



NAM/CAR AND SAM REGIONAL AIR NAVIGATION PLANS (SURVEILLANCE SYSTEMS)

NAM/CAR/SAM AUTOMATIC DEPENDENT SURVEILLANCE – BROADCAST (ADS-B) IMPLEMENTATION WORKSHOP (ADS-B/IMP)

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- **CAR/SAM AIR NAVIGATION PLAN (SURVEILLANCE SYSTEMS)**
- **SAM REGIONAL PERFORMANCE-BASED IMPLEMENTATION PLAN (SURVEILLANCE SYSTEMS)**
- **NAM/CAR REGIONAL PERFORMANCE-BASED IMPLEMENTATION PLAN (SURVEILLANCE SYSTEMS)**
- **GREPECAS ORGANISATION (SURVEILLANCE SYSTEMS)**
- **IMPLEMENTATION OF SURVEILLANCE AND AUTOMATION SYSTEMS – SAM REGION**
- **IMPLEMENTATION OF SURVEILLANCE AND AUTOMATION SYSTEMS – NAM/CAR REGIONS**



- Air navigation plans lay out in detail the facilities, services, and procedures required for international air navigation in a given area.
- These plans contain recommendations that governments may follow when planning the provision of their air navigation facilities, with the assurance that the facilities foreseen in accordance with the plan, together with those of the other States, will create an integrated system that is appropriate for the foreseeable future.
- Each contracting State is responsible for the provision of facilities in its territory, in accordance with Article 28 of the Convention. The Council has recommended that these facilities include those specified in the air navigation plans.
- On 18 June 2014, the ICAO Council decided that regional air navigation plans (ANPs) would be published in three volumes, thus replacing the regional air navigation plans approved by the Council on 26 February 1997, made up by two volumes: a **basic ANP** and a facilities and services document (**FASID**). For the CAR/SAM Regions, the number of the Air Navigation Plan document continues to be 8733.



Volume I contains the stable elements of the Plan, whose amendment requires the approval of the Council, related to:

- the assignment of responsibilities;
- mandatory requirements subject to regional agreement; and/or
- additional region-specific requirements not covered by the SARPs.

Partial list of these elements:

- ✓ boundaries (tables and charts) of flight information regions (FIRs);
- ✓ boundaries (tables and charts) of search and rescue regions (SRRs);
- ✓ Volcanic Ash Advisory Centres (VAACs);
- ✓ Tropical Cyclone Advisory Centres (TCACs);
- ✓ Volcano Observatories (VOs);



Volume II contains the dynamic elements of the plan, whose amendment does not require the approval of the Council (approval is by regional agreement of the relevant PIRGs), related to:

- ✓ the assignment of responsibilities;
- ✓ mandatory requirements subject to regional agreement; and/or
- ✓ additional region-specific requirements not covered by the SARPs.

Partial list of these elements:

- ✓ Main traffic flows;
- ✓ Air traffic service (ATS) route network;
- ✓ Meteorological watch offices (MWOs);
- ✓ Secondary surveillance radar (SSR) codes;
- ✓ Five-letter name codes;
- ✓ VOLMET broadcasts.



Volume III will contain the dynamic/flexible elements of the plan, providing guidance for planning the implementation and modernisation of air navigation systems, taking into account emerging programmes, such as ASBU, and the roadmaps of the associated technologies described in the GANP.

Volume III of the ANP will also contain appropriate additional guidance material, mainly concerning implementation, to supplement the material contained in ANP Volumes I and II.

Amendment of Volume III would not require approval by the Council but rather a regional agreement (Secretariat and PIRG).



VOLUME I

PART III – COMMUNICATIONS, NAVIGATION AND SURVEILLANCE (CNS)

SURVEILLANCE

2.8 Planning of aeronautical surveillance systems must be based on a systems approach concept, giving consideration to collaboration and the exchange of data sources in support of an efficient use of airspace.

PART IV – AIR TRAFFIC MANAGEMENT (ATM)

AIRCRAFT IDENTIFICATION – SSR CODE ASSIGNMENT

2.5 Secondary surveillance radar (SSR) code management is a key element for ATM to ensure continuous and unambiguous aircraft identification. Requirements related to the system for assigning SSR codes used in the Region are contained in Volume II.



VOLUME II

PART III COMMUNICATIONS, NAVIGATION AND SURVEILLANCE (CNS)

General regional requirements

Surveillance

- 2.40 An important element of the modern air navigation infrastructure required to safely manage the increasing levels and complexity of air traffic is aeronautical surveillance systems.
- 2.41 When operating Mode S radars, States should coordinate with their corresponding Regional ICAO Office the assignment of their interrogator identifier (II) codes and surveillance identifier (SI) codes, particularly in areas of overlapping coverage.



VOLUME II

PART III COMMUNICATIONS, NAVIGATION AND SURVEILLANCE (CNS)

Specific regional requirements

Table CNS II-CAR/SAM-1 — ATN IPv4 addressing scheme

Table CNS II-CAR/SAM-2 — Aeronautical mobile service and AMSS

Table CNS II-CAR/SAM-3 — Radio navigation aids plan

Table CNS II-CAR/SAM-4 — ASTERIX SAC code assignment

Table CNS II-CAR/SAM-5 — Surveillance systems plan

Table CNS II-CAR/SAM-6—Geographical separation criteria

Table CNS II-CAR/SAM-7—VHF sub-band allotment table



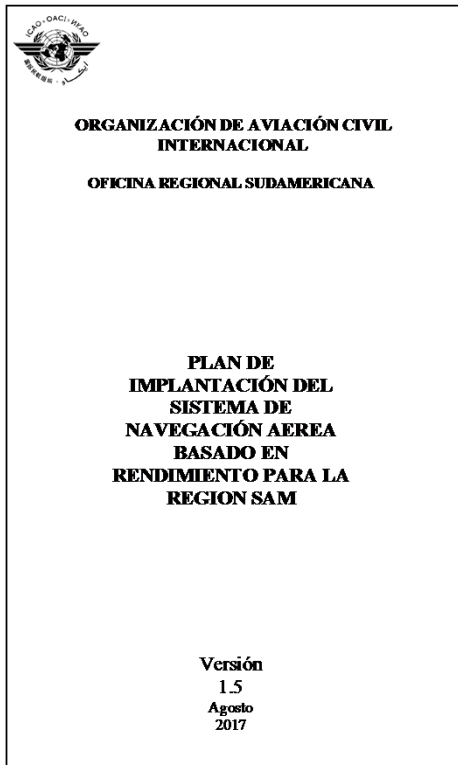
Table CNS II-CAR/SAM -4 - SAC ASTERIX code assignment plan

