INTERNATIONAL CIVIL AVIATION ORGANIZATION

Workshop on Air Navigation Deficiencies Management

(Mexico City, Mexico, 17 May 2013)

GREPECAS
Air Navigation Deficiencies Database
(GANDD) and
HAZARD IDENTIFICATION AND RISK ASSESSMENT (HIRA)

ICAO North America, Central America and Caribbean Regional Office

Doc 9756, AIG

- *1.2 An aircraft accident provides evidence of hazards or deficiencies within the aviation system. A well conducted investigation should therefore identify all immediate and underlying systemic causes of an accident and recommend appropriate safety actions aimed at avoiding the hazards or eliminating the deficiencies. The investigation may also reveal other hazards or deficiencies within the aviation system not directly connected with the causes of the accident……*

- *1.2 Los accidentes de aviación son evidencia de los peligros o deficiencias que existen en la aviación. Toda investigación bien dirigida ha de señalar las causas inmediatas del accidente y las deficiencias innatas del sistema y recomendar las medidas de seguridad apropiadas para evitar o eliminar los peligros observados. Puede que la investigación descubra también otros peligros o deficiencias del conjunto aeronáutico no relacionados directamente con las causas del accidente……*

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

Approved by the Council on 30 November 2001

- ✓ A33-14, the Council obligate users of air navigation facilities and services to report any serious problems encountered due to the lack of implementation of air navigation facilities or services required by regional plans

- ✓ *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.*

- ✓ Assessment carried out by ICAO on the input received from various sources regarding deficiencies in the air navigation field:

  - ✓ a) collection of information;
  - ✓ b) safety assessment of reported problems;
  - ✓ c) identification of suitable corrective actions (technical / operational / financial / organizational), both short-term and long-term; and
  - ✓ d) method of reporting in the reports of ICAO planning and implementation regional groups (PIRGs).

UNIFORM METHODOLOGY FOR…, Regional Office

- ✓ a) compare the status of implementation of the air navigation facilities and services with the regional air navigation plan documents and identify facilities, services and procedures not implemented;
- ✓ b) review mission reports with a view to detecting deficiencies that affect safety, regularity and efficiency of international civil aviation;
- ✓ c) make a systematic analysis of the differences with ICAO SARPS filed by States to determine the reason and their impact on safety, regularity and efficiency of international civil aviation;
- ✓ d) review aircraft accident and incident reports with a view to detect possible deficiencies;
- ✓ e) review inputs, provided to the regional office by the users of air navigation services
- ✓ f) assess and prioritize;
- ✓ g) report the outcome to the State(s) concerned for resolution; and
- ✓ h) report the result to the related PIRG for further examination, advice and report to the ICAO Council, as appropriate through PIRG reports.

UNIFORM METHODOLOGY FOR….

REPORTING DEFICIENCIES

- ✓ States and appropriate international organizations including IATA and IFALPA, are expected to provide the information they have to the ICAO regional office, including action at PIRG meetings.
  - ✓ The information should at least include:
  - ✓ description of the deficiency,
  - ✓ risk assessment,
  - ✓ possible solution,
  - ✓ time-lines,
  - ✓ responsible party,
  - ✓ agreed action to be taken and
  - ✓ action already taken.
- ✓ The GREPECAS should make an assessment of the safety impact for subsequent review by the Air Navigation Commission (ANC).

UNIFORM METHODOLOGY FOR….

ASSESSMENT AND PRIORITIZATION

- ✓ Three levels of priority organized on the basis of safety, regularity and efficiency assessment as follows:
- ✓ "U" priority = Urgent requirements having a direct impact on safety and requiring immediate corrective actions.
  - ✓ Urgent requirement consisting of any physical, configuration, material, performance, personnel or procedures specification, the application of which is urgently required for air navigation safety.
- ✓ "A" priority = Top priority requirements necessary for air navigation safety.
  - ✓ Top priority requirement consisting of any physical, configuration, material, performance, personnel or procedures specification, the application of which is considered necessary for air navigation safety.
- ✓ "B" priority = Intermediate requirements necessary for air navigation regularity and efficiency.
  - ✓ Intermediate priority requirement consisting of any physical, configuration, material, performance, personnel or procedures specification, the application of which is considered necessary for air navigation regularity and efficiency.

UNIFORM METHODOLOGY FOR….

MODEL REPORTING TABLE FOR USE IN THE REPORTS OF PIRGS

- ✓ The model for use by PIRGs for the identification, assessment, prioritization etc. of deficiencies for each of the different areas AGA, ATM, SAR, CNS, AIS/MAP, MET.

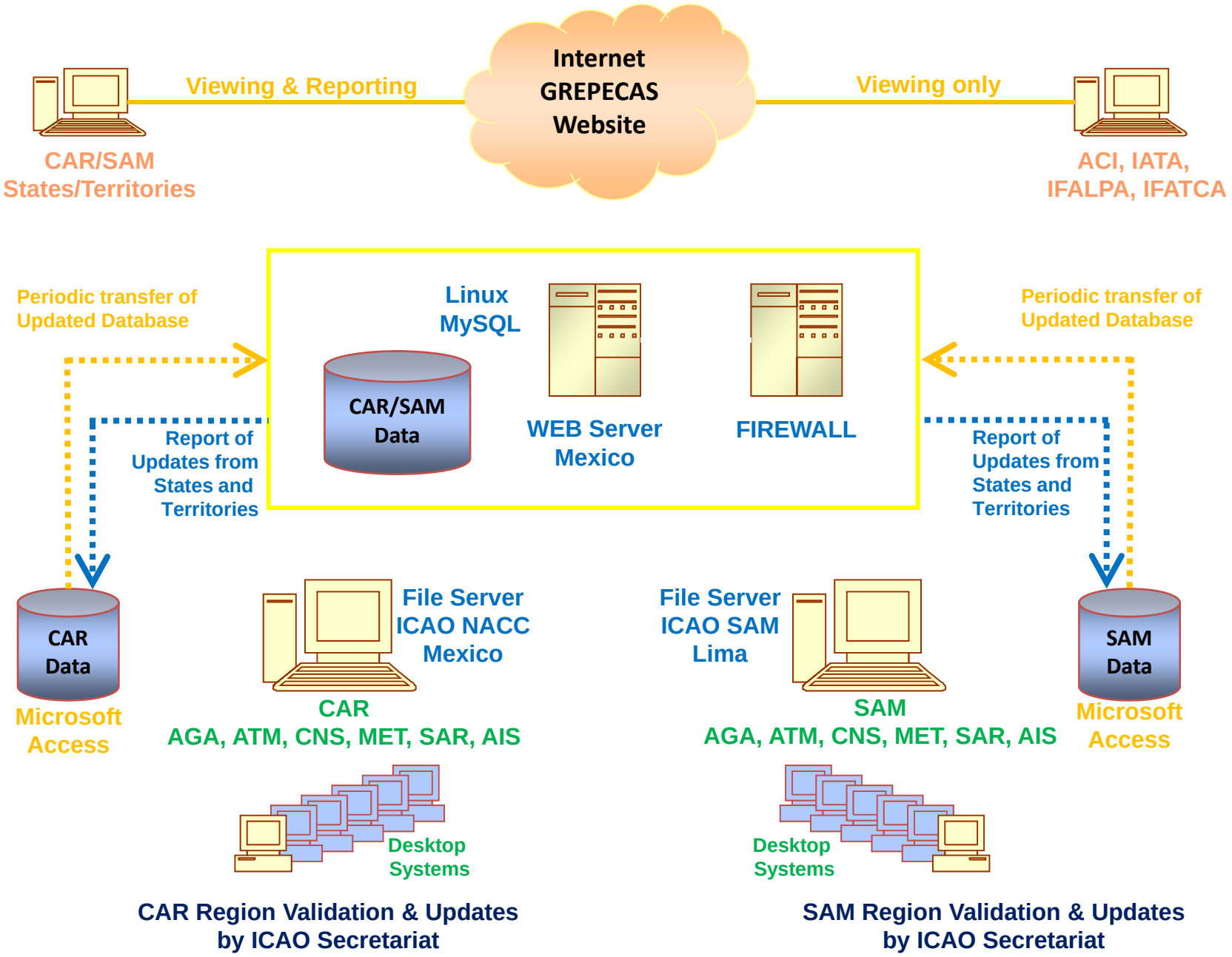
Identification		Deficiencies			Corrective action			
Requirements	States/facilities	Description	Date first reported	Remarks	Description	Executing body	Date of completion	Priority for action*
Requirement of Part.., paragraph (table).. of the air navigation plan	Terra X Terra Y	Speech circuits not implemented Villa X - Villa Y	12 Dec. 2..X	Coordination meeting between Terra X and Terra Y on 16 July 2..X to finalize arrangements to implementation circuit via satellite	Implementation of direct speech circuit via satellite	Terra X	20 Aug. 2..X	A

