THIRD MEETING OF THE ALLPIRG/ADVISORY GROUP

(Montreal, 6 – 8 April 1999)

Agenda Item 5.7: Interregional coordination and harmonization mechanism – Y2K date change preparations

STATUS OF Y2K PREPARATIONS AND CONTINGENCY PLANNING IN THE SOUTH AMERICAN REGION

(Presented by the Secretariat)

SUMMARY

This information paper describes the actions carried out by the South American Regional Office with regard to the year 2000 problem within the air navigation systems environment, and provides an initial summary of the actions taken by the SAM States on the matter.

REFERENCES

AN13-46-97/92 of 12 December 1997
AN13-46-98/37 of 15 May 1998
LN2/SA6516 of 23 October 1998
AN 13/46.1-99/16 of 29 January 1999

1. BACKGROUND

1.1 Technology plays today a very important role in all areas and, especially, within the aeronautical environment. The progress of the last decades has made it unimaginable to carry out a series of activities, functions and operations without the support of computer systems and electronic equipment.

1.2 Bearing this fact in mind and without wanting to deepen on the problem in itself, the arrival of the year 2000 creates a challenge without precedence to the aeronautical community, to which all computer systems and electronic equipment must be evaluated. Even though this problem was at first considered as a purely and exclusively technical one, and centred on the adaptation to the year 2000 with the consequential trials to equipment and systems, it later acquired higher importance since it not only circumscribed itself to technical elements but also could represented economical, legal, administrative risks, as well as regards its relationship with other enterprises and/or organizations.

1.3 Within the frame of this problem, ICAO, has assigned a high priority to problems which could arise in the processing systems based on computers which might affect air traffic control services and States' international airport users with the change of date of the year 2000 or, as it is normally known, Y2K problem. Based on the above, the ICAO Assembly formulated Resolution A32-10: International assessment criteria and notification of status concerning year 2000 compliance (October 1998).

1.4 The CAR/SAM Regional Planning and Implementation Group, during its last meeting (GREPECAS/8) held from 9 to 18 November 1998 in Santo Domingo, Dominican Republic, also examined this problem, and took knowledge of the activities carried out and planned by the Lima and Mexico Regional Offices with regard to this matter.

1.5 GREPECAS/8 recognized that, on the one hand, one of the most important aspects which States should confront was the establishment of national Y2K contingency planning teams. With regard to the aforementioned, GREPECAS formulated Conclusion 8/53, which urges CAR/SAM States to create these planning teams. On the other hand, note was taken of the work carried by the COM/SG on this problem and on the guidelines which this Subgroup elaborated to carry out trials at the message switching centres, deciding to formulate Conclusion 8/54.

2. ACTIVITIES OF THE SOUTH AMERICAN REGIONAL OFFICE

2.1 The South American Regional Office, for its part, and following the guidelines set by ICAO Headquarters and GREPECAS, elaborated a SAM Y2K Project, to be carried out during the course of 1999 with the aim to examine, together with the SAM civil aviation administrations, the Y2K problem.

2.2 The main objective of the Y2K Project is to encourage States to take contingency measures permitting to minimize or to eliminate any inconveniences which this circumstance might present, and to elaborate an ATS contingency plan, which would be applied as necessary, to ensure, in the event of partial or total interruption of the Air Traffic Services, the safe and orderly operation of aircraft at the Region's main international traffic flows.

2.3 In order to facilitate the interpretation of the terms utilized, a contingency measure was described as an action to be taken by the State in the event that interruption of certain facility is presented, in order that the service provided through this facility can continue in operation. For example, if an interruption to a communications circuit rented from a provider were to occur, a contingency measure would be the use of HF.

2.4 An ATS contingency plan was considered as an action to be carried out by the State in the event that the contingency measure can not be executed. Such action would consist, for example, of the re-routing of international ATS traffic in such a manner that it continues providing safe ATS services.

