SAM/AIM/7

INTERNATIONAL CIVIL AVIATION ORGANIZATION
SOUTH AMERICAN REGIONAL OFFICE

SEVENTH MULTILATERAL MEETING OF THE SAM REGION FOR THE TRANSITION OF AIS TO AIM (SAM/AIM/7)

FINAL REPORT

Lima, Peru, 23 to 27 March 2015

INDEX

HISTORY OF THE MEETING

ii-1 PLACE AND DURATION OF THE MEETING

The Seventh Multilateral Meeting of the SAM Region for the transition of AIS to AIM (SAM/AIM/7) was held at the ICAO South American Regional Office, Lima, Peru, from 23 to 27 March 2015.

ii-2 OPENING CEREMONY AND OTHER MATTERS

Mr. Oscar Quesada, Deputy Regional Director of the ICAO South American Office, greeted the participants and highlighted the importance of the objectives of the Meeting, as regards consolidation of Phase 1 of the Roadmap for the transition from AIS to AIM, and the continuation and follow-up of the tasks of AIM Projects for the provision of Electronic Terrain and Obstacle Data (e-TOD), aeronautical information/data management and the preparation of quality specifications applicable to the digital AIM environment, emphasizing the importance and connection of these implementations with the Declaration of Bogota.

In addition, Mr. Oscar Quesada informed the participants of the Meeting of the special attention that ICAO Council was focussing in the AIM within the framework of support to the ATM, since aeronautical information systems are the essence of the global ATM concept.

The Meeting had the opportunity to count with a presentation of Mr. Onofrio Smarrelli, CNS Regional Officer of the ICAO South American Office, on the SAM Regional RAIM prediction availability service (SATDIS). With this presentation, participants were informed on the background, documentation, GPS components, functions, PBN, RNAV/RNP operational support, tools and other benefits of this important service.

ii-3 SCHEDULE, ORGANIZATION, WORKING METHODS, OFFICERS AND SECRETARIAT

The Meeting agreed to hold its sessions from 0830 to 1530 hours, with appropriate breaks. The work was done with the Meeting as a Single Committee, Working Groups and Ad-Hoc Groups.

Mrs. Graciela Monzillo, AIS Chief from DINACIA Uruguay, was unanimously elected as President of the Meeting. Mr. Oscar Dioses from Peru was elected as Vice-Chairman.

Mr Roberto Arca Jaurena, ATM/SAR/AIM Regional Officer, acted as Secretary and Mr. Jorge Armoa, MET/AIM Regional Officer, as co-Secretary, both from the South American Regional Office.

ii-4 WORKING LANGUAGES

The working language of the Meeting was Spanish, with simultaneous interpretation into English, and its relevant documentation was presented in both languages.

ii-5 **AGENDA**

The following agenda was adopted:

Agenda Item 1: Implementation of provision of Electronic Terrain and Obstacle Data (e-TOD)

Agenda Item 2: Implementation of systems for Aeronautical Information Data Exchange and Aeronautical Data

Agenda Item 3: Implementation of the Quality Management System in AIM units

Agenda Item 4: NOTAM Contingency Plan and AIM deficiencies

Agenda Item 5: Update on information concerning progress in the implementation of automated systems and other requirements according to Annex 15

Agenda Item 6: Other business

ii-6 **ATTENDANCE**

The Meeting was attended by 21 participants from 6 States of the SAM Region, (Argentina, Bolivia, Brazil, Chile, Peru and Uruguay), one international organization (IATA) and the professional association IFAIMA.

The list of participants is presents in page iii-1.

LIST OF PARTICIPANTS

ARGENTINA
1. Silvina Rotta
2. Ricardo Daniel Sykes
3. María Inés Villalba
4. Silvia Beatriz García
5. Héctor Marcelo Cancinos

BOLIVIA
6. John Félix Apaza Apaza

BRASIL / BRAZIL
7. Rinaldo Ferreira Marinho
8. Claudius Sany Soares Cardoso
9. Leonardo Coelho de Almeida

CHILE
10. Sergio García Jorquera

PERÚ
11. Jorge Taramona Perea
12. Alfredo Harvey Palomino
13. Sara Siles La Rosa
14. Federico Vásquez Cáceres
15. Juan Vargas Gavancho
16. Karina Calderón Yactayo
17. Oscar Dioses García

URUGUAY
18. Graciela Monzillo
19. Juan José González Pose

IATA
20. Luis Mesen (UNITED AIRLINES)

IFAIMA
21. Marcilio Pinto de Vasconcelos

OACI
Roberto Arca
JorgeArmoa

Agenda Item 3: Implementation of the Quality Management System in AIM units

3.1 Under this agenda item, the Meeting reviewed the following papers:

a) WP/05 - *GREPECAS Project G3-Implementation of the Quality Management System in AIM units (*presented by the Secretariat);
b) IP/03 - *Status of progress in the implementation of Quality Management System (QMS)* (Presented by Panama – *Spanish only*)

GREPECAS Project G3 – Implementation of the Quality Management System in AIM units

3.2 When analyzing ***Project G3 - "Implementation of the Quality Management System in AIM units*"**, shown in **Appendix A**, the Secretariat informed that progress had been made in the implementation of quality systems, but much work remained to be done and, consequently, further efforts had to be made to achieve the objective.

Progress of G3 Project

3.3 The Meeting took note that Argentina has advanced 20%, reaching 70% implementation, and that it would be certified in December 2015.

3.4 Peru informed that it had made 20% progress, reaching 80% implementation, maintaining August 2015 as the certification date.

3.5 Uruguay informed that it was in the final audit phases and that it would be ready for certification by the end of July 2015.

Analysis of compliance with goals, based on G3 Project indicators/metrics

- States certified with QMS ISO 9001:2008
  2012 = 4 Estados 2014 = 5 Estados

3.6 Currently, there are five States certified in QMS in the SAM Region: **Brazil, Chile, Ecuador, French Guiana and Paraguay.** The last update on March 2015 and the progress made by each State since 2012 can be seen in the following table:

State	% implementation March 2015	Implementation date	% Progress
Argentina	70%	Dec/2014	20%
Bolivia	30%	Jul/2015	0%
Brazil	**CERTIFIED**	----------	----------
Chile	**CERTIFIED**	----------	----------
Colombia	90%	Sep/2014	20%
Ecuador	**CERTIFIED**	----------	----------
French Guiana	**CERTIFIED**	----------	----------
Guyana	25%	Dec/2015	25%

Panama	50%	3rd quarter/2015	10%
Paraguay	**CERTIFIED**	----------	----------
Peru	80%	Aug/2015	20%
Suriname	45%	Aug/2014	15%
Uruguay	95%	Jul/2015	5%
Venezuela	70%	Nov/2014	20%

3.7 The Meeting took note that the States that had set their implementation date for August, September and November 2014, had not provided any information regarding certification or the status of the implementation plan, or the problems faced during the implementation process.

3.8 Likewise, the Secretariat stressed the need to insist with the experts on completing the certification, which is not a complicated process.

3.9 Finally, the Secretariat informed that Panama had submitted an information paper postponing the date of certification until the third quarter of 2015. The progress made by Colombia, Venezuela and Suriname could not be reflected in the Report because they had not attended the Meeting nor submitted the data by other means.

APÉNDICE A / APPENDIX A

SEGUIMIENTO NIVEL DE IMPLANTACIÓN DE LA NORMA PARA LA PROVISIÓN DE DATOS ELECTRÓNICOS SOBRE EL TERRENO (E-TOD) PARA EL ÁREA 1 (Ref.: Anexo 15, 10.1.3)

FOLLOW-UP LEVEL OF IMPLEMENTATION OF THE STANDARD FOR THE PROVISION OF ELECTRONIC TERRAIN OBSTACLE DATA (E-TOD) FOR THE AREA 1 (Ref.: Annex 15, 10.1.3)

ESTADOS / STATES	ARG	BOL	BRA	CHI	COL	ECU	GUY	FGU	PAN	PAR	PER	SUR	URU	VEN
Modelo digital – DIGITAL MODEL														
¿Dispone la Oficina de un Modelo Digital del Terreno (MDT) o de un Modelo Digital de Elevación (MDE) u otro? (Especifique) / Does the Office have a Model for Digital Terrain (MDT) or a Model for Digital Elevation (MDE) or other? (Specify).	Y	N[1]	Y[1]	Y	Y[1]	N	N	Y[1]	N	N	Y	N	N	Y
¿De dónde los obtuvo? (¿de la propia organización, de organización externa? - ¿cuál?) Where did you obtain it? (from your organization, an external organization? - which?).	Y[8]	-	Y[2]	N	Y[2]	N	-	Y[2]	N	N	Y[4]	N	N	*1
¿Qué precisión tiene dicho modelo? / Which accurateness does this model have?	-	-	Y[3]	N	Y[3]	N	-	Y[3]	-	N	N	N	N	*[2]
¿Cumple con Tabla A8-1; requisitos de los datos sobre el terreno para el Área 1 del Anexo 15? / Does it comply with Table A8-1; data requirements for Annex 15, Area 1?	Y	N	N[4]	Y	N	N	N/A	Y[4]	-	N	N	N	N	Y
¿Dicho modelo cumple con la serie de Normas ISO 19110? (Si/No) / Does such model comply with the series of ISO Standard 19110? (Yes/No)	Y	N[4]	N[5]	Y	Y[4]	N	N/A	Y[5]	-	N	Y	-	N	Y
¿Qué precisión tiene dicho modelo? / Which is the accurateness of such model?	-	-	-	-	-	-	N/A	-	-	-	N	-	-	*[3]

ESTADOS / STATES	ARG	BOL	BRA	CHI	COL	ECU	GUY	FGU	PAN	PAR	PER	SUR	URU	VEN
Obstáculos – OBSTACLES														
¿Dispone de una base de datos de obstáculos que abarque todo el territorio de su país? (Si/ No) / Is there an obstacle data base covering all territory in your country? (Yes/No).	Y[1]	N	Y[6]	N	Y[5]	N	N	Y[6]	P	N	N[1]	N	Y	N[4]
¿Cómo los obtuvo? (¿de la propia organización, de organización externa? -¿cuál?) / How did you get them (from your organization, from an external organization? – which?	Y[2]	N	Y[7]	N	Y[6]	N	N/A	Y[7]	-	N	N	-	Y	*[5]
¿Dichos datos cumplen con la serie de Normas ISO 19110? (Si/No) / Does the data comply with the series of ISO Standard 19110? (Yes/No).	Y[3]	N	N[8]	N	N	N	N/A	N[8]	-	N	N	-	N[3]	Y
¿Cumple con Tabla A8-2; requisitos de los datos sobre obstáculos para el Área 1 del Anexo 15? / Does it comply with Table A8-1; data requirements on terrain for Annex 15 Area 1?	N	N	Y	N	N	N	N/A	N[9]	-	N	N	N	Y	Y
Planificación – PLANNING														
¿Ha establecido la Oficina un plan detallado con las tareas, plazos, análisis de riesgos, aspectos económicos y demás para la ejecución del proyecto de implantación del e-TOD para el Área 1? (Si/No). (Si la respuesta es Si, indicar plan y fechas de cumplimiento). / Has your office established a detailed plan with tasks, risk analysis, economical aspects, etc. for the execution of the e-TOD implementation project for Area 1 (Yes/No). (If answer is Yes, indicate plan and dates of compliance).	N	N	Y[10]	Y[1]	N	Y[1]	N	Y[10]	N	N	N	N	Y[4]	N

ESTADOS / STATES	ARG	BOL	BRA	CHI	COL	ECU	GUY	FGU	PAN	PAR	PER	SUR	URU	VEN
¿Ha definido la Oficina un manual de especificaciones técnicas para dicha implantación? (Si/No). (Consultar si se puede acceder al mismo). / Has the office defined a manual with technical specifications for such implementation? (Yes/No). (Ask if there is easy access to the same).	Y[5]	Y	Y[11]	Y	Y	Y	N	Y[11]	Y	Y	Y	Y	Y[5]	N
¿Ha definido y firmado Acuerdos de Nivel de Servicio (SLA) con los proveedores de datos? (Si/ No). (Consultar si se puede obtener una copia modelo de los mismos). / Has your office defined and signed Service Level Agreements (SLA) with data providers? (Yes/No). (Ask if there is an available copy of the same).	Y[6]	N	N	N	N	N	N	N[12]	N	N	Y	N	Y[6]	N
¿Dispone de un programa de capacitación para aquellas personas que tengan que operar con los datos del e-TOD en la dependencia AIS? (Si/No). (Consultar si se puede acceder al mismo). / Is there a training programme for those persons that have to operate with e-TOD data in AIS unit? (Yes/ No). (Ask if the same may be accessed).	Y	N	N[12]	Y	Y	Y[2]	N	Y[13]	N	N	N	N	Y	N
¿Se han tenido en cuenta los conceptos operacionales en este proyecto? (Si/No). (Comentar el plan). / Have operational concepts been taken into account? (Yes/No). (Comments on the plan).	Y	Y	Y	Y	Y	Y[3]	N	N[14]	-	N	Y	N	N	-

ESTADOS / STATES	ARG	BOL	BRA	CHI	COL	ECU	GUY	FGU	PAN	PAR	PER	SUR	URU	VEN
¿La Oficina dispone de equipamiento y programas para la gestión de la información referida a e-TOD? (Si/No). (En caso de respuesta Si, indicar característica de los equipos y programas). / Does the office have equipment and programmes for information management referred to e-TOD? (Yes/No). (In case answer is Yes, indicate the characteristic of equipment and programmes).	N	N	Y[13]	Y	Y[7]	Y[4]	N	N[15]	Y	N	Y[3]	N	Y[7]	N
¿Se han definido cronogramas y especificaciones para la carga y verificación de los datos referidos al e-TOD? (Si/No). (En caso de respuesta Si, indicar tiempos y formas de la verificación). / Have schedules and specifications been defined for the load and data verification referred to e-TOD? (Yes/No). (In case answer is Yes, indicate times and ways to check).	N[7]	N	Y[14]	Y	N	Y[5]	N	N[16]	N	N	N	N	Y[8]	N

Y = Si / Yes
[1, 2, ...] = Ver comentarios / See comments
N = No
P = Parcialmente / Partially
N/A = No aplicable / Not applicable
S/R = Sin respuesta / Without answer

COMENTARIOS DE LOS ESTADOS / COMMENTS BY STATES

ESTADOS/ STATES	COMENTARIOS / COMMENTS
ARG	[1] Se dispone de datos de obstáculos que se han incorporado a una base de datos. / Obstacle data available, which has been incorporated in a data base. [2] El proveedor es el departamento de aeródromos. / Aerodrome Department is the provider. [3] Se está evaluando. / Under assessment. [4] Está en proceso de elaboración. / In process of preparation. [5] Está en proceso de elaboración. / In process of preparation. [6] Está en proceso de elaboración. / In process of preparation. [7] En proceso de realización con el proveedor. / Under process of implementation by the provider. [8] Carta digital obtenida del ING / Digital chart obtained from ING
BOL	[1] Las elevaciones de los obstáculos están en base a las elevaciones proporcionadas por el Estado Plurinacional de Bolivia. / Obstacles are in base to elevations provided by Plurinational State of Bolivia. [2] Del Instituto Geográfico Militar/IGM. / From the IGM. [3] Las elevaciones del IGM tiene una precisión de 1×10^{-4}. / IGM elevations have a precision of 1×10^{-4}. [4] No se tiene implantado el Sistema de Gestión de la Calidad. / Quality assurance system is not implemented.
BRA	[1] Brasil tiene un Modelo Digital de Terreno (MDT) para el Área e-TOD 1 (todo el territorio nacional). Para las otras áreas Brasil adoptará Modelo Digital de Superficie (MDS). / Brazil has the Digital Terrain Model (DTM) for the e-TOD Area 1 (all national territory). For the other areas, Brazil will adopt the Digital Surface Model (DSM). [2] El Modelo Digital de Terreno para el Área 1 e-TOD comprende líneas de contorno y puntos ploteados en 3D obtenidos de las cartas aeronáuticas con una escala de 1:250,000 y cartas topográficas con escalas de 1:100,000 y 1:50,000. Las Cartas Aeronáuticas se producen por el ICA y las cartas topográficas se producen por agencias federales encargadas de la cartografía del territorio nacional. Para áreas del territorio nacional en que no existen los productos mencionados, se usa el Modelo Digital de Terreno derivado del SRTM y disponible libre de cargo por el gobierno de EEUU. El Modelo Digital de Superficie para las otras áreas se encuentra en preparación por parte de ICA (Instituto de la Cartografía Aeronáutica, la agencia brasileña responsable de la preparación de cartas aeronáuticas, publicaciones AIS y e-TOD), y se obtiene por medio de fotografías aéreas. / The Digital Terrain Model for the e-TOD Area 1 comprises contour lines and points plotted in 3D obtained from the aeronautical charts with a scale of 1:250,000 and topographical charts with scales of 1:100,000 and 1:50,000. Aeronautical charts are produced in the Air Force Institute of Cartography (ICA) and topographical charts are produced by federal agencies that have the allocation of mapping the national territory. For areas of national territory where the mentioned products do not exist, it is used the Digital Terrain Model derived from the Shuttle Radar Topography Mission (SRTM) and available free of charge by the U.S. Government. The Digital Surface Model for the other e-TOD areas is being made by ICA (Aeronautical Cartography Institute, the Brazilian agency responsible for the aeronautical charts, AIS publications and e-TOD) through aerophotogrammetry. [3] La precisión del Modelo Digital de Terreno para un área particular geográfica dependerá de la información utilizada, de acuerdo a los siguientes valores: / The accurateness of the model digital terrain for a particular geographic area will depend on the input used, according to the following values: • Cartas aeronáuticas a escala / aeronautical charts at scale of 1:250,000 = altimetry (±50 m to 70 m) and planimetry (±125m to 250 m); • Cartas topográficas a escala / topographical charts at scale of 1:100,000 = altimetry (±-25 m to 37.5 m) and planimetry (±50m to 100 m); • Cartas topográficas a escala / topographical charts at scale of 1:50.000 = altimetry (±10 m to 15 m) and planimetry (± 25m to 50 m);

