



**RASG-PA/01  
Report**

**INTERNATIONAL CIVIL AVIATION ORGANIZATION  
NORTH AMERICAN CENTRAL AMERICANA AND CARIBBEAN OFFICE**

**FIRST REGIONAL AVIATION SAFETY GROUP –  
PAN AMERICA MEETING**

**(RASG-PA/01)**

**PUNTARENAS, COSTA RICA**

**12 TO 14 NOVEMBER 2008**

**INTERNATIONAL CIVIL AVIATION ORGANIZATION**

**REPORT**

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## **History of the Meeting**

### **ii.1 Place and Duration of the Meeting**

The First Regional Aviation Safety Group – Pan America Meeting (RASG-PA/01) was held at the Double Tree Resort by Hilton, Puntarenas, Costa Rica, from 12 to 14 November 2008, hosted by the Directorate of Civil Aviation of Costa Rica.

### **ii.2 Opening Ceremony and other matters**

Mrs. Loretta Martin, Regional Director of the ICAO North American, Central American and Caribbean (NACC) Regional Office, greeted the participants of the Meeting and highlighted the most important tasks to be addressed as related to regional operational safety in the NAM/CAR/SAM Regions. Hence, Eng. Ricardo Arias Borbón, Deputy Technical Director of the Directorate of Civil Aviation of Costa Rica, welcomed the Meeting to the Republic of Costa Rica and officially inaugurated the Meeting.

### **ii.3 Organization, Officers and Secretariat**

Mrs. Loretta Martin, Regional Director, of the ICAO NACC Office, chaired the Meeting during discussions conducted under Agenda Item 1, and Mr. Oscar Derby, after being elected Chairman of the RASG-PA, chaired the remainder of the Meeting. Mrs. Loretta Martin acted as Secretary of the Meeting and was assisted by Messrs. Jose Miguel Ceppi, Regional Director of the SAM Office, Victor Hernández, Acting Deputy Regional Director, Mitch Fox, Chief, Flight Safety Section of ICAO Headquarters, Alfonso Escobar, Flight Safety Officer, NACC Office and Oscar Quesada, Flight Safety Officer, SAM Office.

### **ii.4 Working Languages**

The working languages of the Meeting were English and Spanish. Meeting documentation and the Report of the Meeting were issued in both languages.

**ii.5            Agenda**

The Meeting reviewed the agenda, which was adopted as follows:

- Agenda Item 1:** RASG-PA Terms of Reference and Organizational Structure
- Review Terms of Reference
  - Election of Chairperson and Vice-Chairpersons
- Agenda Item 2:** GASR - GSI/7 - Consistent Use of Safety Management Systems
- Review results from the Global Aviation Safety Roadmap (GASR) Workshop
  - Safety Statistics/BOEING
  - Pilot SMS Implementation Project on Aircraft Maintenance Organizations of the Regional System on Safety Oversight in Latin America
- Agenda Item 3:** NAM/CAR/SAM Safety
- CASSOS Presentation
  - CAST Presentation
  - EASA Presentation
  - ACSA Presentation
  - SRVSOP Presentation
- Agenda Item 4:** GASR Project Status
- GSI/3 – Effective Error and Incident Reporting - Status of Project 1 – *Effective Flow of Hazard Information*
  - GSI/12 – Use of Technology to Enhance Safety - Status of Project 2 – *Elimination of Gaps in Use of Technology to Enhance Safety*
  - GSI/12 – Use of Technology to Enhance Safety & GSI/2 – Consistent Regulatory Oversight - Status Project 3 – *Pilot Programme for the Development of Operational Oversight Using New Technologies*
- Agenda Item 5:** Project Funding
- Prioritization/Action Plan
- Agenda Item 6:** Other Business

ii.6 **Schedule and Working Methods**

The Meeting held its sessions from 0830 to 1530 hours with two breaks.

ii.7 **Attendance**

The Meeting was attended by 56 delegates from 14 States/Territories of the NAM/CAR/SAM Regions, 8 International Organizations, 4 airlines, 2 airports and 2 manufacturers.

ii.8 **Conclusions and Decisions**

The Regional Aviation Safety Group – Pan America recorded its activities as Conclusions and Decisions as follows:

**CONCLUSIONS:** Activities requiring communication to States/Territories/International Organizations.

**DECISIONS:** Internal activities of the Meetings of Directors of Civil Aviation of North America, Central America and the Caribbean.

ii.9 **List of Conclusions**

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| 1/1        | RECOMMENDATIONS OF THE RASG-PA/01 CONCERNING THE CONSISTENT IMPLEMENTATION OF SAFETY MANAGEMENT SYSTEMS (GSI/7) | 2-1         |
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ii.10 **List of Decisions**

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| 1/2        | SUPPORT TO THE PILOT SMS IMPLEMENTATION PROJECT IN THE AMOs OF THE SRVSOP | 2-3         |

ii.11 **List of Agreed Action Items**

**RASG-PA/01/AI/1**

States required to complete the legislative survey associated with GSI/3 Project 1.

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**LIST OF WORKING PAPERS AND INFORMATION PAPERS**

| <b>WORKING PAPERS</b> |                    |   |             |  |
|-----------------------|--------------------|---|-------------|--|
| <b>Number</b>         | <b>Agenda Item</b> | <b>Title</b>  | <b>Date</b> | <b>Prepared and Presented by</b>       |
| WP/01<br>Rev.         | ---                | Approval of the draft agenda and meeting work schedule  | 05/11/08    | Secretariat                            |
| WP/02                 | 1                  | Review RASG-PA Terms of Reference   | 29/09/08    | Secretariat                            |
| WP/03                 | 1                  | Election of Chairperson, Vice-Chairpersons and Executive Committee of the Regional Aviation Safety Group – Pan America  | 29/09/08    | Secretariat                            |
| WP/04<br>Rev          | 4                  | GSI/12 – Use of Technology to Enhance Safety & GSI/2 – Consistent Regulatory Oversight - Status Project 3 – <i>Pilot Programme for the Development of Operational Oversight Using New Technologies</i>  | 05/11/08    | Secretariat                            |
| WP/05                 | 2                  | Pilot SMS Implementation Project on Aircraft Maintenance Organizations of the Regional System on Safety Oversight in Latin America  | 09/10/08    | Secretariat                            |
| WP/06                 | 4                  | States responses to the Safety Roadmap progress GSI/3 Project 1 from the CAR and SAM Regions  | 14/10/08    | Secretariat                            |
| WP/07<br>Rev          | 4                  | GSI/12 – Use of Technology to Enhance Safety & GSI/2 – Consistent Regulatory Oversight - Status Project 3 – <i>Pilot Programme for the Development of Operational Oversight Using New Technologies</i>  | 24/10/08    | IATA                                   |
| WP/08                 | 5                  | Financing Alternatives and Resource Utilization for the Implementation of the Projects  | 09/10/08    | Secretariat                            |
| WP/09                 | 4                  | GSI/12 – Use of Technology to Enhance Safety & GSI/2 – Consistent Regulatory Oversight - Status Project 3 – <i>Pilot Programme for the Development of Operational Oversight Using New Technologies</i>  | 13/10/08    | ACI/LAC                                |
| WP/10                 | 6                  | ALTA LATAM and Caribbean Safety Enhancement Initiatives   | 13/10/08    | ALTA                                   |
| WP/11                 | 6                  | Regional Approach Towards Implementation of the Global Aviation Safety Plan (GASP)  | 13/10/08    | Secretariat                            |
| NE/12                 | 4                  | Cooperación para el Desarrollo de un Acuerdo de Entendimiento entre Operadores y los Entes Reguladores para el uso de la Tecnología<br>Iniciativa para la eliminación de brechas utilizando la Tecnología para mejorar la seguridad operacional<br><i>(available in Spanish Only)</i> | 13/11/08    | COCESNA/<br>ACSA                       |
| WP/13                 | 2                  | GSI/7 - Consistent Use of Safety Management Systems<br>• Review results from the Global Aviation Safety Roadmap (GASR) Workshop   | 13/11/08    | Rapporteur of<br>the Drafting<br>Group |

| <b>INFORMATION PAPERS</b> |                    |  |             |                                  |
|---------------------------|--------------------|--|-------------|----------------------------------|
| <b>Number</b>             | <b>Agenda Item</b> | <b>Title</b>   | <b>Date</b> | <b>Prepared and Presented by</b> |
| IP/01                     | --                 | General Information  | 22/09/08    | Secretariat                      |
| IP/02<br>Rev.             | --                 | List of Working and Information Papers   | 13/11/08    | Secretariat                      |
| IP/03                     | 2                  | Global Aviation Safety Plan (GASP) Planning process and the Global Aviation Safety Roadmap (GASR) and Global Strategic Objective (SGI/7) | 09/10/08    | Secretariat                      |
| IP/04                     | 3                  | Agreement for the Establishment of an “Association of Civil Aviation Authorities of the Caribbean” (ACAAC)                               | 24/10/08    | RASOS/<br>CASSOS                 |

**Agenda Item 1: RASG-PA Terms of Reference and Organizational Structure**

**Terms of Reference of the Regional Aviation Safety Group Pan-America**

1.1 The Meeting reviewed and approved the Terms of Reference of the Regional Aviation Safety Group – Pan America as presented in **Appendix A** to this part of the Report.

**Election of Chairperson and Vice-Chairpersons**

1.2 The Meeting reviewed the RASG-PA Organizational Structure, which defines the membership of the RASG-PA, the Executive Steering Committee, and the election of the Chairperson and Vice-Chairpersons.

1.3 The Meeting agreed on the RASG-PA Organizational Structure as presented in **Appendix B** to this part of the Report.

1.4 After approving the RASG-PA Organizational Structure, the Meeting elected Mr. Oscar Derby from Jamaica as Chairperson of the RASG-PA, Mr. Carlos Pellegrino from Brazil as First Vice-Chairperson, Mr. Ricardo Arias Borbón from Costa Rica as Second Vice-Chairperson, Mr. Lorenzo Sepulveda from Chile as Third Vice-Chairperson, and Mr. Glenn Michael from United States as Fourth Vice-Chairperson.

## **APPENDIX A**

### **DRAFT TERMS OF REFERENCE OF THE REGIONAL AVIATION SAFETY GROUP (PAN AMERICA)**

#### **Background**

*Quote from Assembly Resolution A36-7 - Global Planning for Safety and Efficiency*

*Resolved* that these global plans [*Global Aviation Safety Plan and Global Air Navigation Plan*] shall provide the framework in which regional, sub-regional and national implementation plans will be developed and implemented thus ensuring harmonization and coordination of efforts aimed at improving international civil aviation safety and efficiency;

*Recognized* the importance of regional and national plans and initiatives based on the global framework for effective implementation;

*Recognized* that further progress in improving global safety and efficiency of civil aviation is best achieved through a cooperative, collaborative and coordinated approach in partnership with all stakeholders under the leadership of ICAO;

*Urged* Contracting States and the industry to apply the Global Aviation Safety Plan and Global Aviation Safety Roadmap principles and objectives and to implement its methodologies in partnership with all concerned stakeholders to reduce the number and rate of aircraft accidents;

#### **Draft Terms of Reference**

The RASG-PA is established to be the focal point to ensure harmonization and coordination of safety efforts aimed at reducing aviation risks in the North American, Central American, Caribbean (NACC), and South American (SAM) Regions and to promote the implementation of resulting safety initiatives by all stakeholders.

This will be achieved through the involvement of all stakeholders including ICAO, States, International Organizations and the industry.

***Short term***

Develop and implement a work programme to continue implementation of the Global Aviation Safety Plan (GASP) and Global Aviation Safety Roadmap (GASR) in the region to ensure implementation of resulting action plans.

***Longer term***

- 1) Using the framework provided by the GASP and GASR, support the establishment and operation of a performance-based safety system for the Pan American region by:
  - a) Ensuring that all safety activities at the regional and sub-regional level are properly coordinated to avoid duplication of efforts;
  - b) Facilitating the sharing of safety information and experiences among all stakeholders from the region;
  - c) In part of the region where such a performance-based safety system does not exist, analyzing the risks to civil aviation at the regional level, develop action plans necessary to mitigate the risks and coordinate and support their implementation; and
  - d) Conducting follow-up activities as required.
- 2) Provide feedback to ICAO and the ISSG to continually improve and ensure an up-to-date global safety framework (GASP and GASR).

## **APPENDIX B**

### ***Organizational Structure***

#### ***RASG-PA Membership***

NAM/CAR/SAM States/Territories.

- For the purpose of electing the Chairperson and Vice-Chairpersons, the CAR region will be divided into sub-regions as English speaking States and Spanish speaking States. Therefore, regions/sub-regions for election of the Chairperson and Vice-Chairpersons are the following:  
(a) NAM (1); (b) CAR-English speaking States (CAR-E) (1); (c) CAR-Spanish speaking States (CAR-S) (1); (d) SAM (2). In total, there will be five regional/sub-regional representatives including the Chairperson.

Chairperson (NAM/CAR-E/CAR-S/SAM State).

- After election of the Chairperson, the Vice-Chairpersons will be selected from the four remaining regions/sub-region(s).

Vice-Chairpersons (4)

ICAO NACC/SAM Directors (1 to serve as Secretary)

ICAO HQ

NAM/CAR/SAM States/Territories

International Organizations

NAM/CAR/SAM Safety Groups

Manufacturers

- ICAO Contracting States from outside the region, other representative organizations, or any entity directly involved in aviation safety may be invited by the RASG-PA to join the group as a full member or observer as decided by RASG-PA.

#### ***Steering Committee***

A Steering Committee composed of representatives from States, International Organizations and industry will be established to guide the work of the RASG-PA and ensure that safety initiatives are discharged in a timely and efficient manner. To that end, the Steering Committee will:

- a) propose the RASG-PA work programme;
- b) coordinate the activities of the RASG-PA and all GASP/GASR safety related initiatives and adjust strategy as necessary;
- c) act as an advisory body to the RASG-PA membership;
- d) provide regular safety environment assessments to the RASG-PA; and
- e) undertake any action required to ensure that the RASG-PA achieves its objective to reduce aviation risks in the NACC and SAM Regions.

***RASG-PA Executive Steering Committee Membership***

RASG-PA Chairperson  
RASG-PA Vice-Chairpersons (4)  
ICAO NACC/SAM Directors  
ICAO HQ Representative  
ISSG Representative  
ACI Representative  
IATA/ALTA Representative(s)  
IFALPA Representative  
IFATCA Representative

**Agenda Item 2: GSI/7 - Consistent Use of Safety Management Systems**

**Review results from the Global Aviation Safety Roadmap (GASR) Workshop**

2.1 Under this agenda item, the Meeting received a summary of the results of the gap analysis conducted during the GSI/7 - GASR Workshop. The Meeting recalled that the Workshop participants had been divided into seven working groups to perform the gap analysis on GSI/7, *Consistent Use of Safety Management Systems*. The groups consisted mostly of regulators, with some industry participation. Facilitators from the Industry Safety Strategy Group (ISSG) and ICAO were assigned to each group to assist in applying the gap analysis methodology.

2.2 Steps 1 through 3 (Select the Region for Analysis; Identify the Key Stakeholders; and Determine the Safety Strengths and Enablers) of the GASP/GASR process had previously been completed during the workshop in Bogotá, Colombia. Consequently, the Workshop began its analysis at Step 4 (Identify the Risks). Steps 4, 5 and 6 of the process were completed during the Workshop. The facilitators of the Workshop then met as a drafting group to summarize the results of the analysis based upon the recommendations of all working groups.

2.3 The drafting group advised the Meeting that, for the most part, they had found that the recommendations were very similar in the way in which they addressed each of the best practices. It was, therefore, a straight forward process to aggregate the recommendations into summary recommendations. The rapporteur of the drafting group also advised the Meeting that some of the recommendations made may not result in projects. Nevertheless, they were considered important enablers and were, therefore, also included in the summary. The maturity level was also analyzed, and the results showed that States and industry in the region(s) were at a low maturity level with implementation of Safety Management Systems (SMS). Indicative priorities were also assigned to each recommendation based upon the results of the Workshop.

2.4 A question was raised whether the analysis on the impact of the recommendations was assessed against the effect on safety or on the implementation of SMS. It was clarified that the impact analysis was conducted relative to the effect on the implementation of SMS. It was further clarified that prioritization was not just based upon the indicative priority, but also resulted from some of the recommendations being prerequisites to the accomplishment of others.

2.5 It was commented that a lack of SMS regulations sometimes results in industry implementing only those items required by regulation in an effort to conserve limited resources. Based upon the above deliberations, the Meeting adopted the following Conclusion:

**CONCLUSION RASG-PA/01/1      RECOMMENDATIONS OF THE RASG-PA/01  
CONCERNING (GSI/7) - THE CONSISTENT  
IMPLEMENTATION OF SAFETY MANAGEMENT  
SYSTEMS**

That:

- a) the RASG-PA/01 forward the recommendations at the **Appendix** to this part of the Report concerning the implementation of Safety Management Systems (SMS) for consideration and prioritization by the RASG-PA Executive Steering Committee; and
- b) the RASG-PA Executive Steering Committee afford the recommendations a high priority, bearing in mind the low level of SMS implementation maturity in the regions, the impending applicability date of the SMS SARPs, and importance of SMS.

**Pilot SMS Implementation Project for Aircraft Maintenance Organizations of the Regional System on Safety Oversight in Latin America**

2.6 Under this agenda item, the Representative from Brazil presented background information on the establishment of the Pilot SMS Implementation Project for Aircraft Maintenance Organizations (AMOs) of the Regional System for Safety Oversight in Latin America.

2.7 The presentation emphasized how this initiative was framed within the objectives of the Global Aviation Safety Plan (GASP) and the Global Aviation Safety Roadmap (GASR), mentioning the benefit of sharing experiences between regions. The Meeting received background information on the development and implementation of the Latin American Aeronautical Regulations for Aircraft Maintenance Organizations (LAR 145) and the development of its third edition that includes the ICAO regulatory framework on SMS, which will be used as a model for implementation of the pilot SMS implementation project for Aircraft Maintenance Organizations (AMOs). The Meeting was informed that this model incorporates the concept of phased implementation of SMS.

2.8 The Meeting noted that the following AMOs agreed to be part of the pilot implementation project:

- ✓ *AEROMAN (El Salvador)*
- ✓ *ATSA (Perú)*
- ✓ *COOPESA (Costa Rica)*
- ✓ *DIGEX (Brasil)*
- ✓ *LAN (Chile)*
- ✓ *SEMAN (Perú)*
- ✓ *El Peregrino (Perú)*

2.9 The Meeting was informed that Transport Canada had offered advisory support for the pilot implementation project along with training for inspectors, sharing of experiences, lessons learned and identification of improvement opportunities.

2.10 The Meeting was also informed that the initial steps taken by the Airworthiness Expert Panel of the SRVSOP for the implementation of SMS have already identified issues with the following topics, which are expected to be clarified by the pilot implementation project:

- adapting SMS into current management systems;
- effects on emergency response plans;
- effects of implementation of SMS on aircraft components maintenance organizations; and
- effects of SMS implementation on very small AMOs.

2.11 The Meeting noted that SMS implementation might be challenging for both States and industry. Phased implementation of SMS provided an opportunity to allow regulators and industry to make the necessary changes to their management systems in a timely manner.

2.12 The Meeting noted that by working together with industry on the implementation of SMS, lessons learned could be incorporated into the standards and guidance material, allowing for a better understanding of SMS and easing implementation.

2.13 The Meeting concluded that the pilot SMS implementation project and the assistance provided by Transport Canada were good examples of GASR best practices implementation and agreed to the following Decision:

**DECISION RASG-PA/01/2**

**SUPPORT TO THE PILOT SMS IMPLEMENTATION  
PROJECT IN THE AMOs OF THE SRVSOP**

That, taking into consideration the best practices of the Global Aviation Safety Roadmap, RASG-PA supports the pilot SMS implementation project for Aircraft Maintenance Organizations of the Regional Safety Oversight System.