2.5 Additional objectives of the Project have been to inform of experiences obtained from the various civil aviation administrations to face the problem in order to avoid effort duplicity, homogenize as much as possible the contingency measures to be taken and inform of the activities of ICAO and other international organizations and committees with regard to the Y2K problem.

2.6 The execution of this Project will be carried out in different phases. The first phase consisted of missions to States by Regional Officers assigned for the execution of the Y2K task. The second phase consists in the holding of two Y2K ATS/COM informal meetings, the first from 3 to 6 May 1999, and the second from 1 to 3 September 1999. The third phase will be the follow-up on the preparation of an

aeronautical information circular (AIC) detailing the problems identified and the actions taken by the State with regard Y2K.

2.7 The last phase of the SAM Y2K Project is closely linked with ICAO Assembly Resolution A32-10, which, among other things, urges all contracting States to provide other States and airspace users, by 1 July 1999, updated aeronautical information pertinent to the observance of requirements for year 2000 by part of the aeronautical, air navigation and aerodrome services provided at international airports and designated alternate aerodromes.

3. SAM Y2K PROJECT

3.1 Missions to States

3.1.1 The objective of the missions consisted in examining, together with the States, the following aspects:

a) analysis of the year 2000 problem;

b) compilation of information with respect to the inventory carried out by the administration on the basis of letter LT 1/20-SA1323 of 9 December 1998;

c) note of the actions taken by the State to solve identified inconveniences;

d) review of contingency measures and ATS Contingency Plan;

e) preparation of an aeronautical information circular (AIC) detailing identified problems and actions taken by the State with regard Y2K; and

f) information on the Regional Office's plans with regard to the SAM Y2K Project.

3.1.2 Tables were elaborated in order to carry out the evaluation of the systems which might possible be affected by the Y2K problem and compile the contingency measures to adopt in this respect.

3.1.3 Through these tables, it was possible to identify the systems which could be affected by the Y2K problem and the contingency measure, or measures, to adopt. The information contained in the tables contemplate communications, navigation, surveillance, meteorology and airport aspects, as well as electrical power and communications systems.

3.2 Results of missions to States

3.2.1 As a result of the missions carried out, it can be concluded that States are working on the Y2K problem. They have taken into consideration the adoption of more adequate contingency measures to face the problem, they have made consultations with the service provider companies, as well as with the equipment providers of those systems which might be affected by the Y2K problem and, finally, will adopt the ATS contingency plans in the event of partial or total interruption of the ATS systems.

3.2.2 For better reference, the appendix to this paper provides the actions carried out by States with regard to the subject in each of the areas taken into consideration

4. CONCLUSIONS

4.1 Taking into account all of the above, the following general conclusions could be reached:

1. All SAM States civil aviation administrations have established Y2K Committees and, in some cases, they form part of national Y2K committees.

2. All States, to a greater or lesser degree, have carried out an inventory of their equipment and systems.

3. All States have requested the service providers and manufacturers information on their equipment and systems Y2K compatibility and, in most cases, foreseeing certain legal problems, have requested Y2K certification of those equipment and/or systems.

4. Even though many administrations have not yet received response from all service providers and manufacturers, on the basis of studies and analysis carried out by the own State, contingency measures have been identified which will be adopted with views to overcome the change of date problem.

5. Even though the necessary contingency measures have been identified, some States still have not been approved budgets to take these measures.

6. With regard to national ATS contingency plans, the SAM Regional Office has presented guidelines to aid States to elaborate draft ATS contingency plans.

7. These plans will be presented at the forthcoming Y2K ATS/COM Informal Meeting to be held in Lima from 3 to 6 May 1999, when States will be able to exchange points of view on the subject, reach agreements with States responsible for adjacent FIRs for the re-routing of traffic in the event of partial diminishment or total collapse of the ATS. A regional contingency plan will be elaborated on the basis of these agreements, with views to maintain the Region's main international traffic flows in coordination with adjacent regions open to air operations.

8. Another aspect dealt with the civil aviation administrations has been the administrative and finance areas, which, even though do not have direct impact on the safety of air operations, could affect the efficient functioning of the civil aviation directorates.

