RAAC/11-WP/04
30/09/11
Revised

International Civil Aviation Organization
ICAO South American Regional Office
Twelfth Meeting of the Civil Aviation Authorities of the SAM Region (RAAC/12)
(Lima, Peru, 3 to 6 October 2011)

Agenda Item 2: Air navigation regional activities

b) Reduction or elimination of deficiencies detected in the provision of air navigation services and new GREPECAS uniform methodology to identify, evaluate and notify air navigation deficiencies

(Presented by the Secretariat)

SUMMARY

The purpose of this working paper is to present to the Meeting information about "A", "B" and "U" deficiencies in each air navigation area of SAM States, as well as information on the new uniform methodology approved by GREPECAS/16 for the identification, assessment and reporting of air navigation deficiencies, which considers deficiencies as safety hazards and applies a hazard identification and risk assessment (HIRA) process.

References:

- Uniform methodology for the identification, assessment, and reporting of air navigation deficiencies, according to the ICAO Council.
- GREPECAS Air Navigation Deficiencies Database (GANDD).
- Report of the Sixteenth Meeting of the CAR/SAM Regional Planning and Implementation Group (GREPECAS/16), Punta Cana, Dominican Republic, 28 March – 1 April 2011.

ICAO Strategic Objective:	*A – Safety*

1. Introduction

1.1 The existing deficiencies that affect the provision of air navigation services in ICAO Regions and the need for States to establish action plans for their correction are a matter of constant concern and of high priority to the ICAO Council. In this sense, it should be recalled that an important element of the ICAO Global Aviation Safety Plan (GASP), approved by Assembly Resolution A33-16, is the need to establish a better identification or air navigation deficiencies in order to adopt concrete actions for their elimination.

1.2 The Sixteenth Meeting of the CAR/SAM Regional Planning and Implementation Group (GREPECAS/16), Punta Cana, Dominican Republic, 28 March – 1 April 2011, aware of the lack of response by a State to an identified deficiency reported by the respective Regional Office was evidence of ineffective implementation, which could increase the level of risk in a State and generate the need for an ICAO audit under the new Continuous Monitoring Approach (CMA) of the ICAO USOAP, approved a revised methodology for the identification, assessment and reporting of air navigation deficiencies, which considered deficiencies as safety hazards and applied a hazard identification and risk assessment (HIRA) process.

2. Discussion

2.1 Deficiencies in the SAM Region

2.1.1 According to its functions and based on the uniform methodology for the identification, assessment and reporting of air navigation deficiencies formulated by ICAO Council, GREPECAS and its contributory bodies periodically review at their meetings the status of implementation of international standards and recommended practices (SARPs), and the CAR/SAM Regional Air Navigation Plan, with a view to determining the level of implementation, and identifying, to the extent necessary, deficiencies in the sphere of air navigation in these two Regions.

2.1.2 **Appendix A** to this working paper presents statistical information of "U", "A" and "B" deficiencies for SAM States per areas, extracted from the GANDD[1] and **Appendix B** presents the updated list of coordinators for the SAM Region.

2.1.3 The Meeting could take note that in view of the new procedures approved by the Sixteenth Meeting of the CAR/SAM Regional Planning and Implementation Group (GREPECAS/16), the list of deficiencies of the SAM Region will have important changes.

2.2 New GREPECAS uniform methodology to identify, evaluate and notify air navigation deficiencies

2.2.1 During GREPECAS/16 Meeting, note was taken that the existing uniform methodology for the identification, assessment and reporting of air navigation deficiencies has been approved by the Council on 30 November 2001, time in which ICAO audit programme does not exist yet and the concepts of safety management were in their early stages. It was recalled that any modification of the referred methodology should be approved by the Council.

2.2.2 The Meeting could also recall that GREPECAS/16 took note of the concern of IATA regarding the low rate of response by States to Air Safety Reports (ASR) and suggested several improvements to the process.

2.2.3 In this regard, GREPECAS adopted in its last meeting Conclusion 16/43 – Revised methodology for the identification, assessment and reporting of air navigation deficiencies, requesting ICAO to consider the proposed revised methodology for the identification, assessment and reporting of air navigation deficiencies, which is presented in **Appendix C** to this working paper, and that int he interim, GREPECAS adopt the revised methodology as a test-bed and notify the ICAO ANC of the results.