ACTION BY THE REGIONAL OFFICES

- ✓ Before each PIRG meeting, the Regional Office concerned will provide advance documentation concerning the latest status of deficiencies.

- ✓ Regional Offices should document serious cases of deficiencies to the Air Navigation Commission as a matter of priority, rather than waiting to report the matter to the next PIRG meeting, and that the Air Navigation Commission will report to the Council.

GREPECAS Air Navigation Deficiencies Database (GANDD) INFRASTRUCTURE



Accessing the site

- Reference Documentation can be found as support to manage the Air Navigation Deficiencies Database (GANDD)

http://www.mexico.icao.int/gandd2.html

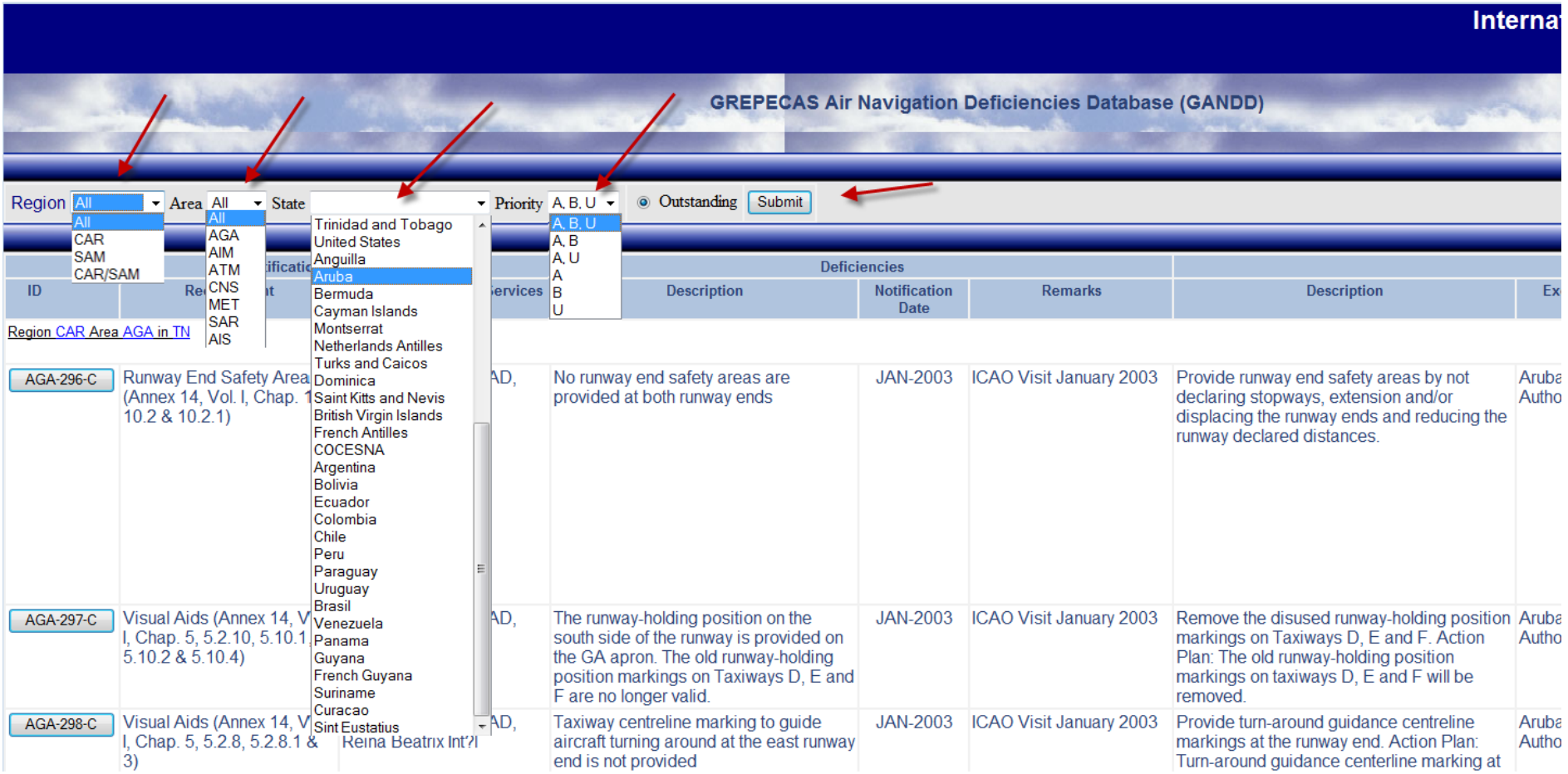
Accessing the site

- It has been restricted to be used through a User name and Password, both of which are requested when login into the following link:

