International Civil Aviation Organization
South American Regional Office
Seventh Workshop/Meeting of the SAM Implementation Group (SAM/IG/7) - Regional Project RLA/06/901
Lima, Peru, 23 to 27 May 2011

Agenda Item 3: Implementation of performance-based navigation (PBN) in the SAM Region

SUMMARY OF TELECONFERENCES ON RNAV5 IMPLEMENTATION

(Presented by the Secretariat)

Summary

This working paper presents information on the TELCONS held on RNAV5 implementation. The meeting is invited to take note of the information provided, assess and issue comments on **Appendices A and B** of this working paper.

References:

- SAM/IG meetings reports
- Action plan for RNAV5 implementation.

ICAO Strategic objectives	*A. Safety* *C. Environmental Protection and Sustainable Development of Air Transport*

1 Background

1.1 As a follow-up of the Sixth SAM Implementation Meeting, SAM/IG/6 Meeting, paragraph 3.41), through the GoTo Meeting tool, a TELCON was held on 24 March 2011, to analyse pending activities for RNAV5 implementation (TELCON RNAV45/01).

1.2 Six States participated in this first virtual meeting, (Bolivia, Brazil, Chile, Paraguay, Peru and Uruguay), as well as IATA and ICAO. It initiated at 1400 hours and ended at 1600 UTC.

1.3 The meeting made a follow-up and revision of the pending tasks since the SAM/IG/6 Meeting. The matters reviewed during the meeting were:

Agenda Item 1: Task 1.4 Analyse communications, navigation means and surveillance (VOR, DME) ground to attend navigation specifications and reverse navigation

Agenda Item 2:	Application of subsequent actions to reduce the risk and risk rate resulting from the RNAV5 safety plan
Agenda Item 3:	Task 3.1 Coordinate the planning and implementation needs with air navigation service providers, regulatory bodies, aircraft operators and military authorities
Agenda Item 4:	Task 5.2 Publish national regulations for the implementation of the RNAV5 specification
Agenda Item 5:	Begin the approval aircraft and operators
Agenda Item 6:	Task 5.4 Establish and keep up to date a registry of approved aircraft and operators
Agenda Item 7:	Task 6.5 Develop an AIP Supplement Model containing the applicable standards and procedures, including the corresponding in-flight contingencies
Agenda Item 8:	Task 6.6 Develop an amendment to the AIP/AIP Supplement corresponding to ENR 3.3, including limitations as regards applicable sensors and critical radio navigation aids in each route segment
Agenda Item 9:	Task 6.9 Develop an amendment to the regional documentation, if necessary
Agenda Item 10	Other business

2 Analysis

2.1 As a result of this first virtual meeting and in view of the good results obtained n the same, it was decided to go on with periodical meetings in order to analyse, assess and identify the aspects that could hinder or delay RNAV5 implementation foreseen for 22 September 2011.

2.2 A schedule of virtual meetings was set out, carrying so far three RNAV5 TELCONs, and there is one pending for 17 May 2011, for the fourth TELCON.

2.3 **Appendices A and B** present the executive summary of the matters dealt with in TELCOONs RNAV5/02 and 03.

2.4 While not all States have been able to participate in the TELCONS, it should be highlighted that they have been successful, and an appropriate and low-cost manner, that enabled the follow-up of pending matters for RNAV5 implementation, expecting to continue with this practice in the future. In this connection, a draft schedule has been programmed regarding the referred virtual meetings:

Tentative schedule for RNAV5 TELCONS:
17MAY11
7JUN11
23JUN11
12JUL11
8AUG11
23AUG11
12SEP11

3 Suggested action

3.1 The meeting is invited to take note of the information provided, assess and issue comments on Appendices A and B of this working paper, and if the meeting considers pertinent, encourage those States which have not participated, to actively participate in TELCONS in order to analyse matters related with RNAV5 implementation.

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APPENDIX A

SUMMARY OF THE SECOND TELCON ON RNAV5 (TELECON RNAV5/02) (7 April 2011, UTC 1400 hours, Finalised 1530) hours

As a follow up of what was agreed in the Sixth SAM Implementation Meeting (SAM/IG/6, paragraph 3.4)1, the Second South American TELCON was carried out on 7 April 2011, through the GoTo Meeting Tool, in order to analyse the pending activities for the implementation of RNAV5 (TELECON RNAV5/02).

Spanish-speaking States were invited to participate and it is expected to hold a teleconference for English-speaking States are expected to participate.

The following States participated in this virtual meeting:

IATA Informed that they would not participate at this time.

State	Name	Email
Bolivia	Cesar Varela	cvarela@dgac.gob.bo
Brazil	Julio Pereira (Rapporteur PBN/TF) Claudio Xavier (ANAC) Nerverton Novais (ANAC)	pln1@decea.gov.br claudio.xavier@anac.gov.br neverton.novais@anac.gov.br
Chile	Ricardo Bordalí	rbordali@dgac.cl
Ecuador	Pedro Plaza Muñoz	ppplaza75@yahoo.es
Panama	Ivan de León	ideleon@aeronautica.gob.pa
Peru	Fernando Hermosa	fhermoza@mintc.gob.pe
Uruguay	Rosanna Barú	navegacionaerea@dinacia.guuy; rocbb17@gmail.com
Venezuela	Omar Linares	o.linares@inac.gob.ve
ATM Adviser	Jorge Fernández	jfernandez@lima.icao.int

The meeting carried out a follow-up and revision of tasks pending since the SAM/IG/6 Meeting and evaluated the information provided by participants of TELCON/RNAV5/02. In view of the above, it was agreed to update the information in the same summary of the first TELCON.. The matters reviewed in the meeting, and a summary of the comments is as follows:

Agenda Item 1: Task 1.4 Analyse communications, navigation means and surveillance (VOR, DME) ground to attend navigation specifications and reverse navigation

This task shall be completed through a workshop to be carried out under the auspices of Regional Project RLA/06/901, through hiring two experts on a two-week period, in the same way as it was done for safety assessment. Tentative date would be March 2011, keeping in mind the need to apply results for the development of task 6.6, as well as to enable its assessment at the SAM/IG/7 Meeting.

1.1 On this matter, the Rapporteur and the Secretariat informed that, in spite the Regional Project RLA/06/901 had planned a workshop to analyse this matter, this event would not be held,

since the task will be carried out by two experts from Brazil, using a software designed to this end, with the assistance of experts from other States. The task will be carried out from 25 April 2011 until 6 May 2011.

1.2 To this end, States of the Region were requested to send geographical coordinates of RNAV routes reporting points in the upper airspace. The target date has finalised, pending the information from some States.

1.3 The meeting concluded that it is necessary that States that have not done so, should submit this information.

1.4 It was also concluded that once this task if finalised, guidelines should be provided to States to include in the amendment to the AIP, information on geometry, as well as radio navigation aids coverage. During the meeting, it was agreed, in addition, that the information to be included in the corresponding amendment to the AIP must be accurate and a volume of information easily manageable for States.