ESTADOS/ STATES	COMENTARIOS / COMMENTS
	• SRTM = ±20m en altimetría, pero hay discrepancias en areas que presentan valores de altitud / SRTM = ±20m in altimetry, but there are discrepancies in areas that present altitude values. Se obtendrá la precisión del Modelo Digital de Superficie con el fin de cumplir con las recomendaciones de la OACI. / The accurateness of the Digital Surface Model will be obtained in order to comply with the recommendations of the ICAO. [4] Todos los ítems cumplen con los requerimientos, con la excepción de la precisión vertical y precisión horizontal, cuando el Modelo Digital de Terreno se obtiene por la carta a escala 1:250,000, carta a escala 1:100,000 y por SRTM debido a que dichos datos comprenden valores menos exactos que aquellos definidos en la Tabla A8-1. / All items comply with the requirements with the exception of vertical accuracy and horizontal accuracy, when the Digital Terrain Model is obtained by aeronautical chart at scale of 1:250,000, topographical chart at scale of 1:100,000 and by SRTM because such data comprises values less accurate than those defined in Table A8-1. [5] Las series de la norma ISO 19110 todavía serán estudiadas e implantadas. / The series of ISO Standard 19110 will still be studied and implemented. [6] Hay una base de datos nacional, pero no se asegura que el 100% de obstáculos de más de 100 metros sean registrados en la base de datos, tal como se requiere en el Anexo 15 para el Área 1 e-TOD, debido a regulaciones recientes que son efectivas desde el 2011 (Orden No.256/GM5). / There is a national database, but it is not assured that 100% of obstacles of more than 100 meters are registered in the database, as required by Annex 15 for the e-TOD Area 1, due to the recent regulations that are effective as of 2011 (order N.256/GM5). [7] Los obstáculos se obtienen a través de estudios topográficos llevados a cabo por el ICA o a través de diversas organizaciones nacionales responsables del control regional de los obstáculos y la navegación. / Obstacles are obtained through topographic survey conducted by the Air Force Institute of Cartography (ICA) or through the other organizations that are responsible for the regional control of obstacles and air navigation. [8] Las series ISO 19110 aún serán estudiadas e implantadas. / The series of ISO standard 19110 will still be studied and implemented. [9] Los datos obtenidos por el ICA cumplen con la Tabla A8-2. Los datos procedentes de fuentes externas sólo se incluirán en la base de datos de obstáculos si cumplen con los requisitos de la Tabla A8-2, debido a la nueva legislación (CIRCEA 53-2), que entró en vigor en 2013. Sin embargo, no es posible garantizar el cumplimiento de estos requisitos para los datos existentes en la base de datos antes de que la legislación citada. / Data from external sources will only be included in the database of obstacles if they comply with the requirements of Table A8-2, due to new legislation (CIRCEA 53-2), which entered into force in 2013. However, it is not possible to ensure compliance with these requirements for existing data in the database before the cited legislation. [10] El plan de Acción está implantado. / Action Plan implemented. [11] Brasil estableció un manual de especificaciones técnicas que definen el proceso de recolección, procesamiento, distribución y almacenamiento de los datos recogidos por fotogrametría. Sin embargo, se está evaluando la posibilidad de adoptar otros métodos de recolección de datos, así como la adición de mejoras en el proceso que se utiliza en la actualidad, por lo que este manual está en proceso de revisión. / Brazil established a technical specification manual defining the process of collecting, processing, distribution and storage of the data collected through photogrammetry. However, other methods of data collection are being considered, as well as adding improvements to the process that is used today, so this manual is under revision. [12] Los técnicos que trabajan con la adquisición y tratamiento de datos Aerofotogramétricos tenían formación adecuada, sin embargo, no existe un plan formal para el mantenimiento de la capacitación. El establecimiento de este plan es parte del Proyecto AIM-BR, creado para gestionar la transición del AIS al AIM. / Technicians working with the acquisition and processing of photogrammetric data has proper training, however, there is no formal plan for continuous training. The establishment of this plan is part of AIM-BR Project, created to manage the transition from AIS to AIM. [13] El sector responsable de e-TOD está equipado con 4 estaciones de trabajo con ajuste apropiado para la actividad, incluidos los monitores y ratones 3D y almacenamiento de datos de alta capacidad. Los programas más utilizados son ArcGIS, ERDAS LPS y Global Mapper. /

ESTADOS/ STATES	COMENTARIOS / COMMENTS
	The sector responsible for e-TOD is equipped with 4 workstations appropriate for the activity, including monitors and mice 3D and high data storage capacity. The most used programs are ArcGIS, ERDAS LPS and Global Mapper. [14] Se establecieron las especificaciones de carga y verificación de datos e-TOD, formalizado en una guía de instrucciones para los operadores. El cronograma establecido se está revisando, y será parte del plan del proyecto e-TOD (véase la respuesta 10). / Load and e-TOD data verification specifications were established, formalized in an instruction guide for operators. The schedules are being revised, and will be part of the e-TOD project plan (see item 10).
CHI	[1] Hay establecido un grupo de trabajo que ha definido un Proyecto de Plan con tareas, plazos, análisis de riesgos y aspectos económicos para la implantación de las Áreas 1, 2, 3 y 4. El citado Proyecto de Plan está en una etapa de evaluación, por lo cual aún no se ha definido un calendario de ejecución. / There is a work group which has defined a Plan Project with tasks, deadlines, risk analysis and economical aspects for the implementation of Areas 1, 2, 3 and 4. The mentioned Plan Project is under assessment, and for this reason an implementation calendar has not been defined yet.
COL	[1] Se dispone de un DTM. / There is a DTM. [2] Instituto Geográfico Agustín Codazzi. IGAC. [3] 30 metros. / 30 mts. [4] Es producido con estándares IPGH. / Produced with IPGH standards. [5] Base de datos Programa FEAMAN, GFEAMAN, ARGIS, MICROESTATION / Data Base Programme FEAMAN, GFEAMAN, ARGIS, MICROESTATION. [6] Diversas fuentes externas / Different external sources [7] Programas FEAMAN, GFEAMAN, ARGIS, MICROESTATION / Programmes FEAMAN, GFEAMAN, ARGIS, MICROESTATION.
ECU	[1] El Plan de implementación e-TOD – SIG está planificado realizarlos desde el 2014 al 2016. / e-TOD - SIG implementation plan is planned to be carried out starting in 2014 to 2016. [2] Dentro del proyecto de implantación del SIG y e-TOD, se contempla la capacitación del personal AIM responsable del mismo. / Training of AIM personnel responsible for the SIG and e-TOD Project is contemplated within its implementation. [3] El plan contempla los nuevos requisitos que emanan del concepto operacional de ATM mundial; los servicios de información aeronáutica deben integrarse en un concepto más amplio de gestión de la Información Aeronáutica centrada en los datos y también se tiene en cuenta lo establecido en la Hoja de Ruta de transición del AIS al AIM de Ecuador. / The plan contemplates new requirements which emanate from the global ATM operational concept; the aeronautical information services must be integrated within an ample concept of aeronautical information management centered in data and also what is established in the Roadmap for transition from AIS to AIM of Ecuador. [4] Personal AIS/MAP con experiencia y conocimientos básicos de GIS. / AIS/MAP personnel with experience and basic knowledge of GIS. Software Microstation 95, ArcGIS 9 (En proceso de compra de licencias). / Microstation 95, ArcGIS 9 software (under process of licenses acquisition). [5] El cronograma estará basado en tiempo establecido para el desarrollo del proyecto, seguimiento a través de Indicadores de cumplimiento de cada etapa./The Schedule is based in time established for the development of the project, follow-up through indicators of compliance in each stage.
GUY	Estamos en el proceso de entrenar al personal para establecer una dependencia MAP para el AIS. / We are in the process of of training personnel to establish a MAP unit for the AIS.

ESTADOS/ STATES	COMENTARIOS / COMMENTS
FGU	[1] Modelo Terreno Digital (DTM). / Digital Terrain Model (DTM). [2] Organización externa: Institut Geographique National (the French National Geodetic and Mapping Agency) – ver AIC A 2008_31 (https://www.sia.aviation-‑civile.gouv.fr/dossier%5Caicfrancea%5CAIC_A_2008_31_EN.pdf). Las condiciones para adquirir estos datos (licencias) se encuentran en el catálogo IGN. / External organization: Institut Geographique National (the French National Geodetic and Mapping Agency) – see AIC A 2008_31 (https://www.sia.aviation-‑civile.gouv.fr/dossier%5Caicfrancea%5CAIC_A_2008_31_EN.pdf). The conditions relating to acquisition of these datasets (licensing) are provided in the IGN catalogue. [3] El producto IGN BD ALTI® es una descripción de referencia terrestre del territorio Francés. Los Modelos DTM (Modelos Terrestres Digital) y contornos describiendo el terreno a diferentes escalas (de 1:50 000 a 1:1 000 000) se derivan del BD ALTI®. El BD ALTI® consiste en archivos de vector estructurados del escaneo de contornos del terreno francés. El intervalo de contorno puede variar de 5 a 40 m. Los datos se ingresan en mapas IGN a 1:25 000 a 1:50 000 y de fotografías adicionales a 1:20 000; 1:30.000 y 1:60 000. / IGN BD ALTI® product is a terrain reference description of French territory. DTM (Digital Terrain Models) and contours describing the terrain at different scales (from 1:50 000 to 1:1 000 000) are derived from the BD ALTI ®. The BD ALTI® consists of structured vector files from scanning all the contours of French terrain. The contour interval can range from 5 to 40 m. Data is entered on IGN maps at 1:25 000 at 1:50 000 and from additional aerial photographs at 1:20 000; 1:30.000 and 1:60 000. [4] Excepto en áreas escarpadas donde el IGN-F recolecta datos adicionales para mejorar la precisión. / Except in very steep areas where IGN-F is collecting additional data to improve accuracy. [5] Los metadatos se pueden obtener gratuitamente en el website de IGN-F, en francés. / Metadata is provided free on IGN-F website, in French. [6] La recolección y evaluación de los datos existentes está en proceso. Nuevos estudios se realizan cada año (por ejemplo en Guyana Francesa en 2011 y en el Caribe en 2012). / Gathering and assessments of existing data are on-going. New surveys are scheduled every year (e.g. in French Guiana in 2011 and the Caribbean in 2012). Obstrucciones aisladas artificiales aparecen en el AIP francés. / Artificial Isolated Obstructions are listed in French AIP; (see / ver: https://www.sia.aviation-civile.gouv.fr/aip/enligne/uk/..%5CPDF_AIPparSSection%5CAIP%20FRANCE%5CENR%5C5%5C1201_ENR--5.4.pdf). [7] De nuestra organización con apoyo de IGN-F. / From our organization with IGN-F support. [8] En proceso, con apoyo de IGN-F. / On-going with IGN-F support. [9] La evaluación de datos existentes está en proceso, con apoyo de IGN-F. Los datos nuevos serán compatibles de conformidad con los acuerdos de nivel servicios (SLA) con los proveedores de datos. / Assessments of existing data are on going with IGN-F support. New data will be compliant according to service level agreements (SLA) with data providers. [10] En proceso, con apoyo de IGN-F. / On-going with IGN-F support. [11] EUROCONTROL está escribiendo un Manual de Datos de Obstáculos del Terreno, un material de guía de datos de obstáculo en el terreno, de acuerdo al Anexo 15 de la OACI. La primera edición del Manual de Datos de Obstáculos del Terreno ha sido evaluado por un Estudio de Pilotos Suizo-Francés para poner el e-TOD en práctica. / EUROCONTROL (European organisation for the safety of air navigation) is writing a “Terrain and Obstacle Data Manual”, a guidance material on the provision of Terrain and Obstacle Data (TOD) in accordance with ICAO Annex 15. First release of “Terrain and Obstacle Data Manual” has been evaluated through a Swiss-French Pilot Study in view of putting eTOD into practice. [12] En proceso. / On-going, [13] El entrenamiento en todas las ediciones geodéticas y de cartas. / The training is global on all the geodetic and charting issues. [14] En proceso. / On-going. [15] Varios Sistemas de Información Geográfica (GIS) como ESRI ArcGIS. / Various Geographic Information Systems (GIS) such as ESRI ArcGIS. [16] En proceso. / On-going.

ESTADOS/ STATES	COMENTARIOS / COMMENTS
PER	[1] Sólo se dispone de información gráfica aislada de obstáculos de algunos aeródromos y que aparecen en algunas cartas aeronáuticas, no se encuentra en una base de datos. / Only isolated obstacle graphical information available of some aerodromes and shown in some aeronautical charts, not found in a data base. [2] De levantamientos topográficos realizados por la propia organización. / Topographical surveying by same organization. [3]Se cuenta con equipos de medición GPS R8 diferencial y estación total TOPOCON 7500, 02 estaciones de trabajo HP Z800, software de diseño CAD. / GPS R8 differential measuring equipment available and total station TOPOCON 7500, 02 workstations HP Z800, CAD design software. [4] Carta digital obtenida del ING. / Digital chart obtained from ING.
URU	[1] En proceso. / On-going. [2] En proceso. De la propia Organización y externa. IGM – Instituto Geográfico Militar. / On-going. From the organisation and outsided source. IGM. [3] En proceso. / On-going. [4] 2011 - 2015 [5] En proceso. / On-going. [6] En proceso. / On-going. [7] Sistema de Información Geográfica ARC-GIS ESRI. / Geographical Information System ARC-GIS ESRI. [8] 2011 – 2015.
VEN	*[1] De organización externa. / Outside sources. Souttle Radar Topography Mission-National Geospatial Inteligence Agency (NGA) y/and National Aeronautics and Space Administration (NASA). *[2] 90 metros. / 90 mts. *[3] 90 metros. / 90 mts. *[4] Se tiene archivos de trabajos geodésicos para los Aeropuertos Internacionales de Venezuela, donde hay obstáculos en el alrededor y aprox del aeropuerto. / There are geodetic work files for International Airports in Venezuela, where there are obsctacles around and approx to the airport. [5] Los archivos mencionados anteriormente se obtuvieron por trabajos de la propia organización. / The files previously mentioned were obtained by works of the same organisation. El Servicio AIS de Venezuela a fines de 2013 adquirió un GIS que está en Fase 1 de ejecución (completar Base de datos estructurados y no estructurados) para generar un AIP electrónico. En la Fase 2 se adquirirá el Módulo e-TOD para gestionar la base de datos e-TOD de Obstáculos y Terreno que afectan las Áreas 1, 2 y 3 de los aeropuertos internacionales y espacios aéreos adyacentes.en Venezuela. / By end 2013 AIS Service in Venezuela acquired a GIS which is in execution phase 1 (complete structured and no structured database) to generate electronic AIP. In phase 2 e-TOD module will be acquired to manage e-TOD Obstacle and Terrain database affecting Areas 1, 2 and 3 of international airports and adjacent airspace in Venezuela.

APÉNDICE B / APPENDIX B

SEGUIMIENTO NIVEL DE IMPLANTACIÓN DE LA NORMA PARA LA PROVISIÓN DE DATOS ELECTRÓNICOS SOBRE EL TERRENO y OBSTÁCULOS PARA EL ÁREA 2 (E-TOD) (Ref.: Anexo 15, Cap.10)

FOLLOW-UP LEVEL OF IMPLEMENTATION OF THE STANDARD FOR THE PROVISION OF ELECTRONIC TERRAIN and OBSTACLE DATA (E-TOD) FOR THE AREA 2 (Ref.: Annex 15, Chap.10)

ESTADOS /STATES	ARG	BOL	BRA	CHI	COL	ECU	GUY	FGU	PAN	PAR	PER	SUR	URU	VEN
Modelo digital – DIGITAL MODEL														
¿Tiene su Estado desarrollado un Plan de Acción para proporcionar a partir del 12 de noviembre de 2015 los datos electrónicos sobre obstáculos situados en el ÁREA 2 que constituyan un peligro para la seguridad aérea?/ Has your State developed an Action Plan to provide from 12 November 2015, electronic data on obstacle located on AREA 2 that constitute a hazard to air safety?	N	N	Y	Y	N	P			Y	Y	Y		Y	N
¿Tiene su Estado desarrollado un Plan de Acción para proporcionar a partir del 12 de noviembre de 2015 los datos electrónicos sobre terreno correspondiente al ÁREA 2a? / Has your State developed an Action Plan to provide from 12 November 2015, electronic data on terrain corresponding to AREA 2a?	Y	Y	Y	Y	N	P			Y	N	Y		Y	N

ESTADOS /STATES	ARG	BOL	BRA	CHI	COL	ECU	GUY	FGU	PAN	PAR	PER	SUR	URU	VEN
¿Tiene su Estado desarrollado un Plan de Acción para proporcionar a partir del 12 de noviembre de 2015 los datos electrónicos sobre terreno correspondiente a la trayectoria de despegue? / Has your State developed an Action Plan to provide from 12 November 2015, electronic data on terrain corresponding to the take-off path?	Y	N	Y	Y	N	P			Y	O/G	Y		Y	N
¿Tiene su Estado desarrollado un Plan de Acción para proporcionar a partir del 12 de noviembre de 2015 los datos electrónicos sobre terreno correspondiente al área delimitada por las extensiones laterales de las superficies limitadoras de obstáculo de Aeródromo? / Has your State developed an Action Plan to provide from 12 November 2015, electronic data on terrain corresponding to the area bounded by the lateral extensions of the aerodrome obstacle limitation surfaces?	N	Y	Y	Y	N	N			Y	N	Y		N	N
Obstáculos – OBSTACLES														
¿Tiene su Estado desarrollado un Plan de Acción para proporcionar a partir del 12 de noviembre de 2015 los datos electrónicos sobre obstáculos situados en el ÁREA 2a que penetran la superficie de recopilación de datos sobre obstáculos apropiada especificada en el APN 8 del Anexo 15? / Has your State developed an Action Plan to provide from 12 November 2015, electronic data on obstacle located in AREA 2a that penetrate the appropriate obstacle data collection surface specified on Appendix 8 to Annex 15?	Y	Y	Y	Y	N	P			Y	Y	Y		N	N

ESTADOS /STATES	ARG	BOL	BRA	CHI	COL	ECU	GUY	FGU	PAN	PAR	PER	SUR	URU	VEN
¿Tiene su Estado desarrollado un Plan de Acción para proporcionar a partir del 12 de noviembre de 2015 los datos electrónicos sobre objetos situados en el área de la trayectoria de despegue que sobresalgan de una superficie plana que tenga una pendiente de 1,2% y el mismo origen que el área de trayectoria de despegue? / Has your State developed and Action Plan to provide from 12 November 2015, electronic data on objects located in the take-off path area that protrude from a flat surface with a slope of 1,2% and have the same origin as the take-off path?	Y	N	Y	Y	N	P			Y	Y1	Y		N	N
¿Tiene su Estado desarrollado un Plan de Acción para proporcionar a partir del 12 de noviembre de 2015 los datos electrónicos sobre penetraciones de las superficies limitadoras de obstáculos del aeródromo? / Has your State developed and Action Plan to provide from 12 November 2015, electronic data on penetrations to aerodrome obstacle limitation surfaces?	Y	Y1	Y	Y	N	P			Y	O/G	Y		N	N

Y = Si / Yes
[1, 2, ...] = Ver comentarios / See comments
N = No
P = Parcialmente / Partially
N/A = No aplicable / Not applicable
S/R = Sin respuesta / Without answer
O/G= En marcha/ On-going

ESTADOS/ STATES	COMENTARIOS DE LOS ESTADOS / COMMENTS BY STATES
ARG	
BOL	No hay Base de datos. / No Data Base.
BRA	Plan de acción desarrollado e implementado. / Action Plan developed and implemented.
CHI	Y1 Parcialmente. Area 2d no considerada por alto costo de implantación. / Partially. Area 2d not considered due to high implementation cost. Año 2014 datos de Aeropuerto Arturo Benitez . / Year 2014 data of Arturo Benitez airport. Año 2015 Aeropuertos de Challuta (Arica), Aeropuerto Diego Aracena (Iquique) y Aeropuerto Cerro Moreno (Antofagasta). / Year 2015 Challuta Airport (Arica), Diego Aracena Airport (Iquique) and Cerro Moreno Airport (Antofagasta).
COL	
ECU	Basados en la Declaración de Bogotá firmada en 2013. Se estima que el Ecuador podrá proporcionar los datos electrónicos sobre el terreno a partir de noviembre de 2016, de acuerdo al plan de trabajo establecido en la Hoja de Ruta del AIS al AIM. El cumplimiento parcial se debe a que el AIS no podrá realizar hasta el año 2015 el levantamiento de la información requerida para el Área 2 de todos sus aeropuertos. / Based on the Declaration of Bogota signed on 2013. It is foreseen that Ecuador will be able to submit electronic terrain data by November 2016, according to the work plan established by the AIS to AIM Roadmap. The partial compliance is due to the fact that Ecuador will not be able to collect the information required for Area 2 in all airports until 2015.
FGU	
GUY	
FGU	
PAR	Y1 Solo Aeropuerto Pettirossi. / Only Pettirossi Airport.
PER	

ESTADOS/ STATES	COMENTARIOS DE LOS ESTADOS / COMMENTS BY STATES
URU	Se está trabajando en la recopilación de datos sobre obstáculos a nivel de todo el país, pero no específicamente sobre el Área 2. / We are working gathering data about obstacles at the whole country, but not specifically on the Area 2. No dispone por el momento de un Modelo Digital del Terreno. / A Digital Terrain Model is not available at this moment.
VEN	El Servicio AIS de Venezuela a fines de 2013 adquirió un GIS que está en Fase 1 de ejecución (completar Base de datos estructurados y no estructurados) para generar un AIP electrónico. En la Fase 2 se adquirirá el Módulo e-TOD para gestionar la base de datos e-TOD de Obstáculos y Terreno que afectan las Áreas 1, 2 y 3 de los aeropuertos internacionales y espacios aéreos adyacentes.en Venezuela. / By end of 2013 AIS Service in Venezuela acquired a GIS which is in execution phase 1 (complete structured and no structured database) to generate electronic AIP. In phase 2 e-TOD module will be acquired to manage e-TOD Obstacle and Terrain database affecting Areas 1, 2 and 3 of international airports and adjacent airspace in Venezuela.