2.14 The Representative from AIRBUS Industries offered to sponsor SMS implementation seminars in support of GSI/7.



**International Civil Aviation Organizational  
Global Aviation Safety Roadmap (GASR) Workshop**  
(Puntarenas, Costa Rica 11 November 2008)

**Global Safety Initiative 7 – CONSISTENT USE OF SAFETY  
MANAGEMENT SYSTEMS (SMS)**

| Acciones recomendadas<br>Recommended Actions   | Impacto<br>Impact | Esfuerzo requerido<br>Changeability | IF | Prioridad<br>Priority |
|--|-------------------|-------------------------------------|----|-----------------------|
| Using the ICAO framework that RSOOs develop Model Regulations and guidance material to support the implementation of SSPs in States and SMS for service providers, within Pan-American Region.   | High              | Considerable                        | P3 | 1                     |
| Utilizando el marco normativo de la OACI que los RSOO desarrollen reglamentación modelo y material de orientación, para apoyar a los Estados panamericanos en la implementación del SSP y a los proveedores de servicio en la implementación del SMS | Alto              | Considerable                        | P3 | 1                     |
| That RSOO establish a self sustaining capability to train all required personnel in the components and implementation aspects of the SSP and SMS.  | High              | Medium                              | P2 | 2                     |
| Que los RSOOs desarrollen su propia capacidad para entrenar todo el personal que sea requerido en los componentes y los aspectos de implementación del SSP y el SMS  | Alto              | Mediana                             | P2 | 2                     |



*International Civil Aviation Organization*  
**Global Aviation Safety Roadmap (GASR) Workshop**  
(Puntarenas, Costa Rica 11 November 2008)

**Global Safety Initiative 7 – CONSISTENT USE OF SAFETY  
MANAGEMENT SYSTEMS (SMS)**

| Acciones recomendadas<br>Recommended Actions  | Impacto<br>Impact | Esfuerzo requerido<br>Changeability | IF | Prioridad<br>Priority |
|---|-------------------|-------------------------------------|----|-----------------------|
| When service providers implement SMS, States should evaluate how these systems may interact with the State's Civil Laws and take appropriate action.  | High              | Hard                                | P3 | 3                     |
| Durante la implementación de SMS por parte de los proveedores de servicio, los Estados deberían evaluar cómo interactúan esos requerimientos con las leyes civiles del Estado y tomar las acciones que sean necesarias. | Alto              | Difícil                             | P3 | 3                     |
| That States leverage the support to implement and maintain SSPs and SMS through RSOOs.  | High              | Little                              | P1 | 4                     |
| Que los Estados tomen ventaja del apoyo de RSOOs para implementar SSPs y SMS.   | Alto              | Poco                                | P1 | 4                     |



**International Civil Aviation Organizational  
 Global Aviation Safety Roadmap (GASR) Workshop**  
 (Puntarenas, Costa Rica 11 November 2008)

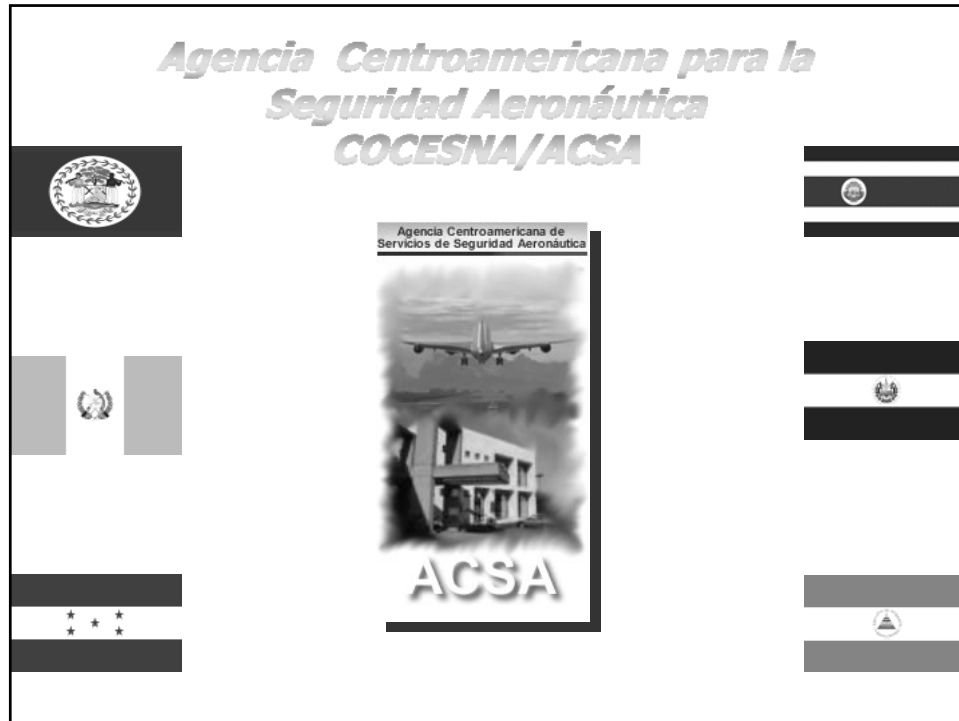
**Global Safety Initiative 7 – CONSISTENT USE OF SAFETY  
 MANAGEMENT SYSTEMS (SMS)**

| Acciones recomendadas<br>Recommended Actions   | Impacto<br>Impact | Esfuerzo requerido<br>Changeability | IF | Prioridad<br>Priority |
|--|-------------------|-------------------------------------|----|-----------------------|
| That RSOOs encourage and assist States to conduct self evaluations using audit protocols.                          | Moderate          | Moderate                            | P5 | 5                     |
| Que las RSOOs alienten y asistan a los Estados para que realicen auto evaluaciones usando protocolos de auditoría. | Moderado          | Moderado                            | P5 | 5                     |

**Agenda Item 3:                    NAM/CAR/SAM Safety**

3.1                    Under this agenda item, the Meeting was informed on the work of various regional safety groups involved in the NAM/CAR/SAM Region(s). The presentations made by the following safety groups are included as appendixes to this part of the Report.

- ACSA Presentation (**Appendix A**)
- CASSOS Presentation (**Appendix B**)
- CAST Presentation (**Appendix C**)
- EASA Presentation (**Appendix D**)
- SRVSOP Presentation (**Appendix E**)



## *ACSA'S BACKGROUND*

### **COCESNA**

**1960**

- ✓ Central American Integration System
- ✓ A joint answer to aviation technological advances
- ✓ Equipment purchase and renewal
  
- ✓ Provision of air navigation services

## *ACSA'S BACKGROUND*

### **SAFETY**

**1999**

- ✓ International Community Concern
- ✓ FAA IASA program
- ✓ Loss of FAA category 1 by Central American Countries
- ✓ Incompliance with ICAO International Standards
- ✓ Increasing regional industry

### *Foundation:*

*Agencia Centroamericana para la Seguridad Aeronáutica (Central American Safety Agency)*

**2000**

- ✓FUNCTIONS:
- ✓ Operator certification
- ✓ Assistance to States in preparing for FAA Technical Reviews
- ✓ Training
- ✓ Surveillance
- ✓ Safety focused on ICAO Annexes 1, 6 and 8

## *ACSA'S DEVELOPMENT*

1. Safety focused on all ICAO Annexes
2. Strengthening of regional systems
3. Corporate quality assurance system

2004

**Support** COCESNA Member States and other interested parties in **complying, in a harmonized and standardized way,** with International Standards and Recommended Practices

- Assistance to States
- Surveillance
- Training
- Development of a Regional Regularity Framework

## *Strategic Objectives*

- ✓ Regional Aeronautical Development
- ✓ Safety Services
- ✓ Security Assistance

## *Main Functions*

### **Regulation and Procedure Development Program**

- Development and update of regulations and guidance material

### **Regulation and Procedure Implementation Program**

- Assistance
- Surveillance & Certification
- Training
- Checking

### **Safety Culture Strengthening Program**

- Seminars
- Activities

### **International Scope Program**

- Attendance and participation in seminars
- Fostering of meeting with international organizations
- Cooperation projects

## *ACSA's Safety Project*

### **Central American Strategic Safety Initiative**

#### Objectives:

- 1.Create a Safety Roadmap for Central America
- 2.Create two groups of experts constituted by members of the Authorities in the region
- 3.Implement a SMS program harmonized for the Central American region using the GASP and the GASR as guidance.
- 4.Promote safety through seminars
- 5.Create a regional commission for the investigation of accidents and serious incidents in the Central American region

**2007- 2008**

*ACSA's Safety Project*  
**Central American Strategic Safety Initiative**

Objectives:

6. Develop MRAC 13 (Civil Aviation Regulation) for its adoption in compliance with ICAO Annex 13

7. Develop a manual including procedures and checklists for accident investigators

**2007- 2008**

8. Evaluate the database system for the investigation of accidents and serious incidents to be implemented in the region and verify that it is compatible with SMS database

9. Assess the possibility of constituting a regional Go-team to provide support to the States in the investigation of accidents and serious incidents

*ACSA's Safety Project*

**Progress of the Central American Strategic Safety Initiative**

**•Implementation of a harmonized SMS for the Central American region**

1. Development of a SMS implementation guide for service providers

**2007- 2008**

2. A Safety seminar in San José, Costa Rica on April 2008. Different organizations such as FAA, ICAO, IATA, MITRE and representatives of operators and Authorities in the region attended the seminar.

3. A Safety Dissemination Seminar in all Central American States. The seminar was addressed to operators and aviation authorities

## **Progress of the Central American Strategic Safety Initiative**

### **ICAO Accident and Incident Prevention Divisional Meeting**

One of the topics to be discussed in this meeting was:

#### **2008 “Regional Cooperation in Accident and Incident Investigations”**

**SUBJECT 6: REGIONAL COOPERATION IN ACCIDENT AND INCIDENT  
INVESTIGATIONS**

For the investigation of major accidents in States which do not have the resources to carry out the investigation, other interested States (e.g. the State of Manufacture) will usually help and provide assistance to the State of Occurrence. However, some States also lack the capability to investigate minor accidents and serious incidents. Thus, the meeting will discuss the development of regional investigation bodies to carry out investigations on behalf of participating States.

## **Central American Proposal**

**“The initiative of promoting a pilot plan to evaluate, create and implement a Regional Commission for the investigation of accidents and serious incidents in regional aviation was proposed to ICAO in the accident and incident prevention divisional meeting (2008). This meeting was held in Montreal from October 13 to October 18 2008. The meeting results are described as follows”**

AIG/08-WP/77  
(Draft)

Report on Agenda Item 6

6-1

**Agenda Item 6: Regional Cooperation in Accident and Incident Investigations**

6.1.4 A presentation was given about the actions taken by the Central American States (COCESNA States) to strengthen investigation and prevention systems in the region, and about the project to create a regional commission for the investigation of aircraft accidents and incidents in the Central American region.

**Abstract of 6.2.2** Regarding the project under consideration in the Central American region, the AIG/08 Meeting unanimously supported the creation of a Central American commission for the investigation of aircraft accidents and serious incidents. One regional organization invited the Central American States to its headquarters and offered to share its experience with these States and other interested States.

## *ACSA's Commitment with International Community*

**2008**

- ✓Provide continuous follow-up to all actions recommended by the RASG-PA on the global aviation safety roadmap
- ✓Receive the approval of the RASG-PA to be the organization, at a regional level, in charge of **closing gaps regarding the use of technology in order to improve safety (GSI-12)**
- ✓Promote the development of a Regional Plan for the Implementation of new technology
- ✓Establish a Memorandum of Understanding (MOU) between the operator and the Authority to use the technology they have. The purpose of doing this is to strengthen surveillance using information collected from databases and devote efforts to optimize resources focused on safety and productivity.

***THANK  
YOU!***

***Agencia Centroamericana para  
la Seguridad Aeronáutica  
COCESNA/ACSA***

# ACAAC-RASOS becomes CASSOS

A Safety Oversight Success Story:  
Now Aimed at Partnership in  
Multi-National Technical Safety  
Improvement Initiatives

## CASSOS Initiatives

- RNAV Operations Standards and Procedures
- RNP Applications, Standards and Procedures
- Safety Enhancements and Accident Reduction
- ECCAIRS Safety Reporting
- Safety Initiatives

## CASSOS Initiatives

### ■ RNAV

- Standards, Guidance Material, to be harmonized, aim for hemispherical standard, possibly global
- Fleet survey and database
- En-route airspace rules, hinterland development
- Route designations, benefit cost studies
- Air Traffic considerations, Obstacle clearance
- ADS potential
- Encouraging use of RNAV, closing obsolete systems
- Education of Industry, encouragement of retrofits
- 5, 10, 20 year planning ATC, COM, ANS, AIS, REGS

## CASSOS Initiatives

### ■ RNP

- Fleet surveys
- Standards and Guidance, harmonized, hemispherical, possibly global
- Airspace, Obstacle clearance WGS 84 database
- Air Traffic Control Systems and Training
- Industry training
- Regulator training
- Certification Issues
- 5, 10, 20 year transition planning

## CASSOS Safety Initiatives

- Analysis of ECCAIRS data
- Recommendations to be made from ECCAIRS databases regarding:
  - Air Carrier occurrences
  - GA occurrences
  - Human Factors occurrences
  - TCAS/ACAS occurrences
  - ALAR/CFIT occurrences
  - Mechanical occurrences
  - Other occurrences

## CASSOS Safety Initiatives

- TRAINING OF INDUSTRY
  - Mandatory ALAR/CFIT training
  - Mandatory Human Factors Training
  - Operational Security Training
  - Restructuring basic training courses to integrated model
  - Unapproved parts training
  - Safety Management Training
  - Risk management training
  - Use of Web based communications and training

## CASSOS Safety Initiatives

- CASSOS encourages setting safety goals
- CASSOS may assist with investigation, reporting and analysis (ECCAIRS analysis)
- CASSOS encourages FOQA
- CASSOS encourages LOSA
- CASSOS encourages Members to aim for ISO 9001-2000 CAA certification
- CASSOS encourages SMS and Risk Management implementation by all certificate or approval holders (AOC, AMO, ATS, CNS, AIS, MET)

CASSOS Brief to ICAO First RASG  
Meeting 10-14 Nov 2008

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## CASSOS Safety Initiatives

- CASSOS Regional SMS Manual developed
- CASSOS Regional Risk Management Manual developed
- CASSOS will continue to encourage and facilitate safety management and risk management training for all inspectors and managers
- CASSOS will encourage adoption of integrated flight training programs for all flight crew licenses and ratings
- CASSOS may facilitate barrier free access for Specialty Air Services (all aerial work and flight training): new rules and recognition of common certification standards ties in with open skies and single market concepts.

CASSOS Brief to ICAO First RASG  
Meeting 10-14 Nov 2008

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## CASSOS Safety Initiatives

- Members require AOC holders to have SMS and QA
- Members require certified airports to have SMS
- Members may require CNS/ATM/AIS/MET to have SMS and QA

## CASSOS Initiatives

- SAFETY REPORTING
  - Members occurrence data bases will be readable by CASSOS
  - Common databases: ECCAIRS, CASORTS
  - Analysis and Recommendations to CASSOS Board will be the basis for directed safety initiatives in region
  - ICAO has conducted ECCAIRS training in region with 6 of 7 RASOS Members completing the course
  - Two Members already using ECCAIRS, others starting to enter data, one still requires training.
  - All Members to be using CASORTS by 2009.

# THANK YOU

Presented for CASSOS by

Captain Gregory Fox

RASOS Coordinator

4 Winchester Road

Kingston, Jamaica

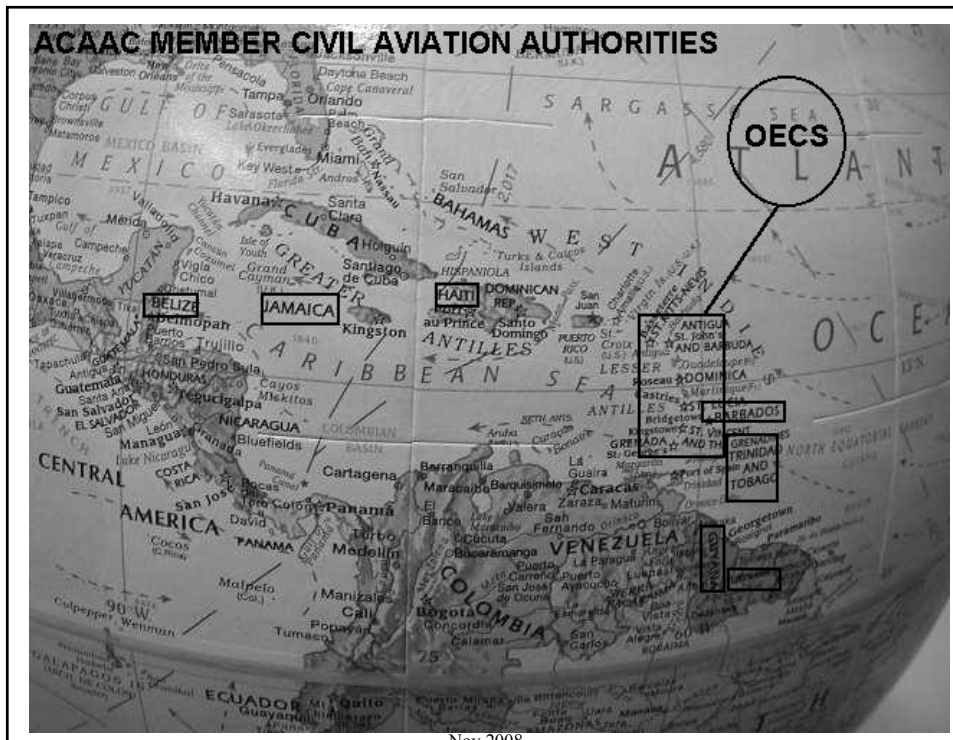
Office 876-060-4364

Fax 876-929-4532

# REGIONAL AVIATION SAFETY OVERSIGHT SYSTEM

RASOS BECOMES CASSOS

# CARIBBEAN AVIATION SAFETY AND SECURITY OVERSIGHT SYSTEM



## Status of RASOS Members Move into CASSOS

- **Barbados-done**
- **Belize (active with ACSA)**
- **Guyana-done**
- **Haiti-in process**
- **Jamaica-in process**
- **OECS-done**
- **Suriname-in process**
- **Trinidad and Tobago-done**

CASSOS Developments Briefing for  
ICAO First RASG Meeting 10-14  
Nov 2008

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## CASSOS SAFETY Workload

- 275+ aircraft including 60 transport category (747, 320, 321, 319, 738, MD80, DHC8, 340)
- 4 international air transport airlines, 4 commuter & 40 air taxi companies
- 25 approved maintenance organizations
- 30 foreign repair stations
- 2000+ licensed personnel
- 30+ foreign operators
- 60+ airline stations
- Approved Training Organizations

CASSOS Developments Briefing for  
ICAO First RASG Meeting 10-14  
Nov 2008

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## CASSOS Safety Workload

- 20 Control Towers
- 9 Terminal Control Units
- 5 Area Control Centers and FIRS
- 7 AIS Units
- 10 VOR most with DME, 5 ILS some with DME
- 15 NDB
- Several RNAV transitions, STARS, approaches and SIDS
- 4 Area Radar 4 Terminal Radar
- Multiple Communications and MET units
- Five ATC training schools

CASSOS Developments Briefing for  
ICAO First RASG Meeting 10-14  
Nov 2008

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## CASSOS Technical Resources

- 7 CAA organizations for 13 States
- 7 licensing officers
- 32 aviation safety inspectors (14 Ops, 16 AW, 2 Cabin Safety/Dangerous Goods)
- 7 Aerodrome inspectors, 7 Security inspectors, Three ANS Inspectors
- CASSOS Staff (Coordinator OPS Asst Coordinator AW)
- Trans national inspectorate comes from above resources
- Donor state technical experts

CASSOS Developments Briefing for  
ICAO First RASG Meeting 10-14  
Nov 2008

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## CASSOS Developments

- Inaugural Board Meeting to be held in next few weeks.
- Budget and administrative rules being determined.
- Member contribution mechanism being formalized
- Sustainable funding for past 6.5 years as RASOS.
- Interim Office in Jamaica already.
- Web Site [www.rasos.org](http://www.rasos.org) will become CASSOS website name TBA
- More permanent staffing being examined.
- Records and filing system already in place.
- Permanent office location to be decided.

## CASSOS Developments

- Common inspector technical qualification and skill record template developed.
- Template for inspection and surveillance work planning developed.
- Matrix of member authority inspectors qualifications and skills developed and provided to members.
- Cadre of trans national inspectors designated

## CASSOS Developments

### **-rules harmonized to MCAR model**

- **harmonized personnel licensing system (80% completed)**
- **common written examinations (95% completed)**
- **aerodrome certification**
- **common flight test standards (95% completed)**
- **common inspection forms**
- **central aircraft register database**
- **central audit groups (air operator, security)**
- **central incident and accident investigation group**
- **common foreign operator and repair station approvals**
- **RASOS WEBSITE**

CASSOS Developments Briefing for  
ICAO First RASG Meeting 10-14  
Nov 2008

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## CASSOS Developments

### **• Technical Cooperation & Progress**

- **Suriname CASAS (achieved Category One 2003)**
- **Trinidad and Tobago CAA (Category One 2005)**
- **Jamaica CAA (achieved Category One 1997, 2005)**
- **Barbados DCA (preparing for ICAO & IASA compliance)**
- **Haiti (preparing for ICAO & IASA compliance)**
- **Guyana CAA (preparing for ICAO & IASA compliance)**
- **OECS DCA ( Category One 2006)**
- **Trans national inspections and cooperation**

CASSOS Developments Briefing for  
ICAO First RASG Meeting 10-14  
Nov 2008

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## CASSOS Developments

- Heads of State Agreement renamed RASOS as CASSOS and designated CASSOS as a CARICOM Institution
- CASSOS- Caribbean Aviation Safety and Security Oversight System

## CASSOS Development

- Continue to seek donor funding especially for ongoing training and technical development assistance for CASSOS.
- Possibility for future widening of CASSOS membership.
- Focus shifted to all 18 ICAO Annexes

## CASSOS Developments

- Upcoming work:
  - continue with working groups, evolve to become CARICOM Institution
  - formation of additional standing committees for all ICAO Annexes
  - investigate regional security projects
  - complete regional inspection and surveillance and certification work plan, review CAAs
  - continue to develop regional human resources through training, promote regional model
  - continue WEBSITE enhancements

CASSOS Developments Briefing for  
ICAO First RASG Meeting 10-14  
Nov 2008

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## Thank You.

