



Agenda Item 4: Assessment of operational requirements in order to determine the implementation of communications, navigation, and surveillance (CNS) capability improvements for en-route and terminal area operations

Follow-up to the implementation of activities under Project D1, SAM ATN architecture

(Presented by the Secretariat)

SUMMARY	
This working paper presents information on the status of implementation of activities under GREPECAS project D1 – <i>SAM ATN Architecture</i> , and the activities foreseen for 2014. Activities are related to the implementation of the new IP-based satellite/ground digital network in the SAM Region (REDDIG II).	
REFERENCES:	
<ul style="list-style-type: none">• Technical-Operational Meeting for the Implementation of the New Digital Network – REDDIG II (Lima, Peru, 9-13 September 2013); and• Second Technical-Operational Meeting for the Implementation of the New South American Digital Network (Lima, Peru, 26-28 March 2014).	
<i>ICAO strategic objectives:</i>	<i>A – Safety; and B – Air navigation capacity and efficiency</i>

1. Background

1.1 With the commissioning of the new South American communication network, the Region will have a modern IP-based digital network. The new digital network (REDDIG II) will be made up by two networks: one main network, based on VSAT stations, that uses the same bandwidth as the current REDDIG but with equipment that uses the bandwidth more efficiently; and a ground network based on MPLS (multi-protocol label system) technology, which runs over fiber optics and will initially operate as backup for the satellite network, thus increasing network availability.

1.2 The REDDIG II will be able to support current services as well as the new ones foreseen in the *SAM performance-based air navigation implementation plan (PBIP)*. The new services will be part of the requirements of the corresponding modules of Blocks 0 and 1 of the Aviation System Block Upgrades (ASBU) methodology, mainly concerning global data and systems interoperability through information management across the system, with global interoperability (Performance improvement area (PIA) 2 – *Global interoperability of data and systems through information management across the system*).

1.3 Likewise, the REDDIG II will be able to support the initial and future requirements of the regional ATFM, initially through the provision of an IP communications subnetwork that will permit teleconferencing amongst the different ATFM units of the Region.

2. Discussion

2.1 Phase 2 of Contract No. 22501200 between the INEO & Level 3 Consortium and ICAO (on behalf of REDDIG member States) for the implementation of the new South American digital network (REDDIG II) started on 21 December 2012.

2.2 The updated (January 2014) schedule of activities for the implementation of REDDIG II is contained in the **Appendix** to this working paper, showing that the installation and commissioning of REDDIG is scheduled for the beginning of the last quarter of 2014.

2.3 The first activity in Phase 2 will be the purchase of equipment for REDDIG II, to be performed by the INEO & Level 3 Consortium. The main activities under Phase 2 to be carried out in 2014 are as follows: in-factory course (Vélizy, France, 21 April to 9 May 2014); factory acceptance tests (Vélizy, France, 12-16 May 2014); shipment of the equipment (mid-June 2014); theoretical-practical course on REDDIG II (Rio, Brazil, August 2014); concurrent installation of all REDDIG II nodes (September 2014); provisional acceptance tests (PSAT) (end of September 2014); final acceptance tests (October–November 2014); and commissioning of the REDDIG II (November 2014).

2.4 In-factory courses are for Manaus and Ezeiza NCC personnel. The REDDIG II contract includes travel tickets and *per diems* for 6 participants, three from the Manaus NCC and three from the Ezeiza NCC. In addition to these six participants, the REDDIG Administrator (Mr. Luis Alejos) will also attend, his expenses to be covered by the RLA/06/901 budget.

2.5 According to the REDDIG II contract, factory tests (FAT) contemplate the participation of six attendees, two from project management (the CNS Officer of the ICAO SAM Regional Office and the REDDIG Administrator) and four from REDDIG member States. REDDIG management considered that the State representatives that would participate in the FAT would be those that had participated actively in the drafting of the technical specifications for the REDDIG, the bidding process, and the review of the REDDIG II design documentation. The expenditures of the 6 participants in the FAT will also be covered by the REDDIG II contract.

2.6 The technical-operational courses are scheduled for August 2014 in Rio, Brazil, with the participation of 36 attendees. In this regard, the REDDIG member States must propose the name of two candidates per node. The candidates must be directly involved in the maintenance of the existing REDDIG nodes. It is expected that the names of all the candidates will be provided at the Meeting.