APPENDIX C

SAM Region	**PROJECT DESCRIPTION (DP)**	DP N° G1	
Programme	**Título of the Project**	**Start**	**End**
AIM (ICAO Programme Coordinator: Roberto Arca Jaurena)	Implementation of the provision of electronic Terrain and Obstacle Data (e-TOD) (SAM) Project Coordinator : Juan González (Uruguay) Experts contributing to the project: SAM/AIM IG	26/09/11	31/12/15
Objective	Support the implementation of the provision of e-TOD by SAM States and provide guidance to States on GIS acquisition and management.		
Scope	The scope of the Project contemplates the assessment and identification of implementation levels associated to the provision of electronic Terrain and Obstacle Data. It contemplates the drafting of an Action Plan and guides for the implementation of e-TOD to support developments in the provision of electronic Terrain and Obstacle Data for the evolution of Digital Terrain Models (DTM) to gradually improve electronic aeronautical charts and other similar products, with the support of tools such as the Geographical Information Systems (GIS).		
Metrics	• Number of States that have implemented GIS or automated systems. • Guide-Document with Action Plan approved. • Number of States that establish SLAs. • Number of main international airports with Area 2 (e-TOD) surveyed.		

Strategy	The conduction of Project activities will be coordinated among Project members, the Project Coordinator, and the Programme Coordinator, mainly through teleconferences (*GoToMeeting* application) and meetings that may be held within other scheduled events, based on the activities of the work programme. The Project Coordinator will coordinate with the Programme Coordinator for the inclusion of additional experts, if warranted by the tasks and works to be executed. The results of the work done will be submitted to the consideration and review of State experts in the form of a final consolidated document for analysis, review and approval, and for presentation to the GREPECAS PPRC by the Programme Coordinator.
Goals	Draft the Guide-Document containing the objectives of the e-TOD Project: 2012. Define the technical and e-TOD Project specifications: 2012. Prepare the document containing the e-TOD technical specifications: 2012. Guide on the acquisition of a Geographical Information System (GIS): 2012. GIS Implementation Manual: 2012. Available methodologies and tools for Area 2 survey: 2013 Main international airports with Area 2 (e-TOD) surveyed: 2016
Rationale	Compliance with the SARPs of Annexes 15 and 4 to facilitate the execution of performance-based air operations and to advance with the AIS-AIM transition Roadmap. A close relationship with other projects is needed in order to obtain the operational requirements of the aforementioned applications and their respective tentative dates of implementation.
Related projects	It is related to Project G3 "*Implementation of the Quality Management System in the AIM units*" in the SAM Region States

Project deriverables	**Relationship with the performance-based regional plan (PFF)/ASBU**	**Responsible**	**Status of implementation***	**Delivery date**	**Comments**
Survey on status of e-TOD implementation	PFF: SAM AIM/02	Juan González Uruguay		30/11/2011	Finalized on schedule.

Generate follow-up report.	PFF: SAM AIM/02	Juan González Uruguay		30/04/2012	Finalized on schedule.
Develop Guide-Document with the objectives of the e-TOD Project	PFF: SAM AIM/02	Juan González Uruguay		30/09/2012	Finalized on schedule. Delivered 30/09/2012.
Define the technical specification of the e-TOD Project.	PFF: SAM AIM/02	Juan González Uruguay		30/09/2012	Finalized on schedule. Delivered 30/09/2012.
Develop the document with the e-TOD technical specifications.	PFF: SAM AIM/02	Juan González Uruguay		30/09/2012	Finalized on schedule. Dellivered 30/09/2012.
Guide for the acquisition of a Geographical Information System (GIS)	PFF: SAM AIM/01	Juan González Uruguay		09/03/2012	Finalized on schedule.
GIS Implementation Manual.	PFF: SAM AIM/01	Juan González Uruguay		09/03/2012	Finalized on schedule.
Present to States different options and available tools for the Area 2 survey	ASBU:BO30 DATM	ICAO Coordinator		26/07/2013	Finalized on schedule
Conduct seminars for e-TOD specialists, describing the plans and expected operational and economic benefits.	PFF: SAM AIM/02 ASBU:BO30 DATM	ICAO Coordinator		30/03/2015	
Resources required	Designation of experts in the execution of some of the deliverables. More commitment by States to support the designated Coordinators and experts that are working.				

**Grey* *Task not started.*
Green *Activity under way as scheduled.*
Yellow *Activity started with some delay but expected to be complete don time.*
Red *It has not been possible to implement this activity as scheduled; mitigating measures are required.*

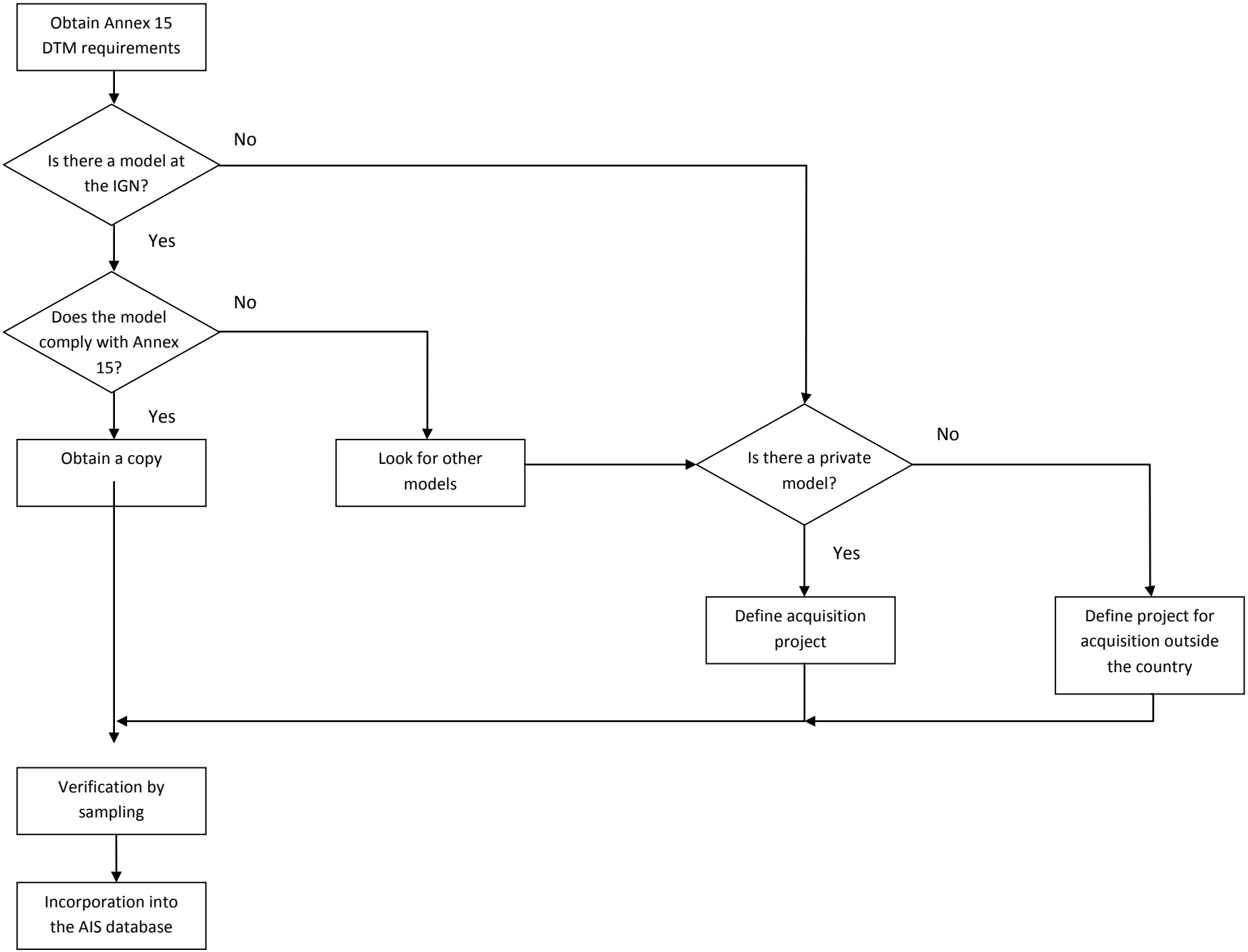
APPENDIX D

MODEL GUIDE

TO OBTAIN A DTM/DEM

FOR AIS

MODEL GUIDE TO OBTAIN A DTM/DEM FOR AIS



PROCESS DETAILS

- Obtain Annex 15 DTM requirements
  - Collect the requirements published in Annex 15 in order to have them available.

- Obtain a copy
  - Define a document containing the requirements for obtaining the model.
  - Present the document to the provider in order to get its conformity and validation of the requirements.
  - Obtain the model
  - Generate backups (use a copy, not the original).
  - Ask if the model has ISO certification.

- Look for other models
  - Study the market to check the existence of models that meet the requirements.
  - Request support from cartographic institutes or offices to obtain information on places where such models can be obtained.

- Verification by sampling
  - Once the model has been selected, ask the areas that conduct field work, whenever possible, to perform sample-type measurements at sites you will have to visit so as to have information to validate existing data.
  - Enter into an SLA with the data survey organisation to ensure compliance with Annex 15 specifications.

- Incorporation into the AIS database
  - Define the process for incorporating the model.
  - Verify.
  - Validate.

- Define acquisition project
  - Define a document containing the requirements for obtaining the model.
  - Prepare, and obtain approval for the budget.
  - Send the requirements to possible bidders.
  - Verify compliance with requirements.
  - Acquisition *per se*.

- Define project for acquisition outside the country
  - Define a document containing the requirements for obtaining the model.
  - Research the existence of providers of the model.
  - Prepare, and obtain approval for the budget.
  - Send the requirements to possible bidders.
  - Verify compliance with requirements.
  - Acquisition *per se*.

GENERAL ASPECTS TO TAKE INTO ACCOUNT

- The participation of planners is recommended when obtaining the DTM/DEM to cover Area 2.
- The participation of planners and aerodrome operators is recommended when obtaining the DTM/DEM to cover Areas 3 and 4.
- It is recommended that each State study the guide and adjust it to its own requirements.

Agenda Item 2: Implementation of systems for Aeronautical Information Data Exchange and Aeronautical Data

2.1 Under this agenda item, the Meeting reviewed the following paper:

a) WP/04 - *GREPECAS Project G2 – Implementation of Aeronautical Information/ Data Exchange systems (*presented by the Secretariat);

2.2 The Secretariat informed that ***Project G2 -*** *"Implementation of Aeronautical Information Exchange Systems (AIXM)"* still had no Coordinator and that the States had not offered experts to coordinate the tasks of this Project. The description of the Project is presented in **Appendix A** to this part of the Report.

2.3 The Secretariat produced the deliverables of the information provided at the SAM/AIM/3 and SAM/AIM/4 meetings, but the Project on the Exchange of Aeronautical Data and Information was behind schedule.

2.4 The Secretariat noted that if the Project did not obtain the support of the experts, a request would have to be submitted to GREPECAS to abandon this Project, and invited the Meeting to establish an *ad hoc* group to try to reactivate this Project, by designating a coordinator to work with the Secretariat and start producing guidance documentation for the States.

2.5 In this regard, the Meeting took note that Uruguay had offered to translate the necessary AIXM documents from English into Spanish.

Progress in Project G2 AIXM

2.6 The results of the *ad hoc* group on AIXM were as follows:

2.6.1 **AIXM Action Plan**

2.6.1.1 The Action Plan to continue and complete Project G2 included the following activities:

- Compilation of AIXM specifications (Eurocontrol):
  - Compile AIXM documentation.
  - Translation of documentation into Spanish.
  - Review of documentation.
  - Obtention of validated documentation.

- AIXM Data Transmission/Reception Tests (Basic):
  - Drafting of document describing the testing sequence.
  - Conduction of the AIXM test itself.
  - Report on results of data transmission/reception tests.

- AIXM Training
  - Basic AIXM training (with informative approach for AIS personnel).
  - Advanced AIXM training (including AIXM course/workshop).

- Guidance document in Spanish:
  - Prepare the guidance document for the CAR/SAM Regions.

2.7 The Secretariat accepted and expressed its acknowledgment to CORPAC, Peru, for its proposal to designate Ms. Karina Calderón, Systems Engineer, as Coordinator of the GREPECAS AIXM Project.

APPENDIX A

SAM Region	**PROJECT DESCRIPTION (DP)**	DP N° G2	
Programme	**Project title**	**Start**	**End**
AIM (ICAO Programme Coordinator: Roberto Arca Jaurena)	G2: Aeronautical Information/Data Management (SAM) Project Coordinator: There is no coordinator Experts contributing to the Project: SAM/AIM/IG	01/03/12	31/12/15
Objective	Prepare an action plan to be followed by the States for the application of the Aeronautical Information/Data Exchange Model		
Scope	The scope of the Project covers the assessment and identification of automation levels associated to the integration of the Aeronautical Information and Data Exchange Model in the Region, through surveys, the identification of database providers and the follow-up of the development of SARPs on this topic.		
Metrics	Number of States with data exchange systems Action Plan implemented.		
Goals	Complete all the documentation required for the States before 31/12/15.		

Strategy	The implementation of Project activities will be coordinated amongst Project members, the Project Coordinator and the Programme Coordinator, mainly through teleconferences (*GoToMeeting* tool) as well as seminars/meetings in function of the activities of the work programme. The Project Coordinator will coordinate with the Programme Coordinator the inclusion of additional experts if so required by the tasks and work to be performed. Coordination will take place between the CAR and SAM Regions. The results of the work done will be submitted to State experts in the form of a final consolidated document for analysis, revision and approval, and will be submitted by the Programme Coordinator to the GREPECAS PPRC.
Rationale	Integrate aeronautical information to enable ATM systems interoperability, while maintaining safety, applying Information Exchange Models.
Related projects	It is related to Project G3 "*Assessment and development of AIM QMS in SAM States"*

Project deliverables	**Relationship with the Regional performance-based plan (PFF)**	**Responsible party**	**Status of Implementation***	**Delivery date**	**Remarks**
Survey of IAIP provision using a table.	PFF: SAM AIM/02	ICAO Coordinator		16/03/12	Completed on schedule at the SAM/AIM meeting.
Distribution of IAIP survey to States.	PFF: SAM AIM/02	ICAO Coordinator		16/03/12	Completed on schedule at the SAM/AIM meeting.
Collection and updating	PFF: SAM AIM/02	ICAO Coordinator		16/03/12	Completed on schedule at the SAM/AIM meeting.
Compilation of the experience of SAM States with the electronic AIP.	PFF: SAM AIM/02	ICAO Coordinator		16/03/12	Complete don schedule at the SAM/AIM meeting.

Analise Eurocontrol AIXM specifications.	PFF: SAM AIM/02	ICAO Coordinator		TBD	
Organize AIXM Seminar.	PFF: SAM AIM/02	ICAO Coordinator		TBD	
Development of guidance material.		ICAO Coordinator		TBD	
Development of an AIXM Action Plan for States.	PFF: SAM AIM/02	ICAO Coordinator		TBD	
Necessary resources	Designation of experts to execute some of the deliverables. Greater commitment of States to support coordinators and experts who are working.				

**Grey* *Task not started.*
Geen *Activity underway as scheduled.*
Yellow *Activity started with some delay but would be completed as scheduled.*
Red *This activity has not been implemented as scheduled and mitigation measures are required.*

Agenda Item 3: Implementation of the Quality Management System in AIM units

3.1 Under this agenda item, the Meeting reviewed the following papers:

a) WP/05 - *GREPECAS Project G3-Implementation of the Quality Management System in AIM units (*presented by the Secretariat);
b) IP/03 - *Status of progress in the implementation of Quality Management System (QMS)* (presented by Panama - *Spanish only*)

GREPECAS Project G3 – Implementation of the Quality Management System in AIM units

3.2 When analyzing ***Project G3 - "Implementation of the Quality Management System in AIM units*"**, shown in **Appendix A**, the Secretariat informed that progress had been made in the implementation of quality systems, but much work remained to be done and, consequently, further efforts had to be made to achieve the objective.

Progress of G3 Project

3.3 The Meeting took note that Argentina has advanced 20%, reaching 70% implementation, and that it would be certified in December 2015.

3.4 Peru informed that it had made 20% progress, reaching 80% implementation, maintaining August 2015 as the certification date.

3.5 Uruguay informed that it was in the final audit phases and that it would be ready for certification by the end of July 2015.

Analysis of compliance with goals, based on G3 Project indicators/metrics

- States certified with QMS ISO 9001:2008
  2012 = 4 States **2014 = 5 States**

3.6 Currently, there are five States certified in QMS in the SAM Region: **Brazil, Chile, Ecuador, French Guiana** and **Paraguay.** The last update on March 2015 and the progress made by each State since 2012 can be seen in the following table:

State	% implementation March 2015	Implementation date	% Progress
Argentina	70%	Dec/2015	20%
Bolivia	30%	Jul/2015	0%
Brazil	**CERTIFIED**	----------	----------
Chile	**CERTIFIED**	----------	----------
Colombia	90%	Sep/2014	20%
Ecuador	**CERTIFIED**	----------	----------
French Guiana	**CERTIFIED**	----------	----------
Guyana	25%	Dec/2015	25%

State	% implementation March 2015	Implementation date	% Progress
Panama	50%	3rd quarter/2015	10%
Paraguay	**CERTIFIED**	----------	----------
Peru	80%	Aug/2015	20%
Suriname	45%	Aug/2014	15%
Uruguay	95%	Jul/2015	5%
Venezuela	70%	Nov/2014	20%

3.7 The Meeting took note that the States that had set their implementation date for August, September and November 2014, had not provided any information regarding certification or the status of the implementation plan, or the problems faced during the implementation process.

3.8 Likewise, the Secretariat stressed the need to insist with the experts on completing the certification, which is not a complicated process.