1.5 Guidance on this matter is expected to be presented at the SAM/IG/7 Meeting.

Agenda Item 2: Application of subsequent actions to reduce the risk and risk rate resulting from the RNAV5 safety plan

Conclusion SAM/IG/6-2 Application of subsequent actions to reduce the RNAV5 safety plan risk and the resulting risk rate

That States, ATS providers and aircraft operators take the necessary measures to apply further action to reduce the RNAV5 safety plan risk and the resulting risk rate, as shown in Appendix 1 to Chapter 4 of the safety plan for RNAV5 implementation in the SAM Region, shown in ***Appendix I*** **to this part of the report.**

State	Comments
Argentina*	
Bolivia	No action taken
Brazil	Same as the other States. The process has not been initiated.
Chile	In national fleet, more than 90% complies with requirements to fly in RNAV5 routes and are in process of approval. The regulation for approvals was approved a week ago.
Colombia*	With certified aircraft, so far they comply with on board control and performance alert, in spite that it is not a requirement for RNAV. It provides a reduction in RNAV5 operations risk.
Ecuador*	
Panamá*	No comments
French Guiana	
Guyana	Guyana has not yet started with specific meetings on RNAV5; however, the corresponding AIC has been disseminated, and has maintained informal conversation with the Regulations Area. Guyana has no national fleet requiring approval, anyway the need was expressed to obtain information from the regulatory body on

State	Comments
	flights that require their approval.
Guyana	
Paraguay	We are working with the Sub-Directorate of Flight Standards regarding this conclusion, works are in progress.
Peru	Has not had major development on the conclusion. Fluent contact with domestic operators. No approval has occurred.
Suriname	
Uruguay	No action taken. Updated contingency plan has not been made.
Venezuela*	No information seminars have been carried out to services providers and operators, encouraging the latter to involve in the process of certification. Also, operational agreements have been tuned with adjacent FIRs, so as to minimize coordination failures. A military position was also implemented, to consolidate civil/military coordination.
IATA	It is expected to have more information and requests to keep informed on the activities being adopted, especially as related to aircraft and operators approval to fly in RNAV5 routes to be related with IATA members.
*	

2.1 The Secretariat explained the confusion on SAM/IG/6 Meeting report, and arrangements were made to include Appendix I corresponding to the RNAV5 safety assessment plan and the modification of the text of Conclusion SAM/IG/6-02.

2.3 All participating States confirmed reception of the RNAV5 operational safety plan and it was agreed that a revision of ulterior measures will be made during TELCON RNAV5/03, in order to reduce the resulting risk and rate, as shown in the safety plan. To this end, the Secretariat will prepare a table to enable follow-up on the status of application of the ulterior measures.

2.4 In view of the volume of information related with ulterior measures, and in order to facilitate analysis during the TELCON, it was agreed that such table should be sent to States to complete information, and that during the TELCON information be again revised in a general manner, since the particular information will be included in such table.

Agenda Item 3: Task 3.1 Coordinate the planning and implementation needs with air navigation service providers, regulatory bodies, aircraft operators and military authorities

It is expected that States continuously coordinate implementation needs with air navigation service providers, regulatory bodies, users, aircraft operators and military authorities.

The information was updated during TELCON RNAV5/02.

State	Comments
Argentina*	

State	Comments
Bolivia	Being widely coordinated. Seminars were held in different areas. Operators, ATSP and CGAD. A course for RNAV5 aircraft approval is being dictated.
Brazil	Has carried a meeting with regulatory body and users to install them and initiate the process. Onboard existent equipment needs administrative process. AC prepared by SAM/IG Meetings will be used. In phase of approval. All users were informed to carry out approval. It is expected to meet agreed deadlines. DECEA is holding a meeting today with users.
Chile	Has been coordinated. In process. All parties interested are in contact. Users are aware. All new regulation is uploaded into the website.
Colombia*	Seminars and contacts have been made with the aeronautical community both civil and military, in order to achieve flexibility within restricted areas.
Ecuador*	
French Guiana	
Guyana	With regard to regulations, Guyana informed that at present they do not have any regulation on this matter. Those regulations must be developed and implemented.
Panamá*	Coordination with users finalised and are in phase of approval.
Paraguay	Is being coordinated. We are in contact with all interested parties. Users are aware and training will be initiated on May, once all points are clarified with the Flight Standards Sub-Directorate.
Peru	Implementation programme has been carried out together with CORPAC. Certifications/Operations and Airworthiness are involved in the CGAD. With the military area, no great coordination has been carried out. Little military aviation above FL250, but operators are encouraged to take interest on this matter. Letter to CAD. Users are aware of this matter but have difficulties and need to make efforts for certification. The need to initiate the process is clear. LAN is initiating internal tasks for certification. They have contacted a new company and focused in the approval.
Suriname	
Uruguay	Not fully completed. No meetings have been held but users have been informed. Information is not completely updated. A meeting will be held tomorrows, in order to take immediate actions. The fleet is small, they are acknowledging the process. There is no approval for any aircraft but no problems are expected to occur.
Venezuela*	Based on the AC model, issued by the SAMIG, the guidance document for certification process has been implemented. Some operators have already initiated their process. Venezuela is continuously disseminating information. One of the main operators has already initiated the process of approval
IATA	Interested in knowing whether IATA member operators have made comments in the approval and process. This will ensure that IATA members are ready.

State	Comments

Agenda Item 4: Task 5.2 Publish national regulations for the implementation of the RNAV5 specification

The meeting verified that 3 States of the Region have already published regulations, 9 States informed that this task was in execution and there is no information from 2 States. IATA informed the meeting that a follow-up on this matter has been carried out and it has been noted that regulations have not been published in several States; therefore, it has been difficult to initiate approval process.

The information was updated during TELCON RNAV5/02 and States that did not have the information available were committed to deliver it during TELCON RNAV5/03.

State	Comments
Argentina*	
Bolivia	Bolivia has published the corresponding amendment for PBN in RAB 91 part corresponding to foreign and national aircraft operations operating abroad PBN Operations advisory circulars. General civil aviation also participated on the activities and they do not expect difficulties for its approval. Regarding paragraph 4.2 of this Summary relate to BRANV, it was indicated that there is no information available and the same will be communicated at a later date.
Brazil	ANAC informed that they will directly use advisory circulars approved for the Region. Operators used working aids as guidance. Within a month, it is expected to have all the necessary documentation for the process of approval. Regulation for RNAV5 is being developed based on the RNAV5 AC. General aviation is contemplated in the regulation that they are generating but operators have not been contacted. Regarding para. 4.2 of this summary related to BRNAV, it was indicated that, since BRNAV responds to the technical and operational requirements, and there are no differences with RNAV5, it is considered equivalent and accepted and no additional demand is planned.
Chile	The regulations will be published during the next 10 days. DAN06/23 is not yet in the web, and the signature of DCA is pending. Information and validity date of the new regulation will be sent to general aviation. Regarding paragraph 4.2 of this Summary related to BRNAV, IRT WAS INDICATED THAT Chile respects approvals issued by the rest of the States and that BRNAV approval is considered as RNAV5.
Colombia*	Information circulars were issued for PBN approval process in Colombia, CI-5102-082-001/002/003/008. They may be consulted in the following link: http://portal.aerocivil.gov.co/portal/page/portal/Aerocivil_Portal_Internet/seguridad_aerea/circulares/informativas. Also, AIC for RNAV5 implementation was issued, which may be consulted in the following link: http://portal.aerocivil.gov.co/portal/pls/portal/!PORTAL.wwpob_page.show?_docname=18150013.PDF.
Ecuador*	
French Guiana	
Guyana	