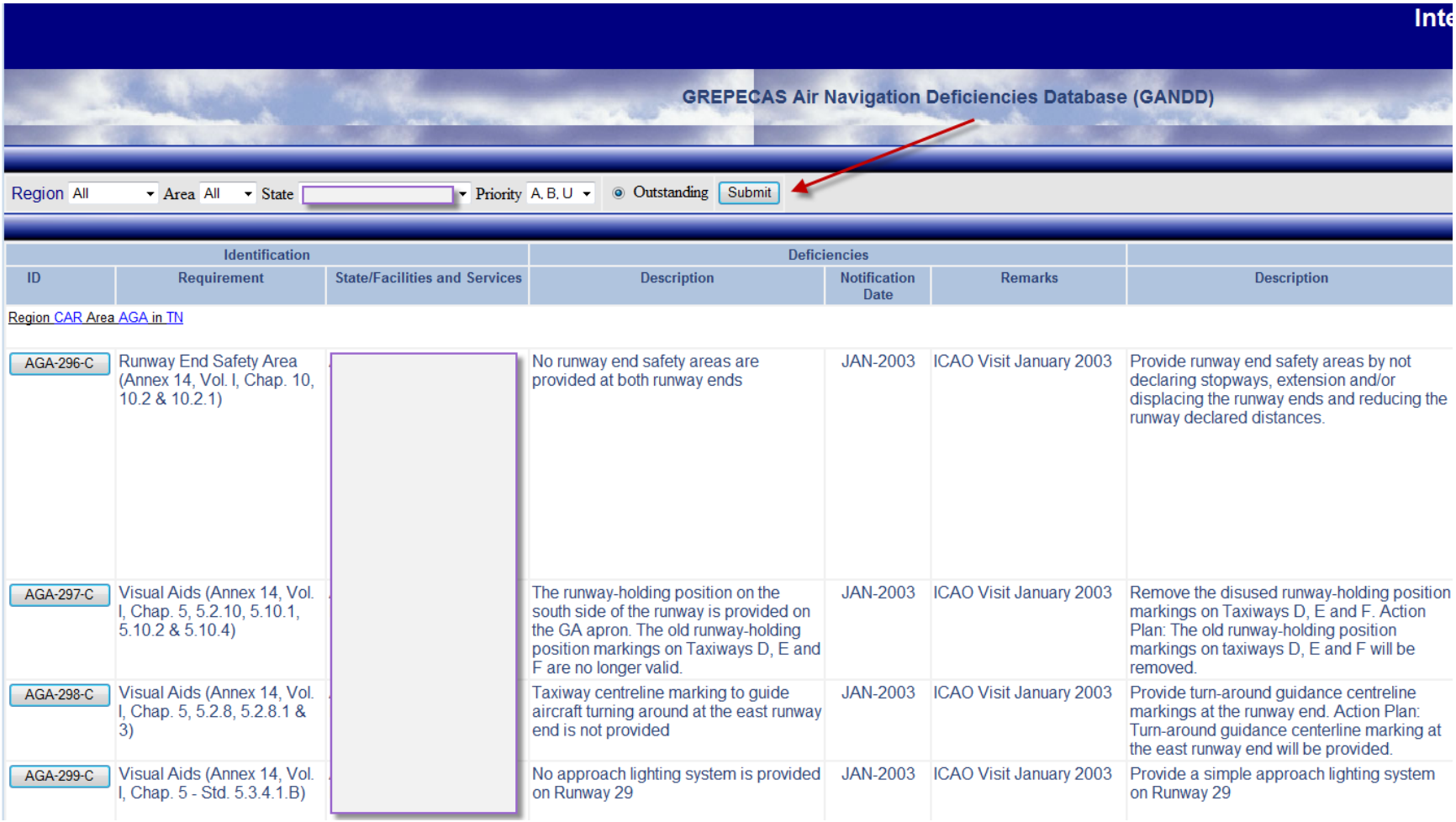
Display of Information

- According to the User name used, the first display of information will be that of the corresponding State or Organization; however, it is also possible to see the global information through the use of the following filters, either English or Spanish

Use of filters and Language Selection



Deficiencies' display of information



Identification			Deficiencies			
ID	Requirement	State/Facilities and Services	Description	Notification Date	Remarks	Description
Region CAR Area AGA in TN						
AGA-296-C	Runway End Safety Area (Annex 14, Vol. I, Chap. 10, 10.2 & 10.2.1)		No runway end safety areas are provided at both runway ends	JAN-2003	ICAO Visit January 2003	Provide runway end safety areas by not declaring stopways, extension and/or displacing the runway ends and reducing the runway declared distances.
AGA-297-C	Visual Aids (Annex 14, Vol. I, Chap. 5, 5.2.10, 5.10.1, 5.10.2 & 5.10.4)		The runway-holding position on the south side of the runway is provided on the GA apron. The old runway-holding position markings on Taxiways D, E and F are no longer valid.	JAN-2003	ICAO Visit January 2003	Remove the disused runway-holding position markings on Taxiways D, E and F. Action Plan: The old runway-holding position markings on taxiways D, E and F will be removed.
AGA-298-C	Visual Aids (Annex 14, Vol. I, Chap. 5, 5.2.8, 5.2.8.1 & 3)		Taxiway centreline marking to guide aircraft turning around at the east runway end is not provided	JAN-2003	ICAO Visit January 2003	Provide turn-around guidance centreline markings at the runway end. Action Plan: Turn-around guidance centerline marking at the east runway end will be provided.
AGA-299-C	Visual Aids (Annex 14, Vol. I, Chap. 5 - Std. 5.3.4.1.B)		No approach lighting system is provided on Runway 29	JAN-2003	ICAO Visit January 2003	Provide a simple approach lighting system on Runway 29