2.2.4 GREPECAS considered the proposed revised methodology and agreed to incorporate the following for improvements:

> *"a) Establish a period of three months for the State to conduct a risk analysis of new deficiencies, complete the respective forms, and send them to the corresponding ICAO Regional Office. The State/Territory could ask for a time extension from the Regional Office by providing the respective justification.*

[1] The Air Navigation Deficiencies Database (GANDD) is electronically available on ICAO Lima Office website, **www.lima.icao.int,** under GANDD, using a username and password assigned to the person designated by each Administration for providing updated information in that database. In this regard, ICAO designated Mr. Arturo Martínez **(amartinez@lima.icao.int),** as focal point for SAM Office, to provide technical assistance in the use of the GANDD.

b) Expand the field # 8 "Specific Requirement" in Attachment 1to Appendix A[2] to WP/14, to include a reference to the standard/recommended practice and ICAO Annex or a reference to the Air Navigation Plan requirement associated with the deficiency.

c) Reflect in the methodology flow chart the fact that Regional Offices can also send information to the ANC and the ICAO Council regarding compliance problems without having to wait for a meeting of GREPECAS or the future Programme and Project Review Committee.

d) Include two-way communications for reporting deficiencies to the States in order to avoid risk analysis of deficiencies considered by the State as not affecting safety or that have already been resolved.

e) Incorporate procedures to ensure that the deficiencies database is kept constantly up-to–date, including the timely elimination of deficiencies from the GANDD once reported and validated to have been resolved."

2.2.5 According with the information presented in Appendices A, B and C, the Meeting could take note that in spite of GREPECAS efforts, the list of deficiencies does not reflect important changes. In May 2009, there were 421 deficiencies in the GANDD and in September 2011, 363, that is, in 28 months only 13.7 per cent of deficiencies have been corrected.

2.2.6 Taking into consideration that with the new methodology the State is responsible for the deficiencies risk analysis, for taking the necessary actions for their correction, as well as for the consequences for their maintenance, the Meeting might agree on the need that States prioritize the effective implementation of their safety management systems (SMS) in the air navigation service providers and their State safety programmes (SSP), in order that the hazards (deficiencies) identified by the GREPECAS mechanism are approved through a risk analysis, the GANDD is updated, necessary corrective actions are taken to eliminate the deficiencies. In this respect, the following draft conclusion is suggested:

Draft
Conclusion RAAC/12-X - Risk Analysis and Resolution of Deficiencies

That the States prioritize the effective implementation of their safety management systems (SMS) in the air navigation service providers and their State safety programmes (SSP), to:

a) carry out the risk analysis of all the deficiencies of their State included in GREPECAS list; and
b) update the GANDD, including the action plan for the correction of the deficiencies not later than **30 March 2012**.

3. Suggested action

3.1 The Meeting is invited to:

a) take note of the contents of this working paper, as well as of its Appendices A, B and C;
b) consider the approval of the draft conclusion of paragraph 2.2.6; and
c) take any other action as appropriate.