State/Territory Estado/Territorio	SAC Code Format Formato Código SAC								Hexadecimal SAC Code Código SAC Hexadecimal
	B7	B6	B5	B4	B3	B2	B1	B0	
Anguilla (United Kingdom)	1	1	1	0	0	0	0	0	E0
Antigua & Barbuda	1	1	1	0	0	0	0	1	E1
Argentina	1	1	1	0	0	0	1	0	E2
Aruba (Netherlands)	1	1	1	0	0	0	1	1	E3
Bahamas	1	1	1	0	0	1	0	0	E4
Barbados	1	1	1	0	0	1	0	1	E5
Belize	1	1	1	0	0	1	1	0	E6
Bolivia	1	1	1	0	0	1	1	1	E7
Brasil	1	1	1	0	1	0	0	0	E8
Cayman Islands (United Kingdom)	1	1	1	0	1	0	0	1	E9
Chile	1	1	1	0	1	0	1	0	EA
Colombia	1	1	1	0	1	0	1	1	EB
Costa Rica	1	1	1	1	1	1	0	0	EC
Cuba	1	1	1	0	1	1	0	1	ED
Dominica	1	1	1	0	1	1	0	1	EE
Dominican Republic	1	1	1	0	1	1	1	1	EF
Ecuador	1	1	1	1	0	0	0	0	F0
El Salvador	1	1	1	1	0	0	0	1	F1
Guadeloupe, French Antilles (France)	0	0	0	0	1	0	0	0	08
Martinique, French Antilles (France)	0	0	0	0	1	0	0	0	08
French Guiana (France)	0	0	0	0	1	0	0	0	08
Grenada	1	1	1	1	0	1	0	1	F5
Guatemala	1	1	1	1	0	1	1	0	F6
Guyana	1	1	1	1	0	1	1	1	F7
Haiti	1	1	1	1	1	0	0	0	F8
Honduras	1	1	1	1	1	0	0	1	F9
Jamaica	1	1	1	1	1	0	1	0	FA
Mexico	1	1	1	1	1	0	1	1	FB
Montserrat (United Kingdom)	1	1	1	1	1	1	0	0	FC
Netherland Antilles (Netherlands)	1	1	1	1	1	1	0	1	FD
Nicaragua	1	1	1	1	1	1	1	0	FE
Panama	1	1	1	1	1	1	1	1	FF
Paraguay	1	1	0	1	0	0	0	0	D0
Peru	1	1	0	1	0	0	0	1	D1
Puerto Rico (United States)	1	1	0	1	0	0	0	1	D2
Saint Kitts and Nevis	1	1	0	1	0	0	1	1	D3
Saint Lucia	1	1	0	1	0	1	0	0	D4
Saint Vincent and Grenadines	1	1	0	1	0	1	0	1	D5
Saint Maarten	1	1	0	1	0	1	1	0	D6
Suriname	1	1	0	1	0	1	1	1	D7
Tortola	1	1	0	1	1	0	0	0	D8
Trinidad and Tobago	1	1	0	1	1	0	0	1	D9
Turks and Caicos Is. (United Kingdom)	1	1	0	1	1	0	1	0	DA
United States (For sharing with CAR Region)	1	1	0	1	1	0	1	1	DB
Uruguay	1	1	0	1	1	1	0	0	DC
Venezuela	1	1	0	1	1	1	0	1	DD
Virgin Island (United Kingdom)	1	1	0	1	1	1	1	0	DE
Virgin Island (United States)	1	1	0	1	1	1	1	1	DF



SURVEILLANCE SYSTEMS - TABLE CNS II CAR/SAM -5

State(Territory) /Location	ATS Unit Served	PSR		SSR			ADS-B	ADS-C	MLAT	Remarks
		Function	Coverage	Function	Modes (A,C& S)	Coverage (NM)	Function	Function	Function	
1	2	3	4	5	6	7	8	9	10	11
ANGUILLA (UK)										
ANTIGUA & BARBUDA Airport (4 NM North)	V.C. Bird			T	AC	180				* MSSR
ARGENTINA Bahia Blanca, Airport	APP			ET	AC/S	200				* MSSR 2009
Córdoba, Airport	Ezeiza	T	80	E	AC	180				
Ezeiza , Airport	ACC Bahia Blanca TMA Córdoba	T	90	E	AC	220				
La Rioja, Airport	ACC Ezeiza ACC Córdoba			ET	AC/S	200				* MSSR 2009
Mar de Plata, Airport	APP Ezeiza ACC Buenos Aires APP	T	90	EE	AC	180				
Córdoba ACC			60	ET	AC	180				* MSSR 2008
Mendoza, Airport	Córdoba ACC La Rioja TMA Ezeiza	T		E	AC/S	200				
				ET	AC	180				
						200				



Ch. 1 Foreword

Ch. 2 Air traffic in the SAM Region

Ch. 3 Planning considerations

Ch. 4 Air traffic management

Ch. 5 Communications, navigation and surveillance

Ch. 6 Meteorology

Ch. 7 Search and rescue services

Ch. 8 Aeronautical information services

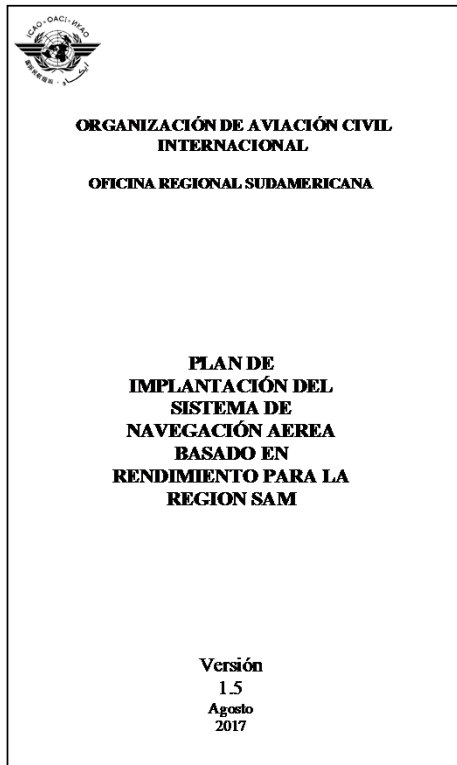
Ch. 9 Aerodromes and ground aids / Aerodrome operational planning

Ch. 10 Development of human resources and competence management

Ch. 11 Safety management

Ch. 12 Environmental protection

Ch. 13 Performance improvement areas (PIAs), modules and air navigation report forms (ANRF)



Attachment A Traffic forecasts in the SAM Region

Attachment B Global plan initiatives and their relationship with the main groups

Attachment C Performance framework form PFF

Attachment D Description of modules considered for the SAM Region

Attachment E Air navigation report forms (ANRF)

Attachment F Glossary of acronyms

Attachment G PBN concept of operations (CONOPS) for the SAM Region

Attachment H List of reference documents



SAM CNS Planning

- Improvement of the aeronautical fixed service (PFF SAM/CNS/01)
- Improvement of the aeronautical mobile service (PFF SAM/CNS/02)
- Improvement of navigation systems (PFF SAM/CNS/03)
- Improvement of the air surveillance service (PFF SAM/CNS/04)



PFF CNS 04 SAM

OBJETIVO DE RENDIMIENTO REGIONAL : SAM CNS/04 SERVICIO DE VIGILANCIA ATS EN LA REGION SAM				
<i>Beneficios</i>				
Seguridad Operacional	<ul style="list-style-type: none"> o Incremento de conciencia situacional ATM; o Mejora en coordinaciones ATS reduciendo errores operacionales en coordinaciones entre ACC adyacentes; y o Reducción de carga de trabajo al piloto y controlador. 			
Protección del Medio Ambiente y Desarrollo Sostenible del Transporte Aéreo	<ul style="list-style-type: none"> o Facilita el suministro ATS; o Aumento de la capacidad del espacio aéreo; o Soporta la implantación del PBN y rutas aleatorias; y o Optimización de recursos al compartir información. 			
<i>Métricas</i>				
<ul style="list-style-type: none"> o Número de sistemas ADS-C en FIR oceánicos implantados; o Número de ACCs adyacentes con intercambio de datos de vigilancia ATS; o Porcentaje de espacio aéreo en ruta para niveles superiores con cobertura ADS-B; y o Número de sistemas A-SMGCS implantados. 				
<i>Estrategia 2018 – 2023</i>				
COMPONENTES OC ATM	TAREAS	PERIODO INICIO-FIN	RESPONSABILIDAD	SITUACION
AOM AO TS CM ATM-SDM	a) Implantar para cobertura en áreas de ruta sistemas ADS-B y/o MLAT	(*) -2023 +	Estados	Válida
	b) Implantar para cobertura en área terminal sistemas ADS-B y/o MLAT	(*) -2023 +	Estados	Válida
	c) Implantar sistemas de guía y control de movimiento en superficie A-SMGCS en aeropuertos que previo estudio así lo requiera	(*) - 2023 +	Estados	Válida
	d) Implantar el servicio ADS-C en todos los Estados FIR oceánico	(*) - 2023	Estados	Válida
	e) Completar automatización en todos los ACCs	(*) -2020	Estados	Válida
	f) Implantar el intercambio de datos de vigilancia ATS entre ACCs adyacentes.	(*)- 2023+	Estados	Válida
	g) Garantizar la protección del espectro de radiofrecuencia utilizados para los servicios de comunicaciones actuales y futuros previstos	(*) -2023	Estados OACI	Válida
	h) Monitorear el avance de la implantación	2018-2023	GREPECAS	Válida
Vínculo con las GPI	GPI/5: RNAV y RNP; GPI/6: ATFM; GPI/9: Conciencia situacional; GPI/10: Diseño y gestión del área terminal; GPI/11: SID y STAR con RNP y RNAV; GPI/12: Integración Funcional de Sistemas de Tierra y de a bordo; GPI/13: Diseño y gestión de aeródromos; GPI/14: Operaciones de pista; GPI/17: Aplicaciones de enlaces de datos, GPI/22: Infraestructura de comunicación, GPI/23: Radioespectro aeronáutico			