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APPENDIX

ACTIONS CARRIED OUT BY STATES WITH REGARD TO Y2K

1. COORDINATION WITH COMMUNICATIONS SERVICES PROVIDERS

1.1 The States of the SAM Region are carrying out pertinent coordinations with the communications services providers with respect to possible faults, which could present themselves due to Y2K problem. Up to date, most States have not received response from their providers.

1.2 In all States visited, it could be noted that there is a national Y2K committee established, forming the aeronautical sector and the communications services providers part of them. It is therefore expected that, in these committee meetings, all necessary coordination be carried out to correct possible problems generated by the lack of Y2K compatibility of the systems and/or equipment, or adopt the most appropriate contingency measures.

1.3 The most important contingency measures adopted by States in the event of interruption of the communications services are the use of HF systems, the use of other providers guaranteeing Y2K operation and the support of military communications networks, as long as they are Y2K compatible.

Coordination with Communications Services Providers

State	Communications Service Provider	Y2K Problem	Contingency Measure
Argentina	Impsat, Telecom Telefónica Teleintar	Awaiting response from provider	Use of HF
Bolivia	Entel	Awaiting response from provider	To be determined
Brazil	Embratel Satellite System Radio Links	Awaiting response from provider No No	The contingency measures are contained in document DMA 63-1
Chile	Entel Chile	No	
Colombia	Telecom, Impsat, Comsat, own satellite network	No	
Ecuador	Emetel, Andinatel Pacifictel	Awaiting response from provider	Use of HF
French Guiana	France Tqg Com	No	
Guyana	GT&T	No	
Panama	Cable &Wireless	No	Use of HF
Paraguay	Antelco	Awaiting response from provider	To be determined
Peru	Telefónica	Awaiting response from provider	Use of HF
Suriname	Telesur	Awaiting response from provider	To be determined

State	Communications Service Provider	Y2K Problem	Contingency Measure
Uruguay	Antel	Awaiting response from provider	Use of HF
Venezuela	CANTV	Awaiting response from provider	Use of HF

2. **AERONAUTICAL INFORMATION PROCESSING SYSTEM**

2.1 Most of the aeronautical information processing systems such as the AIS and OPMET data banks present Y2K problems. The systems developed by the company Syseca which have been installed in Bolivia, Chile, Colombia, Ecuador, and Peru present the Y2K problem. The company has presented the civil aviation administrations with alternate measures and associated costs for the solution of the problem.

2.2 At countries where the system has been installed within the past two years, the guarantee will cover the costs incurred to make the systems Y2K-compatible. The system recently installed in Panama counts with Y2K certification.

2.3 Below is a table on the situation of the SAM Region's information systems with respect to the Y2K problem.

State	Hardware/Software Equipment	Year of Installation	Y2K Problem	Contingency Measure
Argentina	HP Vectra /Aydin	1998	No	
Bolivia	Does not have OPMET or AIS data bank			
Brazil	Opmet Sun Sparc 5 AIS	1999 1999	Yes Yes	Back to old system, pre-established routing
Chile	Compaq/Syseca	1992	Yes	Replacement first quarter 1999
Colombia	Compaq/Syseca	1998	No. Certified	
Ecuador	Compaq/Syseca	1996	Yes. Equipment in guarantee until March 2000.	Manual procedure
French Guiana		1995	Yes	Replacement
Guyana			No	
Panama	Digital Alfa Server 100A/GW	1998	No	
Paraguay	Does not have OPMET or AIS data bank			
Peru	Compaq/Syseca	1994	Yes	Manual Procedure
Suriname		1995	No	
Uruguay				
Venezuela	Does not have OPMET or AIS data bank			

3. AFTN SYSTEM

3.1 In addition to the above paragraph, it could be indicated that almost all SAM States have carried out trials to the AFTN systems, reaching the conclusion that some systems would be affected by Y2K. Due to the above, the civil aviation administrations have taken measures necessary to overcome the identified faults, foreseeing that the whole AFTN network would be ready and Y2K compliant by the end of the year.