3.9 Finally, the Secretariat informed that Panama had submitted an information paper postponing the date of certification until the third quarter of 2015. The progress made by Colombia, Venezuela and Suriname could not be reflected in the Report because they had not attended the Meeting nor submitted the data by other means.

APPENDIX A

SAM Region	**PROJECT DESCRIPTION (DP)**	DP N° G3	
Programme	**Title of the Project**	**Start**	**End**
AIM (ICAO Programme Coordinator: Roberto Arca Jaurena)	G3: Implementation of the Quality Management Systems in the AIM units of SAM States Project Coordinator: Oscar Dioses (Peru) Experts contributing to the Project: SAM/AIM IG David Díaz (Peru)	03/10/11	01/09/14
Objective	Implement guides applicable to the Quality Management System in a digital/electronic AIM environment in the SAM Region, based on the regional performance objectives of the SAM performance-based implementation plan.		
Scope	The scope of the Project contemplates the assessment and identification of implementation levels associated to quality management in AIM services in the Region. Drafting of an Action Plan and guides for the implementation of QMS in a digital/electronic AIM environment.		
Metrics	Percentage of States with ISO 9001:2008 QMS certification.		
Goals	50% of States with the ISO standard 9001:2008 implemented by 2013, and certified by 2014.		
Strategy	Project activities will be coordinated through communications among project members, the Project Coordinator, and the Programme Coordinator, mainly through teleconferences (*GoToMeeting* application) and meetings that may be held within other scheduled events, based on the activities of the work programme. The Project Coordinator will coordinate with the Programme Coordinator for the inclusion of additional experts, if warranted by the tasks and work to be performed. The results of the work done will be submitted to the consideration and review of State experts in the form of a final consolidated document for analysis, review, and approval, and for presentation to the GREPECAS PPRC by the Programme Coordinator.		

Rationale	The Quality Management System in AIM services must provide users the required guarantee and assurance that the aeronautical information/data distributed meets quality requirements in terms of accuracy, resolution and integrity. There needs to be a close relationship with other projects in order to collect the operational requirements of the aforementioned applications and their respective tentative dates of implementation.
Related projects	This project is related to Projects G1 "Implementation of the provision of electronic Terrain and Obstacle Data e-TOD" and G2 "Implementation of Aeronautical Information Exchange Systems (AIXM)".

Project deliverables	**Relationship with the performance-based regional plan (PFF)**	**Responsible party**	**Status of imple-mentation***	**Delivery date**	**Comments**
Prepare surveys to establish the levels of compliance and implementation of AIM-QMS based on ICAO guides	PFF: SAM AIM/01	ICAO Coordinator		25/11/11	Finalised as scheduled.
Circulate surveys to the States	PFF: SAM AIM/01	ICAO Coordinator		17/02/12	Finalised as scheduled.
Collect and tabulate the information of the States	PFF: SAM AIM/01	ICAO Coordinator		13/04/12	Finalised on 30/03/12.
Description of steps for QMS implementation.	PFF: SAM AIM/01	SAM/AIM/WG		30/03/12	Finalised as scheduled.
QMS self-assessment questionnaire	PFF: SAM AIM/01	David Diaz RLA/06/901		30/03/12	Finalised as scheduled.

Template with QMS assessment results	PFF: SAM AIM/01	David Diaz RLA/06/901		30/03/12	Finalised as scheduled.
QMS implementation plan	PFF: SAM AIM/01	David Diaz RLA/06/901		19/10/12	Finalised as scheduled.
QMS procedures and preventive actions.	PFF: SAM AIM/01	Oscar Dioses Peru		19/10/12	Finalised as scheduled.
QMS internal audit procedure.	PFF: SAM AIM/01	Oscar Dioses Peru		19/10/12	Finalised as scheduled.
Procedure for controlling AIS service management system records	PFF: SAM AIM/01	Oscar Dioses Peru		19/10/12	Finalised as scheduled.
Procedure for drafting QMS documents.	PFF: SAM AIM/01	Oscar Dioses Peru		19/10/12	Finalised as scheduled.
Service control procedure - QMS non-conforming products.	PFF: SAM AIM/01	Oscar Dioses Peru		19/10/12	Finalised as scheduled.
Procedures for controlling the documents of the AIS service management system.	PFF: SAM AIM/01	Oscar Dioses Peru		19/10/12	Finalised as scheduled.
SLA with service providers to ensure the quality of the information and the AIM data exchange.	PFF: SAM AIM/01	Juan J. González Uruguay		19/10/12	Finalised as scheduled.

Collect certifications and produce report on the status of ISO 9001:2008 certifications in the SAM Region	PFF: SAM AIM/01	ICAO Coordinator		SAM/AIM Meeting	
Resources required	Designation of experts in the execution of some of the deliverables. More commitment by States to support the designated Coordinators and experts.				

**Grey* *Task not started.*
Green *Activity underway as scheduled.*
Yellow *Activity started with some delay but expected to be completed on time.*
Red *It has not been possible to implement this activity as scheduled; mitigating measures are required.*

Agenda Item 4: NOTAM Contingency Plan and AIM deficiencies

4.1 Under this agenda item the Meeting reviewed the following papers:

a) WP/06 - *Update of the NOTAM Contingency Plans and deficiencies in the AIM area (*presented by the Secretariat);
b) WP/12 - *Update of the NOTAM Contingency Plans and deficiencies in the AIM area-NOTAM Contingency Plan proposal between Peru and Panama* (presented by Panama - *Spanish only*)
c) IP/04 - *Agreement on NOTAM Contingency Plan* (presented by Panama - *Spanish only*)

Update of the NOTAM Contingency Plans and deficiencies in the AIM area

4.2 The Meeting took note of the intention of Panama and Peru to implement a NOTAM Contingency Plan however, due to the absence of Panama it was not possible to sign the Agreement.

Progress in the SAM Region

4.3 The Secretariat recalled that in SAM/AIM meetings the Regional Catalogue of SAM NOTAM Contingency Plans, presented in **Appendix A** to this part of the Report, is updated. Both Peru and Bolivia included their NOTAM Contingency Plans in the Regional Catalogue.

Progress on the deficiencies reports in the AIM Area

4.4 The Secretariat took note with satisfaction of the significant reduction in the deficiencies in the AIM Area included in the GANDD database. The 76 deficiencies in the AIM Area of all the SAM Region, included in the last information presented at GREPECAS last year, have been reduced to 36.

4.5 The progress of the Region to overcome these deficiencies in the AIM area since the last revision presented at GREPECAS has been of 47% to date. The list of updated AIM deficiencies of each State is presented in **Appendix B** to this part of the Report.

APÉNDICE / APPENDIX A

Catálogo de los Planes de Contingencia NOTAM de la Región SAM **Fecha:** **27 de marzo de 2015**
Catalogue of NOTAM Contingency Plans in the SAM Region **Date:** **27 March 2015**

Estado/ State	Estado de respaldo/ Backup State	Situación / Status		Punto de Contacto/ Contact Point	Descripción general de facilidades y servicios que garantizan la continuidad / General description of facilities and services available which ensure continuity	Banco NOTAM NOTAM Bank
		Borrador/ Draft	Final			
1	2	3	4	5	6	7
Argentina	Uruguay		X	NOF Ezeiza Tel: 541 4480 2294 Fax: 541 4480 2260 Email: nofezeiza@anac.gov.ar NOF Montevideo Tel: 5982 6040067 Email: ais@adinet.com.uy	AFS, Tel/Fax, REDDIG, Internet	AMHS
Bolivia	Perú		X	NOF La Paz Tel: 5912 2316686 Email: ais@aasana.bo NOF Lima Tel: 511 2301288 –2301172 Email: fvasquez@corpac.gob.pe nofperu@corpac.gob.pe	AFS, Tel, REDDIG, Internet	
Brasil/Brazil				NOF Brasil Tel/Fax: 5561 33648353 Email: nofbrazil@cindacta1.aer.mil.br		SISNOTAM

Estado/ State	Estado de respaldo/ Backup State	Situación / Status		Punto de Contacto/ Contact Point	Descripción general de facilidades y servicios que garantizan la continuidad / General description of facilities and services available which ensure continuity	Banco NOTAM NOTAM Bank
		Borrador/ Draft	Final			
1	2	3	4	5	6	7
Chile	Ecuador		X	NOF Chile Tel: 562 8404033 Email: nofchile@dgac.cl NOF Guayaquil Tel: 5934 2285661 – 5934 2282017 Email: nof_ecuador@dgac.gob.ec	AFS, Tel/Fax, REDDIG, Internet	IAT-WIN
Colombia				NOF Bogotá Tel: 571 2962991 Email: ais@aerocivil.gov.co; solicitudes.notam@aerocivil.gov.co		Actual Banco Web / Current Web Bank AMHS
Ecuador	Chile		X	NOF Guayaquil Tel: 5934 2285661 – 5934 2282017 Email: nof_ecuador@dgac.gob.ec NOF Chile Tel: 562 8404033 Email: nofchile@dgac.cl	AFS, Tel/Fax, REDDIG, Internet	IAT-WIN
Guyana	Suriname	X		NOF Guyana Telefax: 592 2612279 Tel: 592 2612269 AFS: SYCJYNYX Cable: TIMAIRPORT GUYANA Email: ais@gcaa-gy.org	AFS, Tel/Fax, REDDIG, Internet	
Guyana Francesa/ French Guiana						

Estado/ State	Estado de respaldo/ Backup State	Situación / Status		Punto de Contacto/ Contact Point	Descripción general de facilidades y servicios que garantizan la continuidad / General description of facilities and services available which ensure continuity	Banco NOTAM NOTAM Bank
		Borrador/ Draft	Final			
1	2	3	4	5	6	7
Panamá	Honduras	X		NOF Panamá Tel: 2382 6152616 Email: nof@aeronautica.gob.pa	AFS, Tel/Fax, REDDIG, Internet	AMHS
Paraguay				NOF Asunción Tel: 59521 645952		
Perú	**Bolivia**		X	NOF Lima Tel: 511 2301288 – 2301172 Email: fvasquez@corpac.gob.pe nofperu@corpac.gob.pe NOF La Paz Tel: 5912 2316686 Email: ais@aasana.bo		AMHS
Suriname	Guyana	X		NOF Suriname Tel: 597 0325103 Email: ais.sur@hotmail.com ais@cadsur.sr	AFS,Tel/Fax, REDDIG, Internet	
Uruguay	**Argentina**		X	NOF Montevideo Tel: 5982 6040067 Email: ais@adinet.com.uy NOF Ezeiza Tel 5414 480 2294 Fax 5414 480 2260 Email: nofezeiza@anac.gov.ar	AFS, Tel/Fax, REDDIG, Internet	AMHS
Venezuela						.

Nota/Note:

Columna 1: Indicar Estado, Territorio u Organismo Internacional / Indicate State, Territory or International Organization.

Columna 2: Indicar Estado, Territorio u Organismo Internacional con quien debe coordinarse el Plan de Contingencia del Estado citado en la Columna 1 / Indicate State, Territory or International Organization with whom the Contingency Plan of the State mentioned in Column 1 should be coordinated.

Columna 3: Marcar con X en el caso que el Plan de Contingencia se encuentre en proceso para su armonización con el Estado en cuestión / Mark with an X in case the Contingency Plan is in process for its harmonization with the referred State.

Columna 4: Marcar con X en el caso que el Plan de Contingencia se encuentre armonizado con el Estado en cuestión / Mark with an X in case the Contingency Plan is in process for its harmonization with the referred State.

Columna 5: Indicar cargo del Punto de Contacto y medio de comunicación a utilizar en caso de ser necesario / Indicate position of the Point of Contact and communications means to be used, if necessary.

Columna 6: Indicar cuáles son, en general, las facilidades y los servicios disponibles mientras el Plan de Contingencia se encuentra activado / Indicate which are, in general, the facilities available services while the Contingency Plan is activated.

Columna 7: Banco NOTAM / NOTAM Bank.

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IDENTIFICATION			DEFICIENCY				ACTION PLAN			
ID	**Requirements**	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Priority**	**Description**	**Executing body**	**Date of completion**	**Remarks**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
ARG Argentina										
AIS 15 SAM	ICAO Annex 4; Para. 2.18.2.2 y Annex 15, Para. 1.2.2.4	Argentina	Publication of the geoid undulation as it is required.		SAM RO records.	A	# Action Plan (2006) indicated that relevant action is being taken on the matter. Implementation 70%	Indicated State		Completion date: TBD
AIS 35 SAM	Annex 15; 1.3.1 English language	Argentina	Complete AIP in English language		SAM RO Records.	U	1. Action Plan (2006) indicated that relevant action is being taken on the matter. NOTAM impl. 100%; AIP 30%.	Indicated State.	AUG/ 2015	2008: Requirement of English language experts translator personnel requirement, in order to comply with deadlines.
AIS 60 SAM	Annex 4, 17; Cap. 17.1. VFR aeronautical chart (Scale, 1:500,000)	Argentina	Need for production of this serie of ICAO chart under the WGS-84 system to satisfy the lack of production of the WAC aeronautical chart.		SAM Office records.	B	It is indicated in action plan (2005) that implementation of this requirement is under progress. 20% advance.	Indicated State.	DEC/ 2013	2008: As expressed in the last action plan, the implementation of this requirement is in progress. An analysis of distribution of sheets was made, and the results were that in order to cover in chart scale 1:500.000 Argentina needs 40 sheets, two were produced and the third one is in advanced phase. Percentage made 6%.
AIS 95 SAM	Annex 4, Chap 13, Para 13.6.1 C). Aerodrome/Heliport Chart - ICAO.	Argentina	Need for the inclusion of geoid undulation in the Aerodrome/Heliport Chart - ICAO.		SAM OfficeRecords.	A	Action Plan (2006) 90% implemented. Geoidal undulation data published in the AIP for all airports.	Indicated State	NOV/ 2008	In AMD 03/08 it is expected that this data will be included in aerodrome/helicopter ICAO Type charts.
AIS 162 SAM	Annex 15, Para. 3.7.1 Implementation of Quality system (QS) at the AIS	Argentina	It is required the implementation of a quality system (QS); as well as, of the quality assurance and quality control procedures at the AIS/MAP services.		Relevant Documented Procedures developed by SAM/AIM Group and GREPECAS Proyect according to ISO 9001:2008.	A	It is indicated in the action Plan (2006) that relevant actions on the matter, are being taken as required. Internal auditories are carried out at the AIS.	Indicated State	DEC/ 2015	SAMIG/13 Completion date expected Sep. 2014

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ID	**Requirements**	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Priority**	**Description**	**Executing body**	**Date of completion**	**Remarks**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
BOL Bolivia										
AIS 36 SAM	Annex 15;Cap 1 para. 1.3.1 English language	Bolivia	Requirement to use English for plain language texts in AIS publications		SAM RO Records. 70% Implemented. Information given in SAM/AIM/6 Meeting Full Implementation December 2015 NOTAM Bilingual publishing	A	Action Plan (2006) AIS staff is under training 20% implemented	AASANA	DEC/ 2011	15 Jul 2010: Through Note DNA439/MET020/10 DGAC-0-1-1519 information was received regarding date of compliance, December 2011. Through Note DNA-0529/11 DGAC-012987/2011 information was received regarding date of compliance, December 2011.
AIS 52 SAM	Annex 4, 17; Cap. 17.1 VFR aeronautical chart (Scale, 1:500,000)	Bolivia	Need for production of this serie of ICAO chart under the WGS-84 system to satisfy the lack of production of the WAC aeronautical chart.		SAM Office records. Charts are Produced but not published yet.	B	Action Plan (2006)	Indicated State.		15 Jul 2010: Through Note DNA439/MET020/10 DGAC-0-1-1519 and Note DNA-0529/11 DGAC-012987/2011 information was received that chart 1:500.000 will not be published.

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IDENTIFICATION			DEFICIENCY				ACTION PLAN			
ID	**Requirements**	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Priority**	**Description**	**Executing body**	**Date of completion**	**Remarks**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
AIS 163 SAM	Annex 15, Para. 3.7.1 Implementation of Quality system (QS) at the AIS	Bolivia	It is required the implementation of a quality system (QS); as well as, of the quality assurance and quality control procedures at the AIS/MAP services.		Relevant technical documentation has been prapared by the SAM/AIM group to assist the SAM States to achieve this objective Bolivia Informed there is not an Oficial Plan. SAM/AIM/6	A	I action Plan (2006) working are being carried out on the matter.	AASANA	DEC/ 2011	15 Jul 2010: Through Note DNA439/MET020/10 DGAC-0-1-1519 information was received that date of compliance is December 2011. To date 10% implemented. Through Note DNA-0529/11 DGAC-012987/2011 information was received regarding date of compliance, December 2011. SAMIG/13 was informed estimated date of implementation July 2015

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ID	**Requirements**	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Priority**	**Description**	**Executing body**	**Date of completion**	**Remarks**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
COL Colombia										
AIS 166 SAM	Annex 15, Para. 3.7.1 Implementation of Quality system (QS) at the AIS	Colombia	It is required the implementation of a quality system (QS); as well as, of the quality assurance and quality control procedures at the AIS/MAP services.		Relevant technical documentation and rules has been prapared by SAM/AIM Group in order to assist the SAM States to achieve this objective	A	Action Plan 2006. 30% implemented. 60% was implemented through the application of process management system (GP 1000) corresponding to the quality assurance systems.	Indicated State	JAN/ 2010	
AIS 182 SAM	ANNEX 15; Chap 3, 3.3.3 and 3.5.2 Integrity of aeronautical information/data.	Colombia	Need that quality control (QC) system be implemented by the States, to ensure the required level of integrity of the aeronautical information/data issued and/or available. Application of cyclic redundancy check (CRC).		Registro Oficina SAM	A	Action Plan (2006) action is being taken on the matter. Rrequirements for aeronautical data integrity are included in RAC-15. Up to 2009 AIS counts with an automated system to manage information.	Indicated States	JAN/ 2012	

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ID	**Requirements**	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Priority**	**Description**	**Executing body**	**Date of completion**	**Remarks**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
ECU Ecuador										
AIS 232 SAM	Annex 15; 1.3.1. English language	Ecuador	Requirement to use English for plain language texts in AIP publications		SAM RO Records.. Ecuador informed SAM/AIM/6 Meeting Implementation date August 2015	A	Action plan 2005. 50% implemented.	Indicated State.		