BLOCK 0 MODULES – SAM REGION

Performance improvement area (PIA)	Name of performance improvement area	Module	Name of module
PIA 1	Airport operations	B0-APTA	Optimization of approach procedures, including vertical guidance
		B0-SURF	Safety and efficiency of surface operations (A-SMGCS Level 1-2)
		B0-ACDM	Improved airport operations through airport-CDM
		B0-RSEQ	Improve traffic flow through runway sequencing (AMAN/DMAN)
PIA2	Globally-interoperable systems and data through system-wide information management	B0-FICE	Increased interoperability, efficiency and capacity through ground-ground integration
		B0-DATM	Service improvement through aeronautical information management
		B0-AMET	Meteorological information supporting enhanced operational efficiency and safety
PIA 3	Optimum capacity and flexible flights through global collaborative ATM	BO.FRTO	Improved operations through enhanced en-route trajectories
		B0-NOPS	Improved flow performance through planning based on a network-wide view
		B0-ASUR	Initial capability for ground surveillance
		B0-ACAS	ACAS improvements
		B0-SNET	Enhanced efficiency of ground safety nets
PIA 4	Efficient flight paths through trajectory-based operations	B0-CDO	Improved flexibility and efficiency in descent profiles (CDO)
		B0-TBO	Improved safety and efficiency through the initial application of data link en-route
		B0-CCO	Improved flexibility and efficiency in departure profiles — Continuous climb operations (CCO)



OBJETIVO REGIONAL/NACIONAL DE PERFORMANCE – ASBU B0-ASUR: Capacidad inicial para vigilancia en tierra					
Área 3 de mejoramiento de la eficiencia:					
Optimización de la capacidad y vuelos flexibles mediante una ATM mundial colaborativa					
ASBU B0-84: Impacto sobre las principales Áreas Clave de Performance (KPA)					
	Acceso y equidad	Capacidad	Eficiencia	Medio ambiente	Seguridad operacional
Aplicable	N	Y	N	N	Y

ASBU B0-ASUR: Avance en la implementación	
Elementos	Estado de implementación (tierra y aire)
1. Implementación del ADS B	Diciembre 2023 Usuarios y proveedor de servicios
2. Implementación de la <u>multilateralización</u>	Diciembre 2020 Usuarios y proveedor de servicios
3. Sistema de automatización (Presentación)	Diciembre 2020 Usuarios y proveedor de servicios

ASBU B0-8ASUR Obstáculos/problemas para la implementación				
Elementos	Área de Implementación			
	Implementación de sistemas terrestres	Implementación de aviónica	Disponibilidad de procedimientos	Aprobaciones operacionales
1. Implementación del ADS B	Falta de implementación de sistemas ADS B debido a la reciente implementación de sistemas convencionales de vigilancia	Falta de implementación de ADS B en la aviación general y en la antigua flota comercial	Falta de procedimientos	Falta de inspectores con la capacidad apropiada
2. Implementación de la <u>multilateralización</u>	Instalaciones en estaciones remotas Establecimiento de redes de comunicación	NIL	NIL	Falta de inspectores con la capacidad apropiada
3. Sistema de automatización (Presentación)	Falta de cualquier funcionalidad de automatización	NIL	NIL	NIL

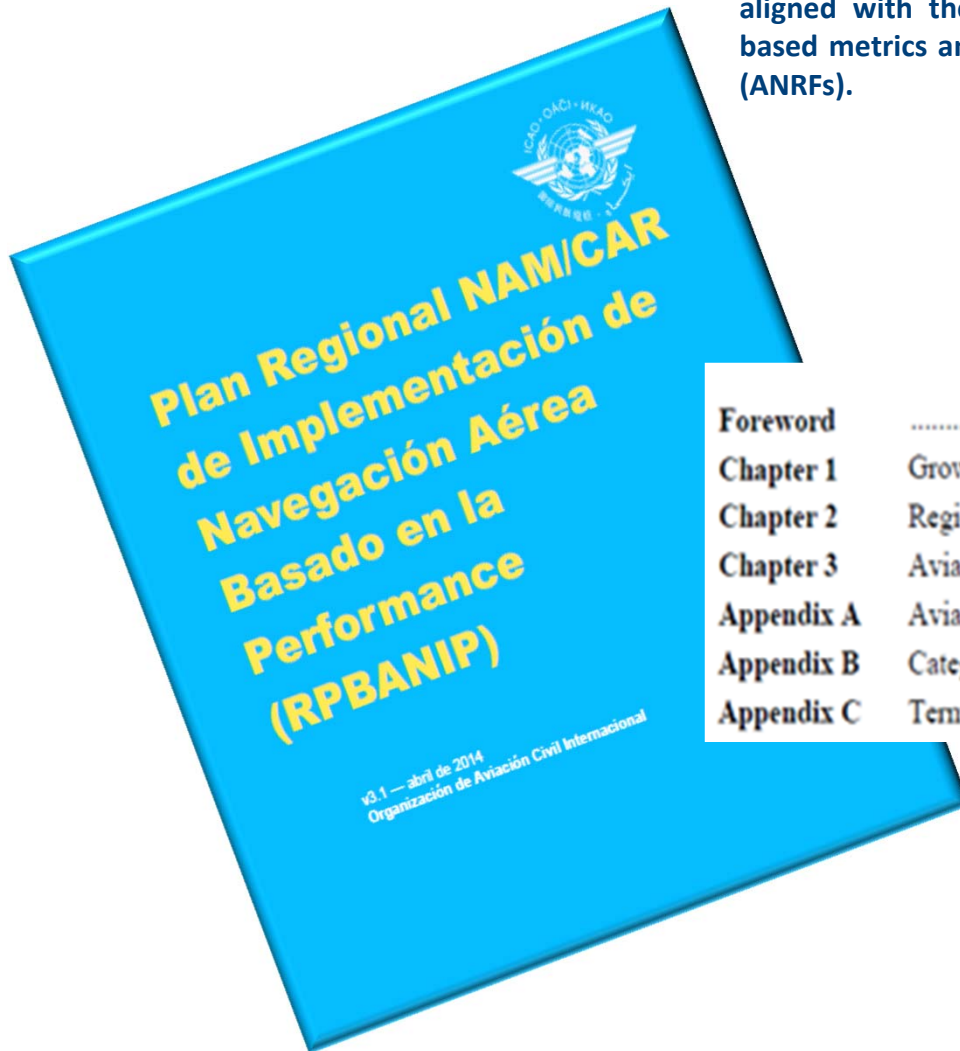
B0-ASUR MONITOREO Y MEDICIÓN DE LA PERFORMANCE (IMPLEMENTACIÓN)	
Elementos	Indicadores de performance/Métricas de apoyo
1. Implementación de ADS B	Indicador: Porcentaje de aeródromos internacionales en los que se ha implementado ADS-B Métrica de apoyo: Cantidad de ADS B implementados
2. Implementación de la <u>multilateralización</u>	Indicador: Porcentaje de sistemas de <u>multilateralización</u> implementados Métrica de apoyo: Cantidad de sistemas de <u>multilateralización</u> implementados
3. Sistema de automatización (Presentación)	Indicador: Porcentaje de dependencias ATS en las que se ha implementado un sistema de automatización Métrica de apoyo: Cantidad de sistemas de automatización implementados en las dependencias ATS

ASBU B0-ASUR MONITOREO Y MEDICIÓN DE LA PERFORMANCE (BENEFICIOS)	
Áreas clave de performance	Beneficios
Acceso y equidad	NA
Capacidad	La separación mínima típica es de 3 NM ó 5 NM, lo cual permite un aumento en la densidad del tránsito en comparación con los mínimos reglamentarios. Se logra mejoras en la eficiencia de la vigilancia TMA mediante vectores de alta precisión y más veloces, y una cobertura mejorada
Eficiencia	NA
Medio ambiente	NA
Seguridad operacional	Reducción en la cantidad de incidentes mayores. Apoyo a la búsqueda y salvamento.