2.7 The commissioning of the new digital network for the CAR Region, MEVA III, is foreseen for the last quarter of 2014. In this regard, it will be necessary to implement a new interconnection with the MEVA III network to replace the current interconnection with MEVA II.

3. Suggested action

3.1 The Meeting is invited to:

- a) take note of the information provided in this working paper;
- b) review the activities listed in section 2 and the Appendix to this working paper, and update the work programme of the SAM ATN Architecture Project (D1); and
- c) discuss any other matters it may deem appropriate.

TENTATIVE TIME SCHEDULE / PHASES / PROGRAMA TENTATIVO - FASES

ID	Nom de la tâche	Duration	Start	Timeline											
				Qtr 2, 2013	Qtr 3, 2013	Qtr 4, 2013	Qtr 1, 2014	Qtr 2, 2014	Qtr 3, 2014	Qtr 4, 2014	Qtr 1, 2015	Qtr 2, 2015	Qtr 3, 2015	Qtr 4, 2015	Qtr 1, 2016
1	Tentative REDDIG II implementation work programme / Programa tentativo de trabajo implantacion REDDIG II	421 days	Thu 09/05/13	[Gantt bar from Q2 2013 to Q4 2015]											
2	Phase 1 - Project / Fase 1 - Proyecto	136.57 days	Thu 16/05/13	[Gantt bar from Q2 2013 to Q4 2013]											
3	Documentation drafting and approval process / Proceso de elaboracion y aprobacion documentacion	136.57 days	Thu 16/05/13	[Gantt bar from Q2 2013 to Q4 2013]											
4	REDDIG II preliminary design installation / Preparación diseño preliminar instalación REDDIG II (SDD)	40 days	Thu 09/05/13	[Gantt bar from Q2 2013 to Q3 2013]											
5	Preparation of installation and training procedures documentation and NMS documentaion preparation / Preparacion documentos de procedimiento de instalacion y capacitacion y ptparacion documentacion del sistema NMS	15 days	Thu 04/07/13	[Gantt bar from Q3 2013 to Q3 2013]											
6	FAT protocol preparation / Preparacion protocolo FAT	10 days	Thu 25/07/13	[Gantt bar from Q3 2013 to Q3 2013]											
7	SAT protocol preparation / Preparacion protocolo SAT	10 days	Thu 08/08/13	[Gantt bar from Q3 2013 to Q3 2013]											
8	Documentation submittance (SDD, FAT/SAT protocol, on-site installation procedure, training manuals) to ICAO / Envio documentacion (SDD, protocolo FAT/SAT, procedimiento instalacion sitio, manuales de capacitacion) a OACI	0 days	Wed 21/08/13	[Milestone: 21/08]											
9	Documentation review / Revision de la documentacion	12 days	Thu 22/08/13	[Gantt bar from Q3 2013 to Q3 2013]											
10	Technical-operational meeting / Reunion tecnico-operacional	5 days	Mon 09/09/13	[Gantt bar from Q3 2013 to Q3 2013]											
11	Final design/Diseño finalizado	23 days	Mon 16/09/13	[Gantt bar from Q3 2013 to Q3 2013]											
12	Documentation reviewed and approved / Documentos revisados y aprobados	0 days	Wed 16/10/13	[Milestone: 16/10]											
13	Schedule DRM /Cronograma DRM	30 days	Thu 17/10/13	[Gantt bar from Q3 2013 to Q4 2013]											
14	Phase 2 - REDDIG II implementation / Fase 2 - Implantación de la REDDIG II	215.29 days	Thu 17/10/13	[Gantt bar from Q4 2013 to Q4 2015]											
15	Purchasing and integration of VSAT equipment / Adquisición e Integración equipos VSAT	35 days	Thu 26/12/13	[Gantt bar from Q4 2013 to Q1 2014]											
16	Purchasing of equipment and remittance to company HQ for integration / Adquisición de equipos y envio a la sede de la empresa ganadora para su integracion	7 wks	Thu 26/12/13	[Gantt bar from Q4 2013 to Q1 2014]											