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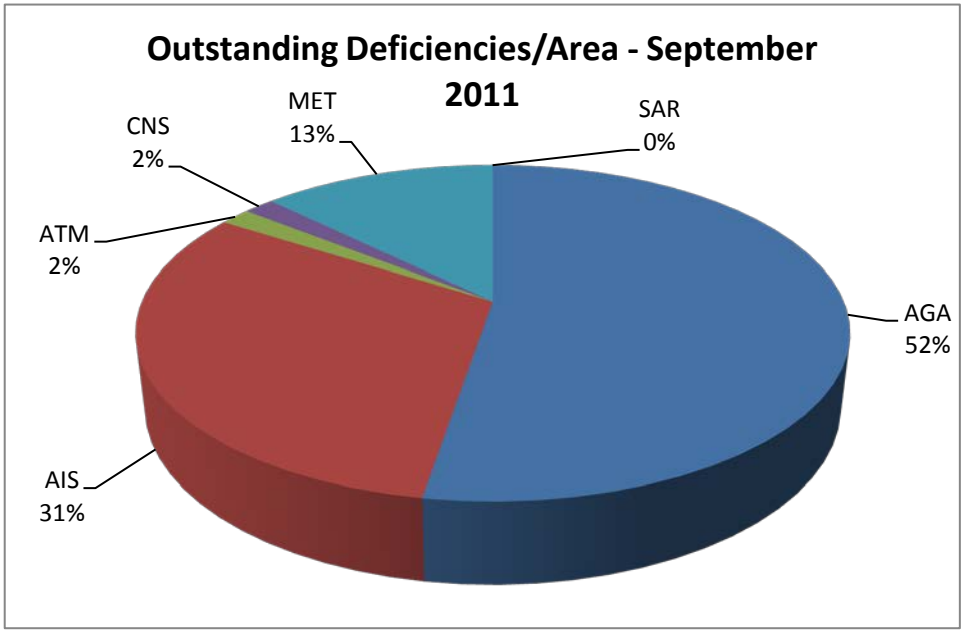
[2] Corresponds to **Appendix C** to this working paper.