NAM/CAR REGIONAL PERFORMANCE-BASED AIR NAVIGATION IMPLEMENTATION PLAN

The RPBANIP establishes the NAM/CAR regional priorities described as Regional Performance Objectives (RPO) to be accomplished during the period 2013 to 2018, aligned with the global air navigation priorities, agreed regional performance-based metrics and indicators, and the ICAO ASBU Air Navigation Reporting Forms (ANRFs).



Foreword
Chapter 1	Growth and Distribution of Air Traffic in the NAM/CAR Regions.....
Chapter 2	Regional Performance Objectives (RPOs)
Chapter 3	Aviation System Block Upgrade (ASBU) Air Navigation Reporting Forms (ANRFs)....
Appendix A	Aviation System Block Upgrades.....
Appendix B	Categorization of ASBU Block 0 Modules for the NAM/CAR Regions
Appendix C	Terms and Definitions



ICAO

UNITING AVIATION

NAM/CAR REGIONAL PERFORMANCE-BASED AIR NAVIGATION IMPLEMENTATION PLAN

RPOs and ASBU Methodology

The Regional Performance Objectives RPOs provide the high-level tasks for implementing the regional priorities, establishing the expected operational benefits and the metrics for progress measurements, benefits and achievements.

In many cases, the RPOs contain the baseline elements to be implemented for the different B0 ASBU modules adopted by the NAM/CAR Regions.

Initially for the 5-year term of the RPBANIP, 15 ASBU B0 modules have been adopted. The ASBU B0 modules - ASEP, OFPL and WAKE - will be included in future reviews of the RPBANIP based on the maturity of tasks and regional priorities.





RPOs related to surveillance and automation of ATS Systems

4. IMPROVE SITUATIONAL AWARENESS				
Benefits				
Efficiency	<ul style="list-style-type: none"> Enhanced traffic surveillance Enhanced collaboration between flight crews and the ATM system Improved collaborative decision-making through electronic aeronautical data sharing Reduced workload for both pilots and controllers Improved operational efficiency 			
Safety	<ul style="list-style-type: none"> Improved implementation on a cost-effective basis Improved available electronic terrain and obstacle data in the cockpit Reduced number of controlled flight into terrain related accidents Improved safety management 			
Strategy				
ATM Component	TASK DESCRIPTION	START-END	RESPONSIBLE	STATUS
SDM	a) Identify the automation level required according to the ATM service provided in airspace and international aerodromes, assessing: <ul style="list-style-type: none"> i. Operational architecture design ii. Characteristics and attributes for interoperability iii. Data bases and software iv. Technical requirements 	2013- 2018	States, Territories, Int. Orgs	Valid
	b) Implement flight plan data processing systems and electronic transmission tools	2013- 2018	States, Territories, Int. Orgs	Valid
	c) Implement radar data sharing programmes where benefits can be obtained	2013- 2017	States, Territories, Int. Orgs	Valid
	d) Develop situational awareness training programmes	2013- 2018	States, Territories, Int. Orgs	Valid
	e) Identify and implement additional ATM surveillance systems to improve accuracy and coverage of traffic situational information (ADS-B, MLAT, etc.) and associated procedures	2013- 2018	States, Territories, Int. Orgs	Valid
	f) Implement ATS automated message exchanges as required (FPL, CPL, CNL, DLA, etc.)	2013- 2018	States, Territories, Int. Orgs	Valid
	g) Implement automated radar handoffs where possible	2013- 2017	States, Territories, Int. Orgs	Valid
	h) Implement ground and air electronic warnings as needed: <ul style="list-style-type: none"> i. Conflict prediction ii. Terrain proximity iii. MSAW iv. DAIW v. Surveillance system for surface movement 	2013- 2017	States, Territories, Int. Orgs	Valid
	i) Implement data link surveillance technologies and applications as required: ADS , CPDLC, AIDC	2014- 2018	States, Territories, Int. Orgs	Valid



RPOs related to surveillance and automation of ATS Systems

6. OPTIMIZATION AND MODERNIZATION OF COMMUNICATION INFRASTRUCTURE				
Benefits				
Efficiency	<ul style="list-style-type: none"> Improved ATS coordination Increased communications availability Communication misunderstandings avoided Facilitated utilization of advanced technologies 			
Continuity	<ul style="list-style-type: none"> Improved airspace interoperability and seamlessness 			
Safety	<ul style="list-style-type: none"> Improved provision of air traffic control services to all aircraft operations Improved airspace and aerodrome safety 			
Strategy				
ATM Component	TASK DESCRIPTION	START-END	RESPONSIBLE	STATUS
AO, TS, CM, AUO, AOM, SDM	a) Review the performance status of current AFS services and identify deficiencies or improvements (AFTN, oral ATS services, A/G communications)	2013-2015	States, Territories	Valid
	b) Implement communication service improvements as required to support current and planned Air Navigation applications, including Required Communication Performance (RCPs).	2014-2018	States, Territories	Valid
	c) Develop regional ATN planning documents	2013-2015	GREPECAS	Valid
	d) Coordinate and test ATN G-G application implementation aspects (AMHS, AIDC, etc.)	2013-2018	States, Territories	Valid
	e) Conduct planning, trial and implementation activities for A-G data applications (DCL, D-ATIS, etc.)	2014-2018	States, Territories	Valid
	f) Carry out technical review of regional telecommunication networks for ATN implementation	2013-2015	States, Territories	Valid
	g) Implement available technologies in order to facilitate ground and airborne applications (CPDLC, ADS-C, ADS-B)	2013-2018	States, Territories	Valid
	h) Implement the necessary communications network for ACDM	2014-2018	States, Territories	Valid
	i) Support ICAO position during the ITU WRC and ensure regional coordination for the protection of the aviation spectrum	2013-2018	States, Territories	Valid



NAM/CAR REGIONAL PERFORMANCE-BASED AIR NAVIGATION IMPLEMENTATION PLAN

1. AIR NAVIGATION REPORT FORM (ANRF)

2. REGIONAL PERFORMANCE OBJECTIVE – B0-75/SURF Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2)					
Performance Improvement Area 1: Airport Operation					
3. ASBU B0-75/SURF: Impact on Main Key Performance Areas (KPA's)					
	Access and Equity	Capacity	Efficiency	Environment	Safety
Applicable	Y	Y	Y	Y	Y
4. B0-75/SURF: Planning Targets and Implementation Progress					
5. Elements			6. Targets and Implementation Progress (Ground and Air)		
1. Surveillance System for Ground Surface Movement (PSR, SSR, ADS-B or Multilateration)			30% of selected aerodromes with SMR/ SSR Mode S/ ADS-B Multilateration for ground surface movement by June 2018 States/airport operator		
2. On-board Surveillance Systems (SSR transponder, ADS B capacity)			20% of aircraft on the NAM/CAR State registries to have surveillance system on board (SSR transponder, ADS B capacity) by June 2018 Aircraft operators		
3. Surveillance System for Vehicles			20% of vehicles at selected aerodromes with a cooperative transponder systems by June 2018 Vehicle operators		
4. Visual Aids for Navigation			70% of selected aerodromes complying with visual aid requirements as per Annex 14 by December 2015 States/Airport operators		
5. Aerodrome Bird/Wildlife Organization and Control Programme			70% of selected airports with an aerodrome bird/wildlife organization and control programme by December 2018 Airport operators		