3.2 In Peru, where the Y2K problem has been identified, turning the application date back has solved this.

State	Hardware/Software Equipment	Year of Installation	Y2K Problem	Contingency Measure
Argentina	Digital Micro Vax ii/ IMX 700	1998	No	
Bolivia	Stratus/Syseca	1996	Yes	Manual switching
Brazil	Atech	1998	No	
Chile	Stratus/Syseca	1992	Yes	Replacement first quarter 1999
Colombia	Stratus/Syseca	1998	No, Certified	
Ecuador	Stratus/Syseca	1996	Yes. Equipment in guarantee until March 2000.	Manual switching
French Guiana	Sagen	1989	Yes	Replacement
Guyana	Siemens	1996	No	
Panama	Digital Alfa Server 100A/GW	1998	No	
Paraguay	Philips DS 714/Aeropp	1980	No	
Peru	Stratus/Syseca	1994	Yes.	Trials turning back the calendar 4 years. Manual switching
Suriname	Messier	1995		To be determined
Uruguay	GPW MSC8000	1988	In consultation	
Venezuela	DS714/Aeropp	1980	Yes	Replacement first quarter 1999

4. ATS SPEECH CIRCUITS COMMUNICATIONS

4.1 The ATS speech circuits communications systems installed in the Region for the Area Control Centres before the 1980's do not present the Y2K problem. The equipment installed at the end of the 1980's and during the first years of the 1990's base their operation on function programming and microcomputer control, having identified the Y2K problem in some of these, and others are pending confirmation by the manufacturer. The equipment recently installed in the Region, such as in Ecuador and Peru, and which are still under guarantee, is based on more versatile computers with higher processing capacity and does not present Y2K problem, even though certification is pending

4.2 The contingency measure for these systems is manual switching.

Table of Speech Switching Systems

State	Equipment	Year of Installation	Y2K Problem	Contingency Measure
Argentina	Andes Electron	1989/90	No	
Bolivia	Microcont	1996	No	
Brazil	Thomson 3179 Thomson 3140	1980 1985	Under study Under study	
Chile	Denro ICSS-400	1989/90	Yes	Software replacement
Colombia	Sitti 3000, 5000 Denro	1996, 1999 1998	No, Certified	
Ecuador	Thompson TMX 400	1998	No	
French Guiana	SEGE	1990	Yes	Repair
Guyana	Siemens	1997	Yes	Repair
Panama	Denro 400D	1993	Yes	Change of software of manual switching
Paraguay	Philips RL 400	1980	No	
Peru	Intelect US Logic	1998	Under consultation with manufacturer	Manual switching
Suriname	Nessing	1995	Under consultation with manufacturer	
Uruguay	Thomson TXM 2112	1988	No	
Venezuela	Intelect 3301	1982	No	

5. MICROWAVE, HF, VHF, UHF TRANSMISSION/RECEPTION SYSTEMS

5.1 In accordance with the information provided by States, these aeronautical mobile service systems present no problems with respect to Y2K. In the event of facing problems with the communications providers, which in turn could affect air/ground communications, the administrations are taking adequate contingency measures to avail themselves of alternate communications means or apply the ATS contingency plans in accordance with the situation presented.

Table of Microwave, HF, VHF, UHF Communications Systems

State	HF/VHF/Microwave Equipment	Year of Installation	Y2K Problem	Contingency Measure
Argentina				
Bolivia	HF, VHF Microwave system	1996	No Under consultation	Use of old radio link system.
Brazil	HF, VHF Microwave system		No	The contingency measures, if necessary, are found in document DMA 63-1
Chile	HF, VHF Microwave system SAT FNN2000	1991	No Under evaluation	
Colombia	HF, VHF, Microwave		No	
Ecuador	HF, VHF, Microwave		No	