Presented by Captain Gregory Fox, RASOS Coordinator

ACAAC: Regional Safety Oversight System

4 Winchester Road

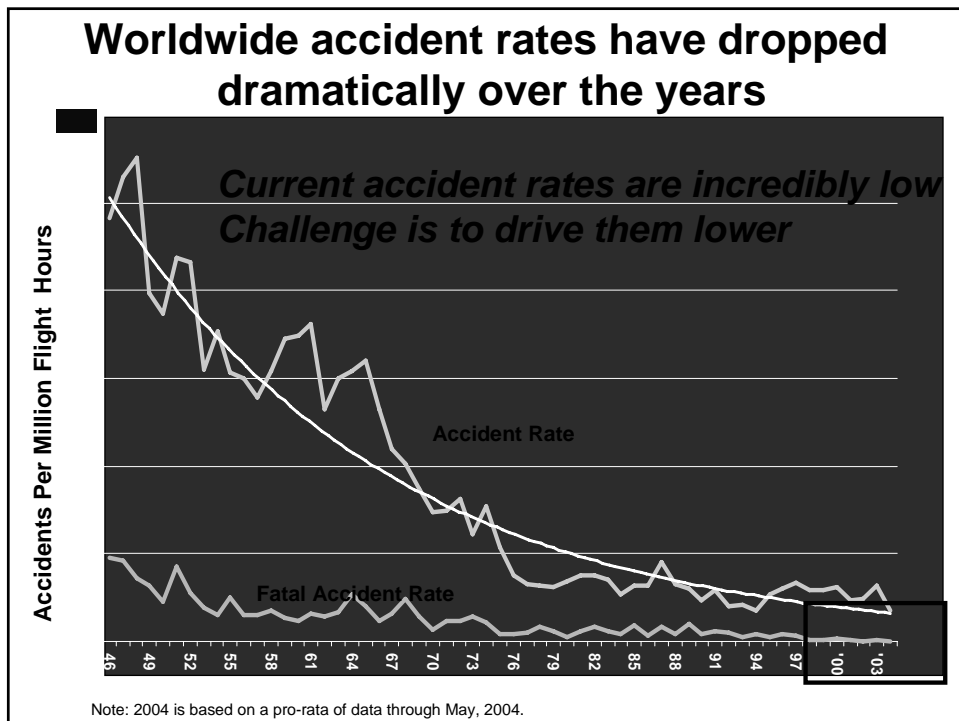
Kingston 10, Jamaica

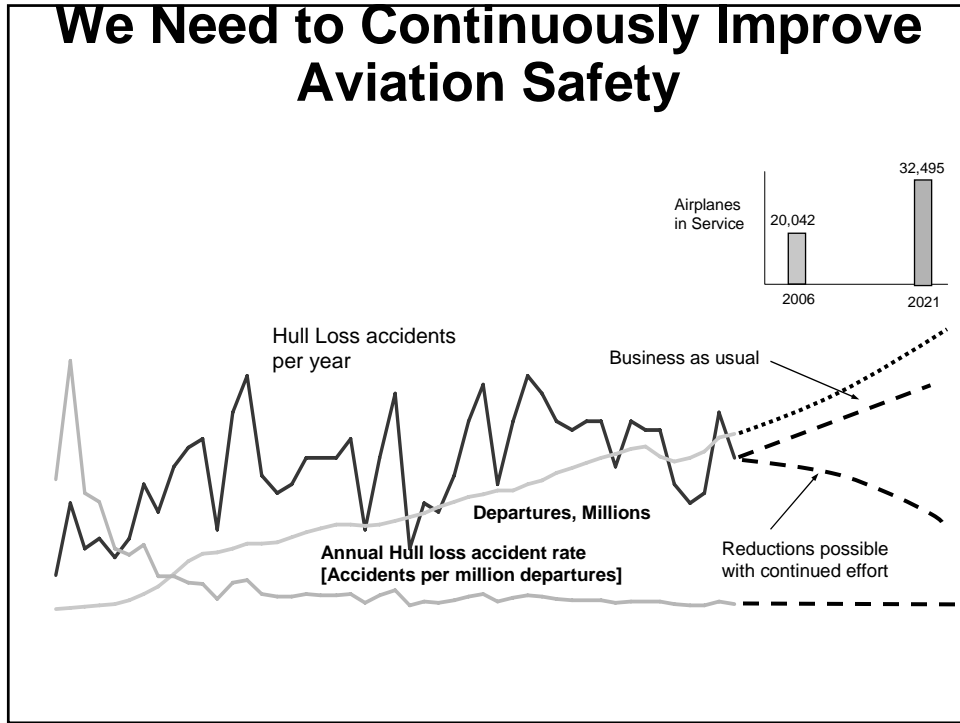
Tel. 1-876-960-4364

Fax 1-876-929-4532

[coordinator@rasos.org](mailto:coordinator@rasos.org)

[www.rasos.org](http://www.rasos.org)





## Vision - Mission - Goals

### Vision

- Key aviation stakeholders acting cooperatively to lead the world-wide aviation community to the highest levels of global commercial aviation safety by focusing on the right things.

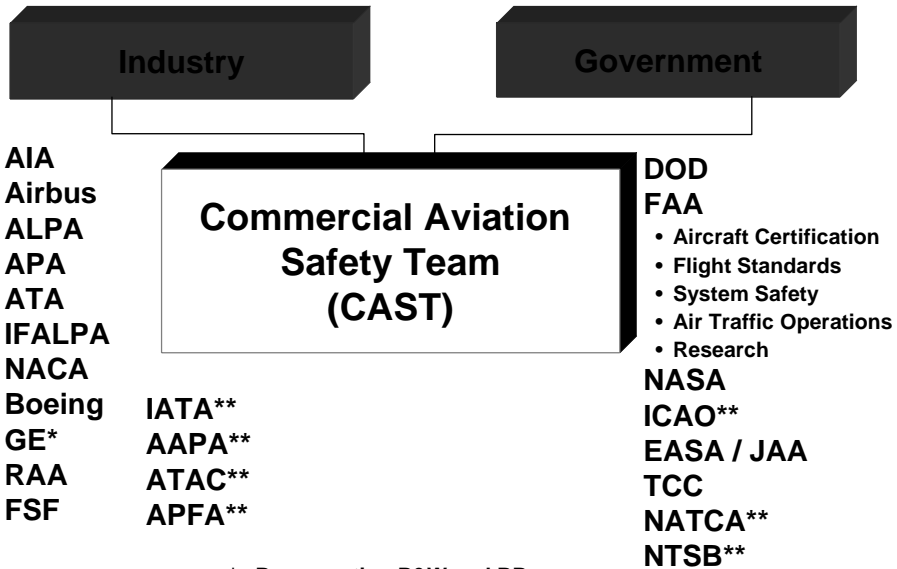
### Mission

- Enable a continuous improvement framework built on monitoring the effectiveness of implemented actions and modifying actions to achieve the goal.

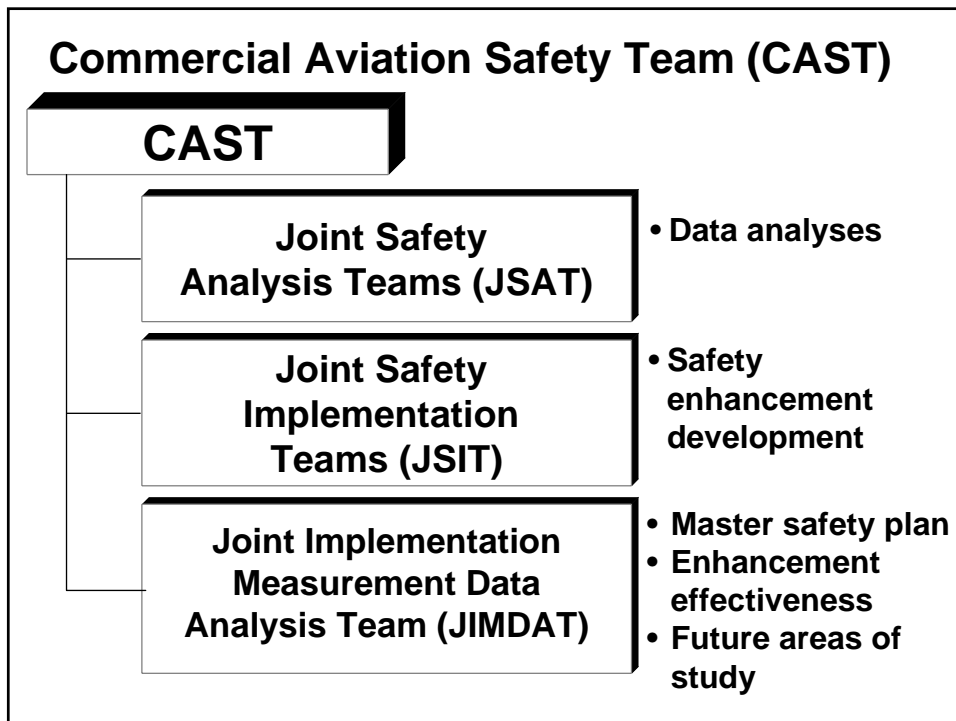
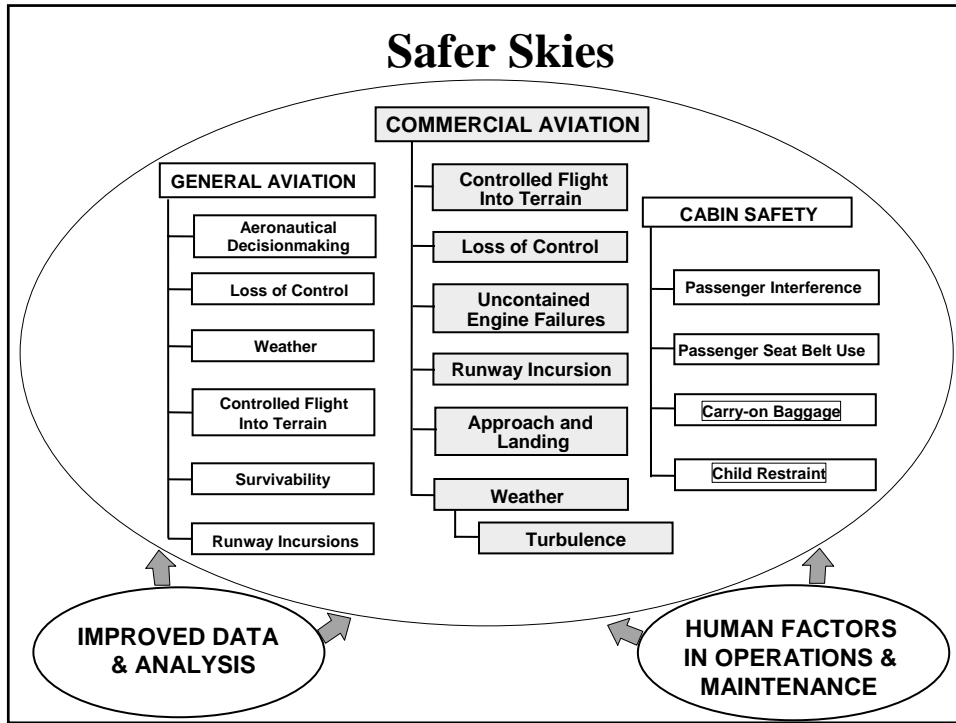
### Goal

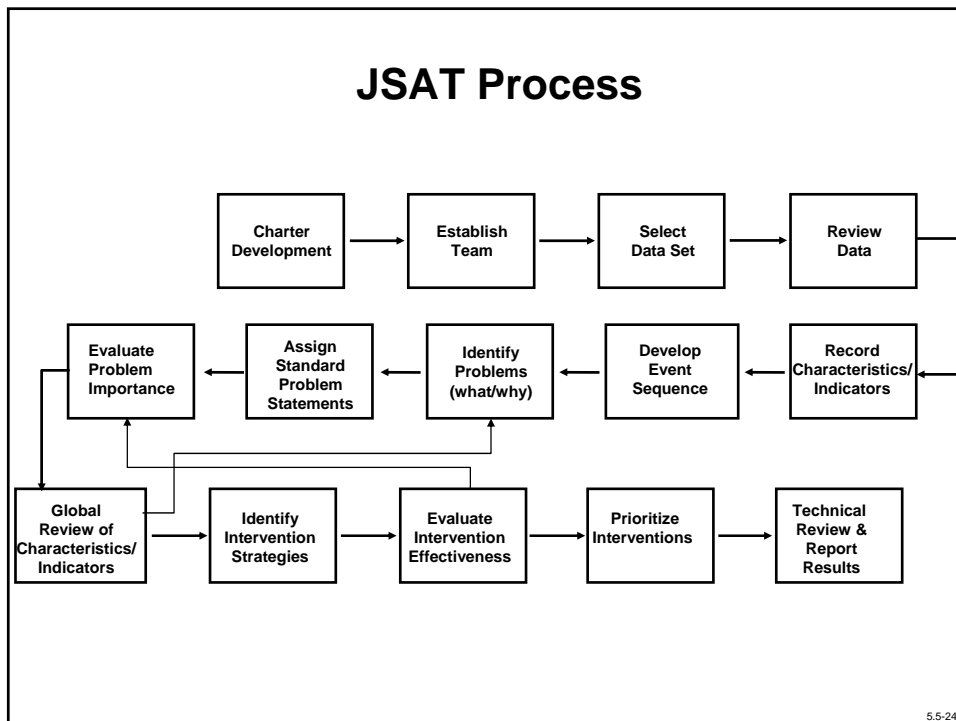
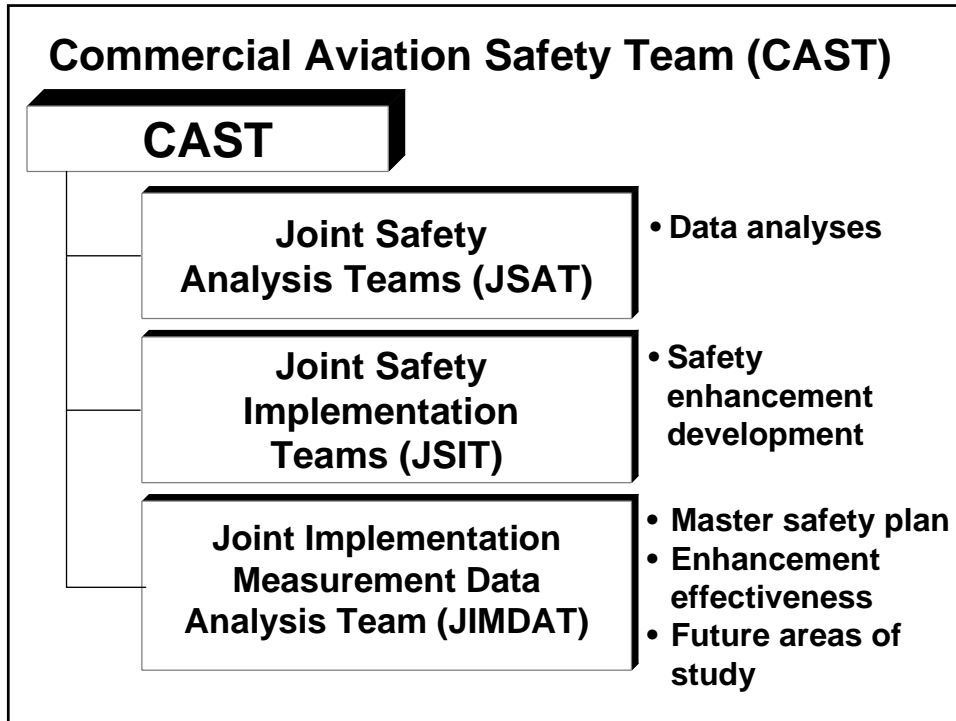
- Reduce the US commercial aviation fatal accident rate 80% by 2007.
- And
- Maintain a continuous reduction in fatality risk in US and International commercial aviation beyond 2007.

**CAST brings key stakeholders to cooperatively develop & implement a prioritized safety agenda**



\* Representing P&W and RR  
 \*\* Observer





## Sample Standard Problem Statements

- 10 FLIGHTCREW – Failure of flight crew to follow established procedures (SOP)
  
- 39 AIRCRAFT EQUIPMENT – DESIGN NOT ERROR TOLERANT System design does not provide adequate redundancy to counteract errors or alerting of the effects of errors.
  
- 44 FLIGHTCREW – Flight crew failure to recognize and correct unstable approach.
  
- 100 REGULATORS – INSUFFICIENT AIR CARRIER OVERSIGHT . Insufficient regulatory oversight of air carrier operations including management and training practices.

## Identify Intervention Strategies

- **Intervention strategies**
  - Suggested solutions
  - Things to do to prevent or mitigate the problem
  - Etc.

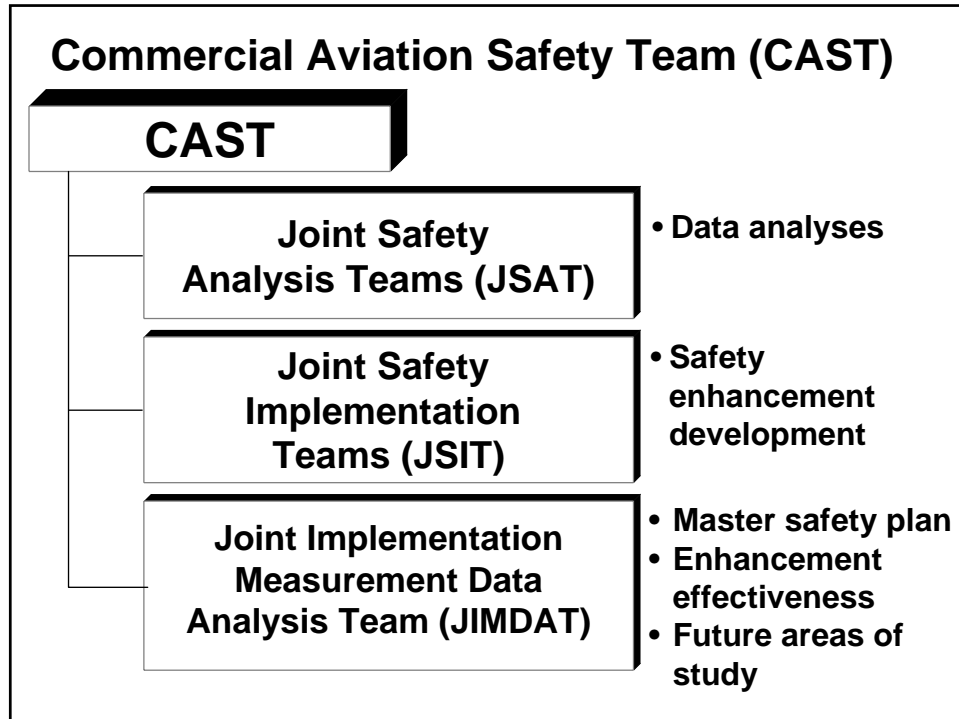
| # | Time     | Event/Data Point  | Problem (What)  | Contributing Factors (Why)  | Standard Problem Statement   | P <sub>1</sub> | A |
|---|----------|---|---|---|--|----------------|---|
| 1 | 8:53:00  | Aircraft took off from Taipei Intl  |   |   |  |                |   |
| 2 | 10:45:00 | F/O briefed CAPT on approach into   |   |   |  |                |   |
| 3 | 10:49:00 | Capt gave very basic guidance to the F/O on aircraft control during approach and landing. | F/O was inexperienced; his actions were not commensurate with 1034 hours in type. | It is not normal practice at China Airlines for Capt and F/O to rotate takeoffs and landings. The FO is required to fly aircraft "in t/o and landing phases at least 3 times every 3 months" (3-28) (airline culture) | 20 AIRLINE OPERATIONS - LACK OF TRAINING (FLIGHTCREW)  | 3              | 5 |
|   |          |   |   |   | 414 Airline operations – training failed to adequately develop FIRST OFFICER piloting skills. (SPS-20) | 4              | 3 |

## **Intervention Effectiveness**

- **POWER**
  - Effectiveness of a specific intervention in reducing the likelihood that a specific accident would have occurred (“Perfect World”)
- **CONFIDENCE**
  - Confidence that this specific intervention will have the desired effect
- **FUTURE GLOBAL APPLICABILITY**
  - How well the intervention can be extrapolated to apply to a world-wide fleet in the future

## **JSAT Reports**

- **Standard Problem Statements**
- **Interventions Prioritized**
- **Recommendations**



## JSIT Feasibility Scales

- **Technical**
- **Financial**
- **Operational**
- **Schedule**
- **Regulatory**
- **Sociological** (political)

## **JSIT Safety Enhancement**

- **Develop Safety Enhancements from Interventions**
- **Collect detailed resource information**
- **Prepared Detailed Implementation Plans (DIP's)**

## **Commercial Aviation Safety Team (CAST)**

### **CAST**

**Joint Safety  
Analysis Teams (JSAT)**

- Data analyses

**Joint Safety  
Implementation  
Teams (JSIT)**

- Safety enhancement development

**Joint Implementation  
Measurement Data  
Analysis Team (JIMDAT)**

- Master safety plan
- Enhancement effectiveness
- Future areas of study

## General Methodology for Calculating the Potential Benefit of a Safety Enhancing Intervention

$$\text{Accident Risk Reduction} = f \left( \begin{array}{l} \text{Effectiveness} \\ \text{that an intervention} \\ \text{has for reducing the} \\ \text{accident rate if} \\ \text{incorporated} \end{array} , \begin{array}{l} \text{Portion of} \\ \text{world fleet} \\ \text{with intervention} \\ \text{implemented} \end{array} \right)$$

## Basics of the Selection Spreadsheet

- **Effectiveness**

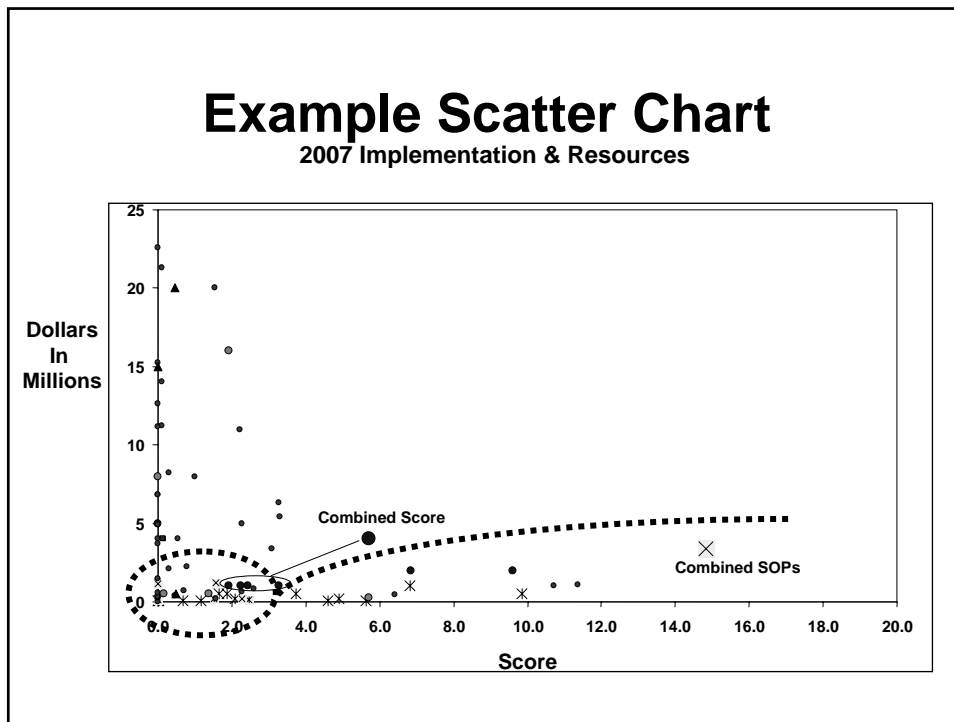
How effective the enhancement would be at eliminating the conditions if the enhancement were put in place.

- **Implementation**

By a future date what portion of the affected population has the enhancement incorporated or predicted to be incorporated.

- **Severity Weighting**

To account for differences in severity or significance of the undesired conditions.