7. ASBU B0-75/SURF: Implementation Challenges				
Elements	Implementation Area			
	Ground System Implementation	Avionics Implementation	Procedures Availability	Operational Approvals
1. Surveillance System for Ground Surface Movement (PSR, SSR, ADS-B or Multilateration)	NIL	NIL	Lack of procedures and training	Lack of inspectors for operational approvals
2. On-board Surveillance Systems (SSR transponder, ADS B capacity)	NIL	Lack of funding - particularly for general aviation	Lack of procedures and training	NIL
3. Surveillance Systems for Vehicles	Lack of funding for vehicle operators	NIL	Lack of procedures and training	NIL
4. Visual Aids for Navigation	NIL	NIL	NIL	NIL
5. Reduction of Bird/Wildlife Related Events	NIL	NIL	Lack of training Implementation programme	NIL

RPBANIP

3-7

v3.1 — April 2014

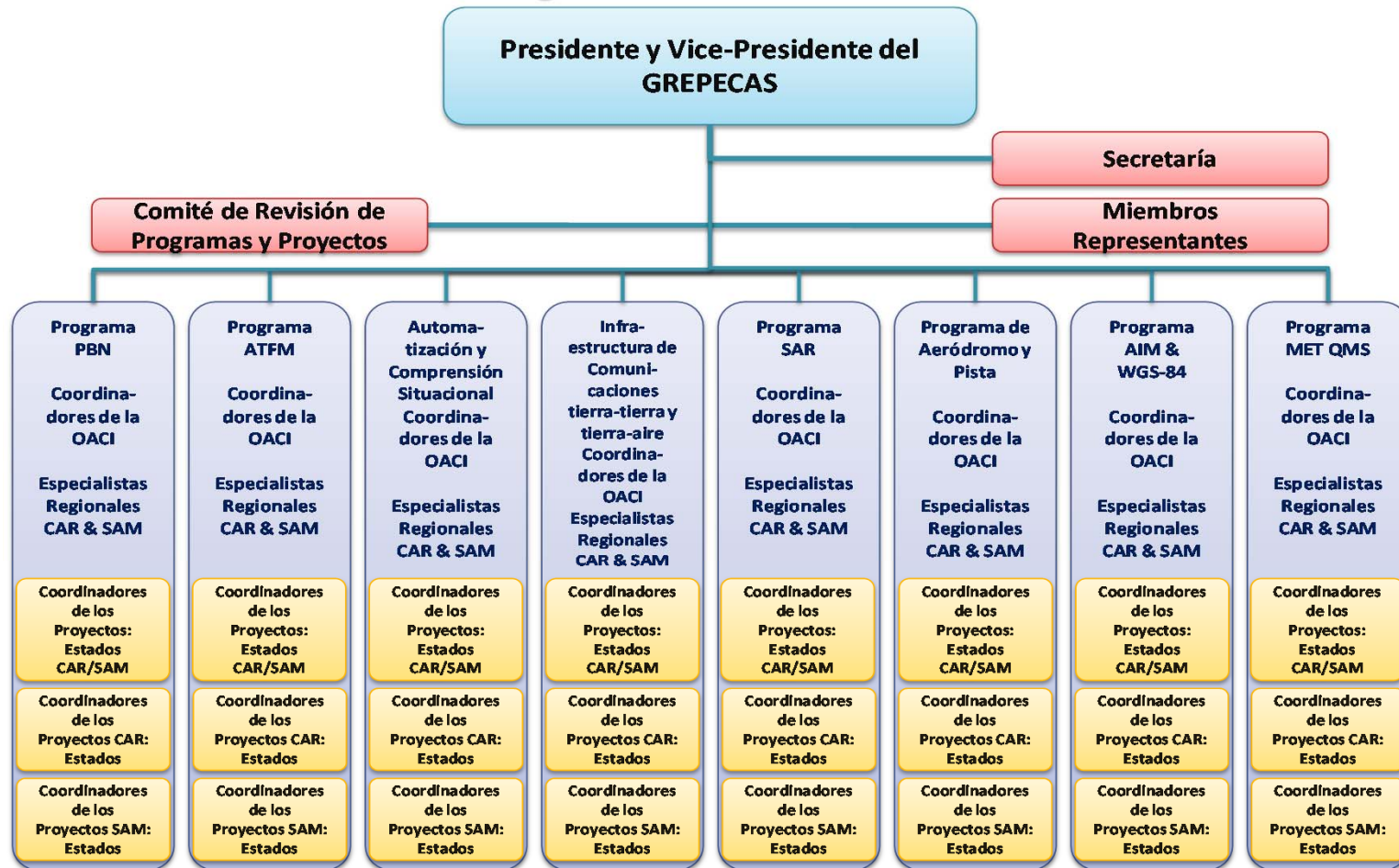
NAM/CAR Regional Performance-based Air Navigation Implementation Plan (RPBANIP)



8. ASBU B0-75/SURF: Performance Monitoring and Measurement	
8A. ASBU B0-15/SURF: Implementation Monitoring	
Elements	Performance Indicators/Supporting Metrics
1. Surveillance System for Ground Surface Movement (PSR, SSR, ADS-B or Multilateration)	Indicator: Percentage of selected aerodromes with SMR/ SSR Mode S/ ADS-B Multilateration for ground surface movement Supporting metric: Number of selected aerodromes with SMR/ SSR Mode S/ ADS-B Multilateration for ground surface movement
2. On-board Surveillance Systems (SSR transponder, ADS B capacity)	Indicator: Percentage of aircraft on the NAM/CAR State registries with on-board surveillance systems (SSR transponder, ADS-B capacity) Supporting metric: Number of aircraft on the NAM/CAR State registries with on- board surveillance systems (SSR transponder, ADS-B capacity)



Organización del GREPECAS





PROJECT RLA/06/901
SAM/IG MEETINGS

Performance-
based
navigation
(PBN)

Air traffic
flow
management
(ATFM)

Improvement
of CNS
systems

ATS
automation



DOCUMENTS PREPARED IN THE SAM REGION TO SUPPORT THE IMPLEMENTATION OF SURVEILLANCE AND ATM AUTOMATION SYSTEMS

(Available at www.icao.int/sam in the CNS section of e Documents)

SYSTEM INTERFACE CONTROL DOCUMENT (SICD)

CONTAINS DETAILED INFORMATION ON THE INTERFACE BETWEEN THE RADAR SENSOR (PRIMARY/SECONDARY RADAR) AND THE ATCS (ATC CONTROL SYSTEM), THE INTERFACE BETWEEN THE AUTOMATIC MESSAGE SWITCHING CENTRE (AFTN) AND THE ATCS, THE OLDI INTERFACE BETWEEN AIR TRAFFIC CONTROL SYSTEMS, THE AIDC INTERFACE BETWEEN AIR TRAFFIC CONTROL SYSTEMS, THE INTERFACE BETWEEN FLIGHT PLAN PROCESSORS, THE INTERFACE BETWEEN THE RADAR SENSOR MONITORING AND CONTROL SYSTEM AND THE MONITORING AND CONTROL UNIT, THE INTERFACE BETWEEN THE CLOCK SYNCHRONISATION SERVER AND THE ATCS.

