DECEA: ADS-B in the Campos Basin

a success story

Departamento
de Controle do Espaço Aéreo
Department of Airspace Control

Statistical data
PETROBRAS and INFRAERO

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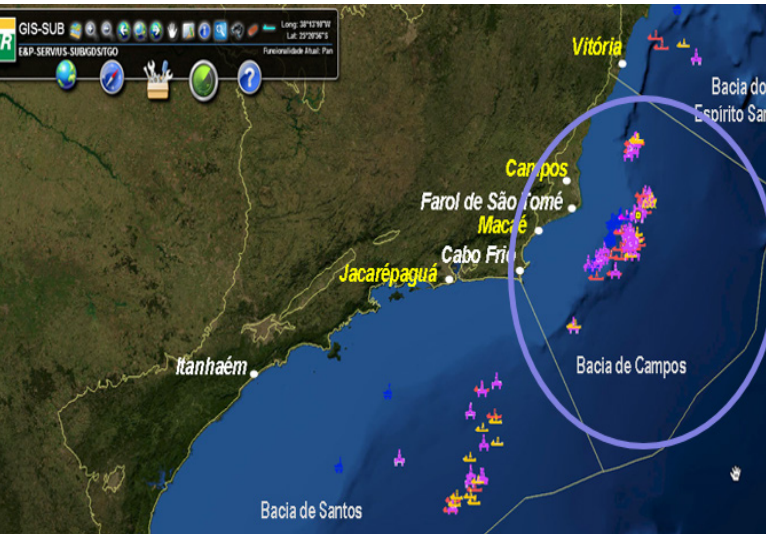
Transportation of loads and people in the remote oceanic region



Campos oil basin: a challenge

DECEA: ADS-B in the Campos Basin

a success story

Day 8 November 2018 represents a milestone for the Brazilian Air Traffic Management: DECEA has operationalized the Automatic Dependent Surveillance – Broadcast (ADS-B) within the offshore airspace in the Campos Basin.

The region, relevant for its oil concentration, corresponds to a remote area of approximately 100 thousand km², subordinate to Macaé Terminal Control Area (TMA-ME), extending beyond 120 NM from the coast. The air operations are performed by helicopters flying from 500 ft to 4500 ft between the continent and the prospection platforms for the transportation of loads and people.

The efficiency of ATC provision was limited by the range of PSR/SSR RADAR installed at Macaé airport and the application of conventional separations. Meteorological conditions and low visibility in high seas increased concerns regarding safety maintenance. The major air traffic concentration pointed to the necessary improvement of warning and flight information services.

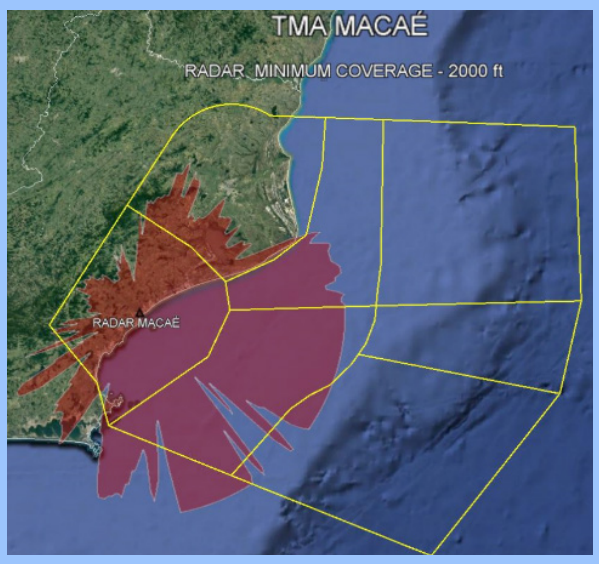
ADS-B OUT 1090ES (Extended Squitter) was the solution for a real operational demand. The system was strategically composed of 2 reception stations in the continent and 4 in the oceanic area.