## CAST Safety Plan

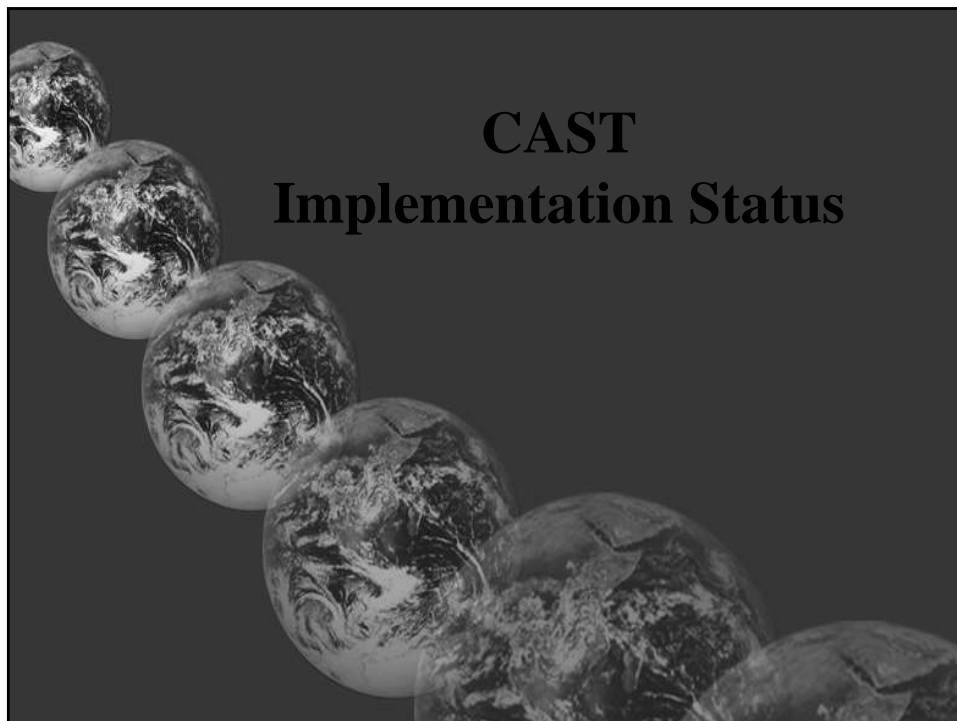
### 47 Completed Safety Enhancements

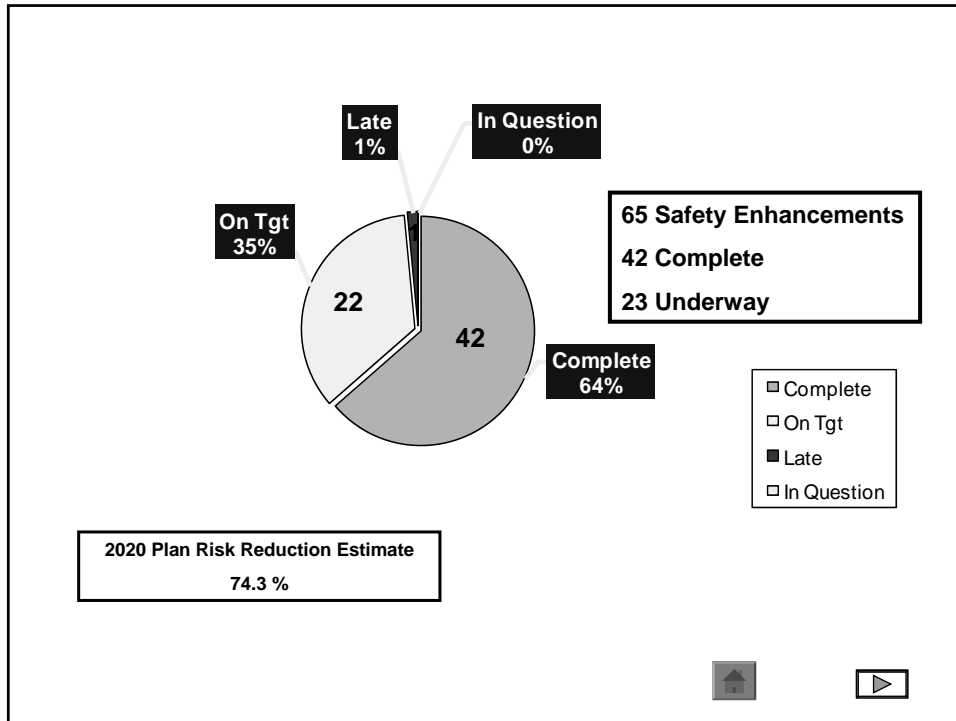
- Safety Culture
- Maintenance Procedures
- Flight Crew Training
- Air Traffic Controller Training
- Uncontained Engine Failures
- Terrain avoidance warning system (TAWS)
- Standard Operating Procedures
- Precision Approaches
- Minimum Safe Altitude Warning (MSAW) Systems
- Proactive Safety Programs (FOQA + ASAP)

## **CAST Safety Plan (cont.)**

### **23 Committed Safety Enhancements**

- **Policies and Procedures**
- **Aircraft Design**
- **Flight Crew Training (additional aspects)**
- **Runway Incursion Prevention**
- **Precision Approaches (additional projects)**
- **Icing (additional turboprop projects)**
- **Midair**
- **Maintenance**
- **Cargo safety culture, policies and procedures**
- **Runway Safety**



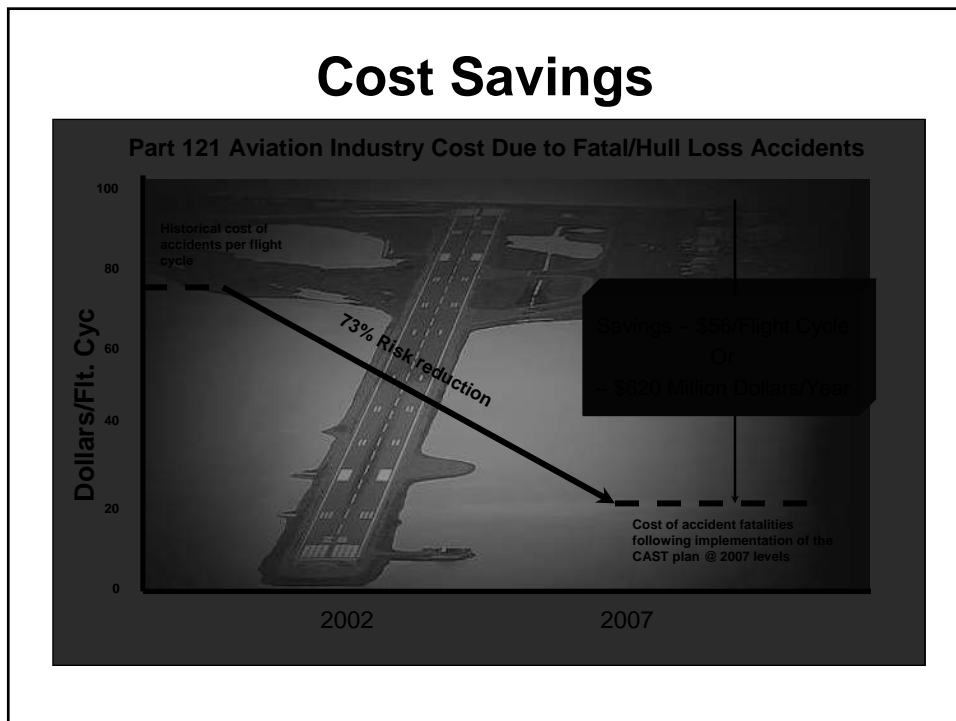
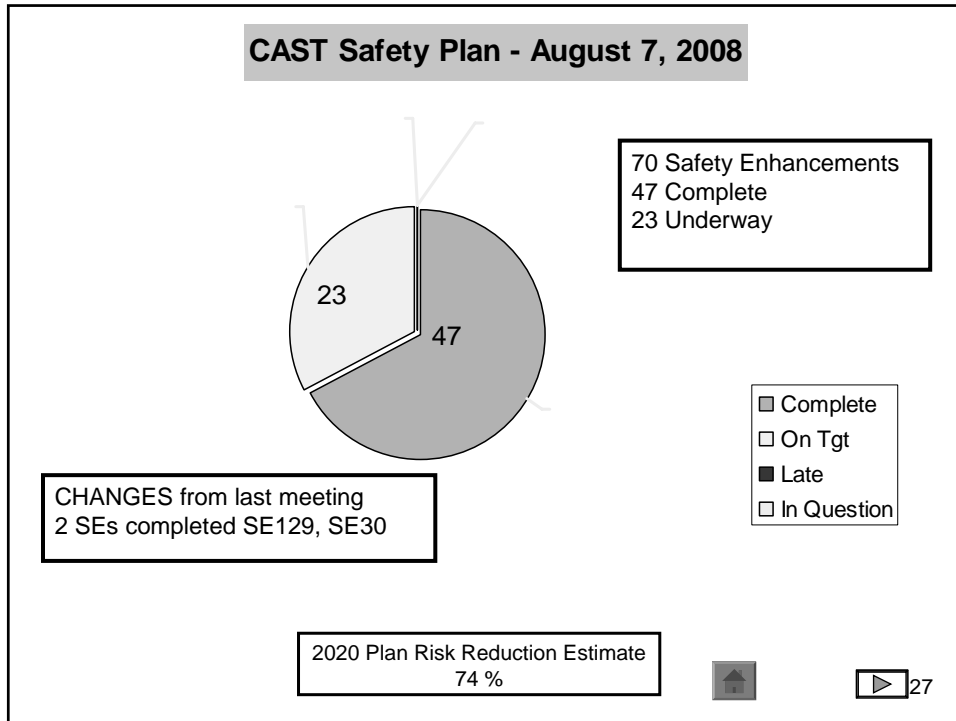


| 2020 CAST SAFETY PLAN – WORKING SEs            |                             |                             |                           |                           |                           |                            |
|--|-----------------------------|-----------------------------|---------------------------|---------------------------|---------------------------|----------------------------|
| (Total Plan – 65 SE; 42 Complete; 23 Underway) |                             |                             |                           |                           |                           |                            |
| <u>24R2</u><br>2.4<br>AIR-1                    | <u>30R1</u><br>0.7<br>ATA   | <u>34R1</u><br>1.5<br>ANM   | <u>39</u><br>4.0<br>ANM   | <u>47</u><br>1.2<br>ATO   | <u>53</u><br>4.2<br>ARA   | <u>120</u><br>0<br>AIA     |
| <u>101R1</u><br>0.10<br>AIA                    | <u>121</u><br>3.02<br>ATA   | <u>125</u><br>1.06<br>ATA   | <u>127</u><br>0.3<br>AIR  | <u>129</u><br>1.72<br>AGC | <u>130</u><br>6.39<br>AFS | <u>131</u><br>30.35<br>ATA |
| <u>133R1</u><br>2.73<br>AIA                    | <u>134R1</u><br>1.73<br>AIA | <u>136</u><br>0.98<br>ATA   | <u>159</u><br>0.27<br>ATO | <u>162</u><br>0.0<br>AFS  | <u>163</u><br>0.39<br>ATA | <u>165</u><br>0.0<br>AFS   |
| <u>169</u><br>2.34<br>AFS                      | <u>170</u><br>0.42<br>AIA   | <u>172R1</u><br>0.97<br>AFS | <u>175</u><br>0.0<br>ATA  |                           |                           |                            |

NOT APPROVED   
  ON TRACK   
  IN QUESTION   
  LATE   
  LOOSEC

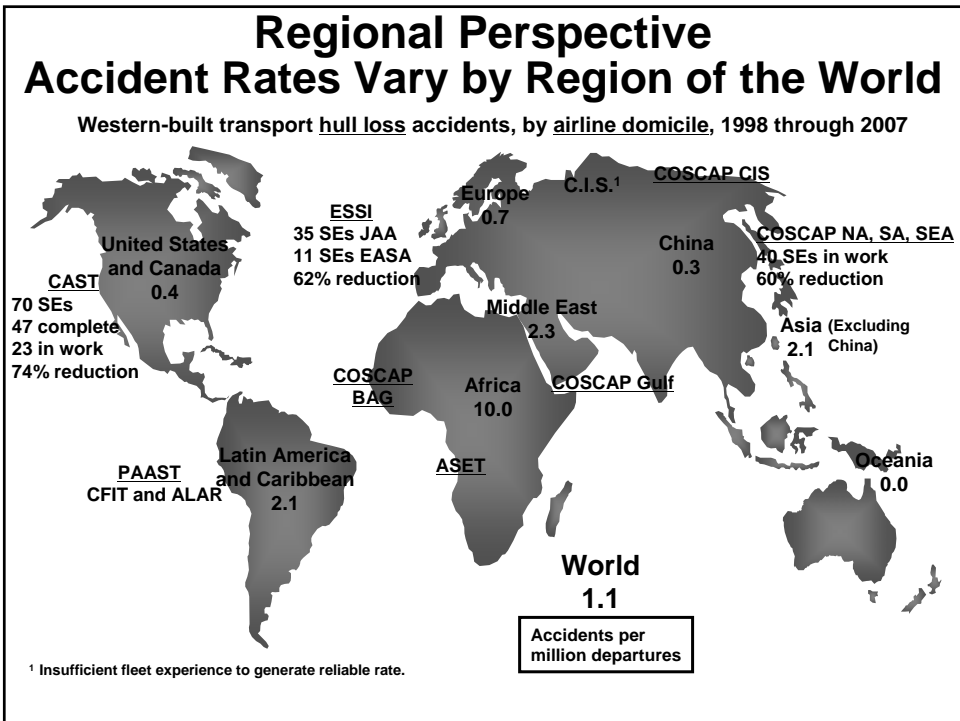
SE #  
Score

JIMDAT Score/2020 implementation level



## CAST Links to International Safety Activities

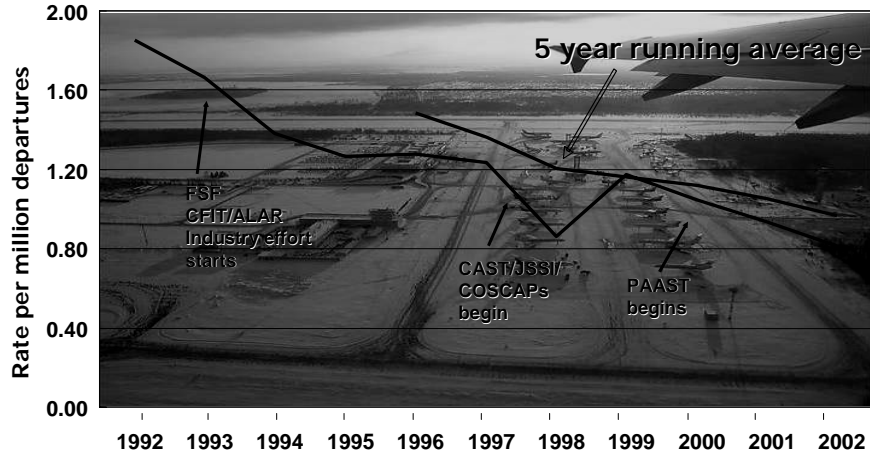
- ICAO
  - COSCAP (**C**ooperative **O**perational **S**afety and **C**ontinuing **A**irworthiness)
- Europe
  - ESSI: European Strategic Safety Initiative
- Central and South America
  - PAAST: Pan American Aviation Safety Team
- Africa
  - African Safety Enhancement Team (ASET)
- Asia/Pacific
  - Association of Asia Pacific Airlines
- North America
  - NAFTA: North American Free Trade Association
- Others



## Cooperative efforts are bringing accident rate down

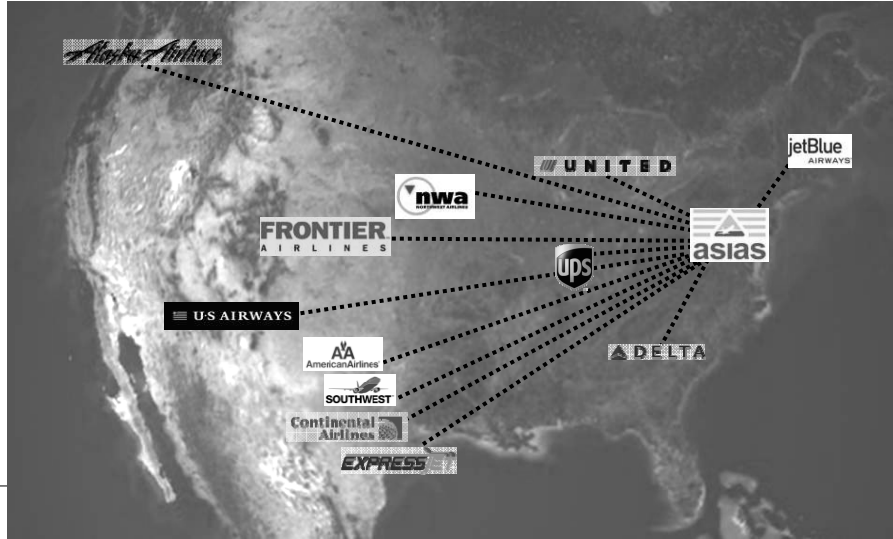
### Hull Loss Accident Rate

Worldwide Commercial Jets (>60,000 lbs, non-CIS) Through 31 December 2002





### Signed MOUs



Distribution limited to CAST only

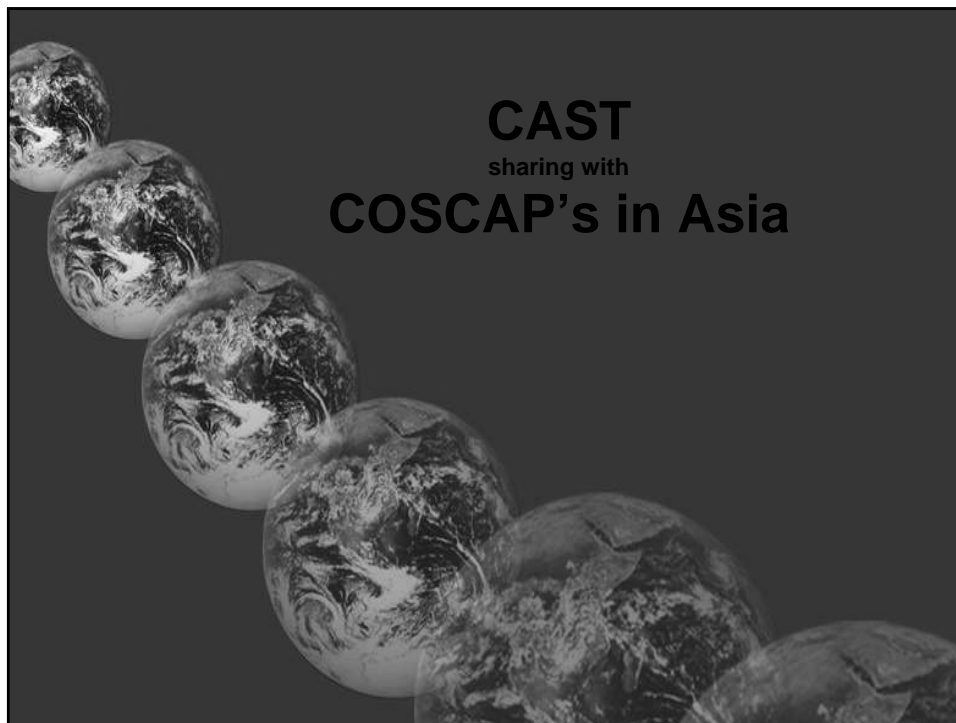
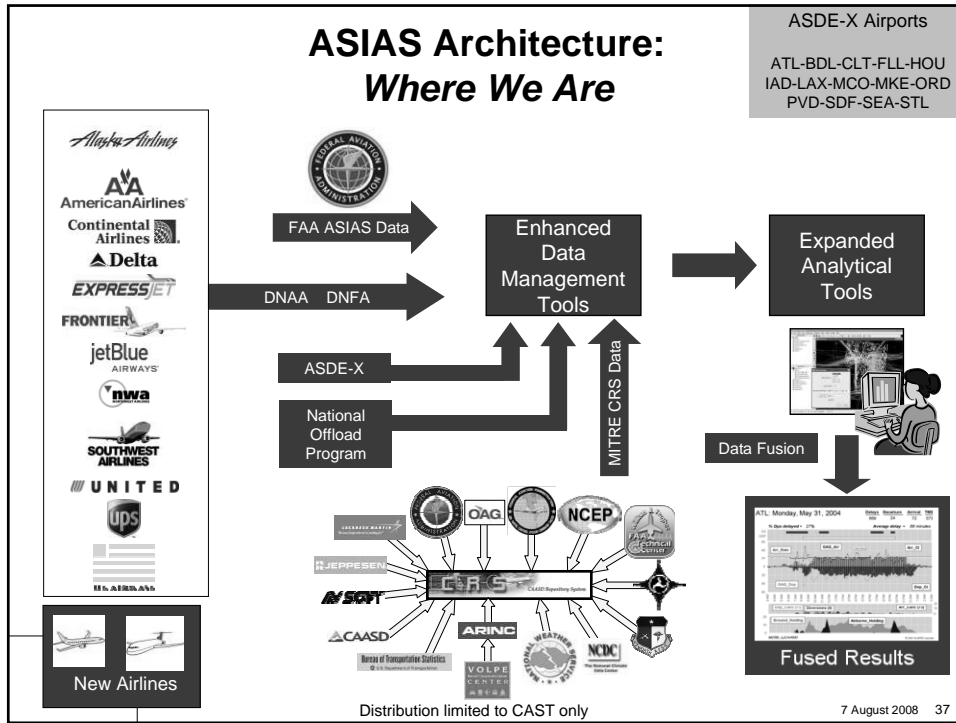
7 August 2008 35

### Regional Airlines Outreach



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7 August 2008 36



## COSCAP-SOUTH EAST ASIA AND GLOBAL AVIATION SAFETY ROADMAP

### COSCAP History

- COSCAP-South East Asia has been working on safety issues for the last seven years.
- South East Asia Regional Aviation Safety Team (SEARAST):
  - reviews safety recommendations,
  - develops interventions,
  - tracks implementation.
- Focused primarily on improving safety by reducing accident risk.

## Global Aviation Safety Roadmap (GASR)

- Proactive approach to aviation safety
- Help coordinate and guide safety policies
- 12 Focus Areas established
  - 4 Focused on States (government)
  - 1 Joint regional responsibilities
  - 8 Focused on industry (operators)
- The Focus Areas are high level
  - Accident risk reduction not defined or identified
- Best Practices identified for each Focus

## 12 Global Safety Initiatives

- The strategic action plan, 'Implementation the Global Aviation Safety Roadmap' defines:
  - Focus Areas.
  - Objective of each Focus Area.
  - Best Practices for each Focus Area.
  - Metrics for each Best Practices.