17	Preparation of ground backbone network / Preparación red medular terrestre	35 days	Mon 14/07/14	[Gantt bar from Q2 2014 to Q3 2014]											
18	Hiring of service for all nodes / Contratación de servicio para todos los nodos	2 wks	Mon 14/07/14	[Gantt bar from Q2 2014 to Q2 2014]											
19	Comisionamiento red terrestre/Ground back bone commissioning	1 wk	Mon 25/08/14	[Gantt bar from Q2 2014 to Q2 2014]											
20	Integration at factory, training and FAT / Integracion en fábrica, entrenamiento y FAT	67 days	Thu 13/02/14	[Gantt bar from Q1 2014 to Q2 2014]											
21	Equipment assembling at factory / Ensamblar equipos en fábrica	6 wks	Thu 13/02/14	[Gantt bar from Q1 2014 to Q2 2014]											
22	Network configuration and pre-test / Configuración y pre-test de la red	8 wks	Thu 06/03/14	[Gantt bar from Q1 2014 to Q2 2014]											
23	Documentation submittance for on-factory-training / Envio documentacion para entrenamiento en fábrica	0 wks	Mon 21/04/14	[Milestone: 21/04]											
24	On-factory-training / Entrenamiento en fábrica	3 wks	Mon 21/04/14	[Gantt bar from Q1 2014 to Q2 2014]											
25	FAT	5 days	Mon 12/05/14	[Gantt bar from Q2 2014 to Q2 2014]											
26	FAT signature / Firma FAT	0 days	Fri 16/05/14	[Milestone: 16/05]											
27	REDDIG II Technical Operational Meeting/Reunión Técnica Operacional REDDIG II	95 days?	Wed 26/03/14	[Gantt bar from Q1 2014 to Q2 2014]											
28	RTO Meeting/Reunión RTO	3 days	Wed 26/03/14	[Gantt bar from Q1 2014 to Q1 2014]											
29	RTO Meeting/Reunión RTO	2 days?	Mon 04/08/14	[Gantt bar from Q2 2014 to Q2 2014]											
30	Preparatory REDDIG II Course/ Curso preparatorio REDDIG II	5 days	Mon 31/03/14	[Gantt bar from Q1 2014 to Q1 2014]											
31	REDDIG II preliminary course in Bogotá/ Curso preparatorio preliminar de la REDDIG II en Colombia	4 days	Tue 05/08/14	[Gantt bar from Q2 2014 to Q2 2014]											
32	Remittance of equipment to sites (customs clearance 1 month approx) / Envío de los equipos a los sitios (liberación equipos aduana 1 mes tiempo estimado)	72 days?	Mon 02/06/14	[Gantt bar from Q2 2014 to Q3 2014]											
33	Preparation of equipment remittance / Preparación para envio de equipos	2.8 wks	Tue 03/06/14	[Gantt bar from Q2 2014 to Q2 2014]											
34	Preparation para el envio equipos REDDIG II a Rio para entrenamiento/Preparation for the remittance of REDDIG II equipment in Rio for training	7 days?	Mon 02/06/14	[Gantt bar from Q2 2014 to Q2 2014]											
35	Ezeiza	11.4 wks	Mon 23/06/14	[Gantt bar from Q2 2014 to Q3 2014]											
36	La Paz	11.4 wks	Mon 23/06/14	[Gantt bar from Q2 2014 to Q3 2014]											
37	Rio de Janeiro	6.4 wks	Thu 12/06/14	[Gantt bar from Q2 2014 to Q3 2014]											
38	Santiago	11.4 wks	Mon 23/06/14	[Gantt bar from Q2 2014 to Q3 2014]											
39	Bogota	11.4 wks	Mon 23/06/14	[Gantt bar from Q2 2014 to Q3 2014]											
40	Guayaquil	11.4 wks	Mon 23/06/14	[Gantt bar from Q2 2014 to Q3 2014]											
41	Georgetown	11.4 wks	Mon 23/06/14	[Gantt bar from Q2 2014 to Q3 2014]											
42	Cayenne	11.4 wks	Mon 23/06/14	[Gantt bar from Q2 2014 to Q3 2014]											
43	Asuncion	11.4 wks	Mon 23/06/14	[Gantt bar from Q2 2014 to Q3 2014]											
44	Lima	11.4 wks	Mon 23/06/14	[Gantt bar from Q2 2014 to Q3 2014]											