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IDENTIFICATION			DEFICIENCY				ACTION PLAN			
ID	**Requirements**	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Priority**	**Description**	**Executing body**	**Date of completion**	**Remarks**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
GUY Guyana										
AIS 54 SAM	Annex 4, 17; Cap. 17.1. VFR aeronautical chart (Scale, 1:500,000)	Guyana	Need for production of this serie of ICAO chart under the WGS-84 system to satisfy the lack of production of the WAC aeronautical chart.		SAM Office records.	B	Action plan (2004) required actions should be taken.	Indicated State.		
AIS 70 SAM	ICAO Annex 4, Chapter 11; 11.7.2 and 11.10.6.5. Instrumens approach charts.	Guyana	Need to complete the inclusion of the topographic (11.7.2), and the ground profile informations (11.10.6.5) in the production of all instrument approach charts - OACI.		SAM Office records.	A	Action plan (2004. 50% implemented.	Indicated State		
AIS 105 SAM	ICAO Annex 4, Chapter 7;Par. 7.6.2 Enroute Navigation Charts - ICAO.	Guyana	Need to produce and include in the AIP the Enroute Charts - ICAO, also including the required Area Minimun Altitude (AMA) in such serie of charts.		SAM Office records	A	Action plan 2004. 50% implemented.	Indicated State		
AIS 127 SAM	Annex 15, Chap 8.3.1; Doc 8733 ANP, Parte VI, Para. 28 Post-flight Information Service	Guyana	Need for effective coordination between the AIS, ATS and users for the effective level of compliance with this requirement.		Records SAM Office.Email Guyana 29/june/2011 AIC will be dissemineted to inform users of this need	A	Action Plan 2004 90% implemented.	Indicated State	DEC/ 2011	
AIS 134 SAM	Annex 4, Chap 13, Para 13.6.1 C). Aerodrome/Heliport Chart - ICAO.	Guyana	Requirement to effectively satisfy the specification on the inclusion of geoid undulation in the Aerodrome/Heliport Chart - ICAO.		Records SAM Office.Email Guyana 29/june/2011 Next Chart production will include this estándar	A	Action Plan 2004 50% implemented.	Indicated State	2012	It is planned to implement in the next chart in 2012
AIS 169 SAM	Annex 15, Para. 3.2 Implementation of Quality system (QS) at the AIS	Guyana	It is required the implementation of a quality system (QS); as well as, of the quality assurance and quality control procedures at the AIS/MAP services.		Relevant technical documentation and rules has been developped by the GREPECAS AIS/MAP Subgroup, in order to assist the CAR/SAM States to achieve this objective.	A	Action plan 2004 action should be taken as required	Indicated State	2012	QMS to be developed by 2012 Email Guyana 29/june/2011
AIS 185 SAM	ANNEX 15; Chap 3, 3.2.8, and 3.2.10 Integrity of aeronautical information/data.	Guyana	Need that quality control (QC) system be implemented by the States, to ensure the required level of integrity of the aeronautical information/data issued and/or available. Application of cyclic redundancy check (CRC).		Email Guyana 29/june/2011 Pending tyhe implementation of QMS-AIS	A	Action plan 2004 action should be taken as required	Indicated States	2012	pending the implementation of QMS Email Guyana

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IDENTIFICATION			DEFICIENCY				ACTION PLAN			
ID	**Requirements**	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Priority**	**Description**	**Executing body**	**Date of completion**	**Remarks**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
AIS 225 SAM	CAR-SAM ANP Part VIII (AIS); Para. 65, 66, 67, 68 AND 69. Regional AIS automated system	Guyana	Requirement for implementation of automated system at the AIS services, in agreement with the indicated in the CAR/SAM Air Navigation Plan..		Records SAM Office. Email Guyana 29/june/2011 40% completed. Studies has to be done to determine needs and develop a roadmap	A	Action Plan 2004 20% implemented.	Indicated State	2014	40% completed. Studies has to be done to determine needs and develop a road map

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IDENTIFICATION			DEFICIENCY				ACTION PLAN			
ID	**Requirements**	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Priority**	**Description**	**Executing body**	**Date of completion**	**Remarks**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
PAN Panama										
AIS 77 SAM	ICAO Annex 4, Chapter 3. Aerodrome Obstacle Chart - ICAO, Type A.	Panama	Need for effective production of Aerodrome Obstacle Chart - ICAO, Type A., concerning the following airport: Enrique Malek y Bocas del Toro..		SAM Office records.	A	Action plan 2006 Will be completed during	Indicated State		
AIS 170 SAM	Annex 15, Para. 3.2 Implementation of Quality system (QS) at the AIS	Panama	It is required the implementation of a quality system (QS); as well as, of the quality assurance and quality control procedures at the AIS/MAP services.		Relevant technical documentation and rules are being prapared by the GREPECAS AIS/MAP Subgroup, in order to assist the CAR/SAM States to achieve this objective Panama informed SAM/AIM/6 Meeting implementation date August 2015	A	Action plan 2006 Action is being taken.	Indicated State		
AIS 186 SAM	ANNEX 15; Chap 3, 3.2.8, and 3.2.10 Integrity of aeronautical information/data.	Panama	Need that quality control (QC) system be implemented by the States, to ensure the required level of integrity of the aeronautical information/data issued and/or available. Application of cyclic redundancy check (CRC).		Registro Oficina SAM	A	Action plan 2006 Action is being taken.	Indicated States		

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IDENTIFICATION			DEFICIENCY				ACTION PLAN			
ID	**Requirements**	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Priority**	**Description**	**Executing body**	**Date of completion**	**Remarks**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
PER Peru										
AIS 39 SAM	Annex 15; 3.6.1 English language	Peru	Requirement to use English for AIP.	JUL/ 2008	SAM RO Records. Implementation is expected December 2015	A	Action Plan (2006) 15% implemented.	Indicated State.	DEC/ 2015	
AIS 78 SAM	ICAO Annex 4, Chapter 3. Aerodrome Obstacle Chart - ICAO, Type A.	Peru	Need for effective production of Aerodrome Obstacle Chart - ICAO, Type A., concerning the following airport: Chiclayo, y Pisco .		SAM Office records. It is included in Action Plan 2010-2016.	A	Action plan (2006) 30% implemented.	Indicated State	DEC/ 2010	
AIS 172 SAM	Annex 15, CAP 3; Para. 3.7 Implementation of Quality system (QS) at the AIS	Peru	It is required the implementation of a quality system (QS);		SAM/AIM Group provided all documented procedures Peru informed in SAM/AIM/6 Meeting implementation Date August 2015	A	Action plan 2006 30% implemented	Indicated State	AUG/ 2015	

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REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE AIS FIELD IN THE SAM REGION

IDENTIFICATION			DEFICIENCY				ACTION PLAN			
ID	**Requirements**	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Priority**	**Description**	**Executing body**	**Date of completion**	**Remarks**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
PRY Paraguay										
AIS 38 SAM	Annex 15; 3.6.1 English language	Paraguay	Requirement to use English for plain language texts in AIS publications		SAM RO Records. P/DINAC 1302/2011 Implementation is expected in August 2012.	A	Action Plan (2006) Action Plan completion August 2012	DINAC	APR/ 2015	Implementation planned in August 2012 P/DINAC nro 1302/2011 EXP DINAC Nro. 002168/11 Correcting action plan implemented 90%

OUTSTANDING DEFICIENCIES

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REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE AIS FIELD IN THE SAM REGION

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ID	**Requirements**	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Priority**	**Description**	**Executing body**	**Date of completion**	**Remarks**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
SUR Suriname										
AIS 57 SAM	Annex 4, 17; Cap. 17.1. VFR aeronautical chart (Scale, 1:500,000)	Suriname	Need for production of this serie of ICAO chart under the WGS-84 system to satisfy the lack of production of the WAC aeronautical chart.		SAM Office records.	B	Action plan 2005	Indicated State.		
AIS 136 SAM	ICAO Annex 4, Chapter 11; 11.7.2 and 11.10.6.5. Instrument Approach Charts - OACI.	Suriname	Need to include the topographic (11.7.2), and the ground profile informations (11.10.6.5) in the production of instrument approach charts - OACI.		Records SAM Office.	A	Action plan 2005 70% implemented	Indicated State		
AIS 173 SAM	Annex 15, Para. 3.2 Implementation of Quality system (QS) at the AIS	Suriname	It is required the implementation of a quality system (QS); as well as, of the quality assurance and quality control procedures at the AIS/MAP services.		Relevant technical documentation and rules are being prapared by the GREPECAS AIS/MAP Subgroup, in order to assist the CAR/SAM States to achieve this objective	A	Action plan 2005 Ongoing	Indicated State		
AIS 189 SAM	ANNEX 15; Chap 3, 3.2.8, and 3.2.10 Integrity of aeronautical information/data.	Suriname	Need that quality control (QC) system be implemented by the States, to ensure the required level of integrity of the aeronautical information/data issued and/or available. Application of cyclic redundancy check (CRC).		Registro Oficina SAM	A	Action plan 2005 Ongoing	Indicated States		
AIS 203 SAM	Annex 4, Chap 13, Para 13.6.1 C). Aerodrome/Heliport Chart - ICAO.	Suriname	Need for the inclusion of geoid undulation in the Aerodrome/Heliport Chart - ICAO.		Records SAM Office.	A	Action plan 2006 70% implemented	Indicated State		

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REPORTING FORM ON AIR NAVIGATION DEFICIENCIES IN THE AIS FIELD IN THE SAM REGION

IDENTIFICATION			DEFICIENCY				ACTION PLAN			
ID	**Requirements**	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Priority**	**Description**	**Executing body**	**Date of completion**	**Remarks**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
URY Uruguay										
AIS 25 SAM	ICAO Annex 4; Para. 2.18.2 Annex 15, 1.2.2 Vertical Reference	Uruguay	Publication of the geoid undulation as it is required.		SAM RO records. WGS 84 System Completed Completed 90% Implementation date estimated December 2015	A	Action Plan (2005) 80% implemented	Indicated State	DEC/ 2015	
AIS 58 SAM	Annex 4, 17; Cap. 17.1. VFR aeronautical chart (Scale, 1:500,000)	Uruguay	Need for production of this serie of ICAO chart under the WGS-84 system to satisfy the lack of production of the WAC aeronautical chart.		SAM Office records. Uruguay informed in SAM/AIM/6 meeting Implementation date Chart 1:1.000.000 expected for July 2015	B	Action plan (2005). Ongoing	Indicated State.		
AIS 79 SAM	ICAO Annex 4, Chapter 3. Aerodrome Obstacle Chart - ICAO, Type A.	Uruguay	Need for effective production of Aerodrome Obstacle Chart - ICAO, Type A., concerning the following airport: Laguna del Sauce y Intl/Carrasco.		SAM Office records. Se estima comletar en Julio 2015	A	# Implementation Plan (2004) indicated that relevant action is being taken on the matter.	Indicated State	DEC/ 2015	
AIS 204 SAM	Annex 4, Chap 13, Para 13.6.1 C). Aerodrome/Heliport Chart - ICAO.	Uruguay	Need for the inclusion of geoid undulation in the Aerodrome/Heliport Chart - ICAO.		Records SAM Office.	A	Action plan 2005 80% implemented	Indicated State	DEC/ 2015	

OUTSTANDING DEFICIENCIES

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IDENTIFICATION			DEFICIENCY				ACTION PLAN			
ID	**Requirements**	**States/facilities**	**Description**	**Date first reported**	**Remarks**	**Priority**	**Description**	**Executing body**	**Date of completion**	**Remarks**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
VEN Venezuela										
AIS 80 SAM	ICAO Annex 4, Chapter 3. Aerodrome Obstacle Chart - ICAO, Type A.	Venezuela	Need for effective production of Aerodrome Obstacle Chart - ICAO, Type A., concerning the following airport: Caracas, Charallave, Margarita, Maturin, Puerto Cabello, San Antonio del Táchira y Valencia.		SAM Office records.	A	Action Plan (2006) 50% implemented	Indicated State		

Agenda Item 5: Update on information concerning progress in the implementation of automated systems and other requirements according to Annex 15

5.1 Under this agenda item, the Meeting reviewed the following paper:

a) WP/07 - *Automated systems from States in relation with PBIP, Cartography and Digital NOTAM (*presented by the Secretariat);

5.2 When analyzing the Roadmap for the transition from AIS to AIM and the requirements of Annex 15 to the Convention regarding automated provision of aeronautical information, the Secretariat noted that an automated AIS system should be able to provide a more flexible pre-flight information service.

5.3 The Meeting considered that an automated system would allow an authorized airspace user to access quality aeronautical information at any time or during any flight phase, thus making AIS more efficient and profitable.

5.4 The Meeting also noted that, for the automation process, the aeronautical information had to be submitted in electronic format in a globally interoperable model, like the AIXM and NOTAM Digital models.

5.5 The Meeting was reminded that, in order to proceed to automation, the States must have completed the implementation of the Quality Management System with the respective certification, and must have implemented the electronic AIP.

5.6 The Meeting also noted that Aeronautical Charts were a very important element in data provision. The production of aeronautical charts required an in-depth evolution and improvement process, which should include the new Geographical Information technologies. The Meeting was informed that the transition from the paper format to electronic cartography implied the implementation of new GIS (Geographic Information System) programmes that included connections, AIXM data models or developments compatible with imports or exports, which would permit standard management of digital aeronautical information.

5.7 The Meeting highlighted that, for the adoption of digital formats, a very important issue to be considered were the metadata. It also noted that the geographic information metadata standard was provided by ISO 19115.

5.8 The Meeting took note that the automation of AIS information publications was a requirement for the introduction of aeronautical information to SWIM, whose implementation was foreseen for the beginning of ASBU Block 1 (2018).

5.9 The Secretariat took note of the information provided by the delegates regarding the facilities, equipment, software and capability of the States to start providing automated aeronautical information. This information is presented in **Appendix A** to this part of the Report, which also includes additional comments.

APÉNDICE A / APPENDIX A

SEGUIMIENTO AL NIVEL DE IMPLANTACIÓN DE LA AUTOMATIZACIÓN PARA LA PROVISIÓN DE INFORMACIÓN AERONÁUTICA (Ref.: Anexo 15, 3.6 y Doc 8126, Capítulo 9)

FOLLOW-UP THE LEVEL OF IMPLEMENTATION OF THE AUTOMATION FOR THE PROVISION OF AERONAUTICAL INFORMATION (Ref.: Annex 15, 3.6 and Doc 8126, Chapter 9)

ESTADOS / *STATES*	**ARG**	**BOL**	**BRA**	**CHI**	**COL**	**ECU**	**GUY**	**FGU**	**PAN**	**PAR**	**PER**	**SUR**	**URU**	**VEN**
Modelo AIXM, Digital NOTAM, GIS y Metadatos / *AIXM Model, Digital NOTAM, GIS and Metadata*														
¿Tiene el Estado un Plan de Implantación de Automatización de la provisión de información aeronáutica? / *Has the State an Automation Implementation Plan for the provision of aeronautical information?*	NO	NO	SI/*YES*	NO	---	---	---	---	---	---	SI/*YES*	---	NO	---
¿Dispone el Estado del e-AIP en un formato de lenguaje extensible de acuerdo al modelo AIXM? (Especifique) / *Has the State the e-AIP in an extensible language format according to the AIXM model? (Specify)*	NO	NO	NO	NO	---	---	---	---	---	---	SI/*YES*	---	NO	---
¿Tiene el Estado la capacidad de preparar Digital NOTAM? / *Has the State the capacity to prepare Digital NOTAM?*	NO	NO	NO (2)	NO	---	---	---	---	---	---	SI/*YES*	---	NO	---
¿Cuenta el Estado con capacidad de generar Cartas Aeronáuticas electrónicas?/ *Has the State the capacity to generate electronic aeronautical charts?*	SI/*YES*	NO	SI/*YES*	NO	---	---	---	---	---	---	SI	---	NO	---

ESTADOS / *STATES*	ARG	BOL	BRA	CHI	COL	ECU	GUY	FGU	PAN	PAR	PER	SUR	URU	VEN
En caso de que la pregunta anterior sea afirmativa ¿ha considerado la recopilación y aplicación de los metadatos en la generación de las cartas aeronáuticas? / *If the previous question is affirmative, has the compiling and application of metadata in the generation of aeronautical charts be considered?*	SI/*YES*	NO	SI/*YES*	NO	---	---	---	---	---	---	SI/*YES*	---	NO	---
¿El modelo de metadato utilizado, está acorde con el presentado en la ISO 19115?/ *Is the model of the metadata used in accordance with the one presented in ISO 19115?*	SI/*YES*	NO	SI/*YES*	NO	---	---	---	---	---	---	SI/*YES*	---	NO	---

Y = Si / Yes
[1, 2, ...] = Ver comentarios / *See comments*
N = No
P = Parcialmente / *Partially*
N/A = No aplicable / *Not applicable*
S/R = Sin respuesta / *Without answer*

COMENTARIOS DE LOS ESTADOS / *COMMENTS BY STATES*

ESTADOS/ *STATES*	**COMENTARIOS / *COMMENTS***
ARG	
BOL	
BRA	Brasil utiliza el software IDS, y una base de datos llamada AERODATABASE. Con relación al NOTAM Digital, esperan poder implantarlo para el 2017 / Brazil uses IDS software and a database named AERODATABASE. With regard to Digital NOTAM, they expect to implement it in 2017.
CHI	
COL	
ECU	
FGU	

ESTADOS/ *STATES*	**COMENTARIOS / *COMMENTS***
GUY	
PAN	
PAR	
PER	Perú, para las publicaciones utiliza el software GROUPVERVE. Para la cartografía, utiliza el software ACCENT. La base de datos proviene del CADAS-AIMDB / Peru, for publications, uses GROUPVERVE software. For cartography, uses ACCENT software. The database comes from CADAS-AIMDB.
SUR	
URU	
VEN	

Agenda Item 6: Other business

6.1 Under this agenda item, the Meeting reviewed the following papers:

a) WP/08 - *Training needs for Aeronautical Information Unit personnel (*presented by the Secretariat);
b) WP/09 - *Amendments to International Route Network* (presented by the Secretariat);
c) WP/10 - *Preparation for the implementation of Phase 2 from AIS to AIM* (presented by the Secretariat);
d) WP/11 - *Application of ICARD System* (presented by the Secretariat);
e) WP/13 - *Information exchange preceded by Cyclic Redundancy Check (CRC*) (presented by Uruguay - *Spanish only*);
IP/05 - *Training requirements of aeronautical information personnel – Training programme Uruguay* (presented by Uruguay – *Spanish only*).

Training Requirements of Aeronautical Information Personnel

6.2 The Secretariat recalled that the Sixth SAM/AIM meeting (SAM/AIM/6 - November 2014) identified some training requirements for AIM professionals, *inter alia*:

- ATM operational concept;
- ASBU concept;
- PBN application and cartographic representation;
- Quality, integrity, and timely distribution of AIS products;
- Standard models for the establishment of integrated aeronautical information, terrain, obstacle, and aerodrome mapping data databases;
- Metadata management across the aeronautical information data supply chain;
- Data protection systems;
- Data packaging for electronic use;
- Collection of electronic Terrain and Obstacle Data (eTOD);
- English language in aeronautical publications;
- Cartography and geoid undulation to be represented in aerodrome and heliport maps;
- Use and application of geographic information systems (GIS);
- Volcanic ash and ASHTAM (including States with no volcanic activity)

6.3 The Sixth SAM/AIM meeting deemed it necessary to establish customised training programmes and plans for each State, based on the requirements described in this part of the report and/or others identified by the State itself, and which are related to the implementation of the phases described in the AIS-to-AIM Roadmap.

6.4 The SAM/AIM/6 also saw the need to provide training to AIM professionals, experts, technicians and officials in a 5-year programme.

6.5 Uruguay presented its AIM Training Programme, and the Meeting decided to include it as a model to be taken into account by other States that had not fulfilled the task requested at the SAM/AIM/6 meeting. This model is presented as **Appendix A** to this part of the report.

6.6 In order to review this matter, Argentina, Brazil, Peru and Uruguay, together with IFAIMA, formed an *ad hoc* Group.

6.7 As a starting point, an analysis was made of the aeronautical information management training programmes proposed by Brazil and Uruguay, which are based on the need to achieve and maintain the operational standards required in AIM.

6.8 These proposals contemplate a minimum standardisation of technical and operational contents, to be adhered to by professionals performing tasks in AIS offices.