## Metrics

- In many instances the metrics link with:
  - ICAO USOAP audit results used when related to States.
  - IATA ISOA audit results used when related to industry.
  - ICAO Annexes, SARPS, Documents, etc.
  
- Prior Roadmap Workshops have developed an implementation tool.

## Example from Focus Area 1, International Standards

Best Practices, Metrics and Implementation

| Table 1a –Best Practices  | Metrics  | Implementation  |
|---|--|---|
| BP 1a-2 – States takes all necessary action to ensure compliance with SARPs and industry best practice.   |  |   |
| a. The State enacts enabling legislation which facilitates the creation and modification of a regulatory scheme giving SARPs the force of law.  | a. USOAP LEG 1.001; LEG 1.005; LEG 1.009; ORG 2.009  | <input type="checkbox"/> Complete<br><input type="checkbox"/> Somewhat          |
| b. State processes include an evaluation of their own compliance with SARPs.  | b. USOAP OPS 4.003; 4.005; AGA 8.003   | <input type="checkbox"/> Little/None<br><input type="checkbox"/> Not Applicable |
| c. State implements USOAP recommendations.  | c. ICAO Doc. 9735, Chapter 6   |   |
| d. State secures necessary financial, human and technical resources to develop, update and implement regulations meant to enforce SARPS and to implement industry best practices. Resources are drawn as necessary from national, regional and international sources. | d. USOAP ORG 2.051; ORG 2.053  | Analysis:   |
| e. ICAO assistance activities are aligned with the Global Aviation Safety Plan (GASP) and the <i>Global Aviation Safety Roadmap</i> .   | e. Percentage of assistance activities that can be linked to best practices or focus area - Results of assistance activities are assessed against metrics and other available benchmarks |   |
| f. State publishes notice of non compliance to all affected entities and notifies ICAO in accordance with Article 38 of the Convention until such time as the SARP is complied with.  | f. Difference are notified to ICAO –Significant differences are listed in the State’s AIP – USOAP LEG 1.025  |   |

Example from Focus Area 9, Inconsistent Adoption of Industry Best Practices  
 Best Practices, Metrics and Implementation

| Table 9a – Best Practices  | Metrics   | Implementation  |
|--|---|---|
| <p>BP 9a-1 – The organization creates and maintains an organizational structure that facilitates adoption of industry Best Practice within the organization.</p> <p>a. The organization designates a specific individual within the organization or within each operating unit with responsibility for researching and disseminating existing best practice for that unit’s activities. That individual is able to recommend specific points for adoption and has follow up responsibilities to ensure implementation of safely critical items.</p> <p>b. The organization adopts “Just Culture” principles to ensure that implementation of best practices are appropriate to the individual organization. These principles encourage an open dialog across all levels of the management structure to optimize information flow both up and down the chain.</p> <p>c. The organization vests in line managers the ability to take action to implement safety best practices.</p> <p>d. Best Practice is independent of any cultural issues. Where cultural issues are presented, steps are taken to resolve them consistent with international best practice.</p> | <p>a. IOSA ORG 1.3.3; 1.4.2; 1.7.7; 2.2.3</p> <p>b. IOSA ORG 1.2.3; 1.5.1; 2.1.1; 3.2.6</p> <p>c. IOSA ORG 3.2.4; 3.1.1</p> <p>d. IOSA ORG 1.1.1; 1.5.1</p> | <p><input type="checkbox"/> Complete</p> <p><input type="checkbox"/> Somewhat</p> <p><input type="checkbox"/> Little/None</p> <p><input type="checkbox"/> Not Applicable</p> <p>Analysis:</p> |

Example from Focus Area 5, Inconsistent Coordination of Regional Programs  
 Best Practices, Metrics and Implementation

| Table 5b – Best Practices   | Metrics   | Implementation  |
|---|---|---|
| <p>BP 5b-1 – Regional safety groups use qualitative and quantitative risk assessment techniques to determine levels of risk.</p> <p>a. Risk assessments and development and prioritization of safety enhancements to address those risks developed by national and regional groups such as CAST, ESSI, and COSCAPs North Asia (NA), South Asia (SA), and Southeast Asia (SEA) are shared worldwide.</p> | <p>a. Risk assessment techniques are adopted by regional safety groups worldwide.</p> | <p><input type="checkbox"/> Complete</p> <p><input type="checkbox"/> Somewhat</p> <p><input type="checkbox"/> Little/None</p> <p><input type="checkbox"/> Not Applicable</p> <p>Analysis:</p> |

## Evaluation

- Prior to a GASR Workshop, the Programme Coordinator working with the SEARAST should evaluate the Focus Areas, Objectives and Metrics to identify possible duplication and gaps within the Region.

## Benefits of an Evaluation

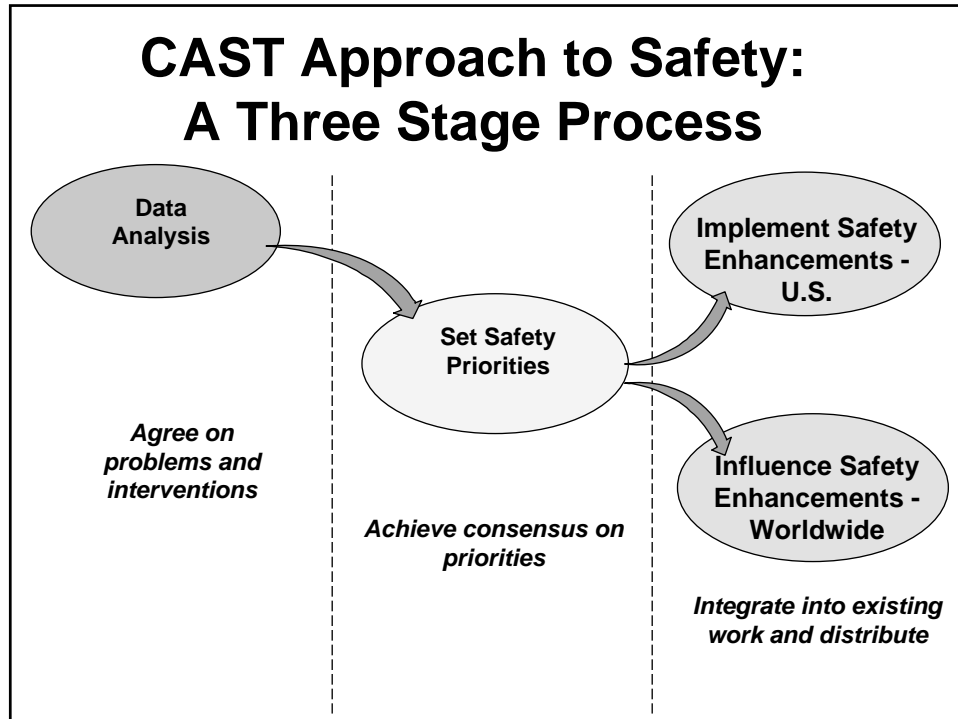
- Help maintain perspective between:
  - Current Safety Team activity,
  - USOAP audit results and actions,
  - IOSA audit results and actions, and
  - GASR Focus Areas
- Help to focus on priorities reducing risk
- Identify and avoid duplication
  - Ongoing activity and efforts
  - Teams

## Possible Duplication

- USOAP Programme, DP3
- SEARAST recommendations, actions and implementation, DP5
- Safety Management Systems (SMS), DP6
- Incident and Accident Investigation
- Creation of an additional safety team

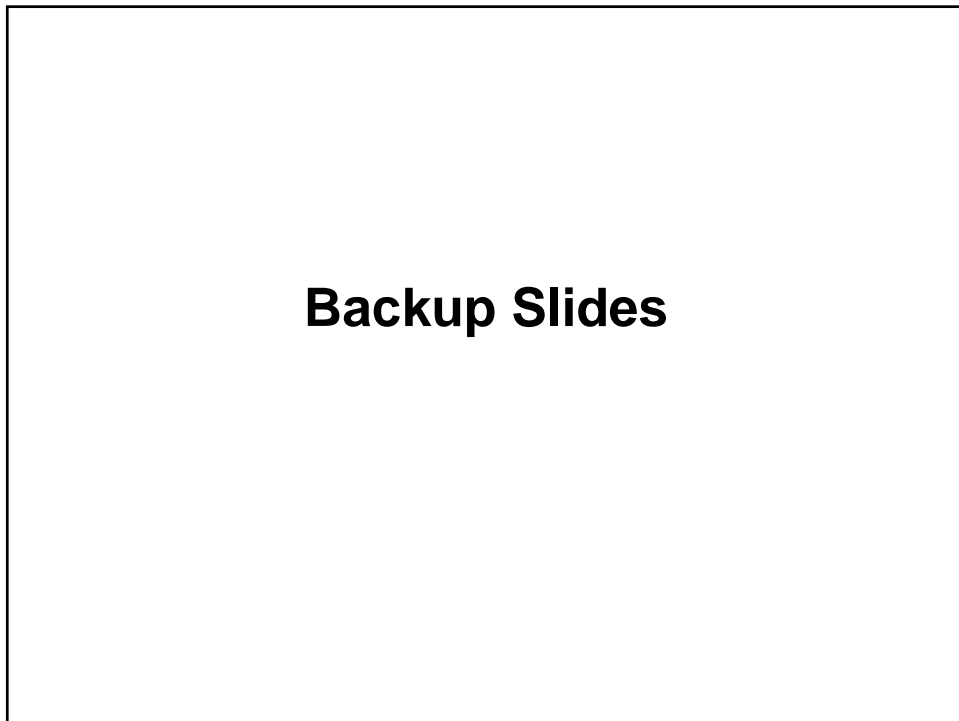
## In South East Asia

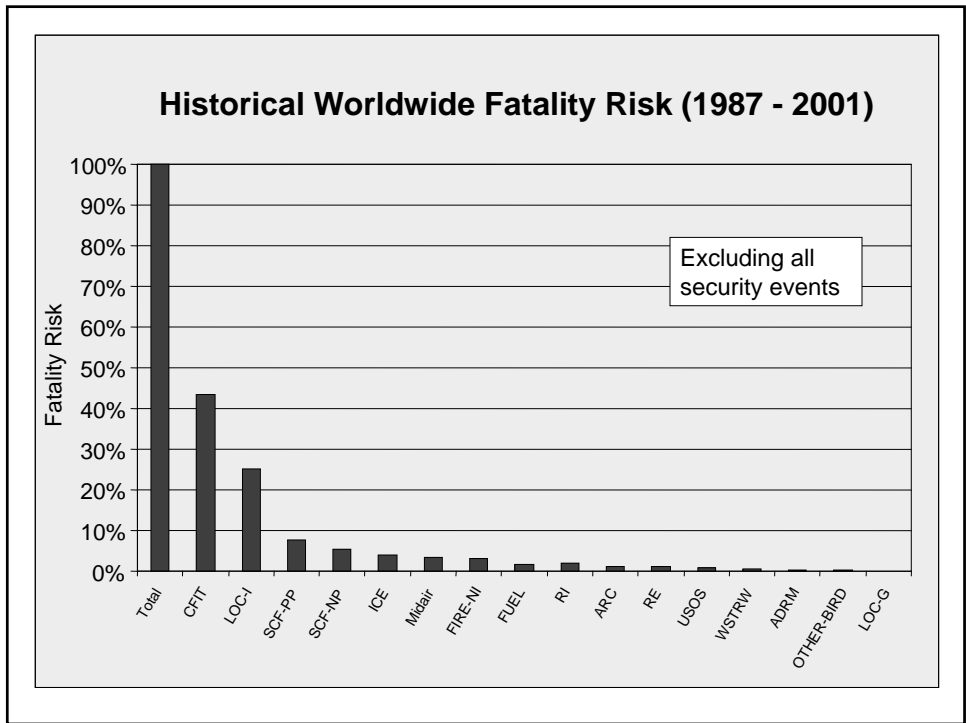
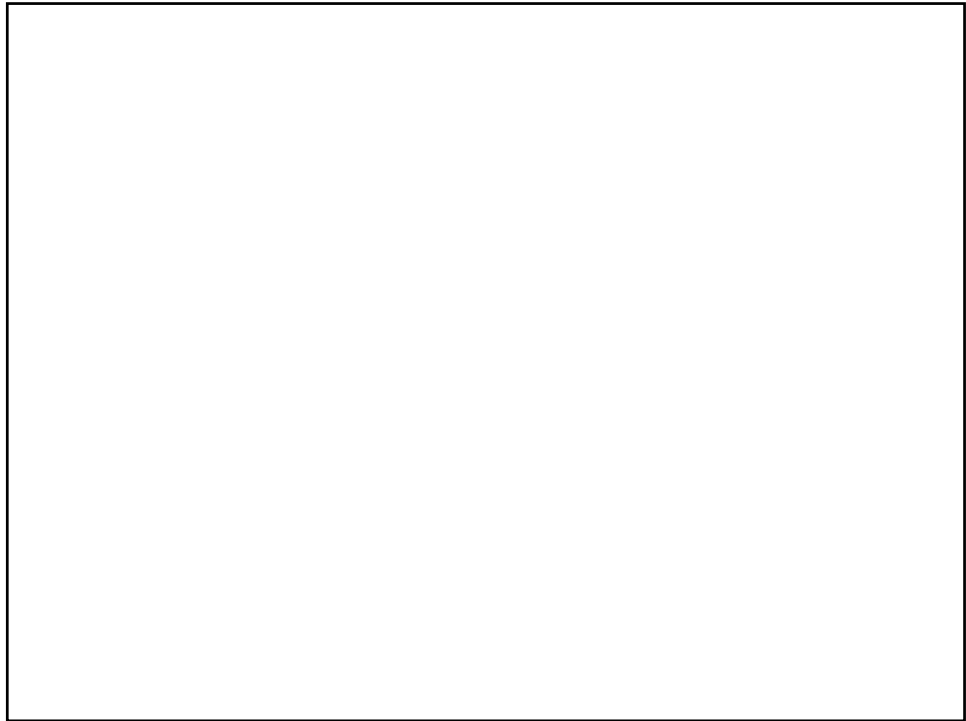
- Programme Coordinator and Safety Team (SEARAST) to evaluate GASR Best Practices, Metrics and Implementation Level to identify gaps and areas of duplication.
- Programme Coordinator:
  - Report results of review to Steering Committee.
  - Recommend future action.
- Approve the revised Terms of Reference.



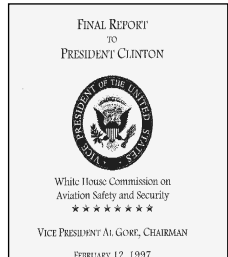
## Conclusions

- **CAST brings together all the key players**
  - Air Carriers
  - Manufacturers
  - Employee Groups
  - Government
- **Predicted 74% risk reduction by 2020**
- **CAST is committed to worldwide participation**
- **History shows focused action and introduction of new capabilities have led to large accident rate reductions**

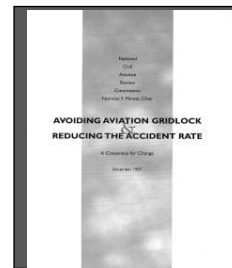




**In the U.S., our focus was set by the  
White House Commission on Aviation  
Safety, and The National Civil Aviation  
Review Commission (NCARC)**



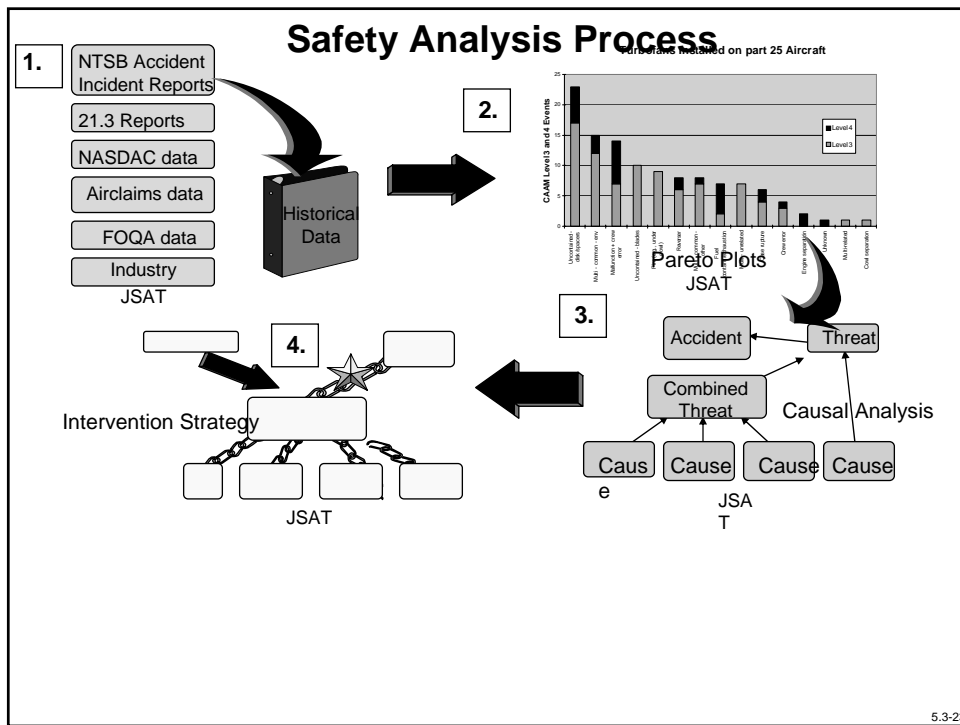
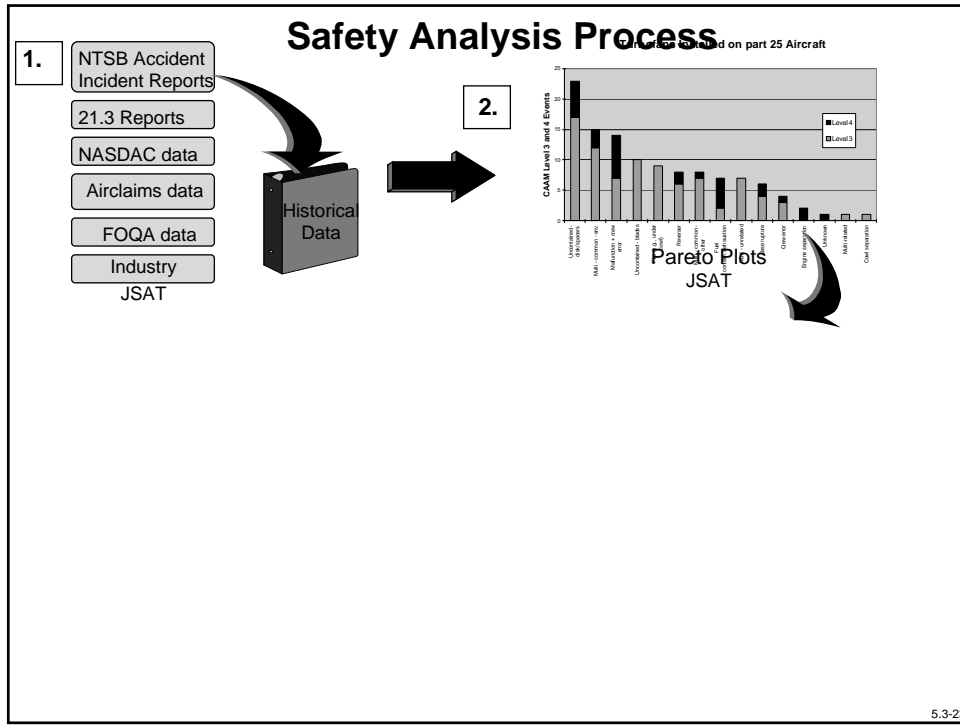
**“Reduce Fatal Accident  
Rate by 80%”**

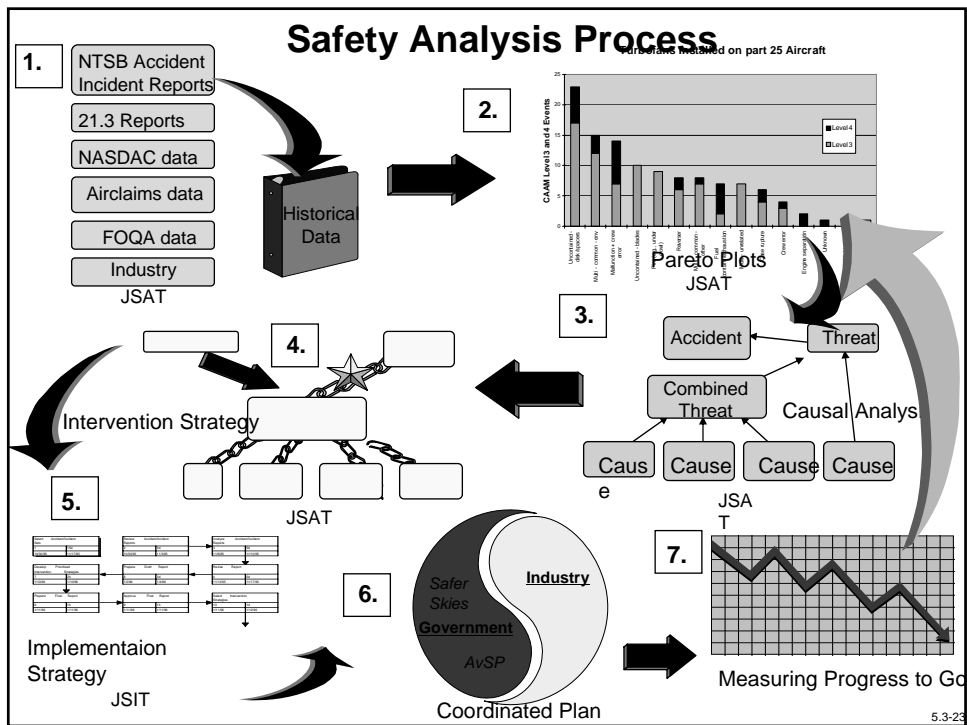
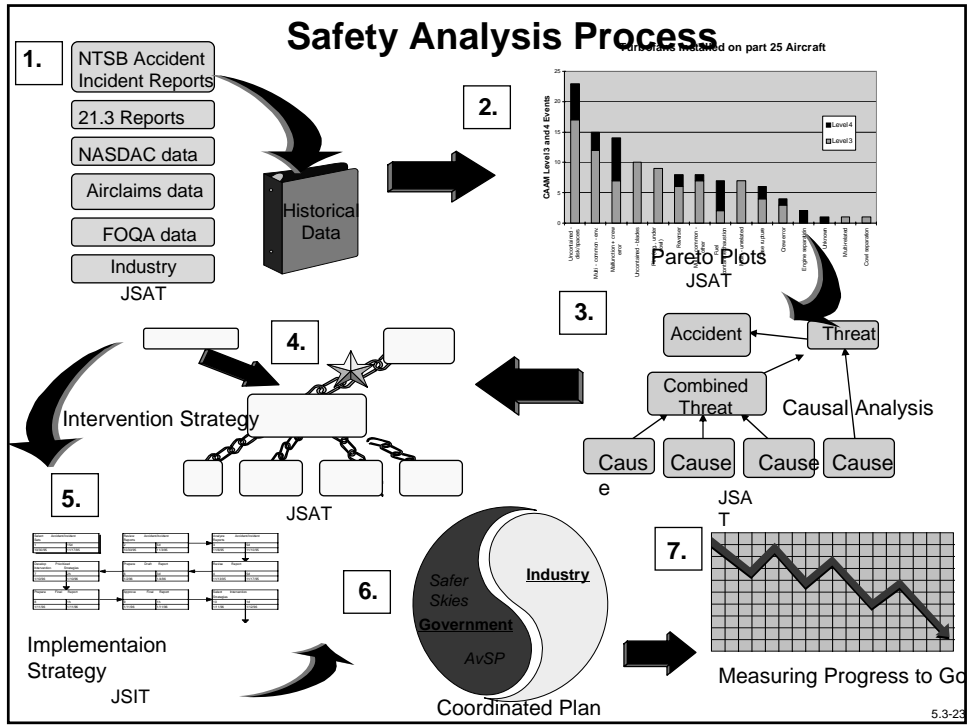