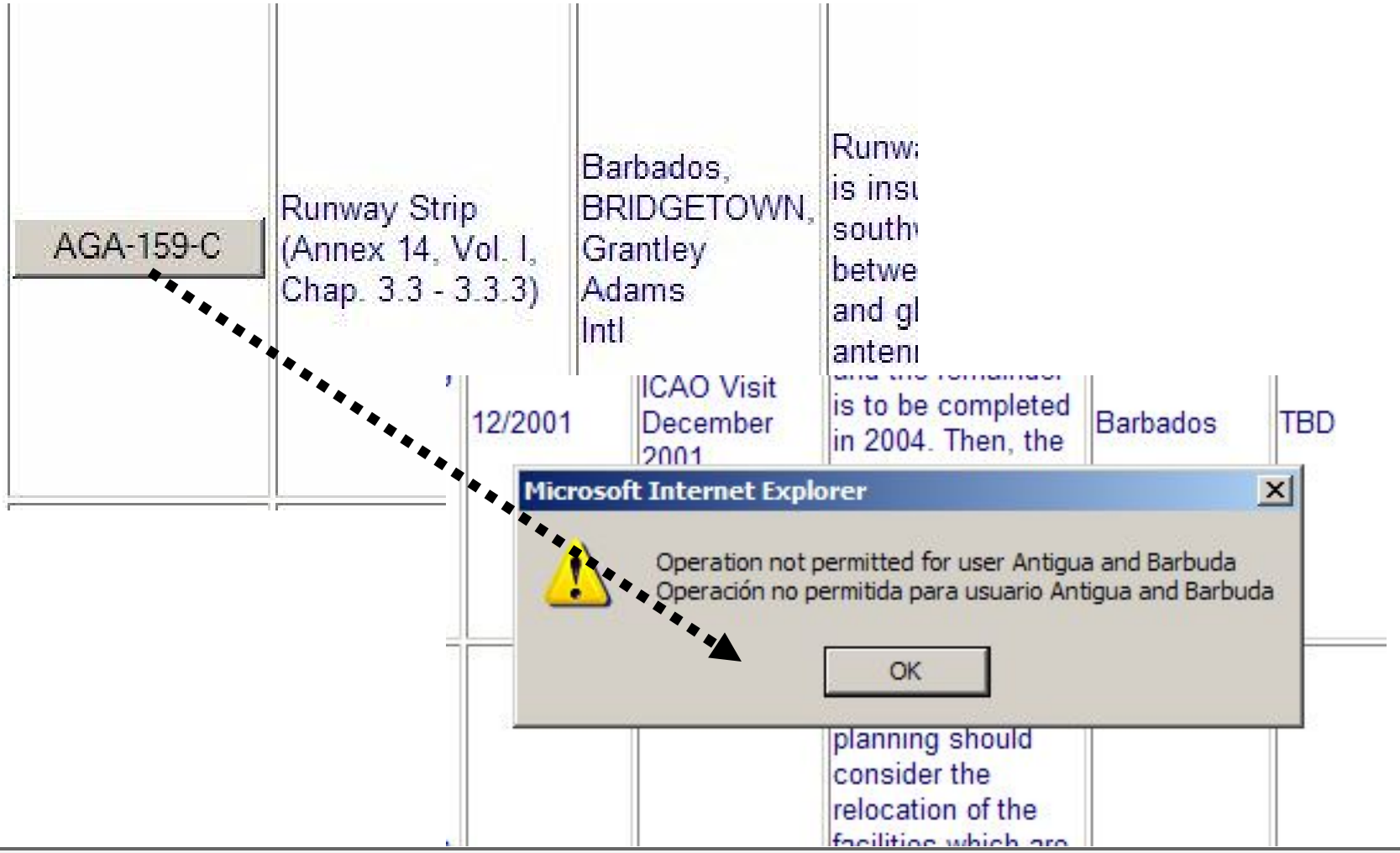
Editing Buttons

Records found for region CAR in the area AGA in Barbados

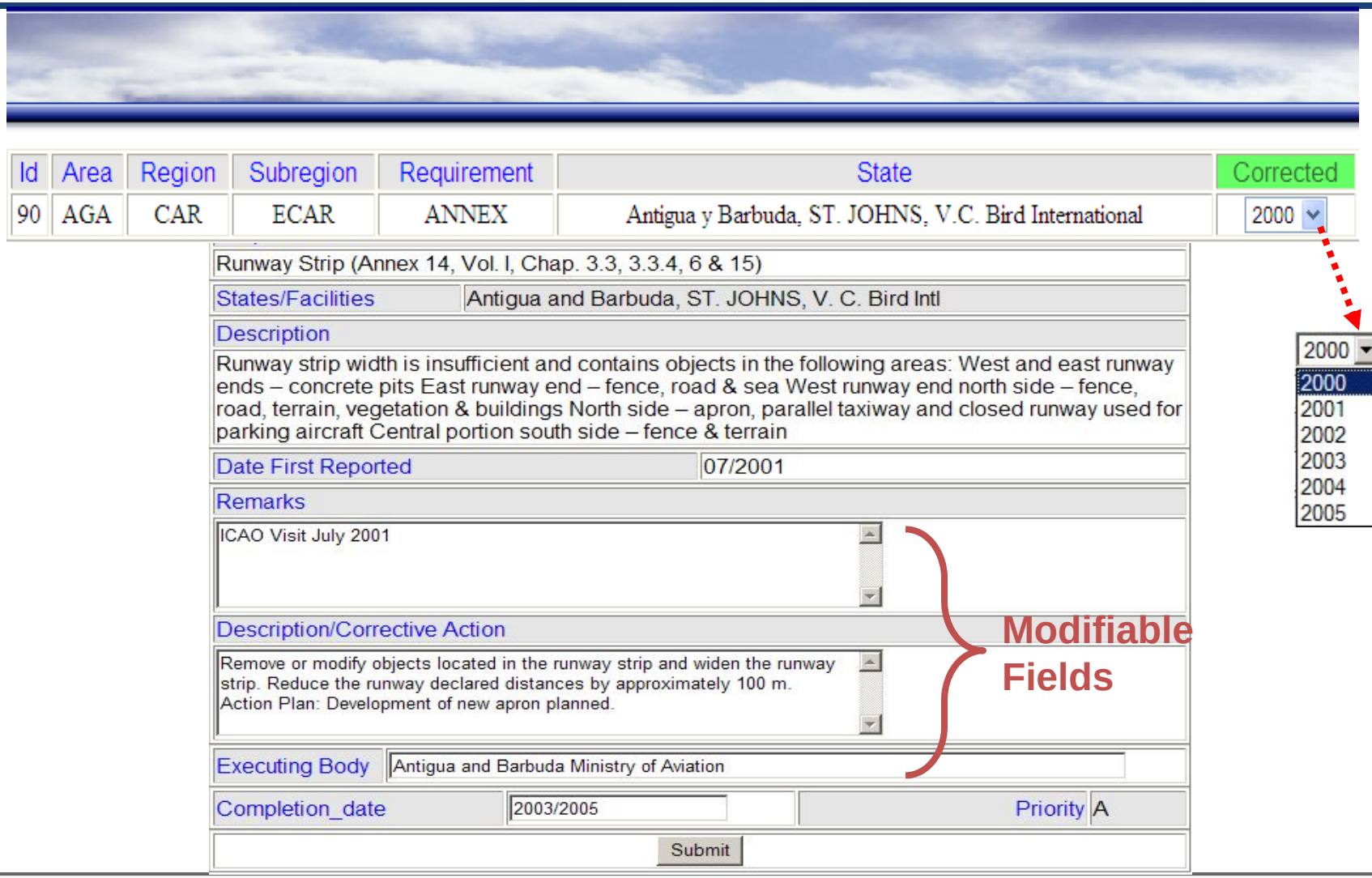
Identification			Deficiencies			Corrective Action			
Edit	Requirements	States/ Facilities	Description	Date First Reported	Remarks	Description	Executing Body	Date of Comple-tion	P
AGA-159-C	Runway Strip (Annex 14, Vol. I, Chap. 3.3 - 3.3.3)	Barbados, BRIDGETOWN, Grantley Adams Intl	Runway strip width is insufficient along southwest portion between hangar and glide slope antenna	12/2001	ICAO Visit December 2001	Widen runway strip. Action Plan: A part of the public road is completed and the remainder is to be completed in 2004. Then, the perimeter fence will be moved southwards to comply with the	Barbados	TBD	A
AGA-160-C	Obstacles (Annex 14, Vol. I , Chap. 4 - 4.2.21)	Barbados, BRIDGETOWN, Grantley Adams Intl	Obstacles in the transitional surfa include the fire station and hang on the south side of the runway middle section			designed to replace the present one. To be completed in 2004.	s	2004	A
AGA-161-C	Visual Aids (Annex 14, Vol. I, Chap. 5 - 5.2.8.1 & 3)	Barbados, BRIDGETOWN, Grantley Adams Intl	Taxiway centreline marking to guide aircraft turning around at the east runway end is not provided	12/2001	ICAO Visit December 2001	Provide turn-around guidance centreline markings at the runway end. Action Plan: Nose-wheel guidance line to accommodate the most critical aircraft (B747-400) will be painted.	Barbados	01/2004	U