OUTSTANDING DEFICIENCIES /AREA - SEPTEMBER 2011

AGA	191
AIS	114
ATM	6
CNS	6
MET	46
SAR	0
TOTAL	**363**

	%
AGA	53
AIS	31
ATM	2
CNS	2
MET	13
SAR	0
	100



APÉNDICE / APPENDIX B

COORDINADORES NACIONALES GANDD / GANDD NATIONAL COORDINATORS

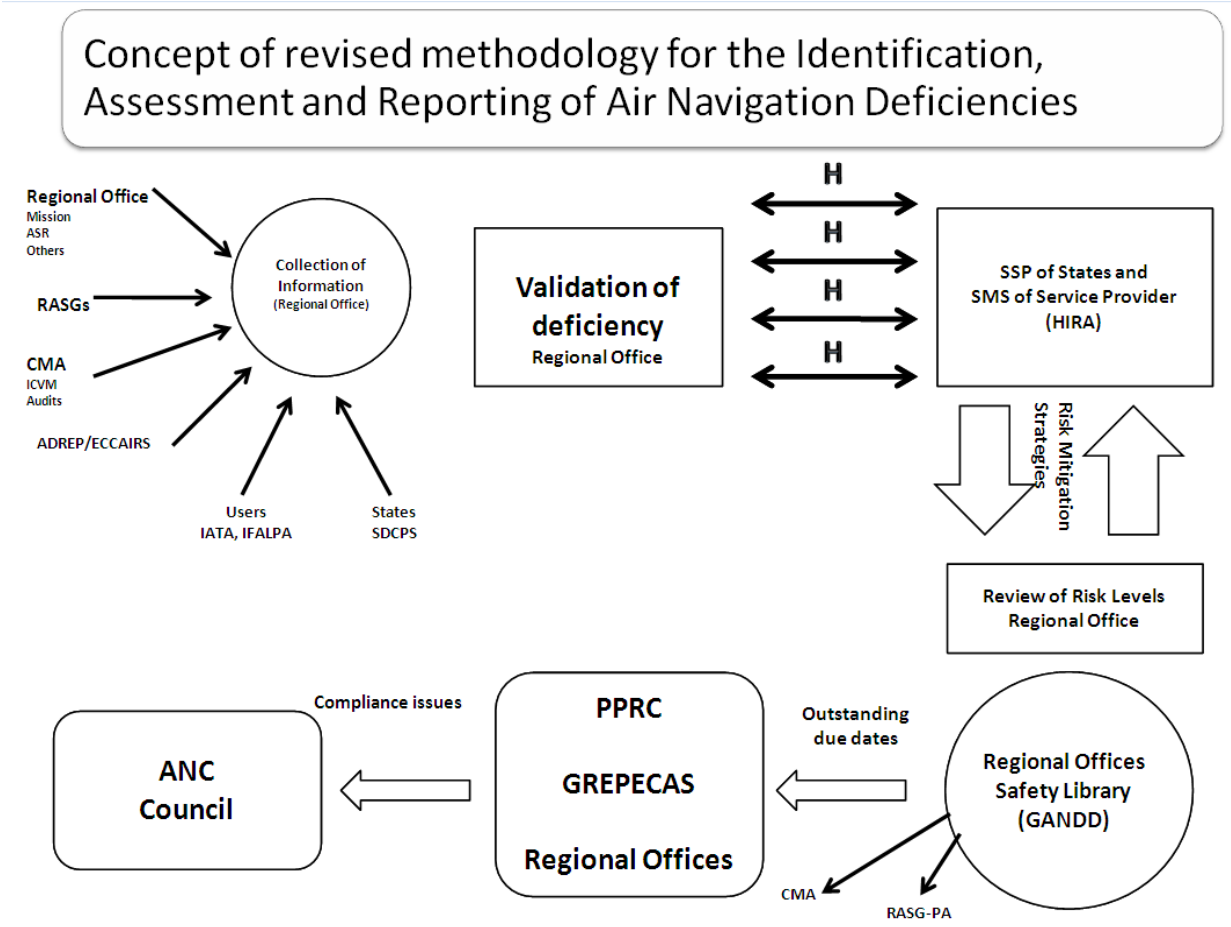
REGION SAM / SAM REGION

Estado / State	Coordinador / Coordinator	Dirección e-mail / E-mail address
Argentina		
Bolivia	Daniel Navajas Orellana Jefe de la Unidad de Infraestructura Aeroportuaria	dnavajas@dgac.gov.bo
Brasil / Brazil	Paulo Jorge de Medeiros Vieira Asesor de la CERNAI	asscernai1@decea.gov.br
Chile	Jesús Sánchez Cvitanic Jefe Sección Navegación Aérea del Departamento Planificación	jsanchez@dgac.cl
Colombia	Grupo de Proyectos Internacionales	sparis@aerocivil.gov.co nsanchez@aerocivil.gov.co
Ecuador	Bolívar Dávalos Cárdenas	bolivar_davalos@dgac.gov.ec bolodavalos@hotmail.com
Guyana Francesa / French Guiana	Catherine Arnaud	catherine.arnaud@aviation-civile.gouv.fr
Guyana / Guiana	Director Air Navigation Services	dans@gcaa-gy.org
Panamá		
Paraguay	Hernán Jhonny Colman Gerente de Navegación Aérea	gna@dinac.gob.py
Perú		
Surinam		
Uruguay	Carlos Acosta Director de Circulación Aérea	insvuelo@adinet.com.uy
Venezuela	Pablo Cecilio Rattia Rodríguez Gerencia de Servicios a la Navegación Aérea	p.rattia@inac.gov.ve

- END/FIN -

APPENDIX C

REVISED METHODOLOGY FOR THE IDENTIFICATION, ASSESSMENT AND REPORTING OF AIR NAVIGATION DEFICIENCIES



1. The Regional Office, upon identifying or receiving a report of a deficiency from sources approved by the Council (State/Territory, IATA, and IFALPA), assesses the report and verifies its validity.

2. The deficiency report duly validated by the corresponding Regional Office is sent to the State concerned through the designated focal point, using the Hazard Identification and Risk Assessment (HIRA) Form that appears in **Attachment 1** to this procedure.

   Note: In case of criterion discrepancies regarding the need to make the next step of the process which entails risk analysis, the State might coordinate with its Regional Office the corresponding actions to deal with deficiencies.

3. The State enters the deficiency report into its safety system for the corresponding investigation.

4. The State safety system, using its internal procedures, assesses the risk generated by the deficiency and the underlying factors and hazards, expressed in terms of probability and severity:

   a) Determines the risk tolerability index.
   b) Identifies missing or inadequate defences.
   c) Implements mitigation measures to control risk indices or values defined as intolerable, reducing the operational risk to an acceptable level.
   d) Disseminates the information according to its procedures.

5. The State will have three months to return to the corresponding Regional Office the form containing the risk mitigation recommendations report (RMRR) that appears in **Attachment 2** to this procedure, duly completed and signed, and will insert a summary of the developed action plan in the GANDD.