**“Strategic Plan to Improve Safety”  
“Improve Safety Worldwide”**

**In Response**

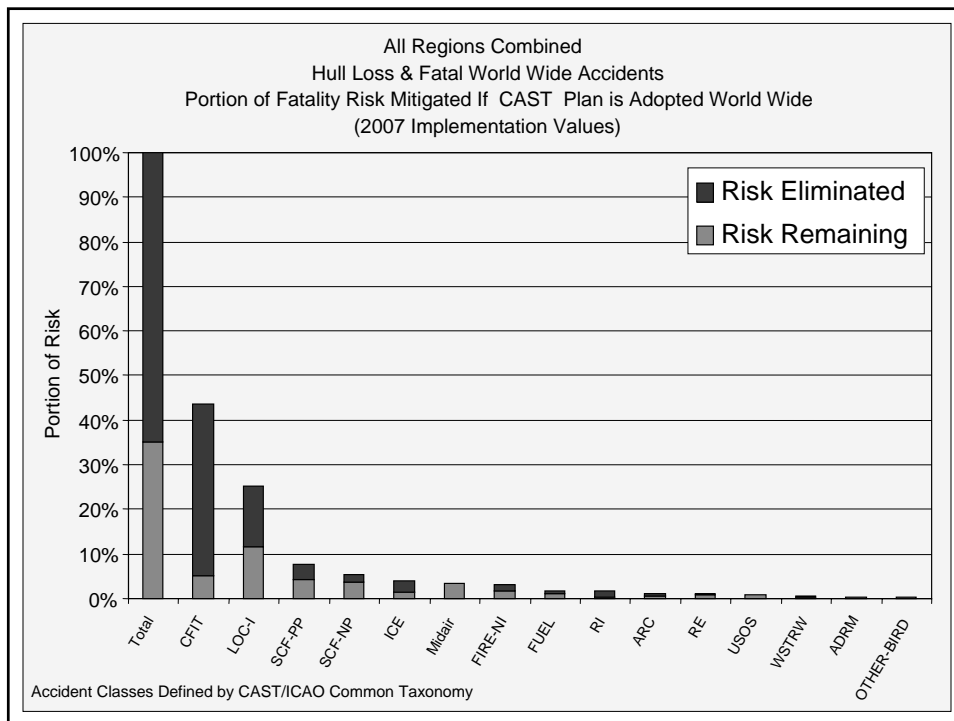
- **Ongoing Industry and FAA Safer Skies Initiatives were combined into CAST**
- **Data-Driven, Consensus-Based, Integrated Strategic Safety Plan Developed**
- **In place and fully supported by Government and Industry with Worldwide Recognition - Commercial Aviation Safety Team, “CAST”**





## CAST Dilemma

- To reduce the accident rate, CAST needed to implement solutions – resources are limited
- The Safety Enhancements enhanced safety but altogether cost ~ 5 billion dollars
- Some safety enhancements are more effective than others across the various accident categories
- Implementation reality demanded prioritization of these enhancements



## Severity Weighting Overview

- To account for differences in fatality risk associated with each accident in the data set, a severity value was applied. In this assessment, the severity value represented the portion of people onboard that perished in the given accident.

- Example: Comparison of two fatal accidents

-----  
757 CFIT accident, 98% perished. Weighting factor is .98

-----  
747 Turbulence accident, .6% perished. Weighting factor is .006

- Hypothetically assume an assessment showed that the chance of these accidents occurring would have been reduced by proposed safety enhancements by 50%.

- The associated portion of fatality risk eliminated can be determined using the severity weighting factor as follows:

757 CFIT.98 x .5 = .49

747 Turbulence, .006 x .5 = .003

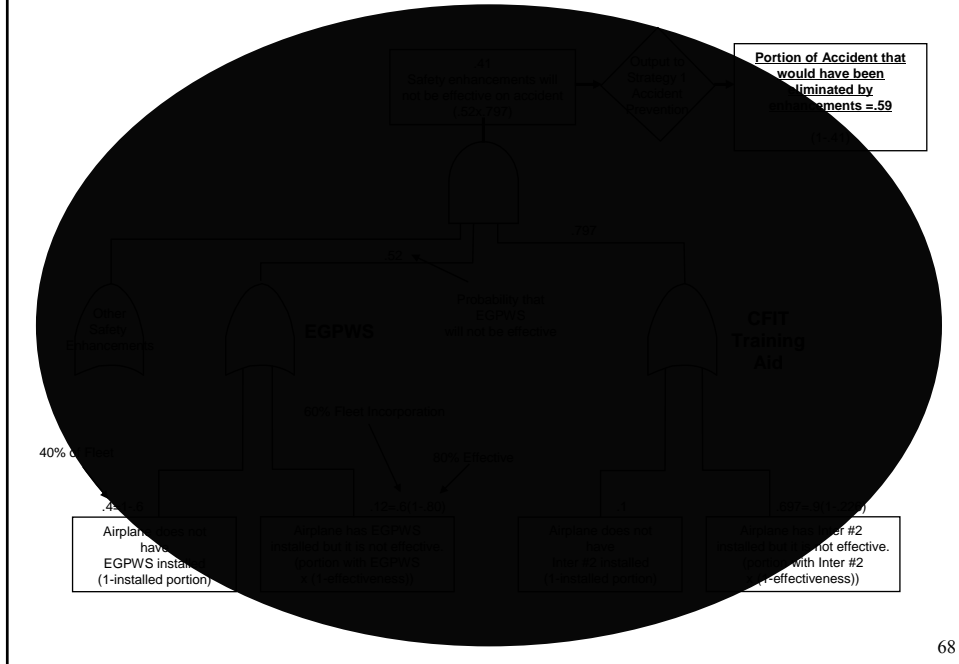
## Integrated Strategic Safety Plan

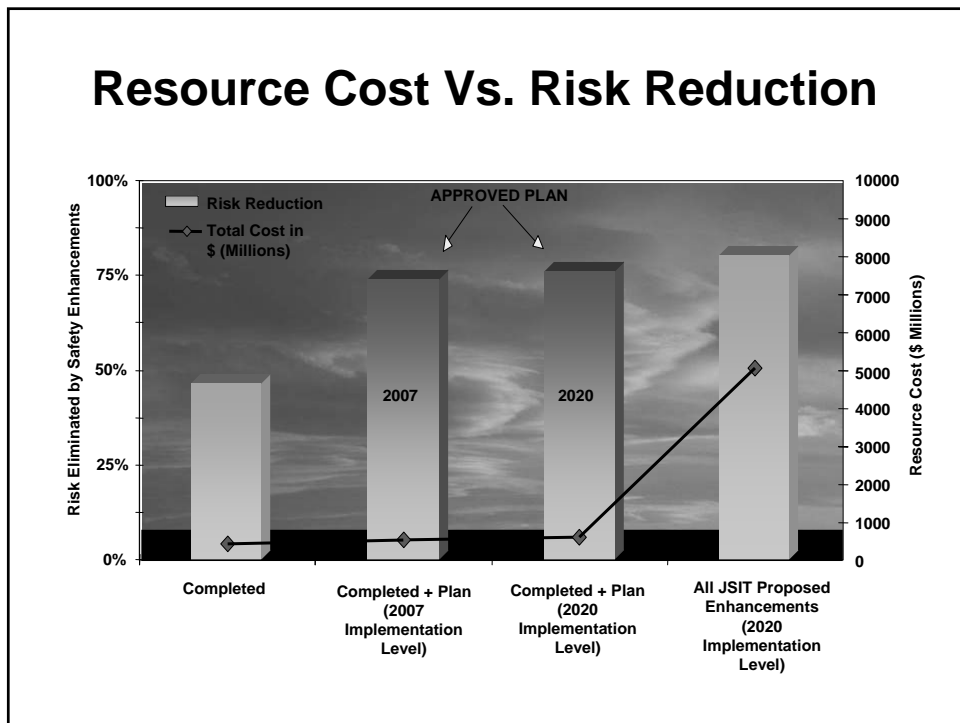
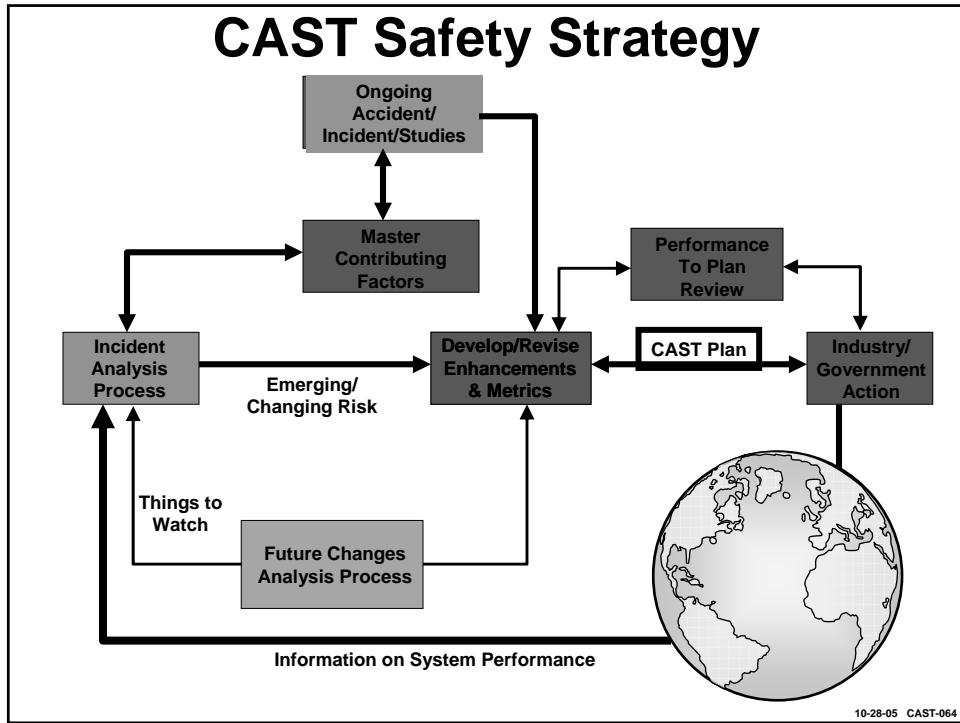
- Data-Driven, Consensus-Based, Integrated Strategic Safety Plan Developed
  - 47 Prioritized Safety Enhancements
  - 8 R&D Projects and 2 Studies
- 47 safety enhancements optimized to include those actions with the best effectiveness vs. resource relationships - 30 complete/17 committed and underway
- Initially combines short-term “liveware”-based enhancements with transition to design change enhancements long term
- Projected 73% Risk Reduction by 2007 (75% by 2020)
- Foundation for U.S-supported continuous improvements in worldwide aviation safety

## Safety Plan Benefits

- **Prediction of a 73% risk reduction that also results in approximately \$620 million annual savings to the industry**
  - **Current accident cost per flight is approximately \$76 cycle**
  - **Implementation of the 47 selected safety enhancements reduces this cost by \$56 per flight cycle**

## Process Example - Values Used are Hypothetical

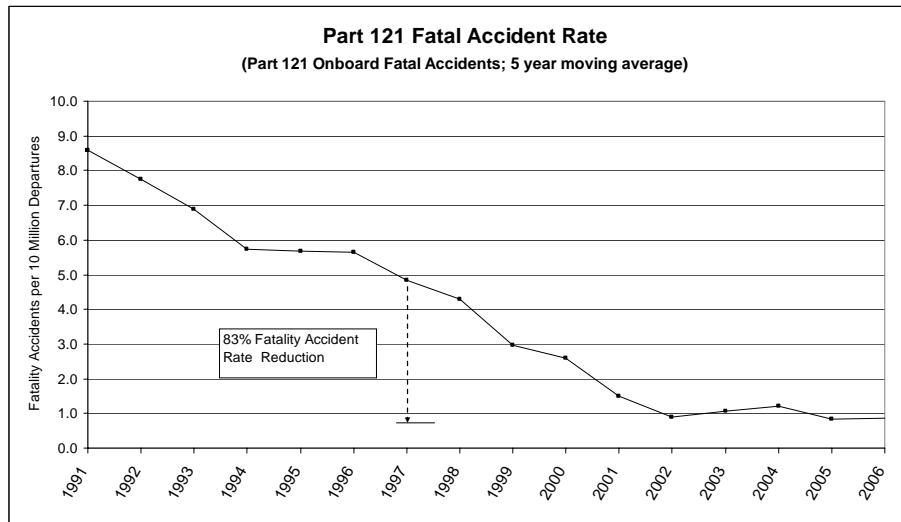


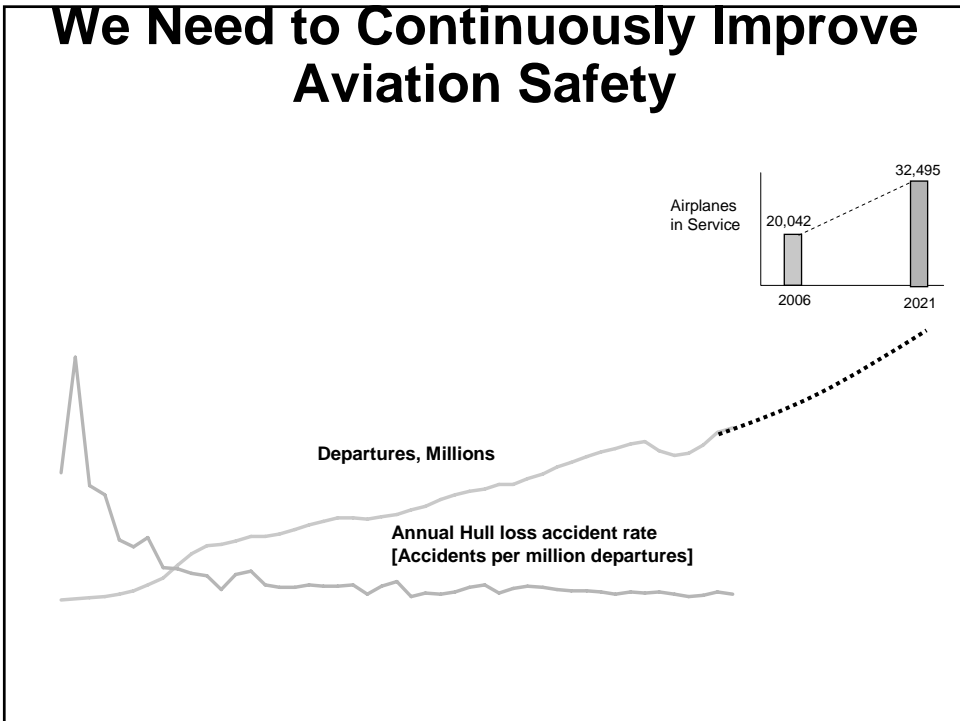
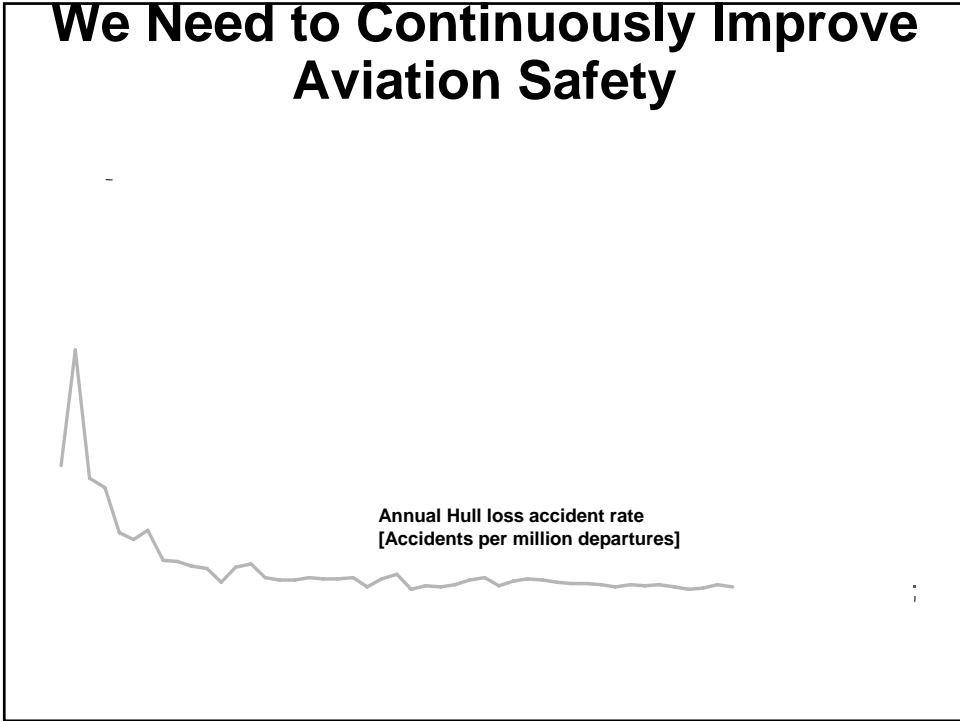


## Safety Metrics Examples

| Safety Enhancement  | Indicator   |
|---|---|
| 1. Terrain Avoidance Warning System (TAWS)                                      | <ul style="list-style-type: none"> <li>Reduction in MSAW alerts</li> <li>Reduction in valid GPWS alerts (CFIT)</li> </ul>   |
| 4. CFIT PAI-Vertical Angles (7-11,18)   | <ul style="list-style-type: none"> <li>Percentage of operators who have adopted constant angle approaches</li> <li>Continuous reduction in selected metrics</li> </ul>  |
| 21. ALAR Flight Deck Equipment Upgrades – New Type Designs (1-3)                | <ul style="list-style-type: none"> <li>Reduction in number of inadvertent descents below decision height</li> </ul>   |
| 23. ALAR Flight Crew Training – one project                                     | <ul style="list-style-type: none"> <li>Continuous reduction in the number of busted approach gates</li> <li>Continuous reduction in altitude busts</li> </ul>   |
| 27. LOC Policies and Procedures – Risk Assessments and Management – one project | <ul style="list-style-type: none"> <li>Percentage of operators/manufacturers with risk assessment/management processes in place</li> <li>Continuous reduction in the number of operations with recurring intermittent failures in flight critical systems</li> <li>Percentage of operators with a process to include safety information in manuals</li> </ul> |

## Cooperative efforts are bringing accident rate down in the USA





## Contents

- **Aviation safety**
- **Commercial Aviation Safety Team (CAST)**
  - History
  - Organization – Structure
  - Process, including ranking
  - Implementation
  - Sharing
  - Future
- **Roadmap & COSCAP South East Asia**

## Developed Event Sequence

- **Facts and data**
  - pilot - controller voice events
  - missed calls
  - events that occurred or should have
- **Time coded each event**

| #    | Time     | Event  |
|------|----------|--|
| 1015 | 21:53:28 | ATC issued ATIS information Sierra: Ceiling 100' overcast, 1/2 mile visibility and fog |
| 1016 | 21:53:28 | F/O call 200' above minimums   |
| 1017 | 21:53:32 | F/O calls ATC to report Marker Inbound   |
| 1018 | 21:53:33 | F/O call out 100' above minimums   |
| 1019 |          | F/O fails to call out "runway not in sight" at the minimums for the Decision Height    |

## Develop Problem Statements

- **Problem statements**

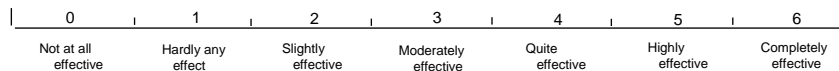
- What went wrong
- Deficiency definition
- Potential reason
- Something which happened or didn't happen

| # | Time     | Event/Data Point  | Problem (What)  | Contributing Factors (Why)  |
|---|----------|---|---|---|
| 1 | 8:53:00  | Aircraft took off from Taipei Intl  |   |   |
| 2 | 10:45:00 | F/O briefed CAPT on approach into   |   |   |
| 3 | 10:49:00 | Capt gave very basic guidance to the F/O on aircraft control during approach and landing. | F/O was inexperienced; his actions were not commensurate with 1034 hours in type. | It is not normal practice at China Airlines for Capt and F/O to rotate takeoffs and landings. The FO is required to fly aircraft "in t/o and landing phases at least 3 times every 3 months" (3-28) (airline culture) |

### EFFECTIVENESS RATING SCALES

#### **POWER**

This scale is to be used to judge the effectiveness of a specific intervention in **reducing the likelihood that a specific accident have occurred** had the intervention been in place and operating as intended. ("perfect world")



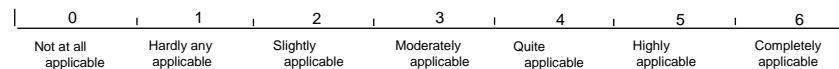
#### **CONFIDENCE**

This scale is to be used to define the level of confidence that you have **that this specific intervention will have the desired effect**



#### **FUTURE GLOBAL APPLICABILITY**

This scale is to be used to estimate **how well the intervention can be extrapolated** to apply to a world-wide fleet in the future (for example: how often the situation it addresses occurs in accident scenarios; whether its impact is on present and future operations (equipment, traffic, regulatory differences); and whether it is applicable across airlines/airplanes/regions).