INITIAL PLAN FOR REGIONAL INTERCONNECTION OF AUTOMATED SYSTEMS IN THE ACCs

DESCRIBES A RECOMMENDED STRATEGY FOR THE IMPLEMENTATION OF THE INTERCONNECTION OF AUTOMATED SYSTEMS BETWEEN ADJACENT ACCs, TAKING INTO ACCOUNT THE CURRENT AND FORESEEN STATUS OF AUTOMATED SYSTEMS, BASED ON THE AUTOMATED SYSTEMS CURRENTLY INSTALLED IN THE ACCs OF THE REGION

PRELIMINARY DOCUMENT ON AUTOMATED SYSTEM SPECIFICATIONS (SSS)

THE DOCUMENT PRESENTS THE MINIMUM SPECIFICATIONS OF AN AUTOMATED CENTRE. IT IS ADDRESSED TO THE STATES OF THE REGION THAT HAVE AUTOMATED SYSTEMS IN THE ACCs SO THAT THEY CAN MAKE SURE THEY HAVE SUCH SYSTEMS, AND TO THOSE STATES THAT HAVE NOT YET IMPLEMENTED AUTOMATED SYSTEMS IN THEIR ACCs.



DOCUMENTS PREPARED IN THE SAM REGION TO SUPPORT THE IMPLEMENTATION OF SURVEILLANCE AND ATM AUTOMATION SYSTEMS

(Available at www.icao.int/sam in section CNS of e Documents)

MEMORANDUM OF UNDERSTANDING FOR THE IMPLEMENTATION OF THE INTERCONNECTION OF AUTOMATED SYSTEMS BETWEEN TWO STATES THAT HAVE ADJACENT ACCs (MOU)

THE MEMORANDUM OF UNDERSTANDING IS A GUIDE FOR STATES OF THE REGION TO ENTER INTO BILATERAL AGREEMENTS, TAKING INTO ACCOUNT ASPECTS CONTAINED IN THE DOCUMENTS ON THE INTERCONNECTION OF AUTOMATED SYSTEMS. THE MOU CONTAINS INFORMATION ON TECHNICAL, OPERATIONAL, ADMINISTRATIVE, INSTITUTIONAL AND FINANCIAL ASPECTS REQUIRED FOR BILATERAL IMPLEMENTATION OF THE INTERCONNECTION OF AUTOMATED SYSTEMS BETWEEN ADJACENT STATES OF THE REGION THAT HAVE INSTALLED AUTOMATED SYSTEMS IN THEIR ACCs.

GUIDE ON TECHNICAL-OPERATIONAL CONSIDERATIONS FOR ADS-B IMPLEMENTATION IN THE SAM REGION

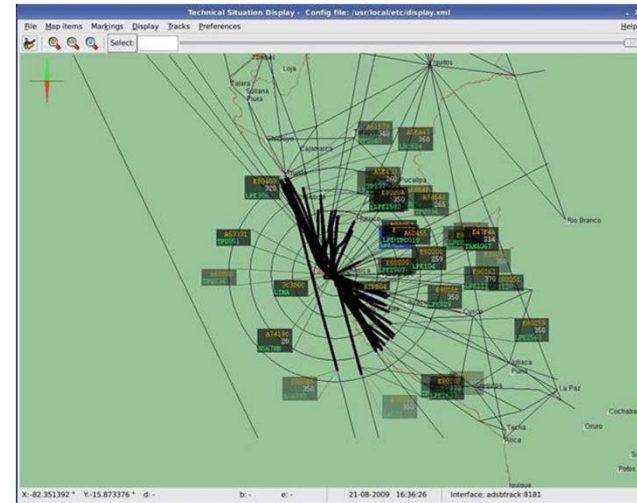
PRESENTS INTRODUCTORY INFORMATION ON CONCEPTS AND TECHNICAL-OPERATIONAL CONSIDERATIONS THAT SHOULD BE TAKEN INTO ACCOUNT BEFORE PLANNING AND IMPLEMENTING ADS-B AS ATIS SURVEILLANCE SENSOR OR AS ON-BOARD TRAFFIC MONITORING SYSTEM TO IMPROVE SITUATIONAL AWARENESS OF THE CREW.

GUIDE ON TECHNICAL-OPERATIONAL CONSIDERATIONS FOR MLAT (MULTILATERATION) IMPLEMENTATION

THE PURPOSE OF THIS DOCUMENT IS TO PROVIDE BASIC INFORMATION TAKEN FROM DOCUMENTS ISSUED BY ICAO AND OTHER ENTITIES REGARDING GENERAL ASPECTS OF AERONAUTICAL SURVEILLANCE SYSTEMS FOR AIR TRAFFIC CONTROL (ATC), AIRCRAFT AND, PARTICULARLY, A MULTILATERATION (MLAT) SYSTEM IN SUPPORT OF AIR TRAFFIC CONTROL.



ADS B TESTS IN PERU - PROJECT RLA/06/901





ADS B Implementation Action Plan – SAM Region

IMPLEMENTATION PHASE	TASK	ACTIVITY	RESPONSIBLE PARTY	EXPECTED RESULT	STATUS
PHASE I Conduction of ADS B trials, data collection and processing, and presentation of results	1	Define trial objectives, to see the possibility for States to derive benefits from ADS-B as surveillance system in the Region.	CNS Task Force	Trial objectives	Finalised
	2	Review and detail the activities to be considered for ADS-B trials conducted by the GREPECAS mechanism.	Secretariat	Regional plan of ADS-B trial activities reviewed	Finalised
	3	Determine the equipment and configuration required for starting trials. Obtain trial costs.	Rapporteur	Definition of equipment and configuration for the trial	Finalised Thales ADS-B station was used for the trial at no cost.
	4	Define the geographical area where trials are to take place.	Rapporteur	Geographical area defined (CONOPS)	Finalised The terminal area of the Jorge Chavez international airport in Lima, Peru, was considered.
	5	Consult States and users on their interest to participate in the trials.	Secretariat	Confirmation of participation by States	Finalised
	6	Select the entities, organisation or States in charge of conducting the trials.	States	Selection of the entity, organisation or State.	Finalised The air navigation service provider of Peru (CORPAC) was selected.



Plan de acción implantación ADS B Región SAM

PHASE I Conduction of ADS B trials, data collection and processing, and presentation of results	7	Installation of the ADS-B equipment required for the trial in the defined geographical area.	Selected entity, organisation or State	Equipment installed	Finalised Installed at the Jorge Chavez international airport in Lima, Peru.
	8	Conduction of trials (data collection).	State (Peru) Manufacturer (Thales) Secretariat	Start-up of trials	Finalised Trials were conducted for a period of six months.
	9	Processing of the data collected.	State (Peru) Manufacturer (Thales) Secretariat	Processing of data	Finalised The collected data was processed by the air navigation service provider (CORPAC).
	10	Presentation of the results obtained.	State (Peru) Secretariat	Presentation of results	Finalised The results were presented at the ADS-B workshop in Lima, Peru, and SAM/IG meeting.