6.9 Likewise, it is requested that the contents of AIS courses 021 and 024 be updated, since they are being used by several States within their training programme and it is necessary to incorporate the technical and regulatory innovations that the AIS-to-AIM transition is adopting.

6.10 Based on the fact that the AIS-to-AIM Roadmap needs to be modified, and knowing that the big technological innovation component will generate new skills in human resources working in AIS, it is suggested that working groups be divided so as to potentiate their skills and thus manage groups of experts in different job positions.

6.11 In view of this proactive scenario, it is important to mention and include operational English language 4 in the proposed basic training for States that have not yet implemented it. This language skill will facilitate access to the new technologies applied to AIM, where all operational generations can make use of them.

6.12 Given the technological growth attained by the Aeronautical Specialty, it is deemed of essence that the States include the development of information technology skills in their basic training programme for Aeronautical Information specialists.

6.13 Finally, all the States participating at the SAM/AIM/7 meeting undertook to work on the 5-year training programme and submit it to the Secretariat by **15 May 2015**, using as a reference the Training Programmes proposed by Brazil and Uruguay.

6.14 The Meeting accepted the proposal of the Secretariat to submit the AIM training programmes for the next 5 years before 15 May 2015.

Amendments to the International Route Network

6.15 The Secretariat noted that some Administrations have made changes to international air routes without notifying ICAO so that it may proceed with the amendment procedure established for the insertion of changes, deletions and additions to the Regional Air Navigation Plan.

6.16 Prior to the publication by aeronautical information units of changes, deletions or additions to the international air route network, both in the upper and lower airspace, it is deemed advisable for the unit concerned to request the approval of ICAO of the proposed route change.

6.17 Also, the Meeting noted the need for the AIM unit to require the airspace planning unit to advise if there is any need to modify the Letters of Operational Agreement or the Contingency Plans, the most critical and essential parts of which are reproduced in the AIPs, as well as some contingency-related letters.

Preparation for the implementation of Phase 2 of the transition from AIS to AIM

6.18 The Meeting took note that, with the completion of Phase 1, some States had to prepare Phase 2 in the transitioning from AIS to AIM. Having completed the stage of quality certification of AIM processes, those States were now mature enough to begin with the preparatory work towards the implementation of Phase 2.

6.19 The Meeting also recognized that performance measurement is an integral aspect of aviation's pursuit for continuous improvement. Measuring performance not only gives an idea of how the entire aviation system is behaving, but also offers a feedback mechanism for future tactical adjustments or action plans to achieve the targets contained in the ICAO Global Safety and Air Navigation Plans.

6.20 In turn, the Secretariat highlighted that measuring performance at regional level was important, since it allowed ICAO Regional Offices to prioritize their resources and work programmes towards desired operational results.

6.21 On the other hand, the Secretariat informed that the ICAO Air Navigation Report consists of qualitative and quantitative data and analyses, and addresses relevant performance areas of the air navigation system, and thus it is necessary to be prepared by analysing the indicators and metrics that will be used for the next implementation stage.

6.22 In order to start preparing, surveys were being conducted to obtain information on the status of AIS-to-AIM transition at global level. The results of the surveys will show the progress made by States and the challenges faced during implementation.

6.23 The Meeting took note that the indicators were defined and made up by metrics, which provided a quantifiable measure of the status of AIS-to-AIM transition. Metrics were based on some of the Roadmap transition steps, which were discussed and agreed upon with the support of the ICAO Regional Offices.

INDICATOR I: Level of automation of the State organisation and implementation of aeronautical information databases

The level of automation within a State organisation and the implementation of Aeronautical Information Databases can be measured on the basis of the following steps of the AIS to AIM transition Roadmap:

a) P-06 - Integrated aeronautical information database; and
   P-08 - Aeronautical Information conceptual model.
b) P-11 - Electronic aeronautical information publication (eAIP).
c) P-13 - Terrain.
d) P-14 - Obstacle.
e) P-05 - WGS-84 implementation.

Steps P06 and P08 can be aggregated into a single measurement, due to their similarity.

INDICATOR II: Level of implementation of aeronautical data quality

The level of implementation of aeronautical data quality could be measured through the following steps of the AIS-to-AIM transition Roadmap:

a) P-17 - Quality.
b) P-03 - AIRAC standard compliance oversight.
c) P-18 - Agreements with data originators.

6.24 The Secretariat proposed to the Meeting to conduct a preliminary study of the Survey that it intends to circulate among the States in April in order to get the results on the second week of May.

Survey proposal for monitoring implementation

INDICATOR I: LEVEL OF AUTOMATION OF THE STATE ORGANISATION AND IMPLEMENTATION OF AERONAUTICAL INFORMATION DATABASES

1. P-06 - Integrated aeronautical information database /
P-08 - Aeronautical Information conceptual model

QUESTION	IMPLEMENTATION/COMPLIANCE CRITERIA	POSSIBLE ANSWERS
Has AIS implemented an AIXM-based AIS Database?	National aeronautical data and information is stored and maintained in an AIXM-based AIS database.	FI/NI

2. P-11- Electronic AIP

QUESTION	IMPLEMENTATION/COMPLIANCE CRITERIA	POSSIBLE ANSWERS
Has the State been publishing its AIP in electronic format (xml, etc.)?	National AIP GEN 3.1.3 “Aeronautical publications” provides information about the availability of the National AIP in **electronic** format (eAIP) *N.B. AIP in PDF, HTML, etc. either on web or CD-ROM is not considered an eAIP.*	FI/NI

3. P-13 - Terrain

QUESTION	IMPLEMENTATION/COMPLIANCE CRITERIA	POSSIBLE ANSWERS
Has the AIS made available terrain dataset for Area 1?	National AIP GEN 3.1.6 "Electronic Terrain and Obstacle" provides information on how the dataset can be obtained	FC/NC
Has the AIS made available terrain dataset(s) for Area 4?	National AIP GEN 3.1.6 "Electronic Terrain and Obstacle" provides information on how the dataset for specific CAT II/III runways can be obtained. States should indicate, under remarks, the existing number of CAT II/III runways. N/A for States that do not have CAT II/III runways.	FC/PC/NC

4. P-14 - Obstacles

QUESTION	IMPLEMENTATION/COMPLIANCE CRITERIA	POSSIBLE ANSWERS
Has the AIS made available obstacle dataset for Area 1?	National AIP GEN 3.1.6 "Electronic Terrain and Obstacle Data" provides information on how the dataset can be obtained	FC/NC
Has the AIS made available obstacle dataset(s) for Area 4?	National AIP GEN 3.1.6 "Electronic Terrain and Obstacle Data" provides information on how the dataset for specific CAT II/III runways can be obtained. States should indicate, under remarks, the existing number of CAT II/III runways. N/A for States that do not have CAT II/III runways.	FC/PC/NC

5. P-05 - WGS-84 implementation

QUESTION	IMPLEMENTATION/COMPLIANCE CRITERIA	POSSIBLE ANSWERS
Are all the coordinates published in the AIP based on WGS-84?	FC: All coordinates concerning FIR/ENR, Terminal and AD are based on WGS-84 and GUNDs have been published for all ADs. PC: part(s) of FC is covered. NC: no FC is covered.	FC/PC/NC

INDICATOR II: LEVEL OF IMPLEMENTATION OF AERONAUTICAL DATA QUALITY

6. P-17 - Quality

QUESTION	IMPLEMENTATION/COMPLIANCE CRITERIA	POSSIBLE ANSWERS
Has the AIS organization implemented and does it maintain a Quality Management System encompassing all functions of an aeronautical information service?	ISO 9001 certification.	FC/NC

7. P-03 - AIRAC standard compliance oversight

QUESTION	IMPLEMENTATION/COMPLIANCE CRITERIA	POSSIBLE ANSWERS
Have operationally significant changes to the AIP been published in accordance with AIRAC procedures?	Issuance of AIRAC amendments in accordance with AIRAC dates. Issuance of Trigger NOTAM(s). Issuance of AIRAC NIL notification(s).	FC/NC

8. P-18 - Agreements with data originators

QUESTION	IMPLEMENTATION/COMPLIANCE CRITERIA	POSSIBLE ANSWERS
Have formal agreements been established between the Aeronautical Information Service (AIS) units and the data originator authorities for the provision of AIS services?	FC: formal agreements have been established between AIS and all a) ANS providers; b) Aerodromes; and c) Military PC: part(s) of FC is covered. NC: no FC is covered.	FI/PI/NI

FC: Fully Compliant; PC: Partially Compliant; NC: Not Implemented (used for Annex 15 standards).
FI: Fully Implemented; PI: Partially Implemented; NI: Not Compliant (used for other than standards).

Application of ICARD System

6.25 The SAM/AIM/6 Meeting decided to implement a first phase of removal, allocation and validation of 5LNC designators, which could finalize on **1 March 2015**, on the duplicate codes listed in **Appendix B**.

6.26 The States participating in the Meeting assessed the scope of these changes and the processes involved, and concluded that the most appropriate target date for publication of either an **AIP Supplement** or an **AIP Amendment** was **23 July 2015**.

6.27 Based on the above, the Meeting proposed **that the effective date for these changes be set for 17 September 2015.** Thus, the providers of these data would have enough time to make the necessary corrections and the users to load the database in their aircraft.

6.28 The Secretariat informed the Meeting that no State had reported compliance with the task that had to be completed by 1 March and that, consequently, there was a delay that would seriously impact planning.

6.29 The Meeting also emphasized the need for States to meet the same implementation date in order to avoid a negative impact on safety if changes to FIR common codes were made on different dates.

6.30 In this regard, the Meeting recognised the importance of this issue and decided to maintain the established schedule and meet the deadlines established by the SAM/AIM/6 meeting for the removal and replacement of duplicated codes. The issuance of the AIC or AIP Amendment is expected for 23 July 2015.

6.31 The Meeting took note of the need to eliminate the code no longer being used from the database, so as not to assign new coordinates to the same code by mistake, thus giving more flexibility to the system.

Information exchange preceded by Cyclic Redundancy Check (CRC)

6.32 Regarding this matter, the Meeting recalled that ICAO had defined as a requirement the use of CRC (Cyclic Redundancy Check) as protection during the data transfer process, to avoid data modifications.

6.33 Such modifications could have multiple reasons, from non-intentional (copying errors, equipment errors, etc.) to intentional (for instance, hacking).

6.34 The inclusion of CRC in information exchange is an attempt to resolve this problem, for which several options have been studied.

6.35 Uruguay presented to the Meeting a product (software) free of charge called **RapidCRC**. This could be obtained at the following URL: http://rapidcrc.sourceforge.net/download.html -
for 32-bit equipment: http://descargar.cnet.com/RapidCRC-32-bit/3000-20432_4-75891996.html
for 64-bit equipment: http://descargar.cnet.com/RapidCRC-64-bit/3000-20432_4-75826526.html

6.36 Through a simple process, and using this free-of-charge product, a set of files can be packaged and the (32-bit) CRC obtained and safely distributed to users.

6.37 Upon receipt of this set of files, and after installing the product in their equipment, users can easily verify if the information has experienced any modification.

6.38 A quick guide to the installation and use of the product can be obtained at: http://rapidcrc.sourceforge.net/usage.html and the displays corresponding to the product can be seen at: http://rapidcrc.sourceforge.net/screenshots.html.

6.39 The Meeting expressed its acknowledgment for the work done by Uruguay and for the presentation made by Eng. Juan González, Systems Engineer and Cartographer.

APPENDIX A

TRAINING PROGRAMME

AERONAUTICAL INFORMATION MANAGEMENT

Servicio de Información Aeronáutica (AIS)

Uruguay

(Spanish only)

PROGRAMA DE INSTRUCCIÓN

DE GESTION DE INFORMACION AERONAUTICA

Elaborado por: Graciela Monzillo Firma:	Revisado por: Equipo SGC AIS Firma:	Aprobado por: Director de Circulación Aérea Firma:
	Fecha:	Fecha:

INDICE

CONTROL DE CAMBIOS

Documento

Codificación:	
Título:	Programa de Instrucción del AIS
Propietario:	Gestión de Información Aeronáutica
Ubicación de la copia maestra:	Proceso de Planificación y Control del Sistema de Gestión de la Calidad AIS,
Fecha de la última actualización:	

Control de Modificaciones

Revisión	Fecha	Parte modificada	Descripción de la modificación

1. OBJETIVO DEL PROGRAMA

1.1 El Programa de Instrucción de Gestión de Información Aeronáutica (AIM), es el medio reconocido por el Uruguay para preparar y certificar personal capaz de hacer frente a los requisitos actuales y futuros que son de aplicación para un efectivo suministro de los servicios AIS/MAP dentro de sus respectivas áreas de responsabilidad, tal como está descrito en los Anexos 15 y 4 de la OACI.

1.2 El personal AIS/MAP que manipula la información y los datos aeronáuticos es parte importante del Sistema de Gestión de Calidad AIS, para garantizar que tiene los conocimientos y habilidades requeridos y es competente para desempeñar las funciones asignadas, por lo que debe poseer y aplicar las habilidades, destrezas y competencias necesarias para poder funcionar en el entorno establecido de calidad

NORMA 3.2.3 ANEXO 15 "Servicios de información aeronáutica"

"En el contexto de un sistema de calidad, se identificarán las calificaciones y los conocimientos requeridos para cada función, y se capacitará en forma apropiada al personal asignado para desempeñar esas funciones. Los Estados se asegurarán de que el personal posee las calificaciones y las competencias requeridas para desempeñar las funciones especificadas asignadas, y se mantendrán los registros correspondientes de modo que se puedan confirmar las calificaciones del personal"

2. INSTRUCCIÓN PARA EL PERSONAL DE TECNICOS DE AIM

2.1 Este programa de Instrucción tiene como finalidad establecer el nivel técnico profesional del personal de Gestión de Información Aeronáutica (AIM), a través de una adecuada capacitación para desempeñar las funciones a ser aplicadas en cada uno de los procesos del Servicio de Información Aeronáutica.

2.2 A fin de asegurar que el personal mantenga al día sus conocimientos, pericias y actitudes, es necesario contar con un programa continuo de instrucción formal, luego de haber aprobado el Curso Básico de Especialista AIS/MAP dictado por el Instituto de Adiestramiento Aeronáutico.

2.3 La instrucción estará dirigida para el personal AIM en base a las políticas, normas, sistemas y procesos AIS, la función específica y puesto de trabajo dentro del AIM y que son:

- Gestión de Información Aeronáutica (AIM)
- Publicaciones
- Cartografía Aeronáutica
- Oficina NOTAM Internacional (NOF)
- Salas AIS de Aeródromo
- Aseguramiento de la Calidad AIS
- Automatización y Bases de datos

2.4 Para ejecutar el Programa de Instrucción se identificarán todos los temas pertinentes en los que se necesita capacitación y se determinará en el Plan de Capacitación AIM anual en base a:

- El personal técnico del AIM deberá realizar los cursos recurrentes específicos de su proceso, cada dos años.

- Cursos de especialización de acuerdo a lo establecido en el documento Evaluación del desempeño, Capacitación y Entrenamiento del personal Técnico AIS (PDG 12 /SGC AIS).

- Seminarios o talleres que necesiten afianzar los conocimientos del personal Técnico del AIM.

- Instrucción en el puesto de trabajo.

3. RESPONSABILIDADES

3.1 La responsabilidad de aprobar el Plan de Capacitación anual o semestral y coordinar la aplicación del Programa de Instrucción en materia de información aeronáutica le corresponde a la Jefatura de Gestión de Información Aeronáutica de la Dirección de Circulación Aérea de DINACIA.

3.2 El Jefe del AIM deberá evaluar periódicamente al personal técnico bajo su responsabilidad a fin de determinar su actuación y rendimiento en el puesto de trabajo o en el desarrollo de tareas específicas por intermedio de las herramientas de medición y evaluación que se encuentran determinadas en el procedimiento de Evaluación del desempeño, capacitación y entrenamiento del personal técnico AIS (PDG 12 /SGC AIS).

4. ASIGNACION DE CURSOS:

De acuerdo a la aplicación del procedimiento Evaluación del Desempeño, Capacitación y Entrenamiento del personal Técnico AIM (PDG 12 SGC AIS) numeral 7.3.5 Instrucción y Evaluación; el proceso de Planificación y Control del SGC AIS en base a la información recopilada identifica en cada proceso AIS al personal calificado para suministrar la capacitación o el entrenamiento. Posteriormente realiza el Plan Anual de Capacitación para poner a consideración de la Jefatura AIM para su aprobación.

CALIFICACIONES PARA APROBAR EL CURSO:

5.1 Los alumnos participantes en los cursos AIM nacionales, internacionales, etc., deberán obtener una calificación mínima de 70 sobre 100 para poder aprobar el curso.

5. CONTENIDO DE LOS CURSOS DE INSTRUCCIÓN Y ENTRENAMIENTO

6.1 Tipos de Cursos

Los cursos podrán ser impartidos a nivel de familiarización, capacitación básica y avanzada, recurrentes.

La instrucción del personal técnico profesional de Gestión de Información Aeronáutica, está dividida en:

a) Instrucción básica;
b) Instrucción especializada;
c) Instrucción recurrente; e
d) Instrucción práctica en el puesto de trabajo.

6.1.1 Instrucción básica

Es la instrucción que se imparte al personal nuevo de los Servicios de Información Aeronáutica, a fin que puedan desempeñar sus funciones como tales. La instrucción básica está siempre complementada por la instrucción en el puesto de trabajo previa su habilitación definitiva.

6.1.2 Instrucción especializada

Es la instrucción especializada complementaria a la instrucción básica, que tiene el propósito de ampliar los conocimientos, habilidades y comportamientos durante el rendimiento del individuo en la función o tarea que le ha sido asignada y que son requeridos para llevar a cabo los niveles de especialización.

6.1.3 Instrucción recurrente

Se impartirá periódicamente a todo el personal de Gestión de Información Aeronáutica, a fin de que los mismos mantengan actualizados los conocimientos, habilidades y comportamientos adquiridos durante la instrucción básica.

6.1.4 Instrucción práctica en el puesto de trabajo

La instrucción en el puesto de trabajo es necesaria tanto para nuevo personal, como para cualquier entrenamiento que se brinde al personal que es reubicado a una nueva área de trabajo dentro del AIM.

El técnico AIM de mayor experiencia del proceso será responsable de impartir la instrucción en el puesto de trabajo. Esta instrucción es de carácter informal y tiene por objeto ayudar al nuevo personal a adaptarse y familiarizarse con los procedimientos operacionales normalizados, los procesos de trabajo, las normas laborales y las estructuras de datos relacionados con una determinada función de trabajo dentro del AIM.

La etapa de entrenamiento se evaluará al personal AIM nuevo o reubicado mediante la aplicación del Registro de Evaluación/Competencia (R8PDG 12 /SGC AIS).

7. PROGRAMA DE LOS CURSOS

- **Básico NOTAM**
- **Especialista NOTAM**
- **Especialista AIS de Aeródromo**
- **Supervisor AIS**
- **Especialista Publicaciones**
- **Especialista Cartografía Aeronáutica**
- **Gerencia de la Gestión de Información Aeronáutica (AIM)**
- **Automatización y Base de datos**
- **GPS**
- **ArcGIS**
- **Sistemas de gestión de la calidad**
- **Sistema CNS/ATM**
- **Factores Humanos**
- **Recurrentes de los Servicios de Información Aeronáutica**

8. MODULOS DE LOS CURSOS DE INSTRUCCIÓN.

8.1 Curso Básico NOTAM

Duración estimada:
10 días hábiles (80 horas)

Contenido:
El Curso está dividido en 7 módulos.