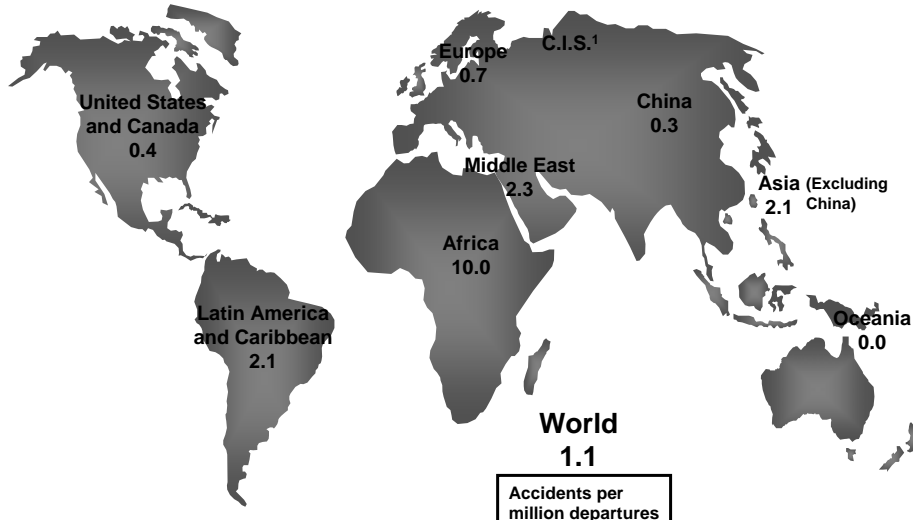


### Spreadsheet Example – Historical Airplane Accidents & Proposed Safety Enhancements

| Accident Class Description | Date       | Location          | Aircraft Type | Accident Description       | Portion of Accident Eliminated | Intervention Name    |          |
|----------------------------|------------|-------------------|---------------|----------------------------|--------------------------------|----------------------|----------|
|                            |            |                   |               |                            |                                | EGPWS                | CFIT TRN |
|                            |            |                   |               |                            |                                | Portion of World Fle |          |
|                            |            |                   |               |                            |                                | .600                 | .900     |
|                            |            |                   |               |                            |                                | Intervention Effecti |          |
| CFIT                       | 1/2/1988   | IZMIR, TURKEY     | 737           | HIT MOUNTAIN ON APPROACH   | .657                           | .950                 | .226     |
| CFIT                       | 2/8/1988   | LUANDA, ANGOLA    | 707           | HIT ANTENNA ON APPROACH    | .586                           | .800                 | .226     |
| CFIT                       | 2/27/1988  | KYRENIA MTS, CYPR | 727           | HIT MOUNTAIN ON APPROACH   | .657                           | .950                 | .226     |
| CFIT                       | 3/17/1988  | CUCUTA, COLUMBIA  | 727           | HIT MOUNTAIN DURING CLIMB  | .657                           | .950                 | .226     |
| CFIT                       | 6/12/1988  | POSADAS, ARGENTIN | MD80          | CRASHED ON FINAL APPROACH  | .203                           | .000                 | .226     |
| CFIT                       | 7/21/1988  | LAGOS, NIGERIA    | 707           | CRASHED ON APPROACH        | .203                           | .000                 | .226     |
| CFIT                       | 10/17/1988 | ROME, ITALY       | 707           | LANDED SHORT               | .203                           | .000                 | .226     |
| CFIT                       | 10/19/1988 | AHMEDABAD, INDIA  | 737           | LANDED SHORT               | .586                           | .800                 | .226     |
| CFIT                       | 2/8/1989   | SANTA MARIA AZOR  | 707           | TERRAIN IMPACT/DESCENT     | .657                           | .950                 | .226     |
| CFIT                       | 2/19/1989  | KUALA LUMPUR, MAI | 747           | TERRAIN IMPACT/APPROACH    | .657                           | .950                 | .226     |
| CFIT                       | 6/7/1989   | PARAMARIBO, SURIN | DC8           | TERRAIN IMPACT/FINAL APPRO | .203                           | .000                 | .226     |
| CFIT                       | 7/27/1989  | TRIPOLI, LIBYA    | DC10          | TERRAIN IMPACT/FINAL APPRO | .203                           | .000                 | .226     |
| CFIT                       | 8/25/1989  | ANKARA, TURKEY    | 727           | HIT ILS ANT. ON TAKEOFF    | .000                           | .000                 | .000     |
| CFIT                       | 10/21/1989 | TEGUCIGALPA, HOND | 727           | TERRAIN IMPACT/APPROACH    | .657                           | .950                 | .226     |
| CFIT                       | 10/26/1989 | HUALIEN, TAIWAN   | 737           | TERRAIN IMPACT/DEPARTURE   | .657                           | .950                 | .226     |
| CFIT                       | 2/14/1990  | BANGALORE, INDIA  | A320          | HIT SHORT (300 FT)         | .203                           | .000                 | .226     |
| CFIT                       | 6/2/1990   | UNALAKLEET, ALASK | 737           | HIT HILL 7 MILES OUT IN FO | .657                           | .950                 | .226     |
| CFIT                       | 11/14/1990 | ZURICH, SWITZERLA | DC9           | CRASHED 5 MILES SHORT      | .634                           | .900                 | .226     |
| CFIT                       | 12/4/1990  | NAIROBI, KENYA    | 707           | HIT POWER LINE ON ILS FINA | .203                           | .000                 | .226     |
| CFIT                       | 3/5/1991   | MT LA AGUADA, VEN | DC9           | HIT MOUNTAIN/APPROACH      | .657                           | .950                 | .226     |
| CFIT                       | 8/16/1991  | IMPHAL, INDIA     | 737           | A/C HIT HILL 20 MILES OUT  | .657                           | .950                 | .226     |
| CFIT                       | 1/20/1992  | STRASBOURG, FRANC | A320          | IMPACTED GROUND/FINAL APP  | .586                           | .800                 | .226     |
| CFIT                       | 2/15/1992  | KANO, NIGERIA     | DC8           | CFIT OUT OF PROCEDURE TRN  | .586                           | .800                 | .226     |
| CFIT                       | 3/24/1992  | ATHENS, GREECE    | 707           | ABANDONED APPROACH-HIT MTN | .657                           | .950                 | .226     |
| CFIT                       | 6/22/1992  | CRUZEIRO DO SUL,  | 737           | HIT SHORT,DRK NT,DISTRACTE | .203                           | .000                 | .226     |
| CFIT                       | 7/31/1992  | KATMANDU, NEPAL   | A310          | CFIT-HIT MTN-MISSED APPRO  | .657                           | .950                 | .226     |
| CFIT                       | 9/28/1992  | KATMANDU, NEPAL   | A300          | CRASHED SHORT DURING APPRO | .657                           | .950                 | .226     |
| CFIT                       | 11/25/1992 | KANO, NIGERIA     | 707           | LANDED SHORT MISLEADING LI | .538                           | .700                 | .226     |
| CFIT                       | 11/26/1992 | MANAUS, BRAZIL    | 707           | HIT LIGHTS ON TO/RMLG COLI | .000                           | .000                 | .000     |
| CFIT                       | 4/26/1993  | AURANGABAD, INDIA | 737           | HIT TRUCK AFTER TAKEOFF    | .000                           | .000                 | .000     |

### Regional Perspective Accident Rates Vary by Region of the World

Western-built transport hull loss accidents, by airline domicile, 1998 through 2007





# **EASA**

## **European Aviation Safety Agency**

First Regional Aviation Safety  
Group – Pan American Meeting  
Costa Rica,  
11-14 November 2008

Juan de Mata MORALES (EASA)




*Americae sive quartae orbis partis nova et exactissima  
descriptio. (Auctore Diego Gutiero Philippi Regis Hisp.  
etc. Cosmographo. Hiero Cock Excude. 1562)*

# **EASA**

## **European Aviation Safety Agency**

### **CONTENTS**

- **European Aviation Safety System**
- **EASA Organization**
- **EASA Tasks**
- **EASA Responsibilities**
- **Technical Cooperation**
- **International Relations**
- **Conclusions**



European Aviation Safety Agency

## Safety Rulemaking XX century


| ICAO, ECAC, JAA, EUROCONTROL ...  | EU States   |
|---|---|
| <ul style="list-style-type: none"> <li>✦ Standards and recommended practices</li> <li>✦ Safety regulatory requirements</li> <li>✦ JARs</li> <li>✦ Etc...</li> </ul> | Discretionary transposition into national legal order |

Non legally binding

Legally binding

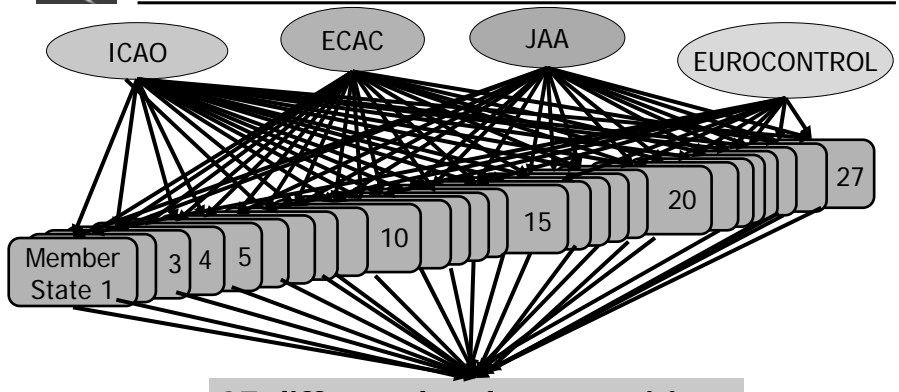
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11-14 November 2008
First Regional Aviation Safety Group – Pan American Meeting
3



European Aviation Safety Agency

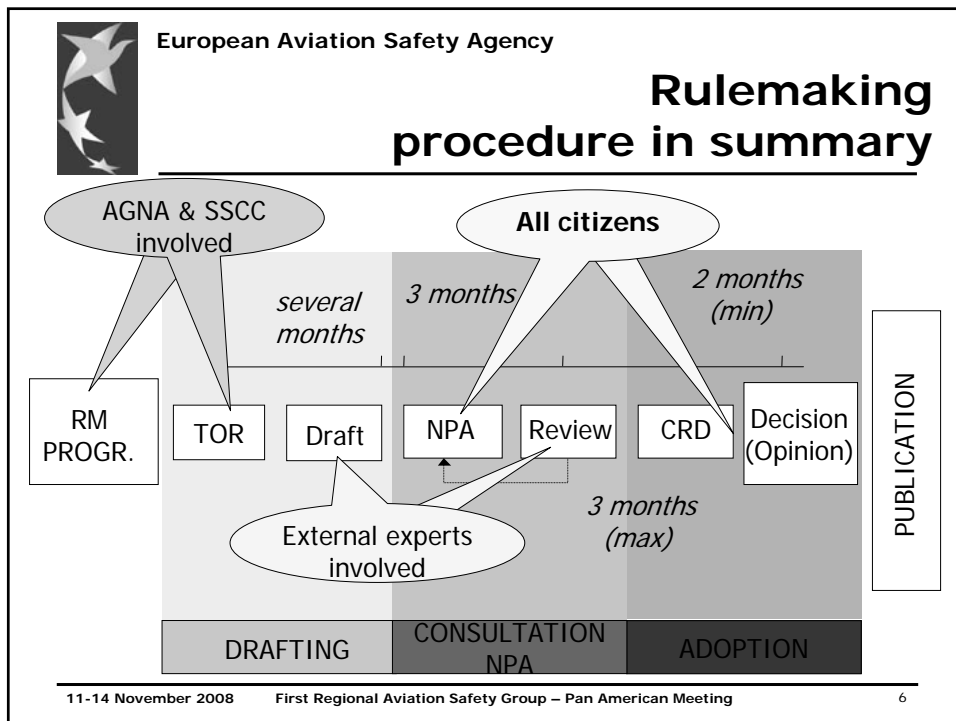
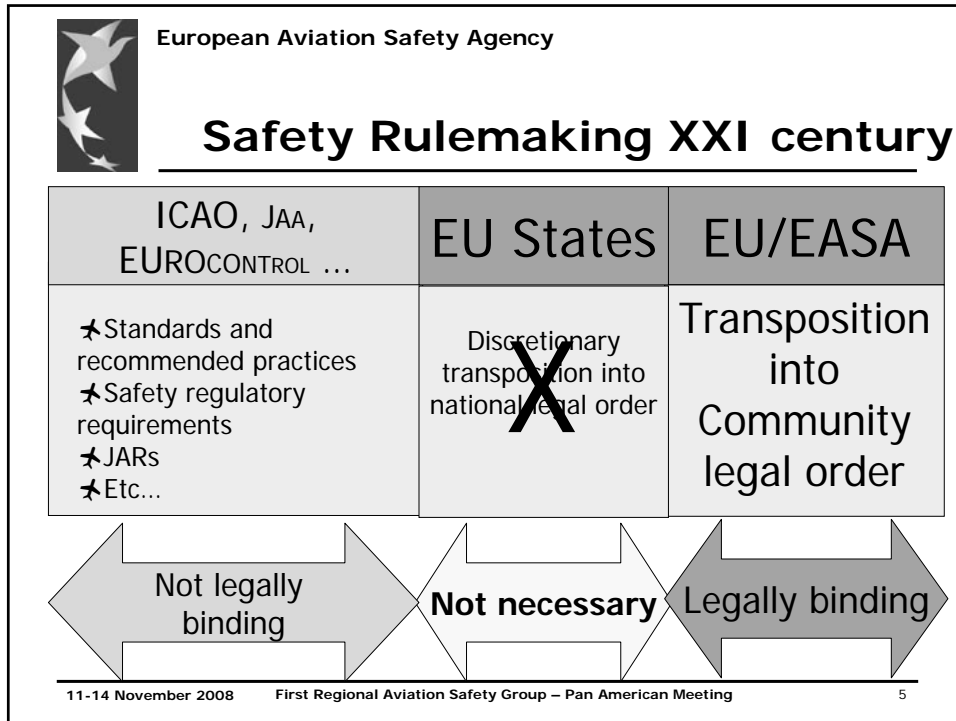
## The past

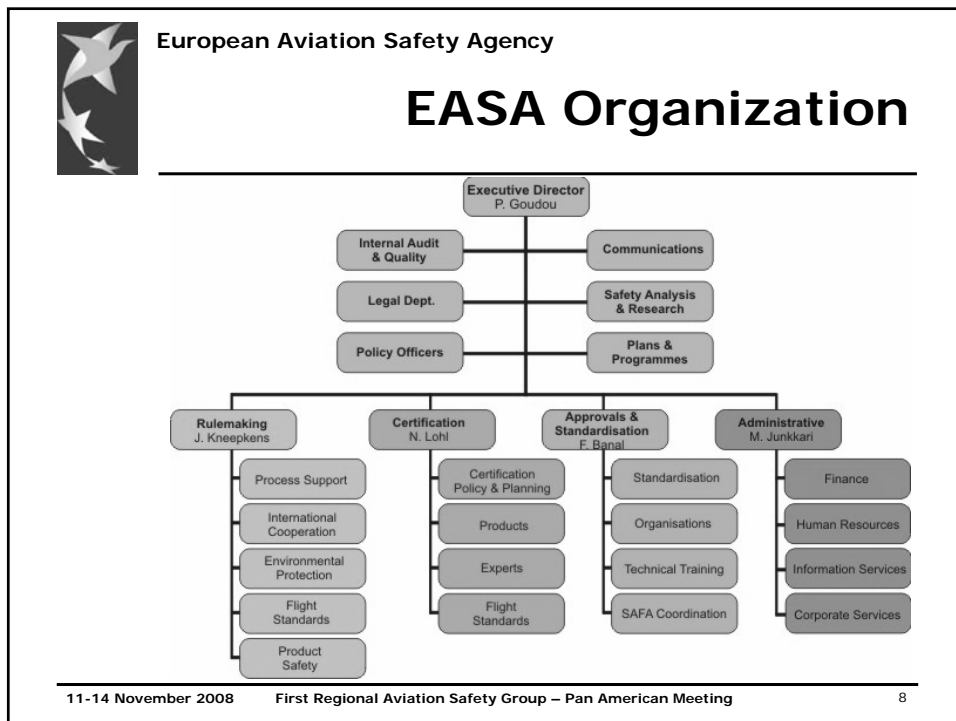
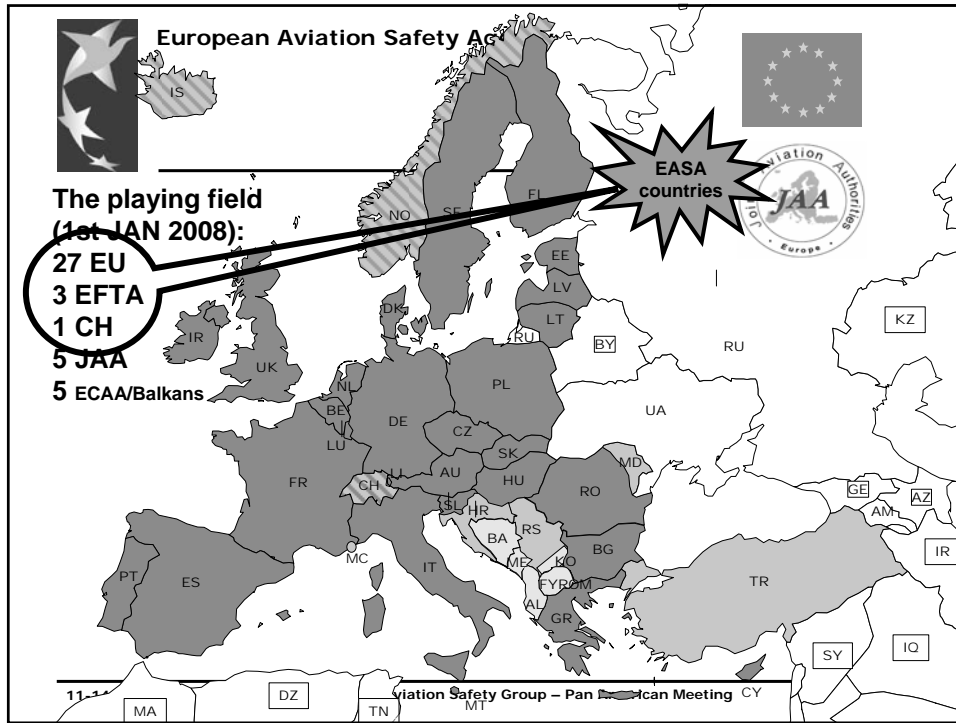



**27 different legal transpositions**

---

11-14 November 2008
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4







European Aviation Safety Agency

## Tasks of EASA

---

Art. 2(3) of Regulation 216/2008:

- ✈ Preparation, adoption and uniform application of all necessary acts (i.e. rules, specifications, AMCs)
- ✈ **Certification** and oversight of undertakings, aeronautical products and professionals (directly or **through competent authorities**)
- ✈ Standardisation of **uniform implementation by competent authorities = uniform safety**

Operational or service tasks excluded

---

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European Aviation Safety Agency

## Certification

---

- **Type-certification**
- **Continuing airworthiness**
- **Approval of Design Organizations**
- **For non-EU countries: Approval of Production and Maintenance Organizations**

---

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European Aviation Safety Agency

## **Rulemaking**

---

- **Assistance to the European Commission in drafting new legislation**
- **Elaboration and adoption of Agency soft laws**
- **Co-operation in the setting of international standards**
- **Technical Assistance and International Agreements**



European Aviation Safety Agency

## **Standardization**

---

- **Assistance to the European Commission in overseeing harmonized application of European legislation in Member States (inspections)**



European Aviation Safety Agency


## Safety analysis

---

- Data collection and safety review
- Exchange of information with Accident Investigation Bodies
- European Strategic Safety initiative

---

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European Aviation Safety Agency

## Responsibilities

---

→ Products initial airworthiness and environmental compatibility Already done

→ Products continuing airworthiness

+

→ Operations (incl. non EU operators) On going

→ Crews

+

Future

→ Aerodromes

→ Air traffic management/ Air Navigation services

---

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European Aviation Safety Agency

## Technical Co-operation

---

Technical co-operation aims at:

- raising the technical capability of a foreign regulatory partner so that its findings can be given the same value than those made by ourselves
- reaching sufficient harmonisation of both regulatory systems so that each regulator understands, and be able to check compliance with, each other standards.



European Aviation Safety Agency

## Technical Co-operation

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The Agency assists the Commission in:

- identifying needs,
- designing projects for upgrading the regulatory capabilities of future partners and
- overseeing the implementation of co-operation projects.



European Aviation Safety Agency

## The Agency's International Relations

---

- Assists the Commission in the negotiation of bilateral agreements
- Develops Working Arrangements with third countries authorities
- Assists the Commission in the development and implementation of national or regional projects
- Assists the Commission and organises relationship with other international organisations (e.g. ICAO)



European Aviation Safety Agency

## Conclusions

---

- A strong European institutional framework
- Direct applicability of EU Regulations in all Member States
- EASA is the principal civil aviation authority in Europe
- Final stage: EASA mandate extended to all aviation safety and environmental issues



**QUESTIONS?**

[juan.morales@easa.europa.eu](mailto:juan.morales@easa.europa.eu)

# El Sistema Regional de Vigilancia para la Seguridad Operacional en Latinoamérica (SRVSOP)

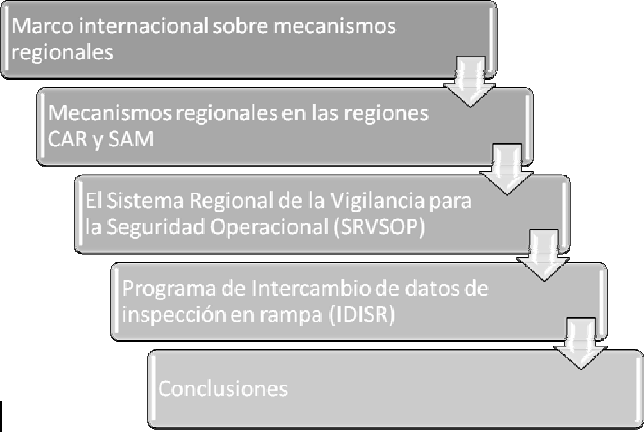
Presentado por: José Miguel Ceppi  
Director de la Oficina Regional Sudamericana de la OACI

Primera Reunión del Grupo Regional sobre Seguridad Operacional de la Aviación – Panamericano (RASG-PA)  
(Puntarenas, Costa Rica, 10-14 noviembre 2008)

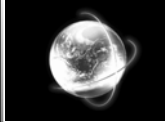


1

## Resumen



```
graph TD; A[Marco internacional sobre mecanismos regionales] --> B[Mecanismos regionales en las regiones CAR y SAM]; B --> C[El Sistema Regional de la Vigilancia para la Seguridad Operacional (SRVSOP)]; C --> D[Programa de Intercambio de datos de inspección en rampa (IDISR)]; D --> E[Conclusiones];
```



2

## Resolución de la Asamblea General de la OACI A 36-2



Alienta a los Estados a fomentar la creación de asociaciones regionales o subregionales para colaborar en el desarrollo de soluciones a problemas comunes con el fin de fortalecer las capacidades estatales de vigilancia de la seguridad operacional, y a participar en el fortalecimiento y fomento de sistemas regionales de vigilancia de la seguridad operacional, incluyendo organizaciones regionales de vigilancia de la seguridad operacional, o a prestarles apoyo de manera tangible.