   Note 5.1: In case of criterion discrepancies in the risk assessment of the reported deficiency/hazard, the corresponding Regional Office could suggest to the State to review the analysis.

   Note 5.2: The State/Territory may request its Regional Office an extension to the response deadline with the corresponding justifications.

6. If no information is received from the State about the reported deficiency within a period of three months, this will be considered as objective evidence of the ineffectiveness of the SSP and/or SMS. This information will be reported to the USOAP/CMA, which could increase the level of risk of this State and activate any of the USOAP/CMA intervention tools.

7. The Regional Office will inform GREPECAS about the result of the risk mitigation assessment and recommendations by the State.

8. Based on the result of the analysis of the deficiency, the information could be sent to the ICAO Air Navigation Commission on behalf of GREPECAS, the Regional Office or the PPRC.

9. A statistical report of CAR and SAM deficiencies will be provided to RASG-PA for inclusion in the annual safety report of that mechanism.

   Deficiency: A deficiency is a situation where a facility, service, or procedure does not comply with **a regional air navigation plan approved by the Council, or with related ICAO standards and recommended practices, and which situation has a negative impact on the safety, regularity and/or efficiency of international civil aviation.*

   **Hazard: A hazard is a condition or an object with the potential to cause injuries to personnel, damage to equipment or structures, loss of material, or reduction of ability to perform a prescribed function.*

   Note: Within this context, deficiencies are considered hazards.

ATTACHMENT 1 TO APPENDIX C

DEFICIENCY (HAZARD) IDENTIFICATION AND RISK ASSESSMENT REPORT	
1. Description of identified deficiency:	
2. State/Territory/Organization:	
3. Report N°:	
4. Date of identification:	
5. Deficiency reported by:	
6. Air Navigation Area Facility/service involved:	
7. Specific requirement:	
8. Potential consequences of the hazard caused by the deficiency:	
9. Mitigation currently implemented (if known):	
10. Remarks:	
11. Report prepared by: (ICAO Officer)	

DEFICIENCY (HAZARD) IDENTIFICATION AND RISK ASSESSMENT REPORT						
		RISK SEVERITY				
		Catastrophic A	Hazardous B	Major C	Minor D	Negligible E
RISK PROBABILITY	Frequent 5	*5A*	*5B*	*5C*	*5D*	*5E*
	Occasional 4	*4A*	*4B*	*4C*	*4D*	*4E*
	Remote 3	*3A*	*3B*	*3C*	*3D*	*3E*
	Improbable 2	*2A*	*2B*	*2C*	*2D*	*2E*
	Extremely Improbable 1	*1A*	*1B*	*1C*	*1D*	*1E*

5A, 5B, 5C, 4A, 4B, 3A	**Intolerable region (equivalent to U-priority deficiencies)** Unacceptable under the existing circumstances
5D, 4C, 4D, 3B, 3C, 2A, 2B, 5E, 2C, 4E, 3D	**Tolerable region (equivalent to A-priority deficiencies)** Acceptable based on risk mitigation. It may require management decision.
1A, 1B, 1C, 1D, 1E, 2E, 3E, 2D	**Acceptable region (equivalent to B-priority deficiencies)** Acceptable
Probability	Is defined as the likelihood that an unsafe event or condition might occur
Frequent:	• Likely to occur many times (has occurred frequently)
Occasional:	• Likely to occur sometimes (has occurred infrequently)
Remote:	• Unlikely to occur, but possible (has occurred rarely)
Improbable:	• Very unlikely to occur (not known to have occurred)
Extremely improbable:	• Almost inconceivable that the event will occur
Severity:	Is defined as the possible consequences of an unsafe event or condition, taking as reference the worst foreseeable situation.
Catastrophic	• Equipment destroyed • Multiple deaths
Hazardous	• A large reduction in safety margins, physical distress or a workload such that the operators cannot be relied upon to perform their tasks accurately or completely • Serious injury • Major equipment damage
Major:	• A significant reduction in safety margins, a reduction in the ability of the operators to cope with adverse operating conditions as a result of increase in workload, or as a result of conditions impairing their efficiency • Serious incident • Injury to persons
Minor:	• Nuisance • Operating limitations • Use of emergency procedures • Minor incident
Negligible:	• Little consequences

EXPLANATION OF THE

"DEFICIENCY (HAZARD) IDENTIFICATION AND RISK ASSESSMENT" FORM

1. **Description of identified deficiency:** Specifies the deficiency identified or the occurrence of the event, validated by the corresponding Regional Office.