State	Comments
Panamá*	The process was initiated during 2010. Circulars have been issued to inform airlines. General aviation is not a factor, since it operates within the lower airspace. Regarding paragraph 2.4 of this summary on BRNAV, it was indicated that information will be verified with OPS/AIR areas and information will be further provided.
Paraguay	We are working for the publication of the AIC on RNAV5 implementation with the colleagues of Aeronautical Information Services.
Peru	Documents have been published during 2010. Some adjustments would have to be made. Complementary technical regulations in the operations field are necessary. For example, radio navigation coverage in some routes. Upon judgement of Peru, regulation is complete, both guidelines and the framework for approvals. Will inform at a later date regarding general aviation. However, general aviation is reduced, reaching approximately 10 aircraft. Regarding paragraph 4.2 of this summary related to BRNAV it was indicated that they could not confirm at this time if any additional requirement would be necessary but the policy of Peruvian CGAD is to accept approval of other States. Additional information will be provided later.
Uruguay	Already published in RAU 91, RAU 225, 121 607, RAU 135 165. The regulations are in the website of DINACIA. RNAV5 in Uruguay is exclusionary, including in domestic operations. Advisory Circular is in the website. In the documentation, general aviation is considered. It is very small, only 4 aircraft and they generally operate in the lower airspace. Regarding paragraph 2.4 of this summary on BRNAV, it was informed that additional data will be provided at a later date.
Venezuela*	Advisory Circulars were published, harmonized with the ACs of the Region, and a complementary regulation to the RAV91 was prepared. All the documentation is available at the website.
IATA	It is very hard to follow States with regard to publications. Comments received by users are focused in their concern by problems for approval. Has regulation for foreign operators been approved? If they had operations State's approval no additional paperwork would be necessary. Inform in the next teleconference. Verification should be made with States, to see if they maintain equivalence between BRANV vs. RNAV5 or some additional paperwork is necessary.

4.1 Participating States committed to verify if some additional requirement will exist in national regulations for aircraft and operators approval for foreign users having air operators State approval. The meeting indicated that the use of additional paperwork would be against PBN implementation philosophy at a worldwide level, keeping in mind that one of the main objectives is to avoid the need for multiple operational approvals.

4.2 The meeting observed had there is a considerable number of aircraft that have BRNAV approval in their operational specifications. In this connection, participants shall inform in the next teleconference on the process of adaptation from BRNAV to RNAV5. It will also be necessary to verify on the validity of RNAV5 approval for flights in the European BRNAV airspace. In this connection, kindly observe the content of Doc 9613 – PBN Manual.

2.1.2.1 This chapter provides guidance to States implementing RNAV 5 in the en-route phase of flight and provides the air navigation service provider with an ICAO recommendation on the implementation requirements, avoiding the proliferation of standards and the need for multiple regional approvals. It provides the operator with criteria to enable operation in airspace where the carriage of RNAV meeting 5 NM lateral accuracy is already required (e.g. ECAC BRNAV). It avoids the need for further approvals in other regions or areas needing to implement RNAV with the same lateral accuracy and functional requirements.

4.3 With regard to the validity of RNAV5 clearance to operate in European airspace, as noted in Doc 9613, is very clear to this end. Mr. Ureña was consulted on this matter and he added that there are the following standards in *Annex 6 – Part I: 4.2.2 – Operational certification and supervision.*

4.2.2.1 Contracting States will recognise as valid an air navigation services operator certificate issued by another contracting State, provided that requirements as per which the certificate has been granted are at least equal to the applicable standards specified in this Annex.

4.2.2.2 States will establish a programme with procedures for operations supervision carried out in their territory by a foreign operator and to take appropriate measures, when necessary, to preserve safety.

4.2.2.3 An operator shall apply and comply with requirements established by States in which operations are carried out.

4.4 As it may be noted, paragraph 4.2.2.1 of Annex 6 demands a contracting State to recognise as valid the AOC issued by other contracting State, provided that certification requirements are equal to standards applicable of Annex 6, Part I.

4.5 In view of this standard, South American operators that have been cleared for RNAV5 operations in their respective States, as per procedures approved by the SAMIG Implementation Group, or equivalent or derivate documents, or that comply with Annex 6, Part I requirements, at least, should not be demanded to comply with any additional requirement in Europe, taking into consideration that ICAO international standards are being complied.

4.6 Notwithstanding, each State must ensure that standards agreed by the Implementation Group are complied.

4.7 It should be added that ICAO Standards only apply to the technical aspect, that is to say, States should not demand any technical requirement to involve an operational approval if the State operator has already issued an RNAV or RNP clearance. Some States may demand legal, economical and regulatory requirements, as per their laws or aeronautical codes, such as the presentation of a copy of the AOC, specifications related to operations, parts of the manuals where statements and procedures of concerned operations are consigned. It should not be observed as a matter involving an approval process, but rather as an aspect of a legal, economical, or regulation-compliance nature, provided that aspects are not demanded further to a mere presentation of documents.

4.8 With regard to Europe, it may be informed that in the forthcoming months, EASA will deal with the *Notice for proposed amended* (NPA) for third States (*Third Country Operators/TCO*). On this regulatory proposal, an extract of the aforementioned NPA is copied, which is the proposal of regulations for air operations of Third Country Operators (TCOs) within the European Community involving PBN.

Except for operations in an area with Performance Based Navigation (PBN), Minimum Navigation Performance Specification (MNPS) or Reduced Vertical Separation Minima (RVSM) for which an approval shall be held issued by the ***State of the operator*** *or, if different, the State of registry, an operator shall not conduct specific operations into, within, or out of the territory of the Community without an approval issued in accordance with Subpart OPS.SPA.*

4.10 It is possible that this proposal has changed, since it was sent for consultation of the Regional Office in 2008. In any case, a member of the Regional System has been invited to participate in the analysis of the regulation related to TCO in Germany, in the forthcoming months, so that we will have updated information on this matter, and therefore the demands of EASA regarding RNAV and RNP operations, will be known.

Agenda Item 5: Begin the approval aircraft and operators

The meeting expressed its concern regarding the low level of operators that have requested approval. It also felt that operators should be encouraged to initiate this process. As per the information received, 1 State has initiated the process of approval, 3 States have not done so, and 3 States are in process of execution. No information is available from 5 States. For 2 States it is not applicable.

Information was updated during TELCON RNAV5/02

State	Comments
Argentina*	
Bolivia	The process of approval has been initiated.
Brazil	Approval is under responsibility of ANAC. All main operators were called to adapt BRNAV to RNAV5. All the documentation for approval will be available within 30 days.
Chile	Will initiate the procedure after publishing the regulation.
Colombia*	UAEAC has finished the approval process to Colombian operators AVIANCA and AEROREPUBLICA. Other operators, such as AIRES, SATENA, SEARCA LANCO are in process.
Ecuador*	
French Guiana	
Guyana	
Panamá*	Initially they thought to go with the approval they had, but it was decided to make an approval of the Panamanian State, and documentation for operators was delivered. They are in process of approval.
Paraguay	In process.
Peru	In process.
Suriname	
Uruguay	In process, operators did not complete documentation. The documentation was

State	Comments
	disseminated.
Venezuela*	Process has been initiated. For the forthcoming TELCON, they will provide the amount of aircraft approved.
IATA	No comments. Will contact TACA Peru to verify the process.