State	HF/VHF/Microwave Equipment	Year of Installation	Y2K Problem	Contingency Measure
French Guiana	HF, VHF	1982	Under consultation	
Guyana	HF, VHF		No	
Panama	HF, VHF, Microwave		No	
Paraguay	HF, VHF, Microwave		No	
Peru	HF, VHF, Microwave		No	
Suriname	HF, VHF		No	
Uruguay	HF, VHF, Microwave		No	
Venezuela	HF, VHF, Microwave		No	

6. NAVIGATION SYSTEMS

6.1 The air navigation aids systems installed in the SAM Region at the beginning of the 1980's and recently, such VOR, DME and ILS do not present Y2K problems.

6.2 With regard to the recently installed equipment, it could be indicated that the processing systems to verify equipment functioning, as well as maintenance based on computerized systems, could be affected, but would not affect the operation of the radioaid in itself.

6.3 SAM States were recommended that, those who had approved the use of GPS as a navigation supplementary system, should emit a NOTAM indicating that the GPS hour systems would be reinitiated on the evenings of 21 and 22 August 1999, since this would affect the GPS receivers who would not foresee this situation.

Navigation Systems Table

State	VOR, DME, ILS Equipment	Year of Installation	Y2K Problem	Contingency Measure
Argentina	VOR/DME/ILS		No	
Bolivia	VOR/DME/ILS		No	
Brazil	VOR/DME/ILS		No	
Chile	VOR/DME/ILS		No	
Colombia	VOR/DME/ILS		No	
Ecuador	VOR/DME/ILS		No	
French Guiana	VOR/DME/ILS		No	
Guyana	VOR/DME/ILS		No	
Panama	VOR/DME/ILS		No	
Paraguay	VOR/DME/ILS		To be confirmed. Under consultation with manufacturer.	
Peru	VOR/DME/ILS		No	
Suriname	VOR/DME/ILS		No	
Uruguay	VOR/DME/ILS		No	
Venezuela	VOR/DME/ILS		No	

7. CO-ORDINATION WITH ELECTRICAL POWER SUPPLIERS

7.1 As carried out with the communications services providers, the States of the Region have made contact and are making co-ordinations with the power suppliers with regard to the Y2K problem. To date, they are awaiting their response. As previously indicated, States have established national Y2K committees. The aeronautical sector form part of these committees, therefore, it is expected that co-ordinations with the providers of electrical and communications services become more efficient. Nevertheless, if there were an interruption in the provision of electrical power, all States have foreseen the taking of respective contingency measures.

State	Electrical Power Service Provider	Y2K Problem	Contingency Measure
Argentina	Cammesa	Awaiting response from provider	
Bolivia		Awaiting response from provider	
Brazil	Various	No	Use of Diesel Generators
Chile	Chilectra Elecda Emelat Emelari Eliq	No	Use of emergency power generators
Colombia		Awaiting response from provider	Use of emergency power generators
Ecuador		Awaiting response from provider	Use of emergency power generators
French Guiana		No	
Guyana		Awaiting response from provider	Use of emergency power generators
Panama	Electra Noreste Metro Oeste Chiriquí Tranmisión S.A.	Awaiting response from provider	Use of emergency power generators
Paraguay	Ande	Awaiting response from provider	Use of emergency power generators
Peru	Luz del Sur Edelnor	Awaiting response from provider	Use of emergency power generators
Suriname		Awaiting response from provider	Use of emergency power generators
Uruguay	UTE	Awaiting response from provider	
Venezuela	Electricidad de Caracas Enelbar Elecentro Cadafe	Awaiting response from provider	

8. SURVEILLANCE SYSTEMS

8.1 The surveillance systems taken into account were the primary and secondary radars, the radar data processor and the flight plan processor. Most of the surveillance systems are still under consultation with the manufacturer on Y2K compliance.

8.2 The primary and secondary radars are under consultation with the manufacturers and responses are pending at some States in the Region. The solution to the problem represents a considerably high cost, except at States where the systems are still under guarantee, as in the case of Ecuador and Peru.