Plan de acción implantación ADS B Región SAM

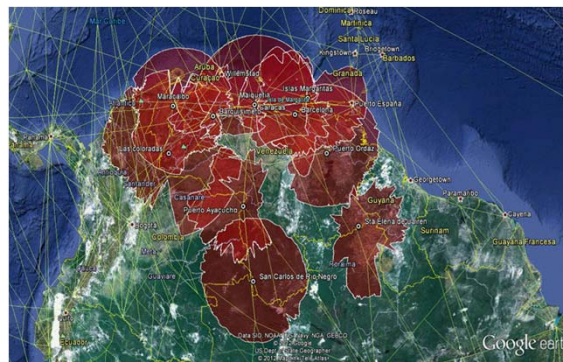
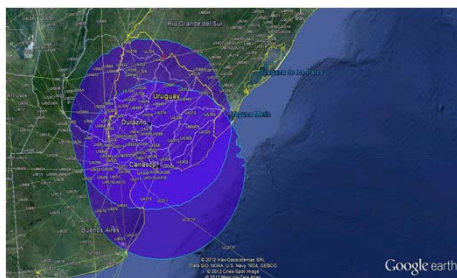
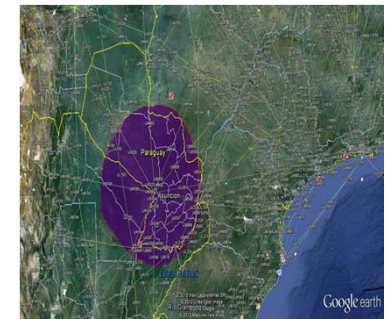
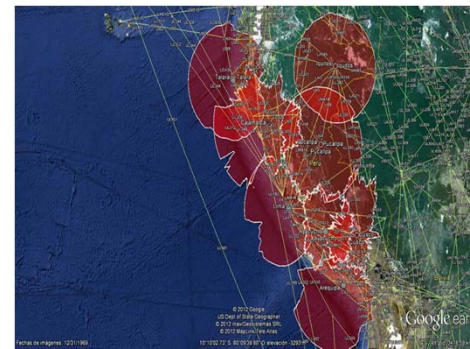
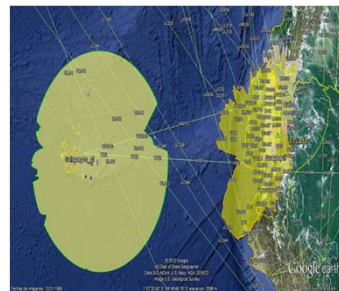
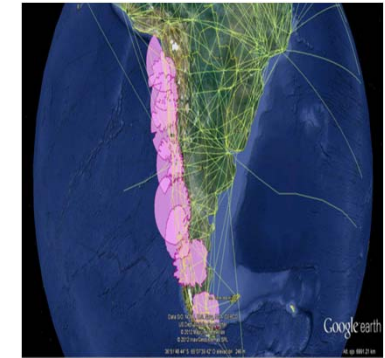
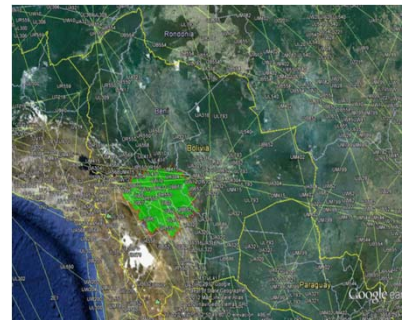
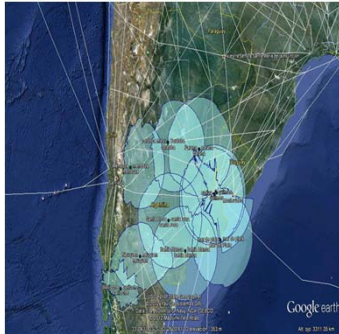
PHASE II OPERATIONAL IMPLEMENTATION OF ADS B	11	Define operational use of ADS B based on the airspace concept defined at national level	States	Presentation of results	Valid
	12	Safety assessment based on the defined operational use	State	Presentation of results	Valid In this task, it is important to analyse the behaviour of global positioning satellites in these latitudes.
	13	Development of model document for ADS-B operational implementation <ul style="list-style-type: none"> • Development of model advisory circulars for airworthiness and ADS-B operation approval • Development of model AIC to communicate ADS-B implementation planning • Develop model AIP supplement containing the applicable standards and procedures for ADS B according to the defined operational use • Review procedural handbooks of ATS units according to the operational use defined for ADS B 	Regional projects RLA/99/901 RLA/06/901 States	Publications in support of ADS B implementation	Valid June 2017 All model publications on the operational use of ADS B.

**Plan de acción implantación ADS B Región SAM**

PHASE II OPERATIONAL IMPLEMENTATION OF ADS B	14	Publication of documents in support of the operational implementation of ADS B	States	Publication of documents	Valid December 2017
	15	Training programme: <ul style="list-style-type: none">• Establishment of a training programme for ATS staff for the operational implementation of ADS B according to the defined operational use• Establishment of a training programme for airworthiness and operations personnel for the operational implementation of ADS B according to the operational use• Establishment of a training programme for pilots for the operational implementation of ADS B according to the defined operational use.	Regional projects RLA/99/901 RLA/06/901 States	Training programme	Valid December 2017
	16	ADS B implementation	States	Operational implementation of ADS B	Valid 2024
PHASE III FOLLOW-UP TO ADS B IMPLEMENTATION	17	Follow-up to ADS B implementation	SAM/IG Secretariat	Follow-up to ADS B implementation	Valid 2024



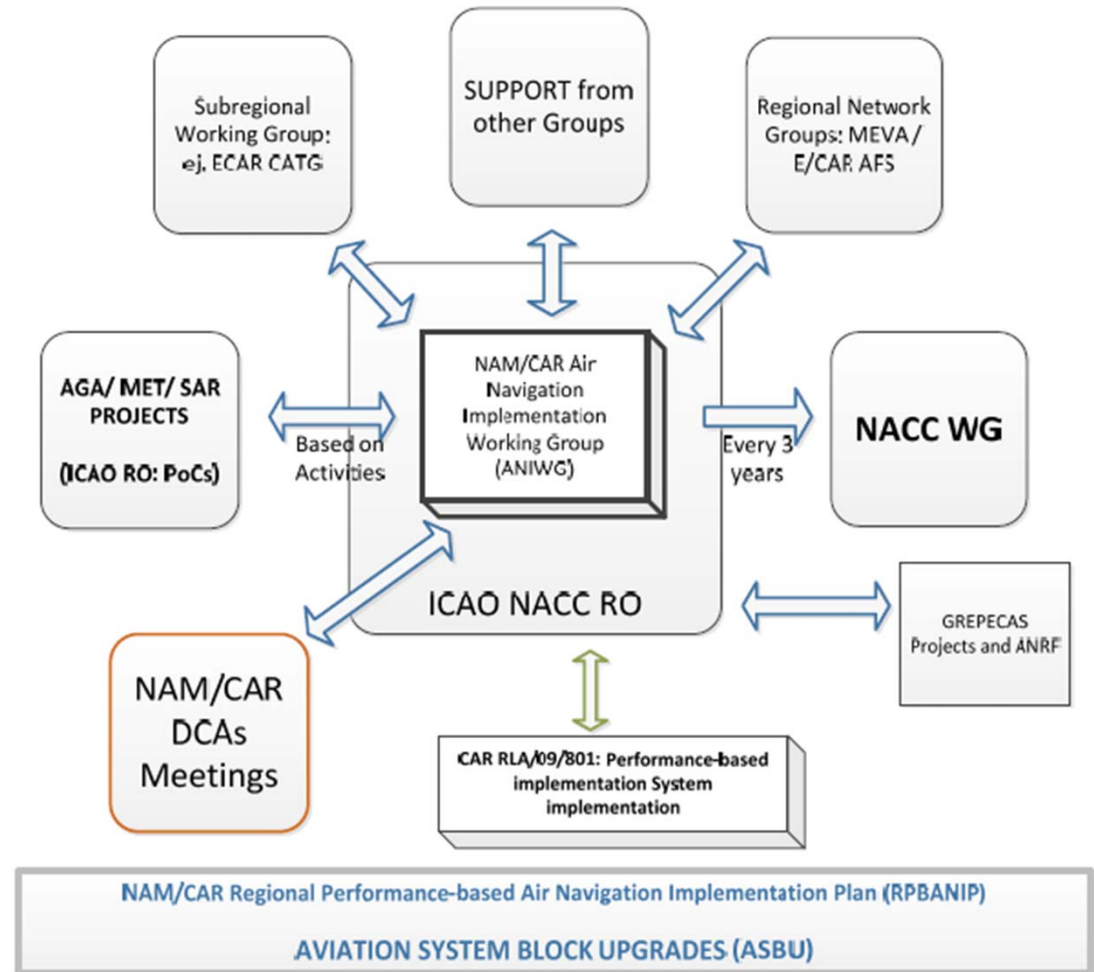
RADAR COVERAGE – SAM REGION





GRUPOS DE IMPLEMENTACION Y APOYO NAM/CAR

<http://www.icao.int/NACC/Pages/nacc-regionalgroups-aniwg.aspx>





ICAO

UNITING AVIATION

IMPLANTACIÓN DE SISTEMAS DE VIGILANCIA Y AUTOMATIZACIÓN EN LAS REGIONES NAM/CAR

OACI / North American, Central American and Caribbean Regional Office (NACC) Office / Grupos Regionales