Agenda Item 6: Task 5.4 Establish and keep up to date a registry of approved aircraft and operators

Within the framework of performance-based navigation (PBN) implementation, the SAM Implementation Group (SAMIG) has decided to establish a database with RNAV5 aircraft and operators' approval and other navigation specifications, which would be in charge of the CAR/SAM Regional Monitoring Agency (CARSAMMA).

As follows, Conclusion SAMIG/6-3 on this matter:

Conclusion SAM/IG/6-3 Forms CMA F5 and CMS F6 3

That SAM States take pertinent action in order to apply forms CMA F5 and CMA F6, attached as ***Appendices A and B*** *to this part of the report, and send them to CARSAMMA as soon as the PBN approval of aircraft and operators is established.*

6.1 Brazil informed that after the analysis carried out by the Brazilian Aeronautical authority CARSAMMA will be in charge of the database and to keep a record of approved aircraft and operators.

6.2 It was also informed that there are only a few forms that were sent to CARSAMMA. Forms from Argentina and Colombia were sent.

6.3 On the other hand, Chile informed that they will initiate the registry as per Conclusion SAMIG/6-3 and through the use of Forms CMA F5 and F6.

6.4 During TELCON/RNAV5/02, Form F5 was shown - PBN certified aircraft report, classified by the certifying authority and it was requested to the Secretariat that such form should be incorporated as attachment to this summary for illustrative purposes.

6.5 It was requested to States that as soon as possible they should initiate submission of the forms.

Agenda Item 7 Task 6.5 Develop an AIP Supplement Model containing the applicable standards and procedures, including the corresponding in-flight contingencies

Another task of the PBN Implementation Project – En-route short-term operations in SAM Region, is related to the development of an AIP/AIC Supplement Model, that includes information related to performance-based navigation (PBN) implementation and particularly that related to RNAV5.

7.1 It was recalled that the model is developed. Information related to coverage and geometry of radio navigation aids will be included.

7.2 It was agreed to recall States on the compliance of AIRAC dates.

7.3 Publication of the AIP Supplement with an anticipation of two AIRAC dates before the validity date.

7.4 This task is considered finalised.

Agenda Item 8: Task 6.6 Develop an amendment to the AIP/AIP Supplement corresponding to ENR 3.3, including limitations as regards applicable sensors and critical radio navigation aids in each route segment

The meeting took note of that as per Doc 8125 – Aeronautical Information Services Manual, it is indicated that in Section ENR 3.3, air navigation (RNAV) routes must be included, and in view of this, and in order to have a uniform format for publication of the information to be incorporated into the AIP Section 3.3 ENR RNAV Routes, a model is presented, expected to be used by all SAM States, formulating the following conclusion:

Conclusion SAM/IG/6-4 ENR 3.3 – Table model of the AIPs

That SAM States, in publishing in their AIPs RNAV routes, use the ENR table model shown in ***Appendix D*** *to this part of the report*

Comments from States and International Organizations:		
State	**Comments**	**Remarks**
Argentina*		
Bolivia		
Brazil	A follow-up of this matter must be carried out during the next teleconference.	
Chile	In AIP CHILE ENR 3.3, under remarks, information appears regarding RNAV in RNAV10 routes. The adoption of the Model Table ENR 3.3 proposed is being discussed. See critical radio navigation aids matter	
Colombia*		
Ecuador*		
French Guiana		
Guyana		
Panamá*		
Paraguay	Follow-up on this matter continues.	
Peru		
Suriname		

8.1 Chile proposed to analyse the possibility to include the differences of sensors between one State and the other in operational agreements, and another in order to provide continuity through the radio navigation aids topology. Chile will present a working paper to SAM/IG/7 on this matter.

8.2 The work of experts from Brazil and Peru on geometry of DMEs in the Region will enable to have a more clear idea as to where may DME/DME navigation be used, so as to comply with RNAV5 requirements. This work will be finalised before SAM/IG/7 Meeting.

8.3 The form to publish the information was also analysed. Peru will investigate the procedure used in other regions and will send comments on this matter. For the next TELCON, they will have the information available and will take a decision to create a working group to carry out a prior assessment of this matter. Brazil and Peru offered to participate in this activity.

Agenda Item 9: Task 6.9 Develop an amendment to the regional documentation, if necessary

9.1 The Secretariat informed on the comments made to proposal for amendment to Doc 7030. On 11 March, the additional period of comments concluded, and comments in favour were received from Argentina and Brazil. The proposal for amendment to Doc 7030 was sent to ICAO Headquarters, Montreal, and approval is expected.

Agenda Item 10 Other business

10.1 10.2 It was agreed to hold the next teleconference on 26 April 2011 at 1400 UTC, Lima local time 0900. ICAO Secretariat will convene this meeting.

10.2 Representatives of participating States expressed their interest in continuing with this type of TELCONS which enable follow-up of the pending matters to implement RNAV5 in a successful manner and they thanked the Rapporteur and the Secretariat for the work carried out.

10.3 It should be mentioned that Ecuador had some difficulties to access the TELCON; however, they could finally participate of the last part of the TELCON, and they committed to participate in the forthcoming TELCONS.

10.4 Venezuela requested that fro the TELCON RNAV5/03, thorough analysis be made to DME/DME coverage, since they, like other States of the Region, could have some difficulties to authorize DME/DME navigation in the Amazonas area.

ATTACHMENT FORM 5

Report of PBN certified aircraft Classified by certifying authority

Relatório de Aeronaves Certificadas PBN Classificadas por Autoridade Certificadora

Form	Explorador	Estado Registro	Estado Explorador	Registro	Tipo	Serie	Serial Number	Codigo da Aprovação	Data Aprovação	Data Emissão	Informe Adicional
Administración Nacional de Aviación Civil (Argentina)											
F5	LAN	SA	SA	LVCDQ	B763	316ER	35229	B2, B3, B4, B5	10/06/10	11/08/10	
F5	LAN	SA	SA	LVBTM	A320	233	1548	B2, B3, B4, B5	10/13/10	11/08/10	
F5	LAN	SA	SA	LVBRY	A320	233	1351	B2, B3, B4, B5	10/13/10	11/08/10	
F5	LAN	SA	SA	LVCFV	B763	316ER	34629	B2, B3, B4, B5	10/06/10	11/08/10	
F5	LAN	SA	SA	LVBSJ	A320	233	1332	B2, B3, B4, B5	10/13/10	11/08/10	
F5	LAN	SA	SA	LVBRA	A320	233	1304	B2, B3, B4, B5	10/13/10	11/08/10	
F5	LAN	SA	SA	LVBFY	A320	233	1858	B2, B3, B4, B5	10/13/10	11/08/10	
F5	LAN	SA	SA	LVBGI	A320	233	1903	B2, B3, B4, B5	10/13/10	11/08/10	
F5	LAN	SA	SA	LVBHU	A320	233	1512	B2, B3, B4, B5	10/13/10	11/08/10	
F5	LAN	SA	SA	LVBFO	A320	233	1877	B2, B3, B4, B5	10/13/10	11/08/10	
F5	LAN	SA	SA	LVBET	A320	233	1854	B2, B3, B4, B5	10/13/10	11/08/10	
F5	XXX	SA	SA	LVCCF	C56X	CESSNA560XI	560-5150	B2, B3, B4	02/23/11	03/09/11	
F5	XXX	SA	SA	LVBRJ	C750	CESSNA750	750-0013	B2, B3, B4, B5	02/23/11	03/09/11	
F5	XXX	SA	SA	LVAMB	C525	CESSNA525	525-045	B2, B3, B4	02/23/11	03/09/11	
F5	XXX	SA	SA	LVAIW	C56X	560XL	560-5350	B2, B3, B4	10/12/10	11/08/10	
F5	XXX	SA	SA	LVAXN	C525	CESSNA525	525-0327	B2, B4	02/23/11	03/09/11	