AGA-159-C

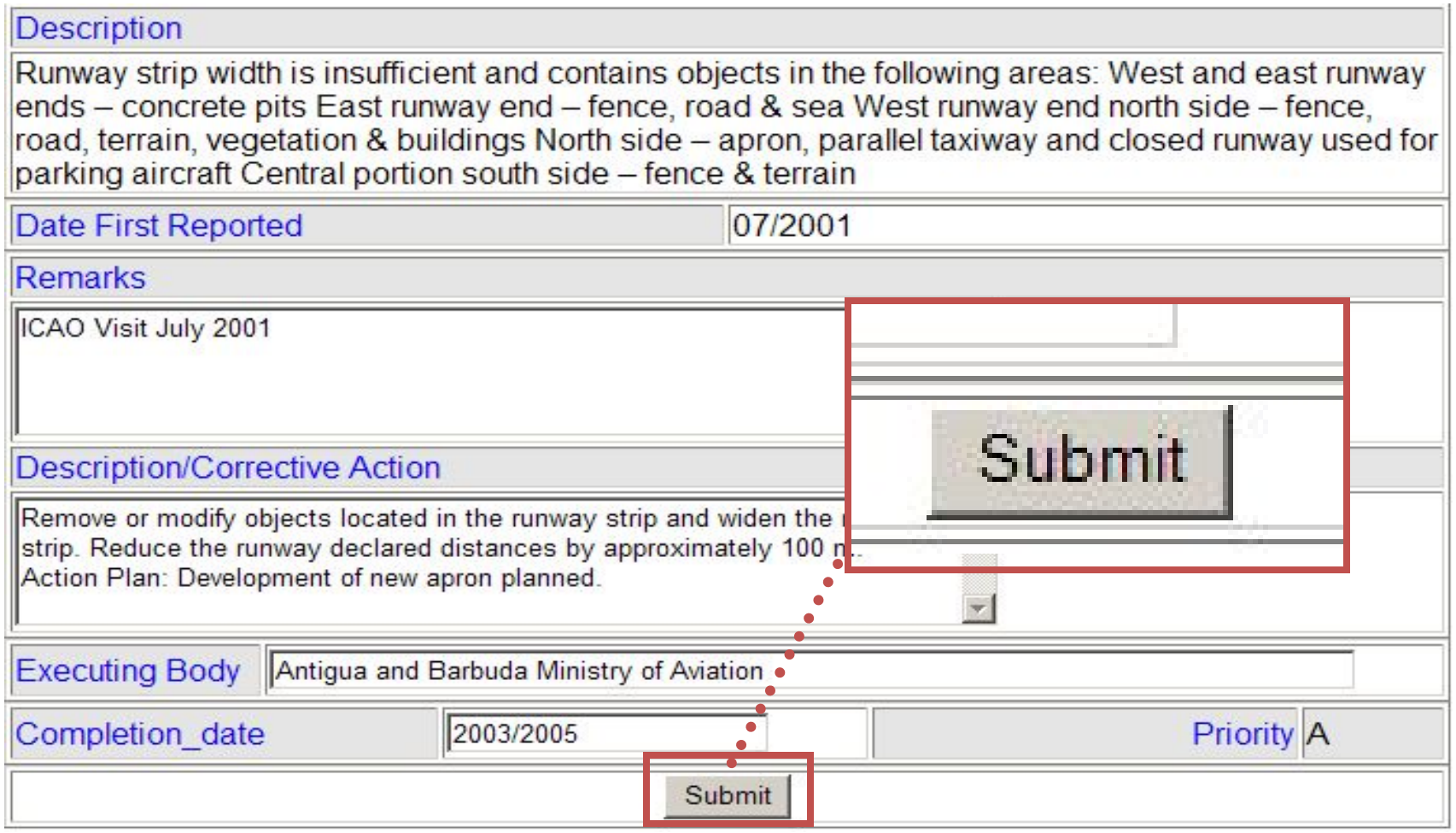
Text editing restriction



Display of the Changes Reporting Form



Submission of Changes



INTERNATIONAL CIVIL AVIATION ORGANIZATION

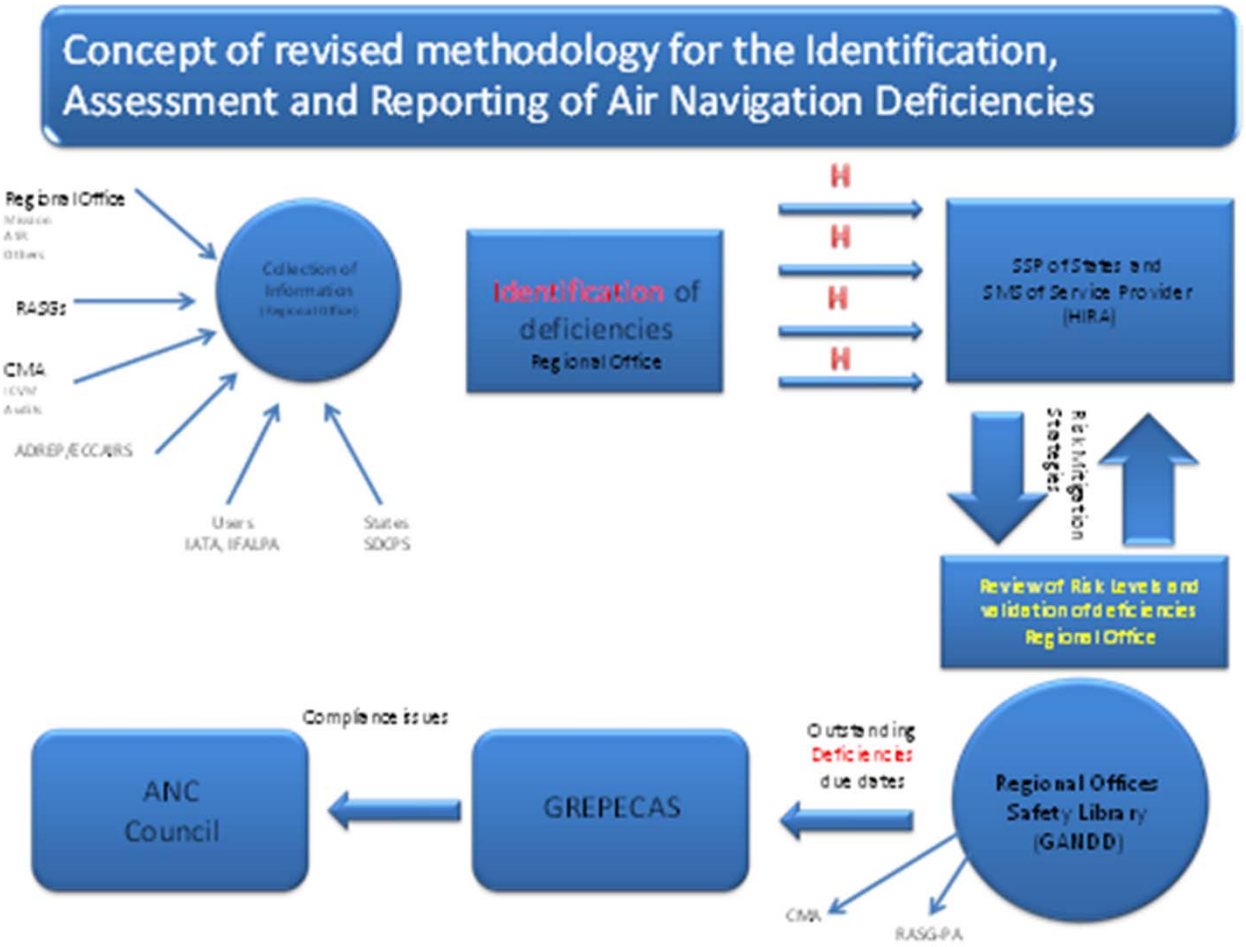
HAZARD IDENTIFICATION AND RISK ASSESSMENT (HIRA)

Methodology for the identification, assessment and reporting of air navigation deficiencies CAR/SAM

Victor Hernandez
RO ATM/SAR

ICAO North America, Central America and Caribbean Regional Office

ICAO Identification, Assessment and Reporting



HIRA

- 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.

- 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.

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

- 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.

HIRA

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

  - *Note: 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.*

- If no information is received from the State, 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.

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

- Based on the result of the analysis of the deficiency, the information could be sent to the ICAO Air Navigation Commission.