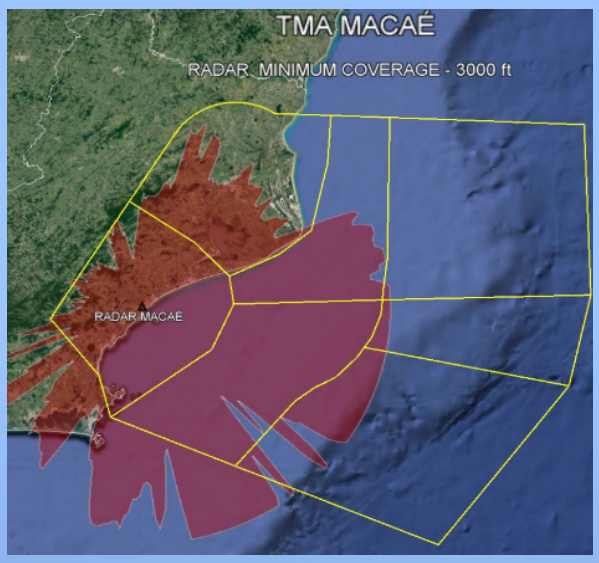
ADS-B, along with other automation, meteorology and communication capabilities, integrated to APP Macaé, allowed the use of minimum separations of at most 5 NM.

An ADS-B exclusive airspace was created to ensure ATM homogeneity.

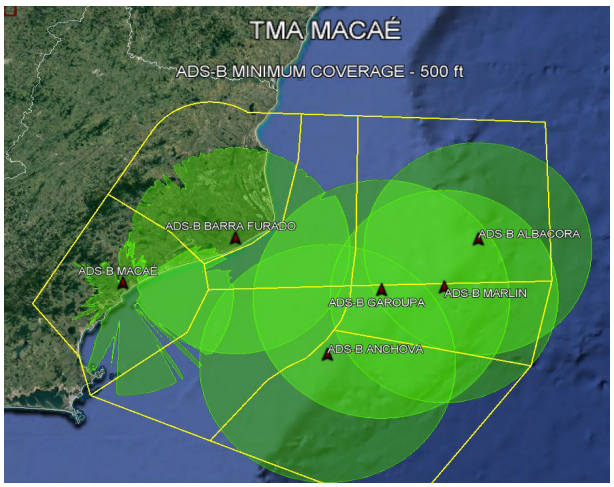
The project was challenging for its unprecedented nature, besides requiring coordination for embarkation in maritime units, user awareness, development of new regulations, training of over 120 aircraft of different models from 7 operators, ATC system suitability, ATCO and maintenance personnel training, continuous management of safety risk and post-implementation strategy. Economic instability and catastrophes as fires in platforms demanded some replanning.

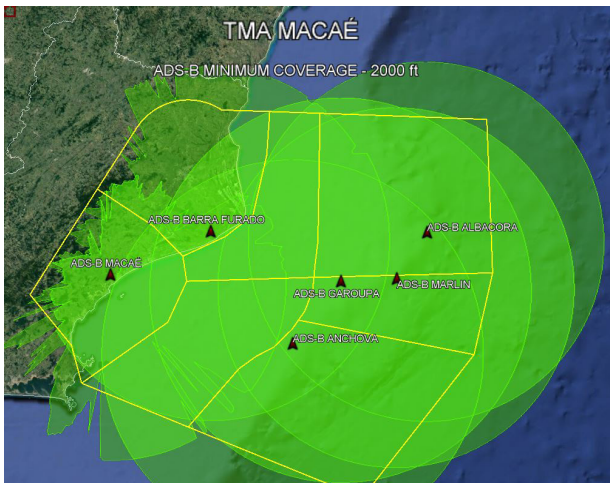
The successful result was achieved thanks to synergy among representatives of ATM Community, consolidating a legitimate work of collaborative decision-making (CDM) among stakeholders, such as DECEA, Brazilian Navy, PETROBRAS, INFRAERO, operators, ANAC and industry, with a common purpose: ensuring safety and efficiency of air operations.