Form	Explorador	Estado Registro	Estado Explorador	Registro	Tipo	Serie	Serial Number	Codigo da Aprovação	Data Aprovação	Data Emissão	Informe Adicional
Unidad Administrativa Especial de Aeronautica Civil (Colômbia)											
F5	AVA	K	SK	N591EL	A318	2333	802	A1, B1, C1, D1, S1	03/14/11	03/22/11	
F5	AVA	K	SK	N984AN	B763	24357	262	A1, B3, B4, B5, C3, C4, D3, D4	03/14/11	03/22/11	
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Form	Explorador	Estado Registro	Estado Explorador	Registro	Tipo	Serie	Serial Number	Codigo da Aprovação	Data Aprovação	Data Emissão	Informe Adicional
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F5	AVA	SK	SK	HK4659	A320	4100	015	A1, B1, C1, D1, S1	03/14/11	03/22/11	
F5	AVA	K	SK	N284AV	A322	4284	016	A1, B1, C1, D1, S1	03/14/11	03/22/11	
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F5	RPB	MP	SK	HP1371CMP	B737	700(7V3)	30049	A1, B1, C1, D1, S1	03/14/11	03/16/11	
F5	RPB	SK	SK	HK4456	E190	100LR	19000074	A1, B1, C1, D1, S1	03/14/11	03/16/11	
F5	RPB	SK	SK	HK4505	E190	100LR	19000114	A1, B1, C1, D1, S1	03/14/11	03/16/11	
F5	RPB	SK	SK	HK4506	E190	100LR	19000110	A1, B1, C1, D1, S1	03/14/11	03/16/11	
F5	RPB	SK	SK	HK4507	E190	100LR	19000122	A1, B1, C1, D1, S1	03/14/11	03/16/11	

Form	Explorador	Estado Registro	Estado Explorador	Registro	Tipo	Serie	Serial Number	Codigo da Aprovação	Data Aprovação	Data Emissão	Informe Adicional
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F5	RPB	SK	SK	HK4560	E190	100LR	19000208	A1, B1, C1, D1, S1	03/14/11	03/16/11	
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F5	RPB	MP	SK	HP1372CMP	B737	700(7V3)	28607	A1, B1, C1, D1, S1	03/14/11	03/16/11	
F5	RPB	SK	SK	HK4453	E190	100LR	19000063	A1, B1, C1, D1, S1	03/14/11	03/16/11	
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F5	RPB	SK	SK	HK4599	E190	100LR	19000269	A1, B1, C1, D1, S1	03/14/11	03/16/11	

APPENDIX B

SUMMARY OF THE THIRD TELCON ON RNAV5 (TELECON RNAV5/03)
(26 April 2011, UTC 1400 hours, Finalised 1545) hours

As a follow up of what was agreed in the Sixth SAM Implementation Meeting (SAM/IG/6, paragraph 3.4)1, the Third South American TELCON was carried out on 26 April 2011, through the GoTo Meeting Tool, in order to analyse the pending activities for the implementation of RNAV5 (TELECON RNAV5/03).

SAM States and IATA were invited to participate

The following States participated in this virtual meeting:

State	Name	Email
Bolivia	Cesar Varela	cvarela@dgac.gob.bo
Brazil	Julio Pereira (Rapporteur PBN/TF)	pln1@decea.gov.br
Chile	Ricardo Bordalí Andrés Prado	rbordali@dgac.cl aprado@dgac.cl
Panama	Ivan de León Ana Teresa de León	ideleon@aeronautica.gob.pa anateresa09@hotmail.com anadeleon@aeronautica.gob.pa
Peru	Fernando Hermoza	fhermoza@mintc.gob.pe
Uruguay	Rosanna Barú Adriana San Germán Gustavo Turcatti	navegacionaerea@dinacia.guuy; rocbb17@gmail.com rocbb17@gmail.com asangerman@gmail.com jopdta@adinet.com.uy
ICAO SAM Office RO/CNS	Onofrio Smarrelli	osmarrelli@lima.icao.int
ICAO SAM Office ATM Adviser	Jorge Fernández	jfernandez@lima.icao.int
Regional Project RLA/06/901	Andre Jansen	ddte5@decea.gov.br

The meeting carried out a follow-up and revision of tasks pending since second meeting, and, in general terms, the discussion focused on items 1, 2, 4 and 8 of TELCON RNAV5/02:

Agenda Item 1: Task 1.4 Analyse communications, navigation means and surveillance (VOR, DME) ground to attend navigation specifications and reverse navigation

Mr. Smarrelli briefly explained the work initiated on 25 April 2011 related with DME/DME coverage studies for the South American Region, with the assistance of two colleagues from Brasil

and two from Peru. Then Mr. Andre Jansen, delegate from Brazil, made a brief presentation explaining the methodology to be used and the steps to be taken in order to reach the objective of this work.

It is expected that the complete result obtained from this task be presented to the SAM/IG/7 Meeting. The best way to present the work, was also discussed and after the analysis carried out, it was agreed that the information will be presented in two ways, so as States have clear and easy information for interpretation. The final work will show which are the areas that without DME/DME coverage and the routes that would be affected due to the lack of such coverage. The **Appendix** to this summary shows the presentation made by Mr. Jansen.

It was also expressed that in those spaces without DME/DME coverage, back-up inertial navigation systems may be used up to a two-hour period to supplement DME/DME navigation and comply with RNAV5 requirements.

Agenda Item 2: Application of subsequent actions to reduce the risk and risk rate resulting from the RNAV5 safety plan

In reviewing this matter, the Rapporteur of the Implementation Group expressed that he did not have any inconveniences to complete the form on ulterior messages of the RNAV safety plan, especially in the following issues:

a) Direct access to ATS units, based on updated RNAV5 aircraft data bases. On this matter, participants agreed that the ATC must not supervise information included by the pilot in the flight plan; therefore, access to the data base would not improve operations safety in the airspace. Such information might be useful if after an event, the data base is reviewed for checking purposes but not during the provision of services. In summary, it was requested that this matter be revised more thoroughly during the SAM/IG/7 Meeting.

b) The item requesting also access to the States AIS Units will be in the same situation.

c) Disseminate information about solar storms that might affect satellite and HF systems. On this matter, doubts arose as to how this information could reach the ATC units. In order to solve this matter, it was requested to review more thoroughly this mater during the SAM/IG/7 Meeting.