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Grupos Regionales

GREPECAS

RASG-PA

NAM/CAR/CATC/WG

ANI/WG

Grupos Regionales

Enlaces a los Grupos Regionales

Grupo Regional de Planificación y Ejecución CAR/SAM (GREPECAS)

Grupo Regional sobre seguridad operacional de la aviación - Panamérica (RASG-PA)

Arreglo de colaboración para la prevención y gestión de sucesos de salud pública en la aviación civil (CAPSCA) - Disponible en inglés únicamente

Grupo de Trabajo sobre Implementación de Navegación Aérea para las Regiones NAM/CAR (ANI/WG) - Disponible en inglés únicamente

Comité Directivo de Aviación Civil de Haití (Haiti CASC) - Disponible en inglés únicamente

Grupo Técnico de Aviación Civil del Caribe Oriental (E/CAR/CATG) - Disponible en inglés únicamente

Grupo Técnico de la Red del Caribe Oriental (E/CAR/NTG) - Disponible en inglés únicamente

Sitio Operacional del MEVA III (MEVA III) - Disponible en inglés únicamente

Grupo de Trabajo NAM/CAR de los Centros de Instrucción de Aviación Civil (NAM/CAR/CATC/WG)

<http://www.icao.int/NACC/Pages/regional-groups.aspx>



Task Force Groups						
ADS-B	AIDC	AIM	AMHS	ATFM	ASBU	PBN

Meeting Reports		
Title	Language	
ANI/WG/1 Final Report	EN	SP
ANI/WG/2 Final Report	EN	SP
ANI/WG/3 Final Report	EN	SP

<https://www.icao.int/NACC/Pages/nacc-regionalgroups-aniwg.aspx>



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Task Force - ADS/B

AUTOMATIC DEPENDENT SURVEILLANCE – BROADCAST (ADS-B) IMPLEMENTATION TASK FORCE

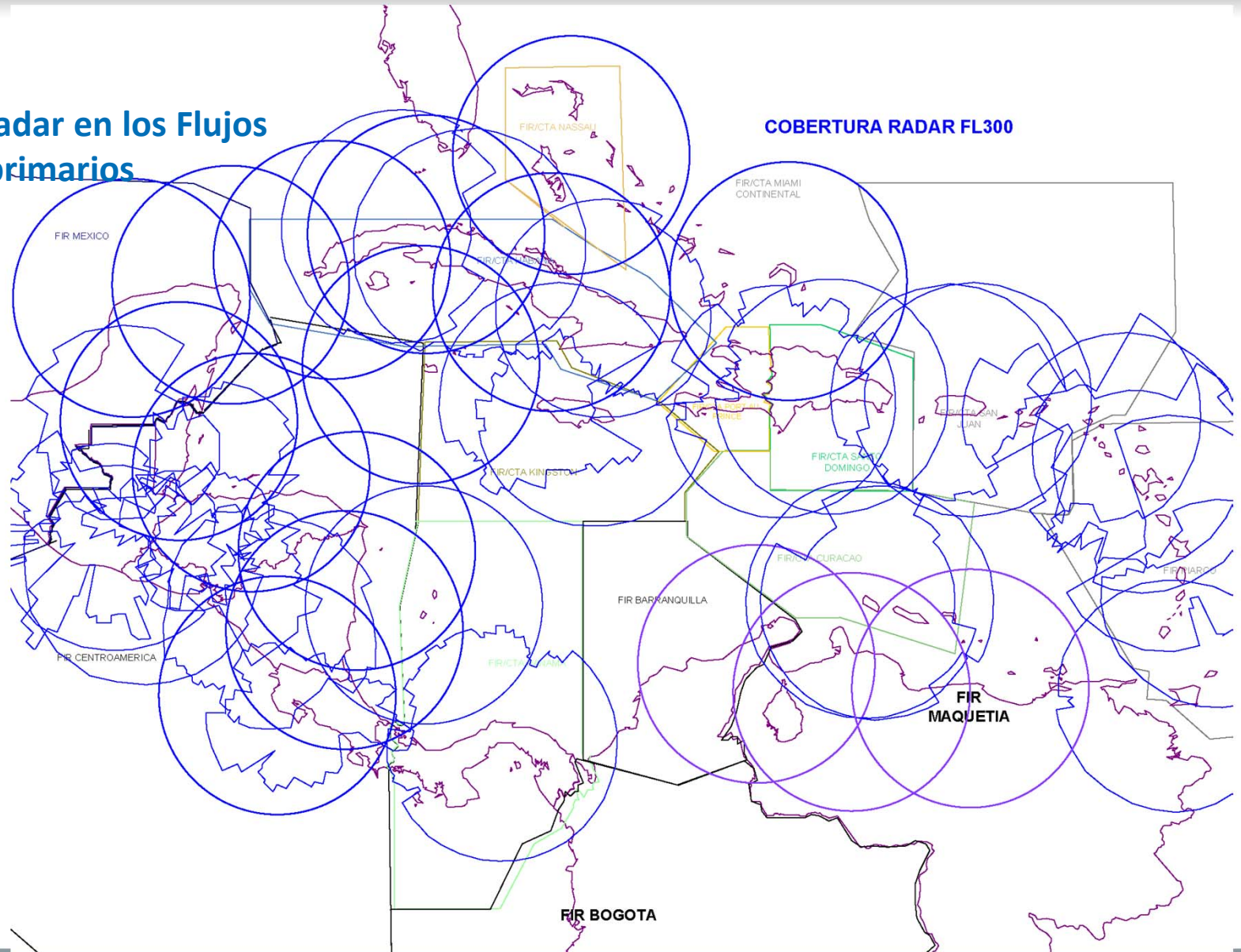
Based on the ANI/WG Terms of Reference for expediting the work progress and to focus on the regional priorities, and considering the existence of various Ad hoc Groups that were working in support of the implementation working groups, such as the ADS-B Ad hoc Group, the AMHS Implementation Group, etc., the ANI/WG/1 Meeting considered necessary to group them under the ANI/WG structure, including any other specific implementation task group, with the aim of providing continuity. In this regard, seven topics that shall be developed through Task Forces under the ANI/WG were formed.

Rapporteur: Carlos M. Jiménez Guerra, Cuba

<https://www.icao.int/NACC/Pages/regional-group-ADSB.aspx>



Cobertura Radar en los Flujos de tránsito primarios





Implementación Radar Modo S:

- ✓ 7 Radares SSR Modo S en Centroamérica
- ✓ 2 Radares SSR Modo S en Bahamas
- ✓ 1 Radares SSR Modo S en Trinidad y Tabago
- ✓ Varios Radares SSR Modo S en México

Implementación ADS-B :

- ✓ Aruba
- ✓ Centroamérica
- ✓ Cuba
- ✓ Haití
- ✓ Jamaica
- ✓ México
- ✓ Trinidad y Tabago





Resultado NACC/WG/5

PROYECTO DE CONCLUSIÓN NACC/WG/5/18

PREPARACIÓN DE LOS ESTADOS PARA LA IMPLEMENTACIÓN DEL ADS-B

Que, con el fin de mejorar los esfuerzos regionales para la implementación de ADS-B, los Estados/Territorios en las Regiones NAM/CAR:

- a) tomen en cuenta la proximidad a la fecha de implementación acordada de 2020 y el impacto de esta implementación para un cumplimiento exitoso de metas de varios módulos del ASBU;
- b) aceleren el desarrollo y la publicación de regulaciones nacionales para el uso del ADS-B; y
- c) adopten el 1 de enero de 2020 como fecha de implementación del ADS-B en sus planes de implementación para completar la implementación operacional del ADS-B OUT.

