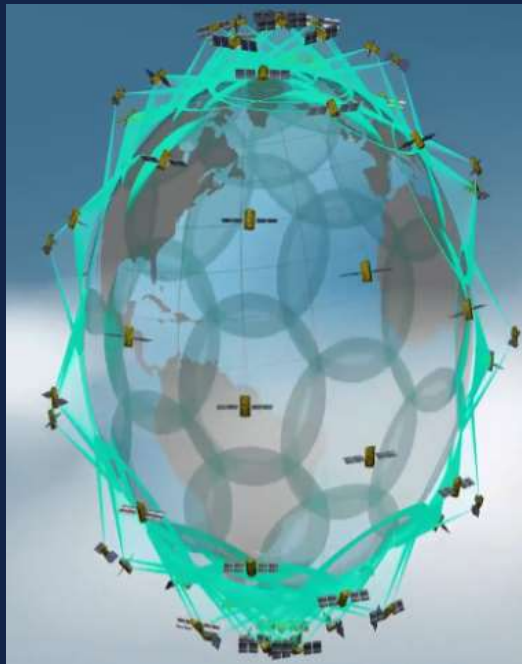


### 3. ADS-B Implementation Plan

#### 3.1 Improvement of Aeronautical Surveillance Services Project

- Atlantico FIR

Contract planned for 2026



Space-Based ADS-B

### 3. ADS-B Implementation Plan

#### 3.2 Fleet capacity - Statistics

- Oceanic Airspace (Basins)

100% Aircrafts Equipped

- Continental and FIR Atlantic Airspace

The data has not yet been consolidated



# SCRIPT

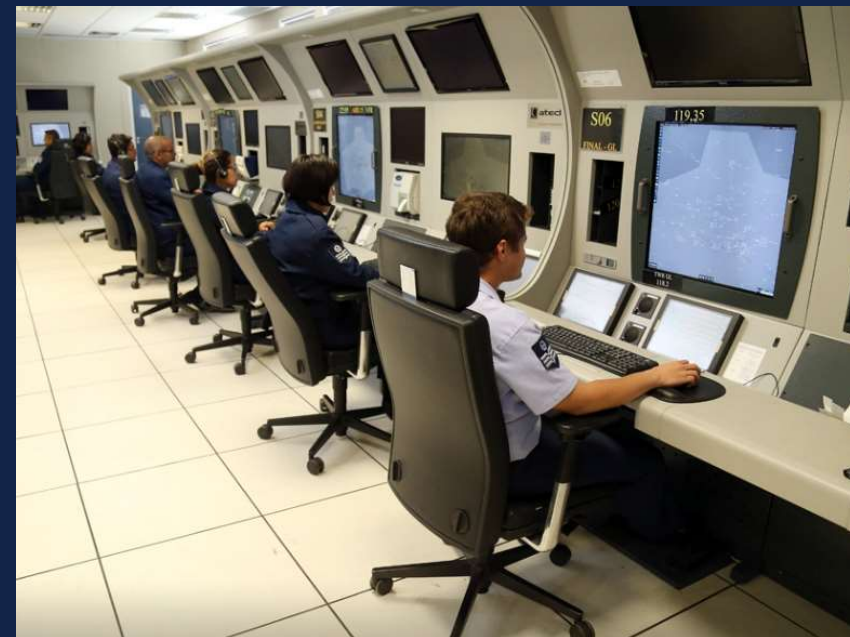
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## 4. Training Level and Certification Process

### 4.1 Training Level

- Basic Training
- Simulation Laboratories Employment Activities Program (PAELS)

Símbolos das Pistas			
+	Primária	◆	Plot Teste
○	Secundária	■	Multilateração
⊕	Associada	▲	Centro Adjacente
×	Plot Primária	*	Pista Extrapolada
◇	Plot Secundária	□	ADS-B
◆	Plot Associada	≡	Teste



## 4. Training Level and Certification Process

### 4.2 Certification Process

- Avionics certification (ANAC)
  - Certification of ground equipment (ICEA - DECEA)
  - Inspection and Homologation Flights (GEIV - DECEA)
- ICEA – Airspace Control Institute  
- GEIV - Special Flight Inspection Group

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## 5. Regulation for the ADS-B implementation

	Publication	Description
1	AIC-N 16/23 y AIC-A 14/23	operationalization of the automatic broadcasting dependent surveillance system (ADS-B) in the brazilian continental airspace
2	AIC-N 47/18 Y AIC-N 46/18	restructuring the airspace of the terminal control area (TMA) in Macaé with application of the ads-b sensor, increase in VHF coverage, implementation of the concept of exclusive airspace ADS-B and provision of weather products from EMS-A
3	ICA 63-25	preservation and reproduction of data reviews and ats communications
4	CIRCEA 121-7	in-flight inspection for automatic dependent surveillance by broadcast (ADS-B)
5	MCA 100-20	operational procedures for using automatic-contract dependent surveillance (ADS-C) in the ATS.
6	AIC-N 40/17	automatic dependent surveillance by broadcasting (ADS-B) in TMA Macaé
7	ICA 100-12	rules of the air
8	ICA 100-37	air traffic services
9	DCA 100-3	operational concept for structuring air navigation services in the Santos oil basin
10	PCA 351-3/2021	national ATM implementation plan
11	MCA 100-23	operating procedures for using controller-pilot data link communication (CPDLC)
12	ICA 11-408	restrictions on objects projected into airspace that may adversely affect the safety or regularity of air operations
13	MCA 100-11	filling out flight plan forms
14	ICA 100-31	air traffic service requirements

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## 6. Challenges

- Improve fleet capacity
- Sustainable planning on reducing radar logistics
- Implement and Regulate the ADS-B Monitoring Policy

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