The contingency measure to be adopted by all States in the event of radar service interruption due to Y2K is to adopt non radar ATS control.

8.3 Therefore, States were recommended to develop a training plan for ATS personnel for air traffic control without the use of radar. This training would basically be for ATS personnel who normally operate with radar data information.

State	Primary, Secondary, RDP, FDP Radar Equipment	Year of Installation	Y2K Problem	Contingency Measure
Argentina	Thomson Lp23m CMS 970	1972/87	Under evaluation	Use of non radar procedure
Bolivia	Ceselsa		No	
Brazil	Primary and Secondary Radars FDP, RDP Mitra VaX II		No Yes	 Use of non radar procedure
Chile	Thomson TRAC2000 Cms 970	1996 1996	Under evaluation Under evaluation	Use of non radar procedure
Colombia	Alenia, Thompson FDP, RDP		No Yes	 Use of non radar procedure
Ecuador	Plessey Eurocat 200	1976/86 1998	No Under consultation. Equipment under guarantee	Use of non radar procedure
French Guiana			No	
Guyana			No	
Panama	ASR9,MSSR FDP,RDP	1993	Yes	Use of non radar procedure
Paraguay	Marconi S511H Marconi M55R		Under consultation with manufacturer	
Peru	ASR12SS, MSSR AMS200	1998	No Yes	
Suriname			No	
Uruguay	Thomson TA10M, RS870	1987	Under consultation	System upgrade. Use of non radar procedure
Venezuela	Texas ASR8 Alenia ATCR-2T	1980/73	No	Use of non radar procedure

9. METEOROLOGICAL SYSTEMS

9.1 The meteorological data processing, the monitoring and remote control, meteorological data recording and WAFS systems were analyzed. The traditional systems with sensors and analogue presentation systems were not taken into consideration since they do not utilize date-related elements.

9.2 Most of the meteorological information processing systems, as well as the recording and monitoring systems are under consultation with the manufacturer. The contingency measure to adopt for these systems is the use of analogue systems.

9.3 In accordance with the information obtained by States, the WAFS presents Y2K problems in the Alden 4 Star 4 processing unit. Only Ecuador and Peru do not have problems in this respect. The contingency measure contemplated by States for the WAFS system has been access to Internet.

Meteorological Data Processing Systems

State	Hardware/Software Equipment	Year of Installation	Y2K Problem	Contingency Measure
Argentina	Digital Alpha Server 2100/Open VMS	1996	No	
Bolivia	Vaisala		Under consultation with manufacturer	
Brazil	Surface Meteorological Observation Stations	1994-1998	Does not update date	Update date manually
Chile	Digital Dec Alfa	1999	No	
Colombia				
Ecuador				
French Guiana			No	
Guyana			Under consultation with manufacturer	
Panama	Weather Trac WEFAXIIPC137	1991	Under consultation with manufacturer	
Paraguay	Vaisala Midas 600	1990	Yes	Under study
Peer	Vaisala	1998	No	
Suriname			Under consultation with manufacturer	
Uruguay				
Venezuela	Digital VAX 4200		Under consultation with manufacturer	Under study

WAFS Table

State	Hardware/Software Equipment	Year of Installation	Y2K Problem	Contingency Measure
Argentina	Alden Star 4		Yes	
Bolivia	Alden Star 4		Yes	Internet
Brazil	Alden Star 4	1998	Yes	Internet
Chile	Alden Star 4		Yes	
Colombia	Alden Star 4		Yes	

State	Hardware/Software Equipment	Year of Installation	Y2K Problem	Contingency Measure
Ecuador	Alden Star 4	1999 (To be installed)	It is expected not to	Internet
French Guiana			No	
Guyana			Yes	
Panama	Alden Star 4		Yes	Internet
Paraguay	Alden Star 4	1998	Yes	Internet
Peer	Alden Star 4	1997	No	
Suriname			No	
Uruguay	Alden Star 4		Yes	
Venezuela	Alden Star 4		Yes	

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