Agenda Item 4: Task 5.2 Publish national regulations for the implementation of the RNAV5 specification

Agenda Item 4: Task 5.2 Publish national regulations for the implementation of the RNAV5 specification

In reviewing this matter, the meeting considered that the time for publication between the SAM/IG/7 Meeting and the implementation date 22 September 2011, is not too long, and States might have some inconveniences on this respect.

Brazil indicated that it was one of their main concerns, since available time and the deadline for publication which is 22 June 2011, was short, and only comprised one AIRAC cycle to enter into force.

Chile proposed that in view of this issue, participants should address this information to the corresponding publications areas, so that they may be aware of this problem. In view of the nature and importance of this matter, it was agreed that it should also be addressed during the SAM/IG/7 Meeting.

Agenda Item 8: Task 6.6 Develop an amendment to the AIP/AIP Supplement corresponding to ENR 3.3, including limitations as regards applicable sensors and critical radio navigation aids in each route segment

In analysing this matter of the TELECON RNAV5/02, Chile indicated that, while there was still concern, it would not be possible for their administration to present a working paper to the SAM/IG/7 Meeting on the topology of radio navigation aids to be incorporated into the ENR 3.3 Table, as agreed during TELECON RNAV5/02. However, it was concluded that, given its importance, this matter would be analysed during the SAM/IG/7 Meeting.

When analysing paragraph 8.3 of TELECON RNAV5/02, it was indicated that no conclusion had been reached yet, since Messrs. Fernando Hermoza and Julio Pereira, together with the Secretariat, would analyse this matter and would have information available for the TELECON RNAV5/05.

Finally, it was agreed to hold a TELECON on 28 April 2011, to carry out a revision only to the works related to DME/DME coverage, and on 17 May 2011, a FULL TELCON to follow-up on the matters of the RNAV5 action plan.

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ATTACHMENT

DME/DME Navigation Analysis Guide

I. Introduction

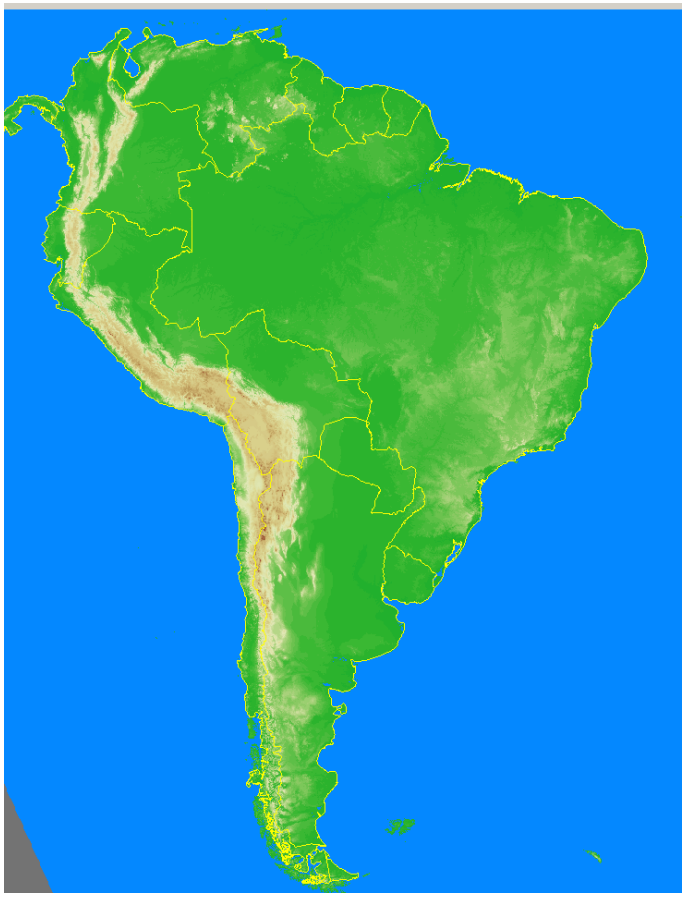
The EMACS is a software for electro-magnetic dissemination. Its main platform is in a CAD environment (Microstation).

II. Methodology -

Step 1 - Relief

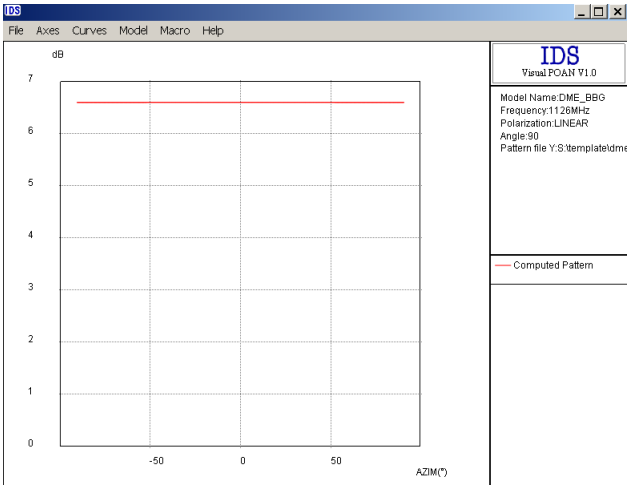
Relief used: South America SRTM 900m

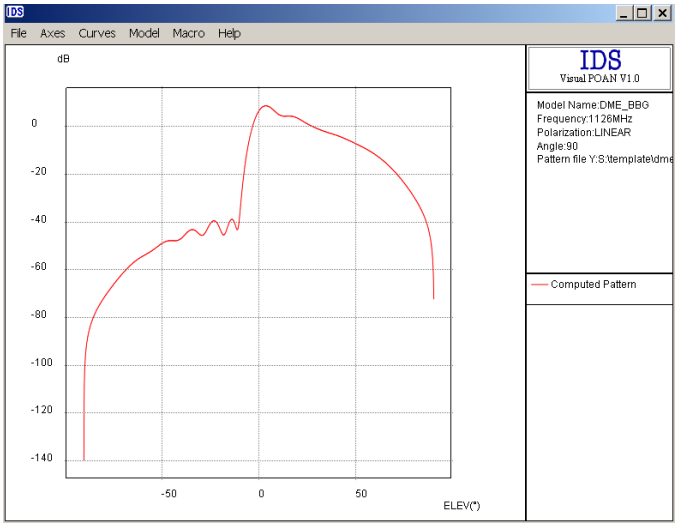
Files that may be in format .dem or .hgt to ENCAS format (.grd). to this end, software ISEU from Intergraph is used.



Step 2 – Define antenna model

The antenna considered was the model BBG, in frequency 1126 Mhz. with 1000 Watts power.