El objetivo del curso es brindar a los participantes los conocimientos y herramientas necesarias para aplicar las normas y métodos recomendados de la OACI en la preparación de un Pre-NOTAM, con el objeto de estandarizar los procedimientos aplicados para la elaboración del mismo. . Se aplicarán pruebas escritas a fin de verificar el grado de aprendizaje de los participantes, asimismo, se incluyen trabajos de grupo y prácticas.

Módulo	**Básico NOTAM**				
No.	**Materia**	**Cantidad de horas**			**Nivel de Especialización**
		Teórica	**Prácticas**	**Total**	
1	Publicación de NOTAM de activar y NOTAM NIL				1
2	Servicios originadores de datos				1
3	Uso de códigos y abreviaturas para NOTAM				1
4	Lista de verificación y lista de NOTAM válidos				1
5	Coordinación y valoración de información para la elaboración de NOTAM				1
6	Almacenamiento y archivo de NOTAM				1
7	Procedimientos de sistema de gestión de calidad aplicada al NOTAM				1
				80	
Nota: la asignación de horas se deja a consideración de los instructores					

8.2 Curso Especialista NOTAM

Duración estimada:
15 días hábiles (120 horas)

Contenido:
El Curso está dividido en 10 módulos

El curso permite adquirir y desarrollar los conocimientos necesarios para la especialización y la correcta aplicación de la codificación NOTAM, significados y uso de abreviaturas en texto para el intercambio de mensajes vía AFS. Se aplicará de forma práctica el uso de la documentación OACI en la clasificación y divulgación de la información aeronáutica, así como también su almacenamiento y consulta en los boletines de información previa al vuelo.

Este evento se ha diseñado como continuación al curso básico NOTAM, para profundizar en los aspectos técnicos y adicionalmente para que el participante pueda hacer uso de la aplicación informática AIS de forma tal que en complemento con los conocimientos adquiridos pueda desenvolverse eficientemente en una oficina NOTAM. El curso se realizará utilizando como metodología, el software del Banco de Datos NOTAM. Se aplicarán pruebas escritas a fin de verificar el grado de aprendizaje de los participantes, asimismo, se incluyen trabajos de grupo y prácticas.

Módulo	**Especialista NOTAM**				
No.	**Materia**	**Cantidad de horas**			**Nivel de Especialización**
		Teórica	**Prácticas**	**Total**	
1	Generalidades NOTAM				2
2	Publicaciones AIS				2
3	Uso de códigos y abreviaturas para NOTAM (inglés técnico)				2
4	Administración y actualización de la base de datos NOTAM				2
5	Validación de NOTAM				2
6	Procedimiento de sistema de Gestión de calidad aplicada al NOTAM				2
7	ASHTAM				2
8	Información posterior al vuelo				2
9	Mensajes relacionados con Pre-NOTAM, NOTAM				2
10	Coordinación con los servicios técnicos afines				2
				120	
Nota: la asignación de horas se deja a consideración de los instructores					

8.3 Especialista AIS de Aeródromo

Duración estimada:
15 días hábiles (120 horas)

Contenido:
El Curso está dividido en 15 módulos.

El objetivo del curso es brindar a los participantes los conocimientos y herramientas necesarias para aplicar las normas y métodos recomendados de la OACI en la preparación de los boletines de información previa al vuelo, Pre-NOTAM, con el propósito de estandarizar los procedimientos aplicados para emitir, divulgar y distribuir la información aeronáutica. Se aplicarán pruebas escritas a fin de verificar el grado de aprendizaje de los participantes, asimismo, se incluyen trabajos de grupo y prácticas.

Módulo	**Especialista AIS de Aeródromo**				
No.	**Materia**	**Cantidad de horas**			**Nivel de Especialización**
		Teórica	**Prácticas**	**Total**	
1	Introducción				2, 3
2	Información Previa al Vuelo				2, 3
3	Boletín de Información Previa al vuelo				2, 3
4	Elaboración y transmisión del Pre NOTAM				2, 3
5	Procedimientos comunes de interrogación de NOTAM				2, 3
6	Información posterior al vuelo				2, 3
7	Tablero auto información				2, 3
8	Recepción y transmisión de plan de vuelo				2, 3
9	Coordinación con los servicios técnicos afines				2, 3
10	ASHTAM				2, 3
11	SNOWTAM				2, 3
12	Interpretación cartas aeronáuticas				2, 3
13	Inglés técnico				2, 3
14	Factores humanos				2, 3
15	Procedimientos de sistema de gestión de calidad aplicados al proceso AIS de aeródromo				2, 3
				120	
Nota: la asignación de horas se deja a consideración de los instructores					

8.4 Especialista en Publicaciones

Duración estimada:
10 días hábiles (80 horas)

Contenido:
El curso está dividido en 7 módulos

El objetivo del curso es brindar a los participantes los conocimientos y herramientas necesarias para aplicar las normas y métodos recomendados de la OACI en el tratamiento adecuado de la documentación integrada de información aeronáutica, aplicación de los controles de calidad, requeridos por las normativas internacionales en el procedimiento de la información aeronáutica demandada por los usuarios. Se aplicarán pruebas escritas a fin de verificar el grado de aprendizaje de los participantes, asimismo, se incluyen trabajos de grupo y prácticas.

Módulo	**Especialista en Publicaciones**				
No.	**Materia**	**Cantidad de horas**			**Nivel de Especialización**
		Teórica	**Prácticas**	**Total**	
1	Servicios de información aeronáutica				3
2	Publicación de información aeronáutica				3
3	Automatización del servicio de publicaciones				3
4	Circulares de información aeronáutica (AIC)				3
5	Lista de NOTAM válidos				3
6	Coordinaciones con los servicios técnicos afines.				3
7	Procedimiento de sistema de gestión de calidad aplicada a las Publicaciones				3
				80	
Nota: la asignación de horas se deja a consideración de los instructores					

8.5 Especialista en Cartografía aeronáutica

Duración estimada:
15 días hábiles (120 horas)

Contenido:
El curso está dividido en 11 módulos

El objetivo del curso es brindar a los participantes los conocimientos y herramientas necesarias para conocer las normas y métodos recomendados de la OACI en la preparación de las cartas aeronáuticas, aplicar la reglamentación nacional y los procedimientos descritos del sistema de gestión de calidad de cartas aeronáuticas, y saber utilizar en forma ágil y eficiente los diferentes tipos de cartas aeronáuticas, proporcionar la información correcta y oportuna a los usuarios de los servicios de información aeronáutica. Se aplicarán pruebas escritas a fin de verificar el grado de aprendizaje de los participantes, asimismo, se incluyen trabajos de grupo y prácticas.

Módulo	**Especialista en Cartografía Aeronáutica**				
No.	**Materia**	**Cantidad de horas**			**Nivel de Especialización**
		Teórica	**Prácticas**	**Total**	
1	Escalas y proyecciones de los mapas				3
2	Sistema de coordenadas				3
3	Cartas aeronáuticas				3
4	Preparación de las cartas aeronáuticas				3
5	Requerimientos de información para la elaboración de cartas aeronáuticas				3
6	Mantenimiento y actualización de las cartas				3
7	Técnicas cartográficas				3
8	Elaboración y reproducción de cartas aeronáuticas				3
9	Distribución de cartas				3
10	Procedimiento de sistema de gestión de calidad aplicada a las cartas aeronáuticas				3
11	Inglés técnico aeronáutico				3
				120	
Nota: la asignación de horas se deja a consideración de los instructores					

8.6 Curso GPS

Duración estimada:
3 días hábiles (24 horas)

Contenido:
El Curso está dividido en 4 módulos

El objetivo del curso es capacitar las funcionalidades del equipo GPS para obtener la lectura de las coordenadas geográficas en WGS-84 necesarias para la elaboración de la base de datos cartográficos, así como datos aeronáuticos para la elaboración de cartas y mapas.

Módulo	**GPS**				
No.	**Materia**	**Cantidad de horas**			**Nivel de Especialización**
		Teórica	**Prácticas**	**Total**	
1	Levantamiento estático				3
2	Stop and go				3
3	Cinemática				3
4	Procedimiento de sistema de gestión de calidad aplicada al levantamiento topográfico WGS-84				3
				24	
Nota: la asignación de horas se deja a consideración de los instructores					

8.7 Curso ARGIS

Duración estimada:
10 días hábiles (80 horas)

Contenido:
El curso está dividido en 10 módulos

El objetivo del curso es proporcionar conceptos y funcionalidades para desarrollar un trabajo eficiente en la aplicación de este software GIS y además realizar operaciones técnicas avanzadas.
El especialista de cartografía aeronáutica podrá aplicar estas herramientas para la elaboración de las cartas aeronáuticas y especialmente desarrollar una base de datos cartográficos, editar, consultar datos, realizar geoprocesos, generar mapas y cartas aeronáuticas, contar con un historial de datos, etc.

Módulo	**ARGIS**				
No.	**Materia**	**Cantidad de horas**			**Nivel de Especialización**
		Teórica	**Prácticas**	**Total**	
1	Visualización de datos geográficos				3
2	Administración y manipulación de datos geográficos				3
3	Comprensión de proyecciones y sistemas de coordenadas				3
4	Atributos de datos espaciales				3
5	Simbolización para la elaboración de cartas y mapas aeronáuticos				3
6	Ingreso, edición y consulta de datos geográficos				3
7	Realización de análisis espaciales				3
8	Automatización de procesos				3
9	Importar, exportar datos				3
10	Procedimiento de sistema de gestión de calidad aplicada a cartas aeronáuticas				3
				80	
Nota: la asignación de horas se deja a consideración de los instructores					

8.10 Curso Automatización y base de datos

Duración estimada:
5 días hábiles (40 horas)

Contenido:
El curso está dividido en 9 módulos

El objetivo del curso es brindar a los participantes los conocimientos y herramientas necesarias para la automatización y el uso de base de datos.

Módulo	**Automatización y base de datos**				
No.	**Materia**	**Cantidad de horas**			**Nivel de Especialización**
		Teórica	**Prácticas**	**Total**	
1	Sistema automatizado AIS/MAP				3 y 4
2	Datos aeronáuticos				3 y 4
3	Almacenamiento de la información/datos AIS/MAP				3 y 4
4	Suministro electrónico de información/datos aeronáuticos				3 y 4
5	Principios de Redes				3 y 4
6	Modelos de intercambio				3 y 4
7	Procedimientos de respaldo				3 y 4
8	Datos electrónicos sobre el terreno y obstáculos				3 y 4
9	Gestión de calidad				3 y 4
				40	
Nota: la asignación de horas se deja a consideración de los instructores					

8.11 Curso Gestión de la Calidad - ISO 9001:2008

Duración estimada:
15 días hábiles (80 horas)

Contenido:
El Curso está dividido en 6 módulos

El objetivo del curso es brindar a los participantes los conocimientos y herramientas necesarias para la implantación de un sistema de calidad AIS.

Módulo	**Gestión de la calidad – ISO 9001: 2008**				
No.	**Materia**	**Cantidad de horas**			**Nivel de Especialización**
		Teórica	**Prácticas**	**Total**	
1	Conceptos básicos de la calidad				1 al 5
2	Sistemas de gestión de la calidad				1 al 5
3	Requisitos de la Norma ISO 9001 - 2008				1 al 5
4	Implantación de un sistema de gestión de calidad				1 al 5
5	Procesos				1 al 5
6	Mantenimiento y certificación del sistema				1 al 5
				80	
Nota: la asignación de horas se deja a consideración de los instructores					

8.12 Curso Sistemas CNS/ATM

Duración estimada:
5 días hábiles (40 horas)

Contenido:
El curso está dividido en 8 módulos

El objetivo del curso es brindar a los participantes los conocimientos y herramientas necesarias del AIM como parte del sistema CNS/ATM.

Módulo	**Sistemas CNS/ATM**				
No.	**Materia**	**Cantidad de horas**			**Nivel de Especialización**
		Teórica	**Prácticas**	**Total**	
1	Evolución del concepto CNS/ATM				2 al 5
2	Sistemas de comunicaciones				2 al 5
3	Nuevos sistemas de navegación				2 al 5
4	Sistemas de vigilancia				2 al 5
5	Gestión del Tránsito Aéreo (ATM)				2 al 5
6	Plan de implementación de los sistemas CNS/ATM				2 al 5
7	Gestión de información aeronáutica (AIM)				2 al 5
8	Impacto de los factores Humanos				2 al 5
				40	
Nota: la asignación de horas se deja a consideración de los instructores					

8.13 Curso Factores Humanos

Duración estimada:
2 días hábiles (10 horas)

Contenido:
El curso está dividido en 2 módulos

El objetivo del curso es brindar a los participantes los conocimientos sobre Factores Humanos en el entorno aeronáutico.

Módulo	**Factores Humanos**				
No.	**Materia**	**Cantidad de horas**			**Nivel de Especialización**
		Teórica	**Prácticas**	**Total**	
1	Administración de recursos para el AIS/MAP				2 al 5
2	Impacto de los Factores Humanos				2 al 5
				10	
Nota: la asignación de horas se deja a consideración de los instructores					

8.14 Curso Recurrente de los Servicios de Información Aeronáutica

Duración estimada:
10 días hábiles (80 horas)

Contenido:
El curso está dividido en 10 módulos

El objetivo del curso es brindar a los participantes los conocimientos y herramientas que han sido modificadas para aplicar las normas y métodos recomendados de la OACI y que deben ser actualizadas en los procesos del sistema de gestión de calidad AIS.

Módulo	**Recurrentes de los Servicios de Información Aeronáutica**				
No.	**Materia**	**Cantidad de horas**			**Nivel de Especialización**
		Teórica	**Prácticas**	**Total**	
1	Documentación Integrada				**1 al 5**
2	e-AIP				**1 al 5**
3	Suplementos AIP				**1 al 5**
4	NOTAM				**1 al 5**
5	Planes de Vuelo				**1 al 5**
6	Automatización				**1 al 5**
7	Sistema AIRAC				**1 al 5**
8	Circulares de información aeronáutica (AIC)				**1 al 5**
9	Sistema de gestión de calidad				**1 al 5**
10	Aplicación del e-TOD				**1 al 5**
				80	
Nota: la asignación de horas se deja a consideración de los instructores					

9. PLANES DE INSTRUCCIÓN

9.1 Los planes de instrucción deberán reflejar los criterios, la dirección y los procedimientos pedagógicos que permitirá a los coordinadores de instrucción preparar planes de instrucción para las dependencias en sus respectivas áreas.

Tales planes deberán reflejar:

- Tipos de instrucción y cursos necesarios.
- Cantidad probable de personal que necesitarán los distintos tipos de instrucción.
- Calendarios de los cursos.
- Asignación de recursos para el instructor y/o del centro de estudios.
- Estado de la aplicación del programa de instrucción en el trabajo.
- Registro de las inspecciones técnicas de la instrucción.

9.2 La Jefatura de la Gestión de Información Aeronáutica, efectuará el Plan de Capacitación Anual del personal de Técnicos AIM a llevarse a cabo a nivel nacional e internacional.

9.3 El presente Programa deberá ser examinado y actualizado frecuentemente para asegurarse que responde a las necesidades y exigencias futuras que se presenten en los procedimientos del SGC AIS o por la autoridad aeronáutica.

Waypoint	ICAO	Latitude	Longitue	Enroute/Terminal
AKROX	SB	S 20 16 3060	W 054 07 1980	E
AKROX	SL	S 17 43 4242	W 063 04 4539	T
AKSIN	SY	N 06 21 3339	W 058 23 3573	T
AKSIN	SB	S 13 37 1920	W 039 35 5520	T
AKVUL	SA	S 50 42 3800	W 069 32 1800	E
AKVUL	SK	N 04 40 3032	W 074 06 0525	T
ALDAX	SC	S 18 21 0000	W 072 28 2000	E
ALDAX	SP	S 02 56 2900	W 076 00 0400	E
ALVAR	SB	S 10 29 3900	W 049 54 0660	E
ALVAR	SV	N 10 19 2348	W 068 03 5086	T
AMERO	SB	S 26 08 3780	W 049 27 5820	E
AMERO	SE	S 03 24 0000	W 083 46 2400	E
ANDAK	SP	S 14 05 0300	W 073 31 1600	E
ANDAK	SC	S 30 14 3708	W 071 07 0884	E
ANDAN	SV	N 08 52 3310	W 069 55 3866	T
ANDAN	SU	S 33 47 4100	W 056 12 0900	E
ANGOL	SB	S 15 49 2460	W 054 01 0360	E
ANGOL	SC	S 37 40 3000	W 072 42 3000	E
ANPAK	SC	S 39 24 1595	W 073 05 4306	T
ANPAK	SU	S 34 54 4949	W 056 01 4746	T
ARC01	SP	S 05 08 5791	W 080 34 4758	T
ARC01	SC	S 20 27 4853	W 070 13 0977	T
ARENA	SB	S 21 01 3600	W 044 46 5700	E
ARENA	SP	S 10 18 2300	W 077 47 0200	E
ARGOS	SC	S 45 15 4037	W 071 54 3839	E
ARGOS	SB	S 19 51 0540	W 057 25 2040	E
ARNAK	SV	N 10 55 2039	W 063 55 0901	T
ARNAK	SC	S 36 15 2544	W 072 07 2862	E
ARTOL	SV	N 10 02 0747	W 069 24 1698	T
ARTOL	SC	S 22 38 4469	W 068 47 5748	T
ARTUX	SP	S 11 23 4050	W 076 28 4530	E
ARTUX	SK	N 05 53 1700	W 075 48 4300	E
ASETI	SC	S 36 16 3021	W 071 52 3581	T
ASETI	SV	N 09 23 5529	W 069 07 2207	T
ASGAR	SP	S 08 17 3188	W 078 59 5313	T
ASGAR	SK	N 00 54 2500	W 076 42 2500	E
ASIVI	SK	N 11 05 2948	W 074 44 2186	T
ASIVI	SV	N 10 53 3694	W 063 44 4587	T
ATABA	SA	S 36 45 2900	W 057 12 4600	E
ATABA	SV	N 04 29 2800	W 067 47 1600	E
ATOGO	SV	N 08 18 2591	W 062 43 1860	T
ATOGO	SP	S 10 11 4900	W 078 00 3800	E
BAGRE	SV	N 10 16 3108	W 066 54 5107	T
BAGRE	SC	S 23 27 1200	W 070 48 0800	E
BAHIA	SC	S 20 19 4980	W 070 12 1228	T
BAHIA	SV	N 11 32 5900	W 064 10 0100	E