HIRA

- 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 (approved by the Council on 30 November 2001).*

- **Hazard: A hazard is a condition or an object with the potential to cause injuries to personnel, damage to equipment or structures, loss of materials, or reduction of ability to perform a prescribed function (Doc 9859 para, 4,2,3).*

  - *Note: Within this context, priority "U" and "A" deficiencies are considered hazards.*

HIRA Form

DEFICIENCY (HAZARD) IDENTIFICATION AND RISK ASSESSMENT REPORT	
1. Description of identified deficiency:	
2. State/Territory/Organization:	
3. Report N°:	
4. Date of identification:	
5. Report prepared 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):	

HIRA Form

DEFICIENCY (HAZARD) IDENTIFICATION AND RISK ASSESSMENT REPORT	
10. Remarks:	
11. Report prepared by: (ICAO Officer)	

DEFICIENCY (HAZARD) IDENTIFICATION AND RISK ASSESSMENT REPORT (CONT .)

		RISK SEVERITY				
		Catastrophic A	Hazardous B	Major C	Minor D	Insignificant E
RISK LIKELIHOOD	Frequent 5	5A	5B	5C	5D	5E
	Occasional 4	4A	4B	4C	4D	4E
	Remote 3	3A	3B	3C	3D	3E
	Unlikely 2	2A	2B	2C	2D	2E
	Extremely Unlikely 1	1A	1B	1C	1D	1E

5A, 5B, 5C, 4A, 4B, 3A	**Intolerable region (equivalent to U-priority deficiencies)** Unacceptable under 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. Might require a managerial decision,
1A, 1B, 1C, 1D, 1E, 2E, 3E, 2D	**Acceptable region (equivalent to B-priority deficiencies)** Acceptable

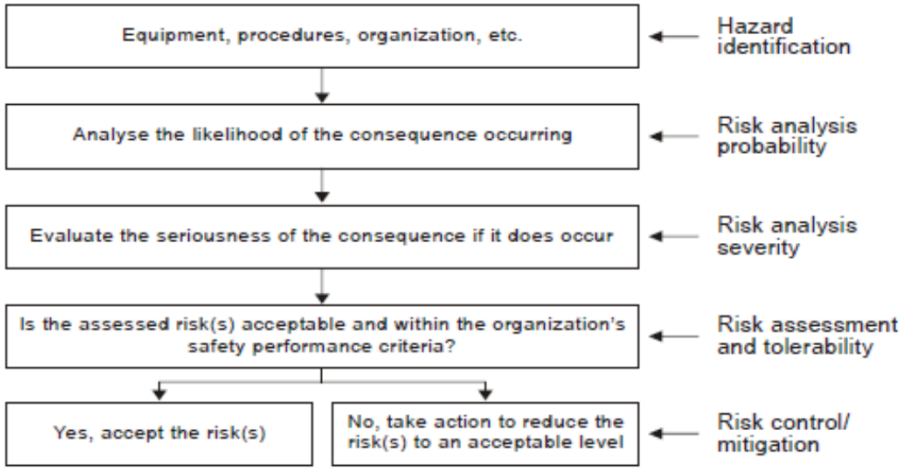
Likelihood	Is defined as the likelihood of occurrence of an event or unsafe condition
Frequent:	• Likely to occur many times (has occurred frequently)
Occasional:	• Likely to occur some times (has occurred infrequently)
Remote:	• Unlikely, but might occur (occurs rarely)
Unlikely:	• Very unlikely to occur (no occurrence is known)
Extremely unlikely	• Almost unconceivable that the event may occur.

Severity:	Is defined as the possible consequence of an event or unsafe condition, based on the worst case scenario
Catastrophic	• Destroyed equipment • Multiple deaths
Hazardous	• An important reduction in safety margins, physical damage or a workload such that operator cannot perform their tasks in a precise and complete manner. • Serious injury • Major damage to equipment.
Major:	• A significant reduction in safety margins, a reduction in the ability of the operator to respond to adverse operating conditions as a result of an increased workload or as a result of conditions hindering its efficiency • Serious incident • Injury to individuals
Minor:	• Interference • Operational limitations • Use of emergency procedures • Minor incidents
Insignificant	• Slight consequences

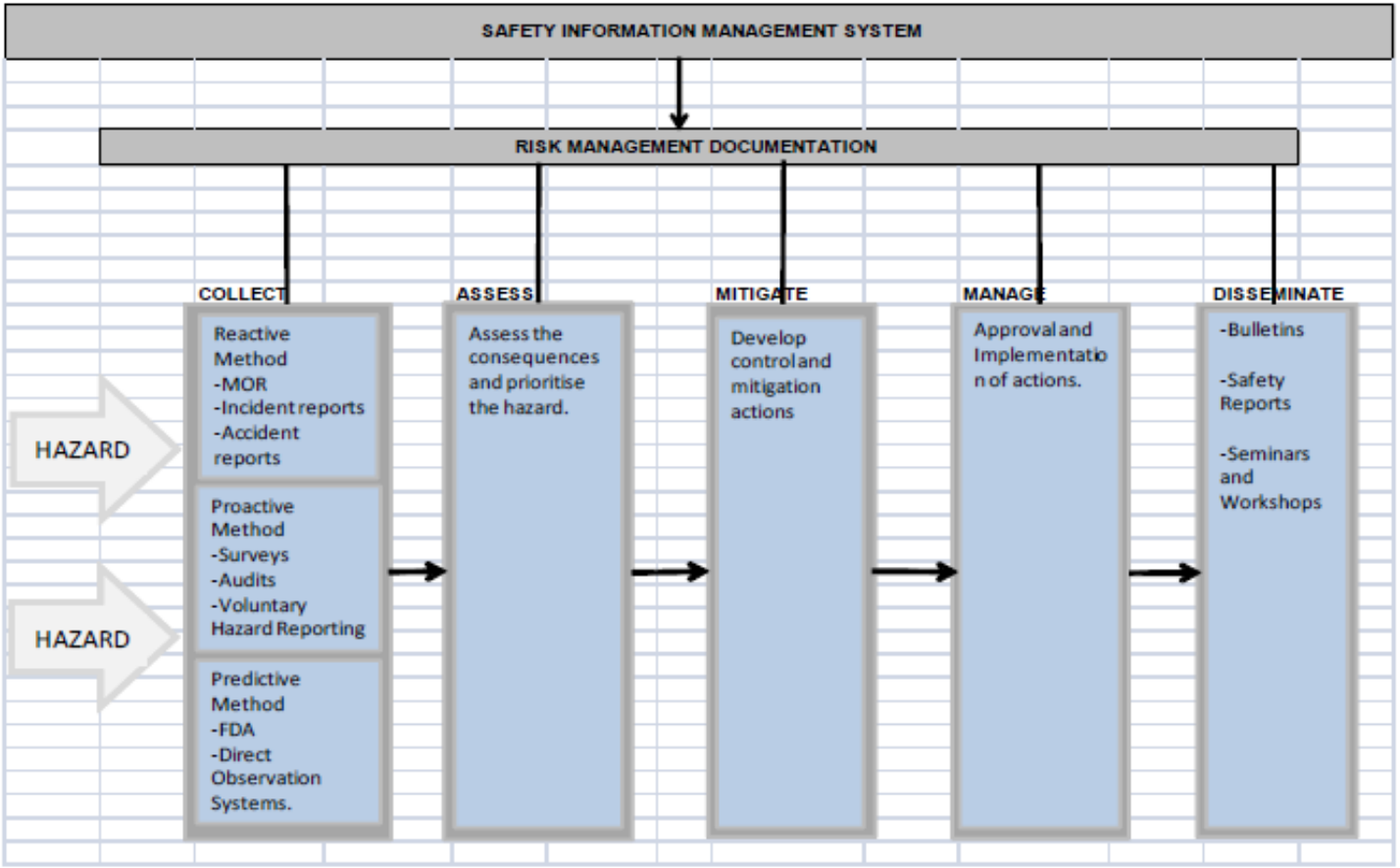
Safety risk management process

- **Systematically identifies hazards that exist within the context of the delivery of its products or services.**