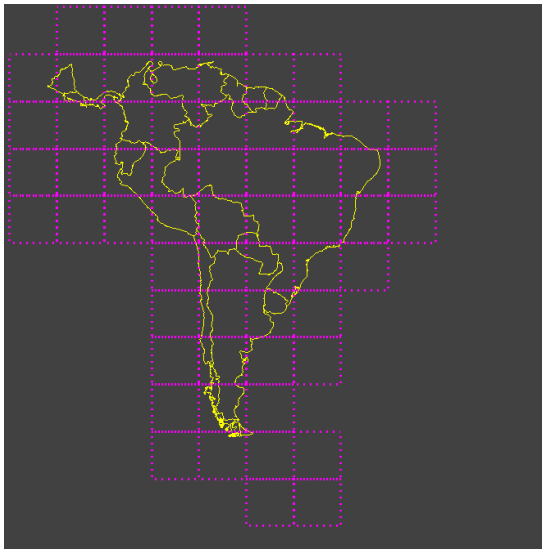


Step 3 – Plot stations

Stations were plotted as per the list of coordinates provided. Altitude was also inserted, adding the altitude with the antenna height, in order to eliminate differences that would generate more work at the time of picking the antenna, due to different antenna sizes.

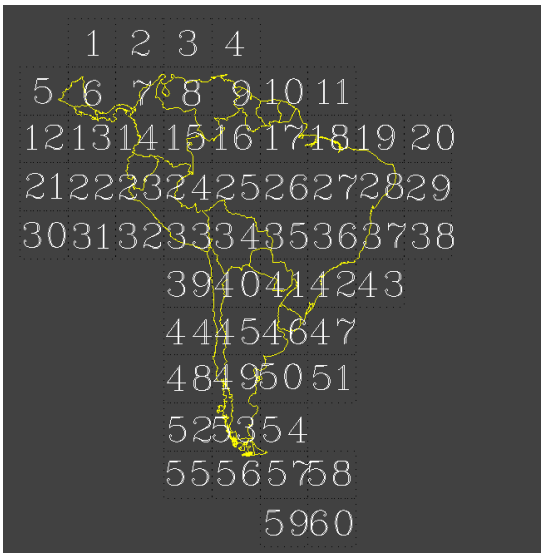
Step 4 – Divide the area in 1.000 km2 grids

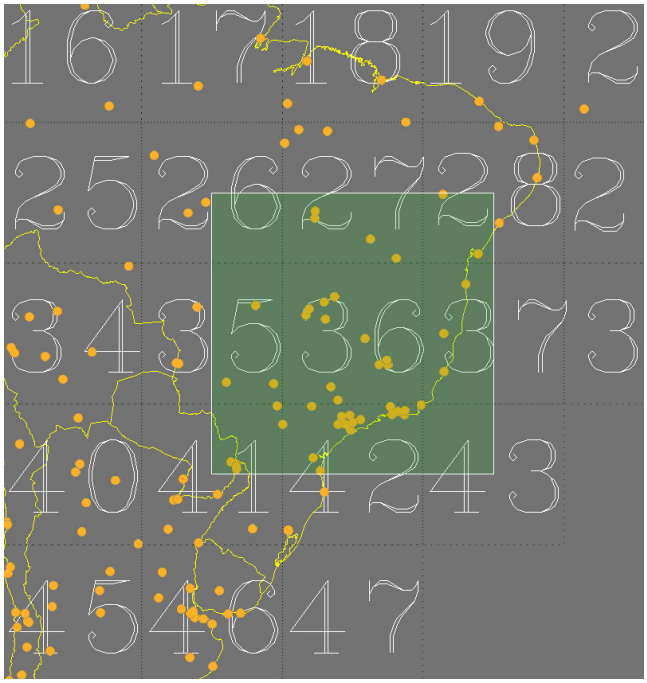
In order to optimize processing and visualization, so as not to have or slowing or blockage, the area of analysis was divided into 60 squares of 1.000 km x 1.000 km.



Step 5 - Create configurations

A configuration - in each grid was set with DMEs located in a range of 270 radius miles as of the grid edges.





Step 6 – Generate coverage

Using the coverage module, visibility coverage was created for each grid, with a resolution of 900m (1078 steps).

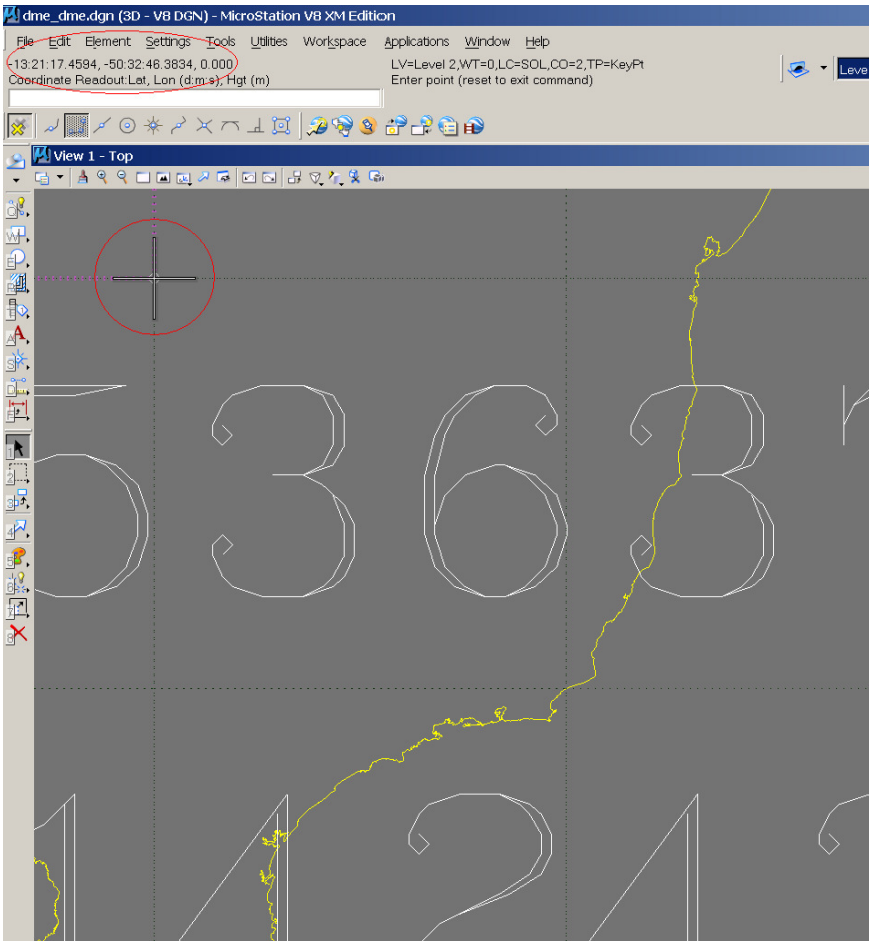
Step 7 – Plot coverage

In order to design coverage for the CAD, a cut point is defined in a DME/DME pair, and then we design the coverage in a level corresponding to the grid.

Step 8 – Export to Google Earth

In order to export coverage for the Google Earth, first it is necessary to select the points to serve as reference.