BAZA	SB	S 02 23 2940	W 044 03 3660	T
BAZA	SB	S 04 14 2155	W 070 01 4913	T
BISUL	SK	N 03 56 1500	W 076 09 2812	E
BISUL	SA	S 43 31 2200	W 053 00 0000	E
BITAG	SA	S 31 21 4900	W 068 25 0200	E
BITAG	SL	S 11 49 1400	W 068 21 3900	E
BUVIM	SB	S 20 10 1260	W 040 13 4440	T
BUVIM	SA	S 37 24 0000	W 064 30 5100	E
CF007	SB	S 19 26 0470	W 044 09 0900	T
CF007	SC	S 22 29 4732	W 068 55 5167	T
CG001	SK	N 10 29 3069	W 075 30 3929	T
CG001	SB	S 21 09 3900	W 053 49 5820	T
DABUL	SA	S 31 46 5200	W 068 24 4400	E
DABUL	SP	S 13 41 5200	W 072 53 1200	E
DAGEM	SV	N 10 14 5900	W 071 45 4200	E
DAGEM	SL	S 11 21 4100	W 068 36 2400	E
DAGEN	SC	S 37 20 2266	W 073 03 2203	E
DAGEN	SB	S 19 03 5460	W 044 10 2880	E
DALMA	SV	N 08 45 3100	W 071 46 4000	T
DALMA	SB	S 10 12 5100	W 041 27 5520	E
DALNA	SP	S 11 55 0600	W 077 09 5500	T
DALNA	SK	N 04 19 3546	W 073 29 0643	T
DOGTA	SK	N 04 03 3700	W 073 50 2800	E
DOGTA	SB	S 02 43 4500	W 043 34 4740	E
DOKTO	SC	S 39 01 5312	W 072 39 4760	T
DOKTO	SB	S 22 06 1536	W 042 21 5262	T
DOLGA	SK	S 03 42 1266	W 070 03 3775	T
DOLGA	SP	S 05 44 2200	W 081 53 2300	E
DOLTO	SC	S 23 30 3635	W 070 32 1284	T
DOLTO	SB	N 03 09 0600	W 060 46 3180	T
DOTKI	SK	S 04 09 4124	W 069 55 5033	T
DOTKI	SB	S 11 36 1980	W 062 30 1020	E
EDRON	SA	S 38 54 2400	W 066 07 1900	E
EDRON	SC	S 30 47 4131	W 071 09 0646	E
EDVAR	SB	S 06 28 3960	W 039 14 4680	E
EDVAR	SK	N 10 05 5000	W 074 00 4800	E
EGISA	SV	N 10 01 4657	W 069 26 3149	T
EGISA	SK	N 08 50 5400	W 074 30 2100	E
EKEGO	SV	N 10 06 0162	W 064 41 0207	T
EKEGO	SP	S 06 36 3650	W 079 48 1990	T
EKETU	SV	N 09 53 5379	W 069 30 3412	T
EKETU	SC	S 20 25 2685	W 070 12 5789	T
ELARI	SP	S 08 16 4847	W 079 10 1429	T
ELARI	SK	S 04 04 5144	W 070 04 4339	E
ENLUS	SB	S 08 53 3420	W 036 02 5640	E
ENLUS	SC	S 21 53 3510	W 070 13 1635	E
ENSAR	SB	S 22 51 3420	W 043 28 5280	T

ENSAR	SK	N 07 08 1200	W 074 25 5800	E
ENTIR	SU	S 34 32 1489	W 057 35 0894	T
ENTIR	SL	S 17 45 5923	W 063 03 0996	T
ERISO	SV	N 10 15 4890	W 066 59 1638	T
ERISO	SC	S 18 22 1000	W 069 47 4900	E
ESEDA	SK	N 09 01 1800	W 077 25 0000	E
ESEDA	SA	S 44 59 4400	W 068 03 4600	E
ESETA	SP	S 11 56 4300	W 072 55 3700	T
ESETA	SU	S 34 43 4208	W 055 51 0197	T
ESMEL	SB	S 27 45 2203	W 048 24 0702	T
ESMEL	SL	S 20 30 5700	W 064 18 0600	E
ESPIN	SA	S 44 59 1600	W 066 41 5600	E
ESPIN	SB	S 20 55 4800	W 054 54 5280	E
ETEXU	SB	S 20 00 4260	W 054 57 5700	E
ETEXU	SU	S 32 08 4400	W 056 28 3200	E
GARCI	SB	S 24 56 5820	W 049 41 3600	E
GARCI	SV	N 06 51 3900	W 069 58 1200	E
GARZA	SV	N 08 27 0853	W 070 11 1837	T
GARZA	SP	S 10 58 3900	W 077 08 0500	T
GARZA	SG	S 25 06 5178	W 057 29 1105	T
GAVOS	SA	S 36 19 1800	W 062 11 2700	E
GAVOS	SL	S 17 58 1400	W 061 47 5600	E
GAVOT	SO	N 04 45 3500	W 052 28 5500	T
GAVOT	SA	S 45 44 5500	W 067 11 2300	T
GOLFO	SB	S 16 51 1080	W 044 44 1680	E
GOLFO	SV	N 11 01 1300	W 071 12 1100	E
GUARI	SB	S 18 34 4380	W 048 21 5880	E
GUARI	SG	S 25 56 4800	W 057 01 2400	E
ILNOP	SK	N 04 49 2638	W 075 52 3806	T
ILNOP	SB	S 14 16 3060	W 039 26 5340	E
ILPUR	SB	S 12 52 1320	W 042 43 4740	E
ILPUR	SG	S 22 42 0200	W 059 58 5000	E
ILTAP	SK	N 05 18 1000	W 072 17 5500	T
ILTAP	SB	S 14 17 1260	W 054 28 2940	E
IRULI	SB	S 14 39 1200	W 049 14 2460	E
IRULI	SC	S 20 22 2070	W 070 45 0945	E
ISAMA	SC	S 20 14 4872	W 070 12 1752	T
ISAMA	SB	S 20 25 2280	W 049 09 5160	E
ISIVA	SP	S 03 50 5500	W 074 52 1200	T
ISIVA	SB	S 02 23 0000	W 059 59 2580	E
ISKAD	SB	S 15 30 2580	W 055 57 3960	T
ISKAD	SB	S 10 59 2640	W 036 59 3500	T
ISOVA	SV	N 11 30 0648	W 069 51 3717	T
ISOVA	SC	S 33 16 5894	W 070 48 3055	T
ISUSO	SB	S 07 13 4200	W 035 56 2040	E
ISUSO	SK	N 03 53 1800	W 071 42 2000	E
ITAMA	SV	N 08 57 2300	W 063 20 1900	E

ITAMA	SB	S 14 13 2737	W 058 03 5029	E
KABET	SL	S 17 30 4681	W 063 20 2705	T
KABET	SB	S 12 59 3960	W 043 02 1920	E
KABOS	SP	S 08 09 2362	W 079 04 0934	T
KABOS	SK	N 03 57 2300	W 076 36 4900	E
KALER	SU	S 34 50 2926	W 055 02 2997	T
KALER	SC	S 33 31 5336	W 070 47 4238	E
KALER	SB	S 19 57 2940	W 051 56 4800	E
KETUL	SA	S 31 26 3600	W 063 50 3900	E
KETUL	SB	S 17 04 0300	W 049 07 5520	E
KEVER	SK	N 04 34 2794	W 075 38 5516	T
KEVER	SB	S 04 25 3960	W 038 41 0840	E
KEVUM	SC	S 36 56 5374	W 073 09 5596	T
KEVUM	SB	S 30 13 5220	W 051 51 5040	E
KILEV	SA	S 39 38 0400	W 065 12 3100	E
KILEV	SL	S 10 58 5400	W 069 06 0400	E
KIMAM	SL	S 11 10 0000	W 069 00 0000	T
KIMAM	SV	N 08 04 2017	W 063 36 4073	T
KODSA	SB	S 12 42 1860	W 038 51 4920	E
KODSA	SL	S 11 06 1800	W 065 18 5600	E
KOGLO	SB	S 19 03 5460	W 044 10 2820	T
KOGLO	SK	N 03 26 5191	W 076 23 5369	T
KOKTI	SB	S 06 55 3780	W 041 51 0420	E
KOKTI	SE	S 02 18 1600	W 077 57 0000	E
KOLMI	SB	S 19 40 5400	W 043 55 2760	T
KOLMI	SP	S 05 18 0400	W 080 38 2000	T
KOMBO	SK	N 05 59 3500	W 073 39 5300	E
KOMBO	SB	S 20 01 5700	W 045 03 1320	E
KORAN	SB	S 13 55 2580	W 046 04 1980	E
KORAN	SL	S 17 16 1900	W 065 35 1600	E
KOVAK	SA	S 41 14 3000	W 071 01 3000	T
KOVAK	SK	N 12 20 1400	W 075 15 4400	E
KOVOS	SC	S 38 53 1654	W 072 28 1685	T
KOVOS	SB	S 28 55 0420	W 049 47 4860	E
KUKAS	SP	S 08 03 1100	W 074 28 5900	T
KUKAS	SC	S 22 29 2792	W 069 00 3328	T
LENOS	SV	N 09 12 0500	W 066 05 5400	E
LENOS	SC	S 39 45 0400	W 072 31 2699	E
LIMON	SC	S 22 38 0900	W 069 07 3200	T
LIMON	SV	N 10 18 3527	W 067 05 0365	T
LITUX	SB	S 00 24 2640	W 061 42 2520	E
LITUX	SC	S 24 46 5600	W 069 05 3600	E
LOMUN	SC	S 23 42 5801	W 070 28 4197	T
LOMUN	SV	N 10 39 3386	W 066 48 1645	T
LUCIA	SV	N 10 18 1564	W 066 39 4455	T
LUCIA	SA	S 26 34 1600	W 054 48 5600	E
MAGDA	SL	S 14 03 4400	W 064 31 2300	E

MAGDA	SB	S 15 41 5100	W 055 25 2040	E
MALPO	SC	S 22 24 5066	W 068 39 5358	T
MALPO	SB	S 20 22 0540	W 043 28 5580	E
MALTU	SB	S 17 52 1920	W 046 22 0720	E
MALTU	SC	S 39 24 0600	W 072 43 5900	E
MANSU	SC	S 42 15 0063	W 073 42 2065	T
MANSU	SB	S 08 04 3060	W 036 23 0300	E
MAPMI	SK	N 05 43 2100	W 075 15 1396	T
MAPMI	SB	S 21 29 5160	W 045 33 5460	E
MARIA	SB	S 27 57 2679	W 050 09 2391	T
MARIA	SL	S 22 00 0000	W 063 00 0000	E
MATKA	SC	S 37 02 2002	W 073 13 0697	T
MATKA	SB	S 21 16 0780	W 049 18 5640	E
MILOG	SK	N 03 57 1213	W 071 24 3687	T
MILOG	SB	S 22 35 1740	W 040 42 1020	E
MORPA	SC	S 32 35 0718	W 070 49 2358	T
MORPA	SB	S 22 47 0180	W 047 46 3240	E
MOVTA	SB	S 04 25 4380	W 045 19 3180	E
MOVTA	SK	S 04 11 5016	W 069 50 1368	E
MUBEN	SA	S 33 03 1100	W 068 37 0500	T
MUBEN	SU	S 34 53 3008	W 056 07 0630	T
MUDOL	SC	S 39 33 2510	W 073 05 2293	T
MUDOL	SB	S 18 13 1800	W 043 26 5700	E
MUGOM	SB	S 21 43 1980	W 047 12 2640	E
MUGOM	SP	S 16 17 4600	W 072 59 4800	E
MUGOP	SB	S 21 02 5700	W 046 51 4620	E
MUGOP	SK	N 05 50 4300	W 075 03 0900	E
MULUX	SK	N 04 41 3372	W 074 07 2902	T
MULUX	SB	S 18 25 3240	W 048 14 2520	E
MUPET	SP	S 15 08 1300	W 070 24 5300	E
MUPET	SB	S 15 52 0180	W 051 09 3840	E
NAXUP	SB	S 23 51 1500	W 046 27 1020	T
NAXUP	SK	N 06 25 3900	W 072 43 1300	E
NAXUR	SB	S 07 03 3720	W 049 19 1920	E
NAXUR	SE	S 00 55 0800	W 084 41 0400	E
NEBAL	SC	S 45 51 0296	W 071 23 2720	T
NEBAL	SB	S 17 26 2700	W 050 19 3960	E
NEDAX	SA	S 38 42 4900	W 067 34 3300	E
NEDAX	SC	S 52 04 5646	W 072 01 2408	E
NEKOR	SV	N 10 21 2700	W 071 38 3549	T
NEKOR	SC	S 39 15 1476	W 073 04 5250	E
NESNI	SK	N 05 34 5200	W 073 33 3800	E
NESNI	SB	S 01 54 1380	W 052 48 5520	E
NILKI	SG	S 24 39 2300	W 056 52 1000	E
NILKI	SB	S 04 18 1740	W 031 10 5400	E
NILNI	SB	S 04 33 2520	W 058 45 0120	E
NILNI	SK	N 07 31 4700	W 073 29 2300	E

OBGOL	SP	S 12 09 3000	W 077 02 4900	T
OBGOL	SV	N 08 17 0419	W 062 46 0751	T
OGRIS	SL	S 18 47 2945	W 057 50 4527	T
OGRIS	SU	S 34 52 0017	W 056 04 3841	T
OPMEL	SV	N 08 26 1776	W 070 04 0680	T
OPMEL	SK	N 06 44 1200	W 075 57 1100	E
OPRIX	SB	N 01 33 5880	W 060 03 0180	E
OPRIX	SA	S 30 13 3700	W 060 09 3200	E
ORUMA	SL	S 11 13 4558	W 068 43 5634	T
ORUMA	SG	S 24 55 2400	W 057 39 0000	T
OSTRA	SB	S 29 20 5160	W 055 32 5040	E
OSTRA	SC	S 28 30 0000	W 105 00 0000	E
OSTRA	SV	N 11 13 1710	W 063 21 1920	E
OSUSO	SV	N 12 00 5121	W 066 31 4563	T
OSUSO	SA	S 33 14 1500	W 063 41 3900	E
PABUX	SK	N 05 29 4482	W 076 31 1432	T
PABUX	SB	S 01 21 4680	W 060 48 0600	E
PAGOM	SV	N 11 59 1905	W 066 26 5419	T
PAGOM	SC	S 36 41 4671	W 072 41 5063	E
PALOV	SP	S 07 02 3110	W 079 47 1070	T
PALOV	SK	N 03 18 5691	W 076 19 3279	E
PALUR	SC	S 39 24 0544	W 072 57 5882	T
PALUR	SV	N 09 33 1835	W 069 01 1332	T
PANEX	SB	S 15 31 0720	W 046 02 2040	E
PANEX	SC	S 37 45 5947	W 073 05 3488	E
PLAZA	SL	S 17 07 5100	W 067 31 4300	E
PLAZA	SE	S 02 55 4500	W 078 22 1800	E
PORGA	SV	N 10 28 2300	W 064 33 1300	E
PORGA	SB	S 18 40 4560	W 038 14 3420	E
POTBA	SB	S 21 02 5100	W 047 48 1440	T
POTBA	SK	S 01 57 4100	W 070 50 3500	E
POTRO	SB	S 08 48 3000	W 035 25 4500	E
POTRO	SA	S 40 03 1000	W 064 45 3300	E
PRADO	SB	S 25 26 5214	W 049 16 5569	T
PRADO	SC	S 33 28 5900	W 070 52 2700	E
PUGSU	SB	N 01 46 3480	W 035 36 1260	E
PUGSU	SE	S 00 55 4200	W 082 12 5300	E
PUKAM	SV	N 08 10 1993	W 063 27 4522	T
PUKAM	SK	N 06 07 2200	W 077 00 1500	E
PUKEM	SC	S 22 30 2440	W 068 46 4999	T
PUKEM	SB	S 23 33 4980	W 047 02 2376	T
PUNTA	SV	N 11 23 4700	W 070 27 1900	E
PUNTA	SP	S 04 15 0000	W 081 20 0000	E
RAXUS	SA	S 39 48 3500	W 068 04 3700	E
RAXUS	SB	S 20 22 1020	W 046 37 5520	E
SAMPU	SC	S 36 26 4112	W 071 51 4014	T
SAMPU	SB	S 17 39 2040	W 044 32 2400	E

SAPMA	SK	N 05 56 2037	W 075 31 5139	T
SAPMA	SB	S 29 59 5340	W 050 58 3060	T
SARPA	SL	S 14 23 3700	W 064 49 5500	T
SARPA	SB	S 19 10 2700	W 043 44 2640	E
SASDA	SK	S 04 01 3677	W 069 52 4628	T
SASDA	SB	S 15 38 4200	W 038 53 2160	E
SASNU	SB	N 02 04 5400	W 042 48 4380	E
SASNU	SK	N 08 43 0600	W 074 05 1600	E
SELMI	SC	S 39 10 2898	W 072 36 5619	T
SELMI	SB	S 19 23 4500	W 044 19 1260	E
SELVA	SV	N 06 07 3300	W 062 58 1100	T
SELVA	SL	S 10 57 5520	W 066 16 3327	T
SELVA	SB	S 09 31 1931	W 072 11 0813	E
SELVA	SE	S 00 59 0300	W 077 31 2200	E
SERVO	SC	S 23 28 2508	W 070 26 5502	T
SERVO	SK	N 07 42 5600	W 075 05 2300	E
SIDOV	SK	N 01 09 1800	W 075 22 3000	E
SIDOV	SB	S 20 21 5160	W 047 52 5400	E
SIDUB	SU	S 34 39 4032	W 055 54 3805	T
SIDUB	SB	N 03 23 5040	W 061 02 2700	E
SIGAS	SP	S 11 47 4900	W 077 13 3100	T
SIGAS	SB	S 27 52 2580	W 054 27 1500	E
SIGIR	SB	S 18 14 4740	W 044 03 5160	E
SIGIR	SK	N 03 44 4400	W 076 36 1400	E
TABOR	SC	S 41 36 5022	W 073 14 0079	T
TABOR	SV	N 10 28 1400	W 066 54 2200	E
TAMAR	SV	N 10 12 1800	W 069 23 3400	T
TAMAR	SB	S 01 18 1563	W 049 08 2183	E
TEGOL	SK	N 05 16 3363	W 072 25 3641	T
TEGOL	SA	S 25 13 1500	W 064 33 2800	E
TESAM	SU	S 34 48 5516	W 055 05 5657	T
TESAM	SK	N 07 11 3404	W 070 54 2764	T
TIGRE	SV	N 08 46 1701	W 070 17 0630	E
TIGRE	SU	S 34 46 5300	W 056 42 5600	E
TOMAS	SV	N 10 36 0659	W 067 04 1747	T
TOMAS	SB	S 11 20 1980	W 038 07 2280	E
TONUL	SU	S 34 45 3281	W 055 06 3101	T
TONUL	SC	S 22 41 0974	W 069 06 3898	T
TOROM	SP	S 03 38 0000	W 074 13 0000	T
TOROM	SO	N 05 38 1500	W 051 18 5200	E
TOROM	SC	S 34 35 2600	W 071 33 2200	E
UDIMA	SV	N 10 32 5900	W 063 42 3100	E
UDIMA	SA	S 41 01 5100	W 066 47 3600	E
UDUSA	SV	N 10 01 0831	W 069 07 5144	T
UDUSA	SB	N 04 42 0600	W 060 51 1740	E
UMGAX	SK	N 06 03 5541	W 075 25 2286	T
UMGAX	SB	S 22 26 4680	W 042 11 3120	E

VULET	SK	N 05 06 5200	W 075 43 1100	T
VULET	SB	S 23 16 0290	W 045 44 3180	E
VULRI	SB	S 22 55 3420	W 043 05 2904	T
VULRI	SK	N 05 36 0400	W 075 49 1000	E
VUSTA	SP	S 02 56 0000	W 073 39 0000	T
VUSTA	SB	S 23 29 1815	W 046 39 4734	T