- **Hazards may be the result of systems that are deficient in their design, technical function, human interface or interactions with other processes and systems**



Hazards and risk management



Safety risk management; probability

Probability of occurrence		
Qualitative definition	Meaning	Value
Frequent	Likely to occur many times *(has occurred frequently)*	**5**
Occasional	Likely to occur some times *(has occurred infrequently)*	**4**
Remote	Unlikely, but possible to occur *(has occurred rarely)*	**3**
Improbable	Very unlikely to occur *(not known to have occurred)*	**2**
Extremely improbable	Almost inconceivable that the event will occur	**1**

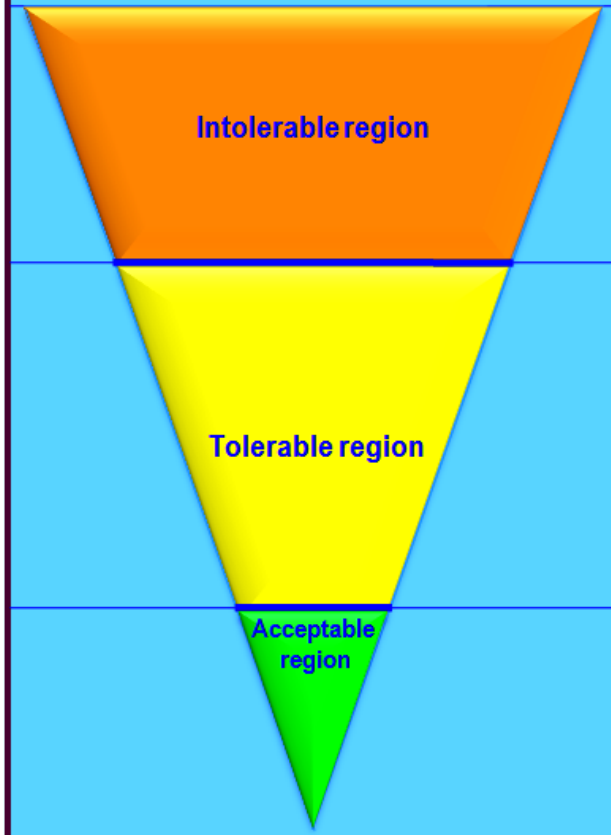
Safety risk management; severity

Severity of occurrences		
Aviation definition	Meaning	Value
Catastrophic	➢Equipment destroyed. ➢Multiple deaths.	A
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.	B
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.	C
Minor	➢Nuisance. ➢Operating limitations. ➢Use of emergency procedures. ➢Minor incident.	D
Negligible	➢Little consequences	E

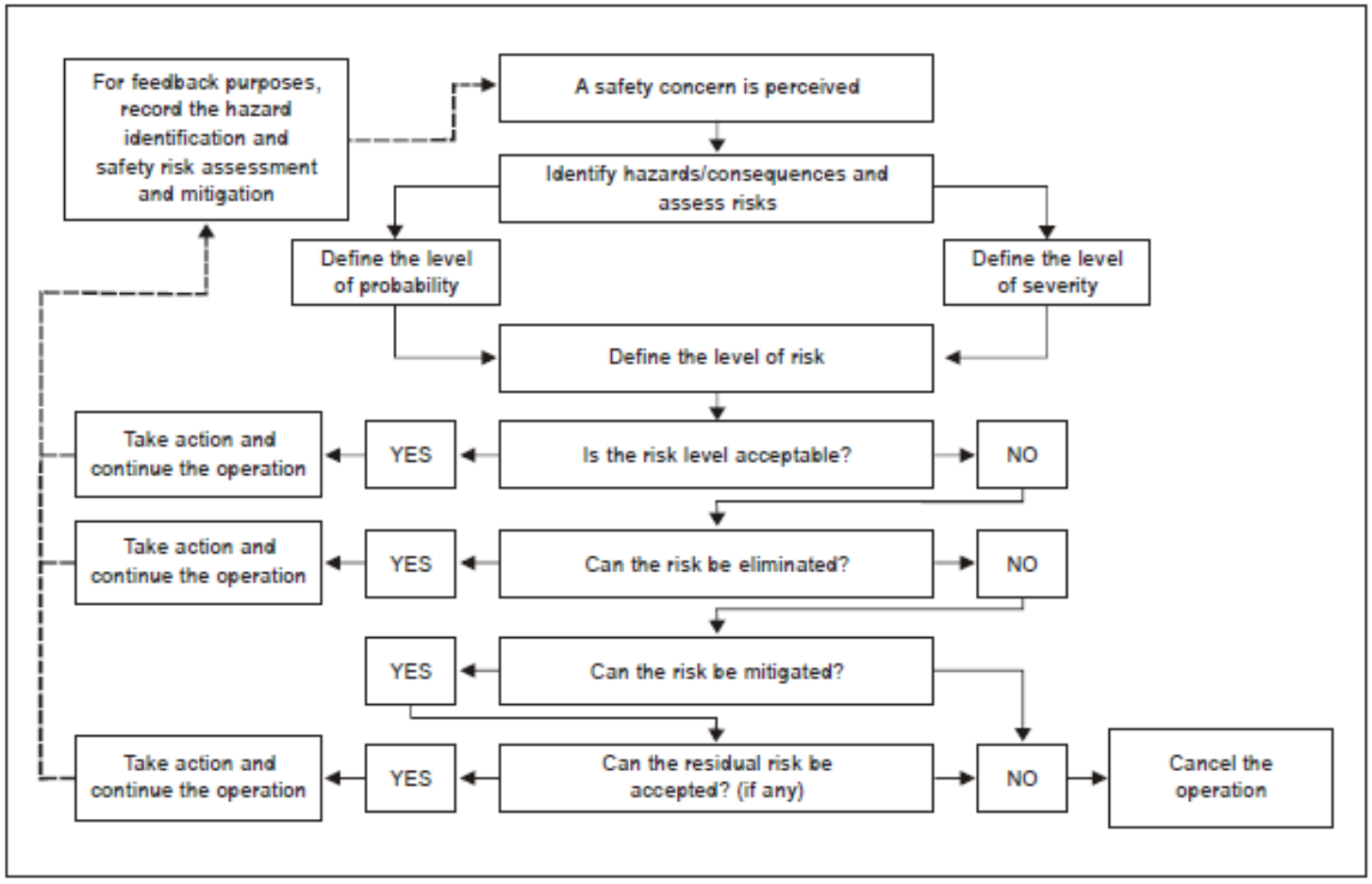
Safety risk assessment matrix

Risk probability		Risk severity				
		Catastrophic A	Hazardous B	Major C	Minor D	Negligible E
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