2. **State/Territory/Organization:** Identifies the name of the State/Territory/Organization involved.

3. **Report N°:** Unique Code that identifies the deficiency by State.

4. **Date of identification:** Indicates the DD/MM/YY of the report of the deficiency identified or of the occurrence of the event, as applicable.

5. **Deficiency reported by:** Indicates the source that identified and reported the deficiency.

6. **Air Navigation Area Facility/service involved or activity:** Specifies the air navigation area directly involved in the identified deficiency. More than one area may be listed.

7. **Specific requirement:** Standard/Recommended Practice of ICAO Annex or the reference to the requirement of the deficiency-related Air Navigation Plan requirement. If known, the specific error or failure that affected the operation is included

8. **Potential consequences of the deficiency caused by the deficiency:** Initial assessment of the consequence of the identified deficiency, either by the source reporting the deficiency, or by the Regional Office that sends the report.

9. **Mitigation currently implemented (if known):** If known, existing defences are included.

10. **Remarks:** Observations or comments on the identified deficiency may be included.

11. **Report prepared by (ICAO Officer):** The reporting ICAO Regional Office and Official is specified.

ATTACHMENT 2 TO APPENDIX C

<table>
<tr><th colspan="5">RISK MITIGATION RECOMMENDATIONS REPORT</th></tr>
<tr><td>1. Description of identified deficiency:</td><td colspan="4"></td></tr>
<tr><td></td><td colspan="4"></td></tr>
<tr><td>2. State/Territory/Organization:</td><td colspan="4"></td></tr>
<tr><td>3. Report N°:</td><td colspan="4"></td></tr>
<tr><td>4. Date of identification:</td><td colspan="4"></td></tr>
<tr><td>5. Level of risk before mitigation measures are adopted:</td><td colspan="4"></td></tr>
<tr><td colspan="5">6. Solution # 1</td></tr>
<tr><td>7. Description of the solution:</td><td colspan="4"></td></tr>
<tr><td rowspan="2">8. Estimated cost and time for implementation of this solution:
$ _____</td><td rowspan="3">9. Revised risk assessment if <u>only</u> this solution is to be implemented:</td><td>10.Probability:</td><td></td><td></td></tr>
<tr><td>11. Severity:</td><td></td><td></td></tr>
<tr><td>12. Level of risk:</td><td></td><td></td></tr>
<tr><td>13. Potential implementation problems:</td><td colspan="4"></td></tr>
<tr><td colspan="5">14. Solution # 2</td></tr>
<tr><td>15. Description of the solution:</td><td colspan="4"></td></tr>
<tr><td rowspan="2">16. Estimated cost and time for implementation of this solution
$ _____</td><td rowspan="3">17. Revised risk assessment if <u>only</u> this solution is to be implemented:</td><td>18.Probability:</td><td></td><td></td></tr>
<tr><td>19. Severity:</td><td></td><td></td></tr>
<tr><td>20. Level of risk:</td><td></td><td></td></tr>
<tr><td>21. Potential implementation problems:</td><td colspan="4"></td></tr>
</table>

RISK MITIGATION RECOMMENDATIONS REPORT				
22. Solution # 3				
23. Description of the solution:				
24. Estimated cost and time for implementation of this solution **$** _____	**25. Revised risk assessment if only this solution is to be implemented:**	**26.Probability:**		
		27. Severity:		
		28. Level of risk:		
29. Potential implementation problems:				
30. Recommended solution(s):				
31. Estimated cost and time for implementation of recommended solution(s):	**$**			
32. Revised risk assessment if implemented as recommended:				