To this end, “placemarks” are recorded in Google Earth for each grid, then we insert kml cells in EMACS, in the same coordinates as the “placemarks.


dme_dme.dgn (3D - V8 DGN) - MicroStation V8 XM Edition
File Edit Element Settings Tools Utilities Workspace Applications Window Help
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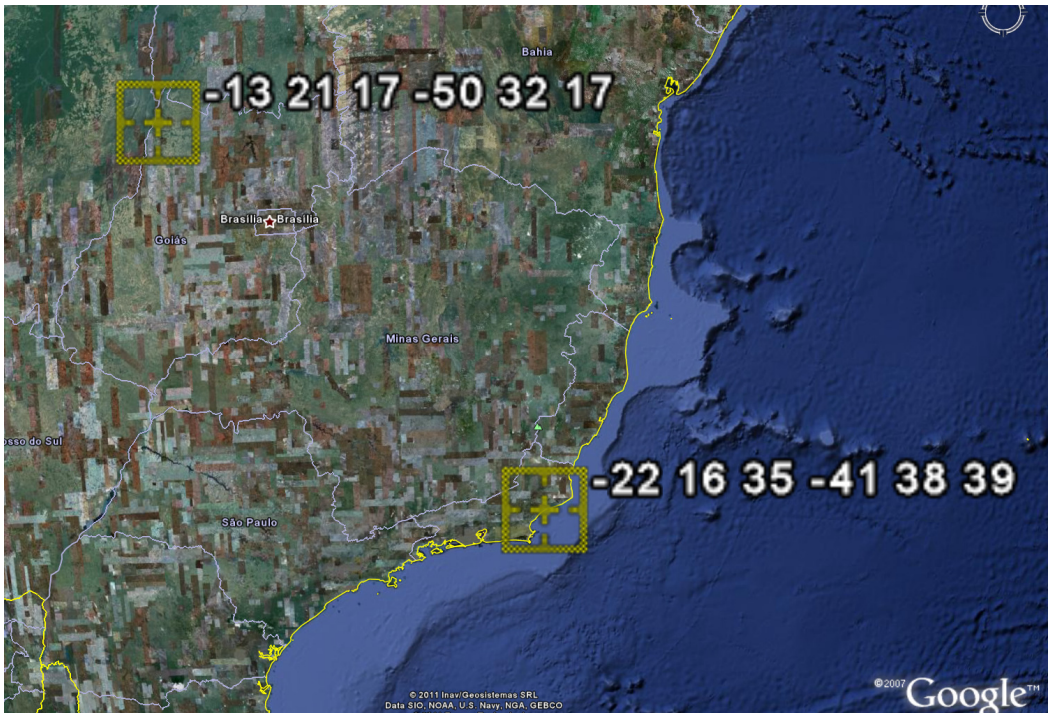
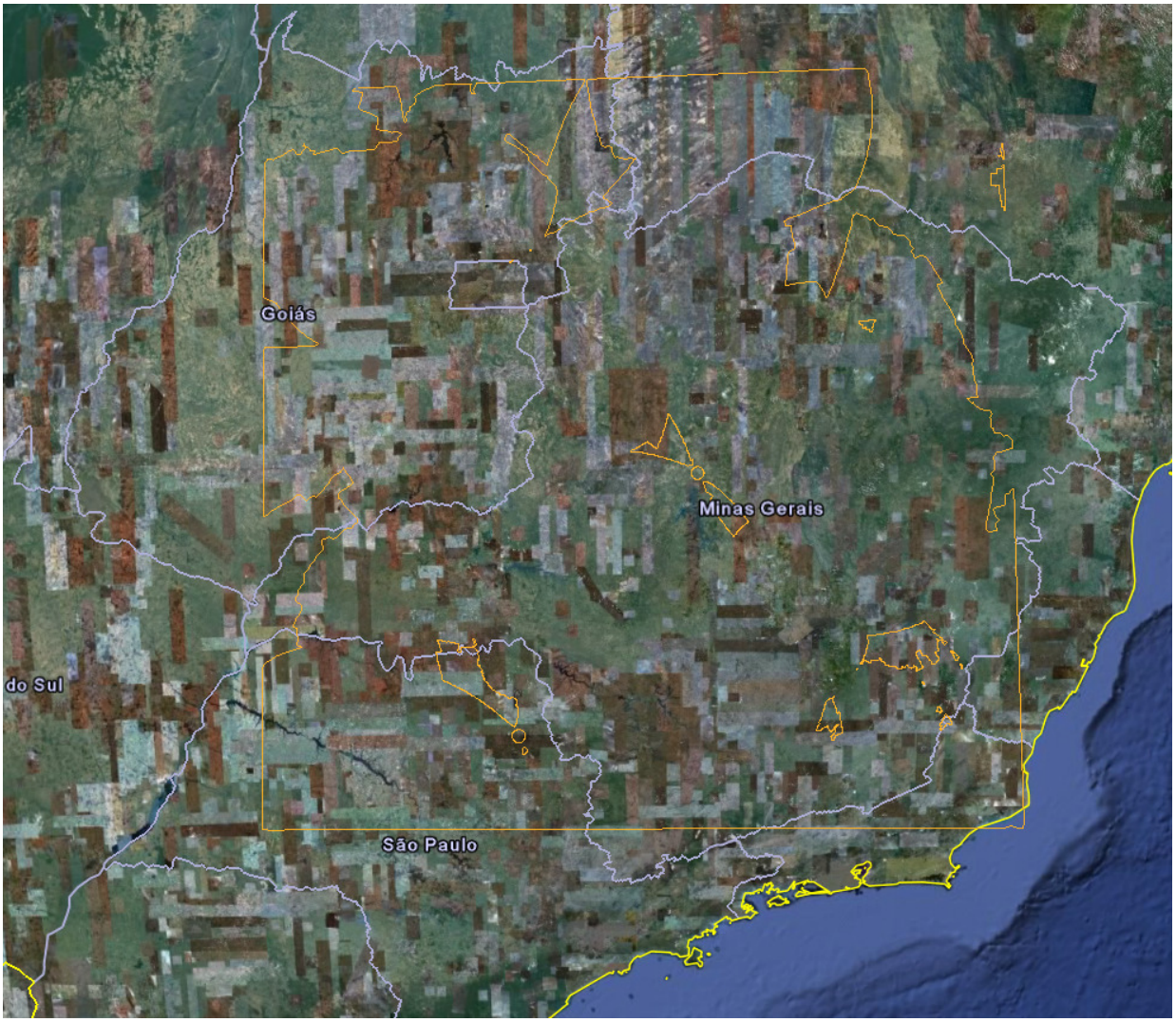
Coordinate Readout:Lat, Lon (d:m:s); Hgt (m)
LV=Level 2,WT=0,LC=SOL,CO=2,TP=KeyPt
Enter point (reset to exit command)
View 1 - Top


-13 21 17 -50 32 17
-22 16 35 -41 38 39
Bahia
Brasilia
Goiás
Minas Gerais
São Paulo
© 2011 Inav/Geosistemas SRL
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
©2007 Google™


© 2011 Cnes/Spot Image
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image © 2011 TerraMetrics
Image © 2011 DigitalGlobe

Step 9 – Plot airways in Google Earth

In order to add airways, we edit a.kml file of the Google Earth which has a programming language xml. In it, we must add the reference coordinates for the airways.



Example UL201:

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III . Final analysis

-END-