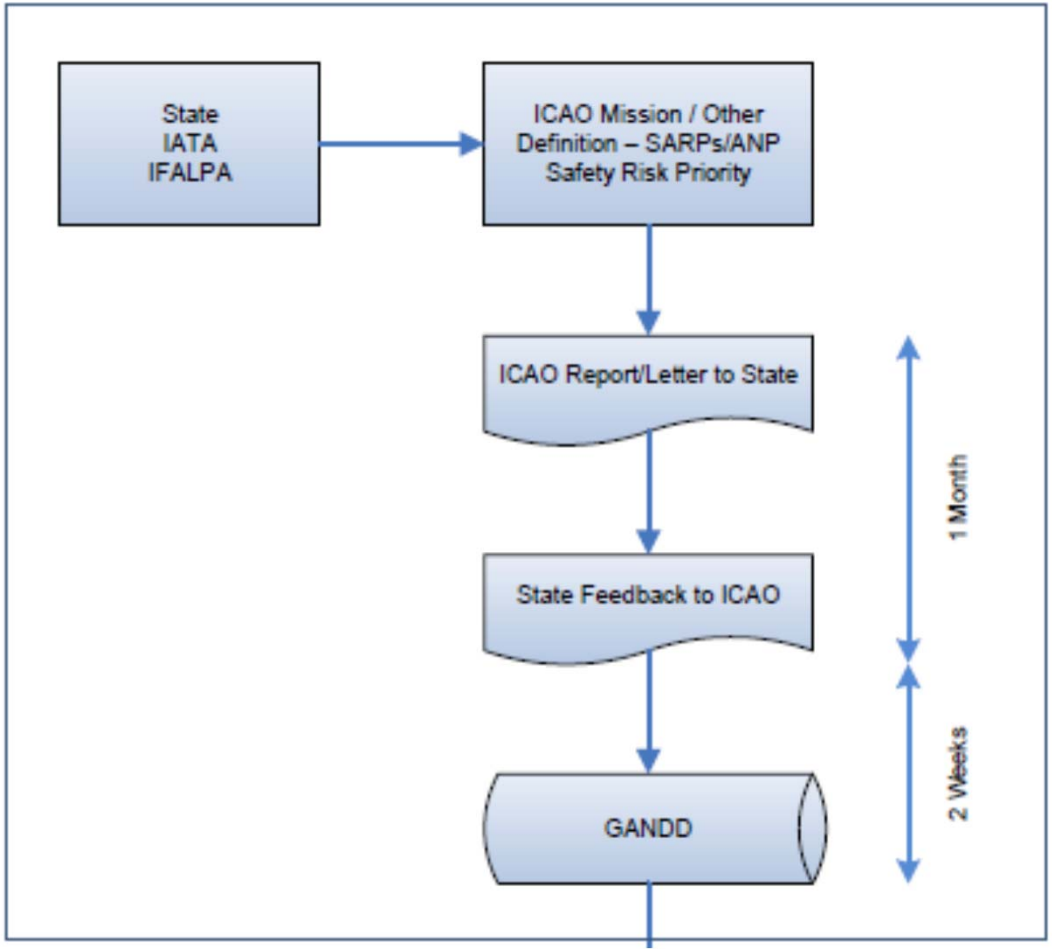
Safety risk management; index/tolerability

Risk management	Assessment risk index	Suggested criteria
	5A, 5B, 5C, 4A, 4B, 3A	Unacceptable under the existing circumstances
	5D, 5E, 4C, 4D, 4E, 3B, 3C, 3D, 2A, 2B, 2C	Acceptable based on risk mitigation. It might require management decision
	3E, 2D, 2E, 1A, 1B ,1C, 1D, 1E	Acceptable

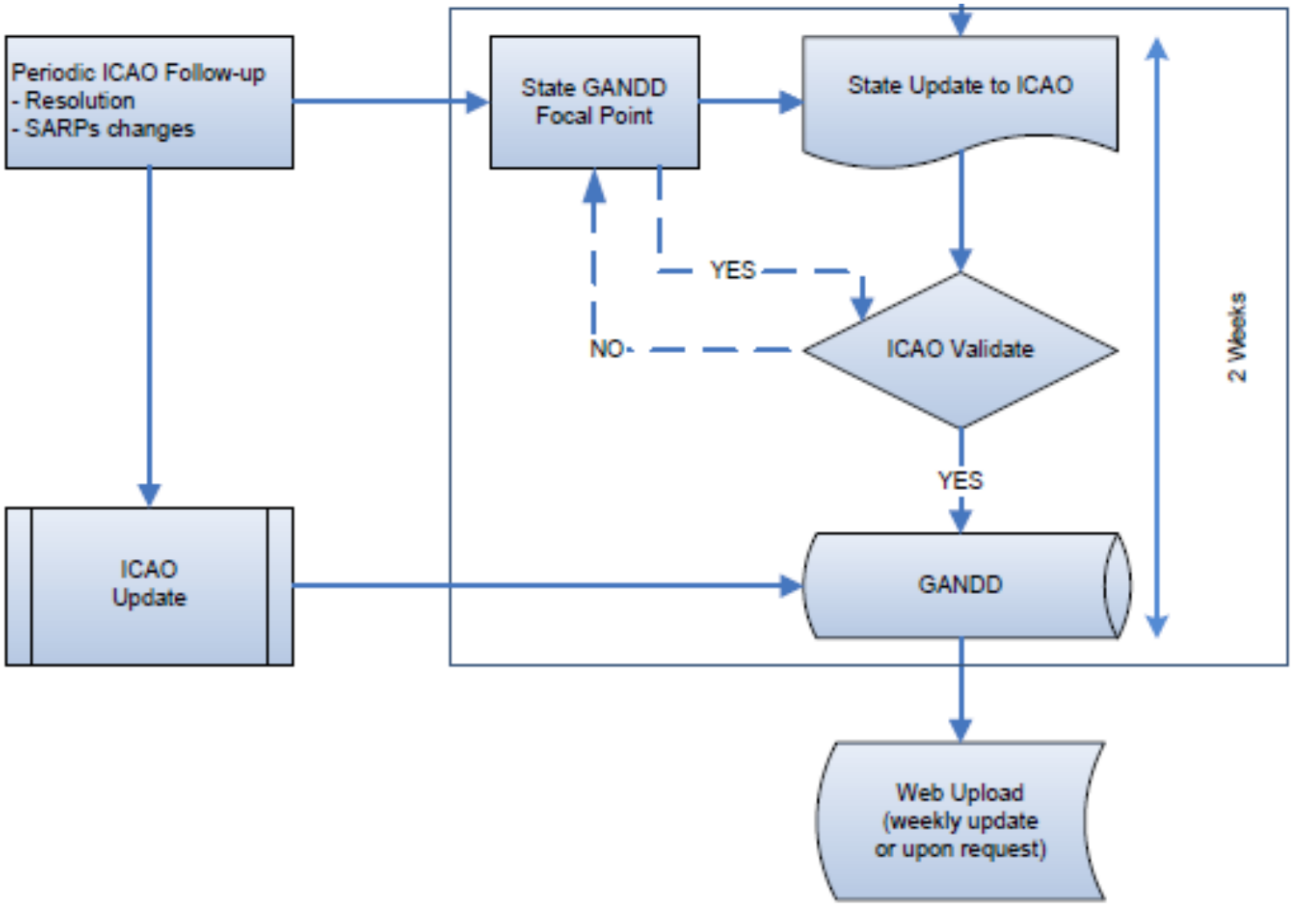
Safety risk management process



ICAO Identification, Assessment and Reporting



State Resolution & Reporting

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