		RISK SEVERITY				
		Catastrophic A	**Hazardous B**	**Major C**	**Minor D**	**Negligible E**
RISK PROBABILITY	**Frequent 5**	***5A***	***5B***	***5C***	***5D***	***5E***
	Occasional 4	***4A***	***4B***	***4C***	***4D***	***4E***
	Remote 3	***3A***	***3B***	***3C***	***3D***	***3E***
	Improbable 2	***2A***	***2B***	***2C***	***2D***	***2E***
	Extremely Improbable 1	***1A***	***1B***	***1C***	***1D***	***1E***

33. Report prepared by (State/Territory/Organization):	

EXPLANATION OF THE "RISK MITIGATION RECOMMENDATIONS REPORT"

The State concerned shall complete the form based on the following explanations:

1. **Description of identified deficiency:** Complete with the same text contained in the deficiency or event occurrence report, validated by the corresponding Regional Office.

2. **State/Territory/Organization:** Complete with the name of the State/Territory/Organization.

3. **Report N°:** Complete with the same code of the identified hazard reported by the Regional Office and to which the risk mitigation recommendations refer.

4. **Date of identification:** Complete with the date (DD/MM/YY) of completion of the form.

5. **Level of risk before mitigation measures are adopted:** Complete with the level of risk estimated with the current mitigation measures.

6. **Solution # 1:** Identifies the number of solution.

7. **Description of the solution:** Complete with a brief description of the first solution to be implemented.

8. **Estimated cost and time for implementation of this solution:** Complete with the estimated cost of implementing the first solution.

9. **Revised risk assessment if only this solution is to be implemented:** Associated to boxes 10, 11 and 12.

10. **Probability:** Complete with the coded and plain-language Probability index that would be achieved with the implementation of this mitigation measure.

11. **Severity:** Complete with the coded and plain-language severity index that would be achieved with the implementation of this mitigation measure.

12. **Level of risk:** Complete with the coded and plain-language tolerability index resulting from the implementation of this mitigation measure.

13. **Potential implementation problems:** Complete with a brief description of the potential implementation problems that might prevent the application of the identified solution.

14. **Solution # 2:** Identifies the number of solution or scenario.

15. **Description of the solution:** Complete with a brief description of the second solution to be implemented.

16. **Estimated cost and time for implementation of this solution:** Complete with the estimated cost of implementing the second solution.

17. **Revised risk assessment if only this solution is to be implemented:** Associated to boxes 18, 19, and 20.

18. **Probability:** Complete with the coded and plain-language Probability index that would be achieved with the implementation of this mitigation measure.

19. **Severity:** Complete with the coded and plain-language severity index that would be achieved with the implementation of this mitigation measure.

20. **Level of risk:** Complete with the coded and plain-language tolerability index resulting from the implementation of this mitigation measure.

21. **Potential implementation problems:** Complete with a brief description of the potential implementation problems that might prevent the implementation of the identified solution.

22. **Solution # 3:** Identifies the number of solution or scenario.

23. **Description of the solution:** Complete with a brief description of the third solution to be implemented.

24. **Estimated cost and time for implementation of this solution:** Complete with the estimated cost of implementing the third solution.

25. **Revised risk assessment if only this solution is to be implemented:** Associated to boxes 26, 27 and 28.

26. **Probability:** Complete with the coded and plain-language Probability index that would be achieved with the implementation of this mitigation measure.

27. **Severity:** Complete with the coded and plain-language severity index that would be achieved with the implementation of this mitigation measure.

28. **Level of risk:** Complete with the coded and plain-language tolerability index resulting from the implementation of this mitigation measure.

29. **Potential implementation problems:** Complete with a brief description of the potential implementation problems that might prevent the implementation of the identified solution.

30. **Recommended solution(s):** Complete with the solution(s) to be implemented for reducing the tolerability index to an acceptable level.

31. **Estimated cost and time for implementation of the recommended solution(s):** Complete with the estimated cost of the solutions to be implemented.

32. **Revised risk assessment if implemented as recommended:** Complete with the risk assessment once the solution(s) described above has (have) been implemented.

33. **Report prepared by (State/Territory/Organization):** Complete with the name of the corresponding aeronautical authority or individual or area generating the report.

- END -