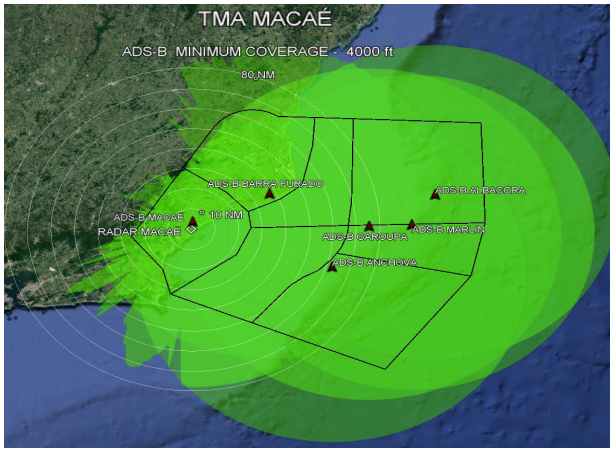


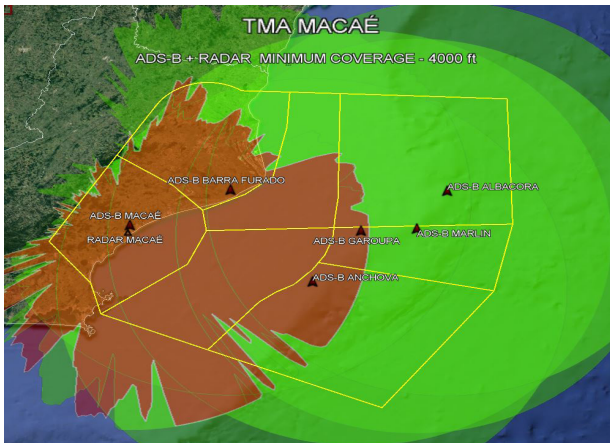


Limitation of Macaé RADAR coverage



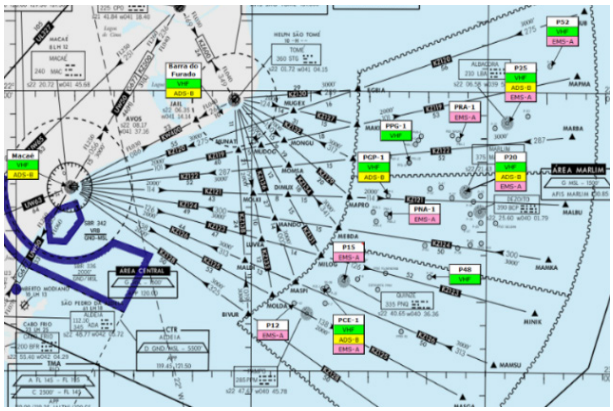






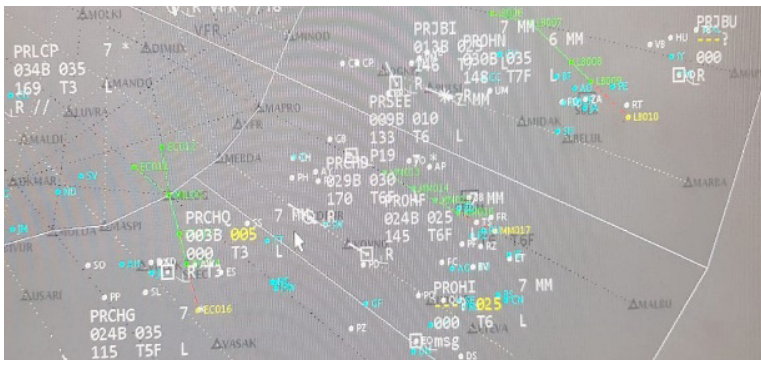
Diagrams of ADS-B coverage at a low altitude: 6 implanted stations

Benefits from the projects are: a) enhancement of situational awareness in low altitudes and users' trust; b) faster and more cost-effective SAR missions; c) reduction of workload due to significant decrease of VHF-AM use time, among which for estimates and position check requests; d) improved planning capacity at APP-ME; and e) optimized navigation allowed by direct heading clearances, reduction of flight times and consequent fuel saving, estimated in R$ MM 1.31/ year.



Airspace structure at TMA-ME

Distribution of platforms and systems



ADS-B integrated to APP-ME

Program of human resources training: technical and operational

Delays in routes reduced 43% and flight punctuality increased 16% due to more regularity in air operations and reduction of flow control measures. RADAR system unavailability during 24h08min in 2019 had insignificant impact.

An important improvement towards Global ATM evolution was accomplished: ADS-B is the technology enabling the design of future concepts developed by ICAO, such as TBO, and allowing feasible data sharing and harmonizing within the SAR region.

Based on lessons learned from this project, the ADS-B implementation will continue in oil basins located in Santos, Espírito Santo and the continental area of Brazilian territory.

Campos Basin ADS-B: commitment and cohesion of efforts

ATM community awareness was key to success