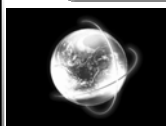


3

## CONFERENCIA DE DIRECTORES GENERALES DE AVIACION CIVIL SOBRE UNA ESTRATEGIA MUNDIAL PARA LA SEGURIDAD AERONÁUTICA (Montreal, 20–22 de marzo de 2006)

Los Directores se comprometieron, entre otras cosas a:

La elaboración de soluciones sostenibles en materia de seguridad operacional, incluida la formación o el fortalecimiento de organizaciones e iniciativas regionales y subregionales de vigilancia de la seguridad operacional



4

**El Plan global OACI para la seguridad operacional de la aviación (GASP) y la Hoja de Ruta (GASR)**

Refuerza el trabajo de los mecanismos regionales de vigilancia de la seguridad operacional.  
Muchas de las mejores prácticas hacen referencia al trabajo con sistemas regionales.



5

**Sistemas Regionales de Vigilancia de la Seguridad Operacional en las Regiones CAR/SAM**

**ACSA**  
• América Central

**CASSOS**  
• Estados del CARICOM

**SRVSOP**  
• América Latina



6



## Miembros del Sistema Regional

Miembros plenos:

- Argentina
- Bolivia
- Brasil
- Chile
- Cuba
- Ecuador
- Paraguay
- Perú
- Uruguay
- Venezuela
- ACSA

Observadores:

- España
- AIRBUS
- EMBRAER



9

## SRVSOP

ESTRUCTURA



- Junta General;
- Coordinador General;
- Comité Técnico; &
- Puntos Focales



10

## Programas de trabajo del SRVSOP

- Armonización de regulaciones**
  - GSI #1 Implementación consistente de los SARPS y mejores prácticas
- Actividades multinacionales**
  - GSI # 2 Vigilancia consecuente de la reglamentación
- Asistencia a los Estados**
  - GSI # 2 BP 2.a-5, GSI # 5 BP 5.a-1, BP 5.a-3



11

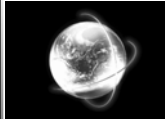
## Programas de trabajo del SRVSOP

- Capacitación y Seminarios**
  - GSI # 5, BP 5.a-1, BP 2.a-1 e
- Actividades de difusión**
- Reuniones**
  - GSI # 1, GSI # 5 BP 5.a-1



12

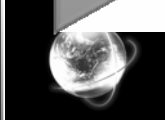
# LARs



Los Estados han reconocido que el primer paso para establecer un sistema regional de vigilancia de la seguridad operacional es tener un conjunto armonizado de normas aeronáuticas y sus procedimientos asociados.

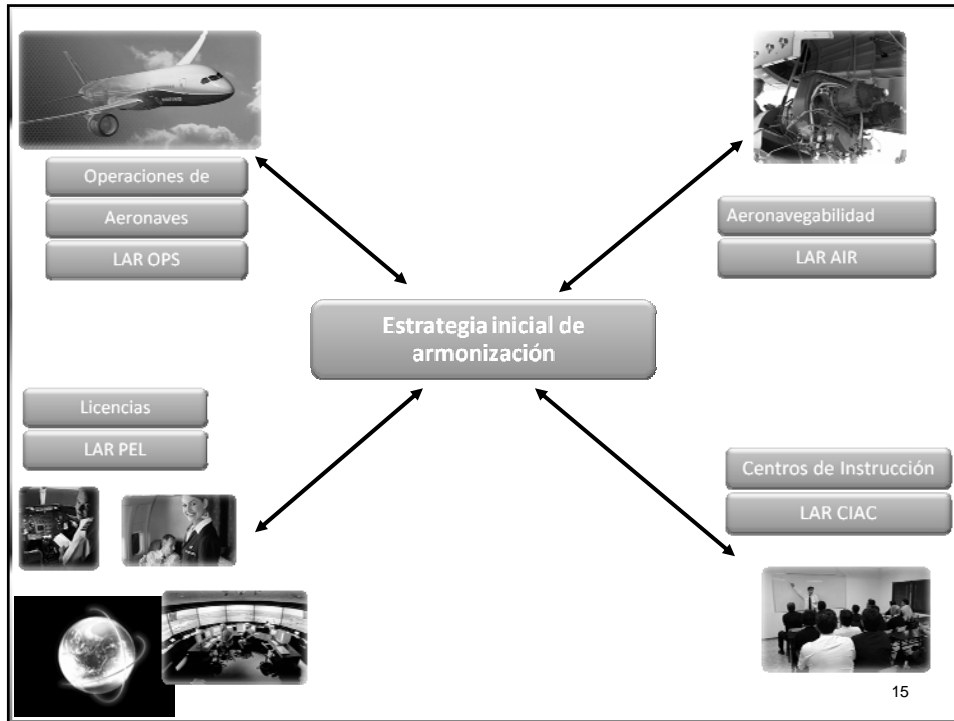
13

## Principios fundamentales en el desarrollo de las LAR



- Garantizar el cumplimiento con las normas de la OACI;
- Utilización del principio de lenguaje claro;
- Evitar la traducción literal de modelos de otras realidades;
- No inventar la rueda; y
- Principio de equilibrio entre supervisión y libertad para los operadores

14



## Estado de Desarrollo LARs

| LAR GEN | LAR PEL | LAR AIR                | LAR OPS |
|---------|---------|------------------------|---------|
| LAR 1   | LAR 61  | LAR 21                 | LAR 91  |
| LAR 11  | LAR 63  | LAR 23, 25, 27, 29     | LAR 119 |
|         | LAR 65  | LAR 31, 33, 34, 35, 36 | LAR 121 |
|         | LAR 67  | LAR 39                 | LAR 135 |
|         | LAR 141 | LAR 43                 |         |
|         | LAR 142 | LAR 45                 |         |
|         | LAR 147 | LAR 145                |         |

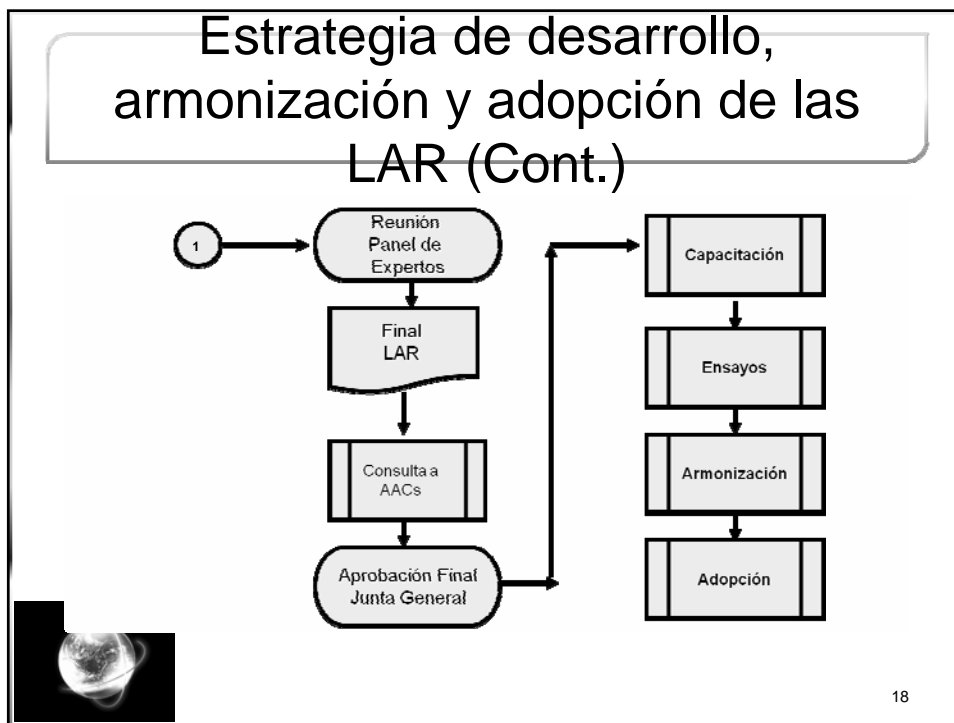
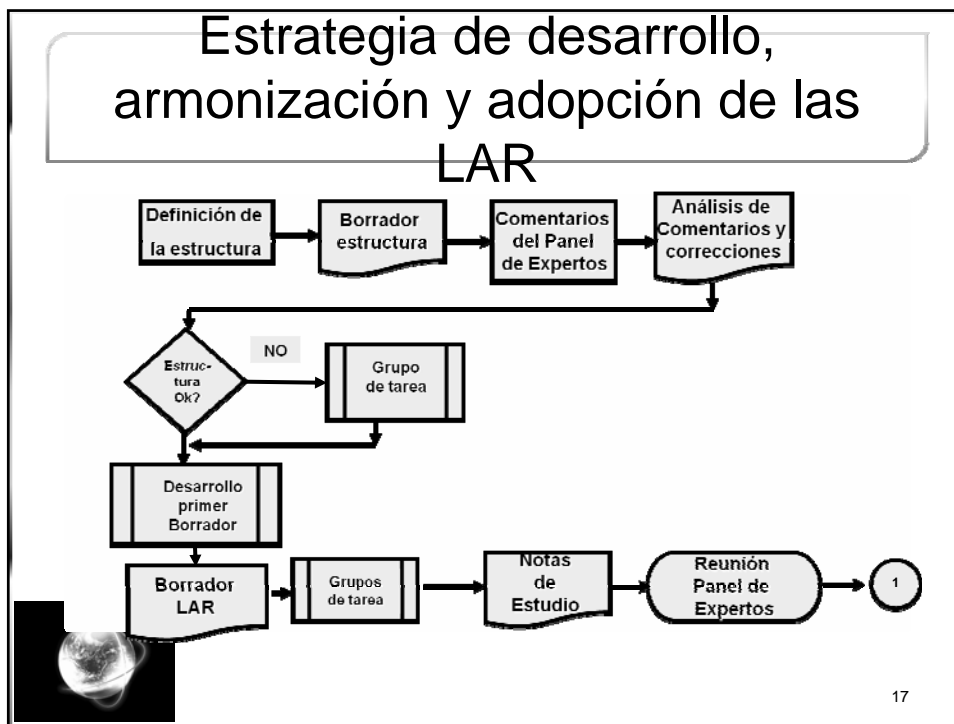
Finalizada

Dic 2008

En desarrollo

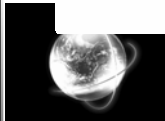
Por desarrollar

Page number: 16



## Actividades multinacionales

- Programa piloto de implementación de SMS en OMA's
- Certificación y vigilancia conjunta de OMA's
- Grupo Regional de Ingenieros aeronáuticos para aprobación de alteraciones y reparaciones mayores
- Programa de intercambio de resultados de inspecciones en rampa (IDISR)
- Registro regional de Auditor LAR
- Reconocimientos mutuo OMA's, CIAC's, Licencias
- Visitas de estandarización.



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## Visión futura del SRVSOP

**LARs es el paso inicial**

**Objetivo final:  
establecer y  
operar un  
Sistema regional  
para la vigilancia  
de la seguridad  
operacional en  
Latinoamérica.**




20



I • Intercambio  
D • Datos  
I • Inspección  
S • Seguridad  
R • Rampa

21



## IDISR

Artículo 16  
Convenio de Chicago  
Inspección de Aeronaves

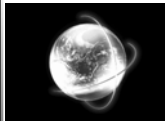
- Las autoridades competentes de cada uno de los Estados contratantes tendrán derecho a inspeccionar sin causar demoras innecesarias, las aeronaves de los demás Estados contratantes, la llegada o a la salida, y a examinar los certificados y otros documentos prescritos por el presente Convenio.

22

**IDISR**

**Resolución  
A 36-2**

- Alienta a los Estados a utilizar plenamente toda la información disponible sobre seguridad operacional en el desempeño de sus funciones de vigilancia de la Seg. Op., inc. Durante la insp., tal como se prevé en el Art. 16
- Recuerda a los Estados la necesidad de vigilar las operaciones de aeronaves, incluidas la extranjeras dentro de su territorio, y de que adopten las medidas que resulten necesarias para proteger la Seg. Op.

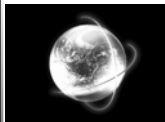


23

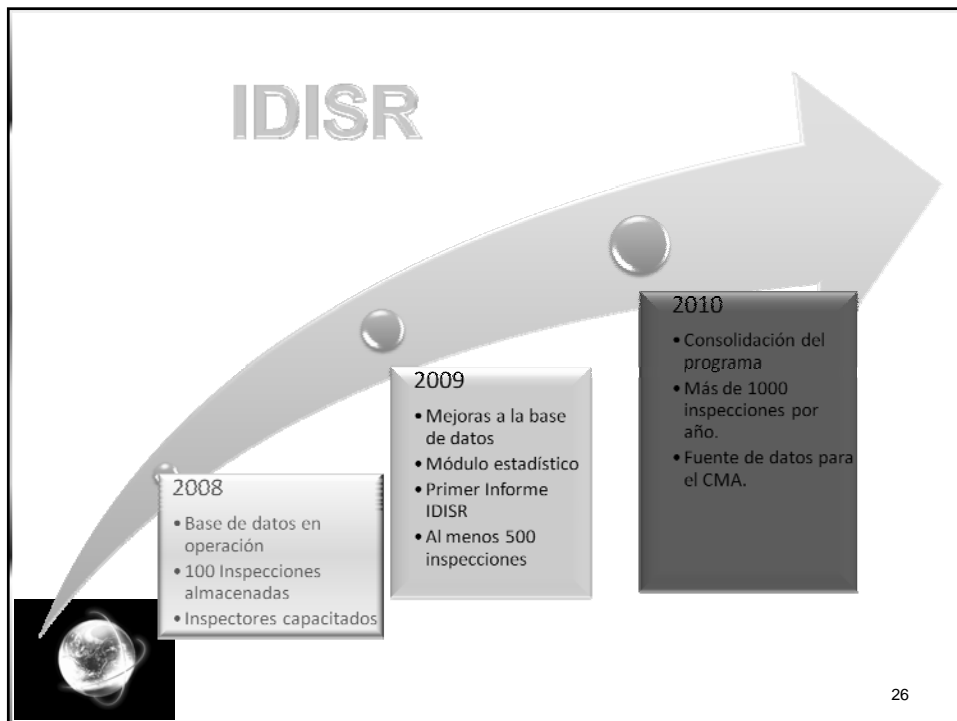
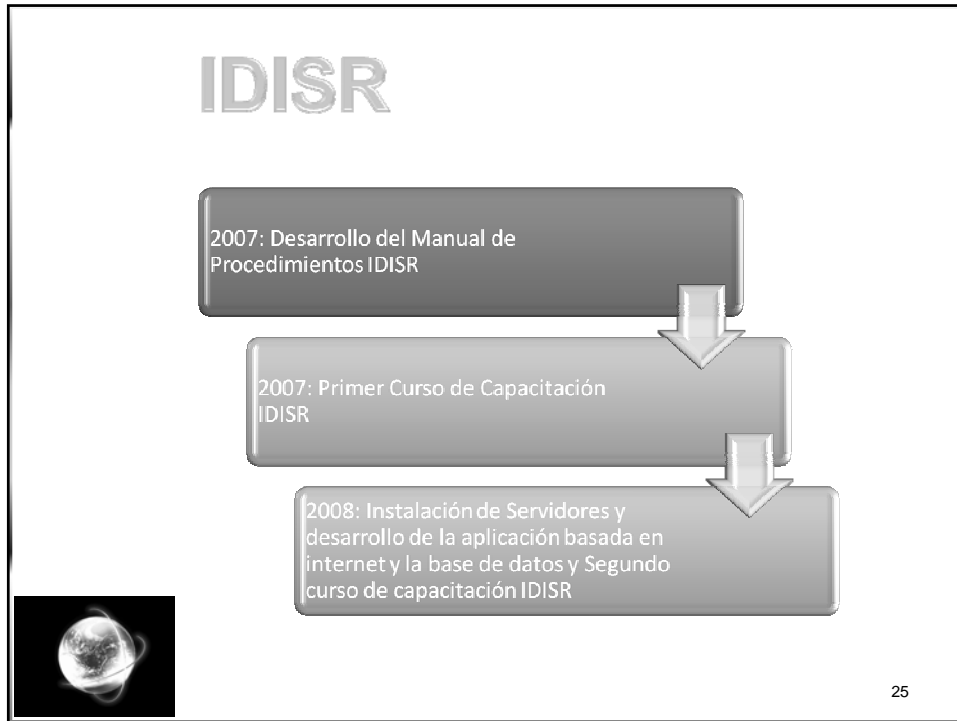
**IDISR**

**Conclusión  
JG 12/09**

- Solicita al Comité Técnico a desarrollar una propuesta para la implementación de un programa de intercambio de datos de inspecciones en rampa



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# Conclusiones

Los Estados se han comprometido a reforzar los mecanismos regionales de vigilancia de la seguridad operacional

El GASP y la Hoja de Ruta refuerzan el trabajo de los sistemas regionales

Los Sistemas Regionales tienen un gran potencial para generar actividades de gran impacto a la seguridad operacional



27

Muchas Gracias por su atención



28

**Agenda Item 4:           GASR Project Status**

**GSI/3 – Effective Error and Incident Reporting - Status of Project 1 –  
*Effective Flow of Hazard Information***

4.1           RASG-PA Project 1 deals with impediments to collecting error and incident data needed for continuous monitoring of hazards and mitigation of risks. As a means to determine the existing approaches towards the protection of safety information, the Secretariat sent a questionnaire to all States in the CAR/SAM Regions requesting information concerning their legislation, regulations and programmes that promote the effective flow of safety information. Only four States replied to the questionnaire, and the Meeting considered this to be an insufficient sampling to draw appropriate conclusions on this issue.

4.2           The Meeting agreed that all civil aviation authorities within the CAR/SAM Regions should complete the questionnaire in **Appendix A** to this part of the Report as soon as possible so as to provide the information needed to draw appropriate conclusions. The Regional Offices accredited to the States concerned were requested to follow-up on the replies.

**RASG-PA/01/AI/1    States are required to complete the legislative survey associated with  
GSI/3 Project 1**

4.3           IFALPA presented a study concerning the legislative implications of Annex 13, Appendix E. The study provided an overview of the legal implications related to the protection of safety information in the context of the various legal systems within the NAM/CAR/SAM Regions. The presentation is at **Appendix B** to this part of the Report. The CASSOS representative offered to share draft regulations that had been developed by RASOS in accordance with Annex 13.

**GSI/12 – Use of Technology to Enhance Safety – Status of Project 2 - *Elimination  
of Gaps in the Use of Technology to Enhance Safety***

4.4           The Meeting recalled the results of the GASR Workshop regarding GSI/12, *Elimination of Gaps in the Use of Technology to Enhance Safety* and the project established to address the recommended actions. The Meeting noted the progress made by IATA, the GREPECAS ATM/CNS Subgroup and ACI-LAC on analysis of Appendices E, F and G of the GASR, which identifies technological options to enhance safety. The Meeting agreed that this project required further development to clearly identify goals and provide concrete results, which will be reported at the next RASG-PA Meeting providing a list of technological options that will achieve optimum safety benefits.

**GSI/12 – Use of Technology to Enhance Safety and GSI/2 – Consistent Regulatory Oversight, Status of Project 3 -- *Pilot Programme for the Development of Operational Oversight Using New Technologies***

4.5 The Meeting reviewed progress of this project, which would enable civil aviation authorities to access information obtained from the Flight Operational Quality Assurance (FOQA) Programme as a means to carry out continuous safety oversight of air operators using the Internet. The Meeting recalled that this was proposed as a means to optimize the limited human resources of civil aviation authorities by decreasing the amount of required flight inspections. The proposal generated considerable discussion in regards to the sensitivity of the information to which an authority would have access and the need to establish an adequate legal framework for the protection of said safety information. In addition, the Meeting discussed the nature and scope of information that a civil aviation authority would need to conduct effective oversight of an air operator.

4.6 Following lengthy discussion, the Meeting agreed that while the project was a challenge, that it should proceed as there were potential benefits for the operators, authorities and safety. It was also agreed that such an approach would be consistent with the concepts of transparency and Safety Management Systems, but noted that the specific nature of the information to be gathered and the various modalities for sharing this information with a civil aviation authority needed further study. The representative from Airbus expressed his interest to participate in this project and to assist with developing the models necessary to support such a system. A RASG-PA pilot programme conducted by COCESNA/ACSA for Central American States was considered.

## APPENDIX A

### Questionnaire on legislation, regulations and programmes to promote the flow of safety risk information

#### References:

1. Global Safety Initiative # 3 (GSI/3) of the ICAO Global Aviation Safety Plan
2. Global Aviation Safety Roadmap (GASR)
3. Report of the Global Aviation Safety Roadmap Workshop (Bogotá, Colombia, 19 to 23 May 2008.)

#### Background:

Error and incident reporting are essential elements of the free flow of data that is required to assess aviation system safety on a continuous basis and to correct deficiencies when warranted. The reporting typically comes from voluntary reports by aviation professionals that may be self-incriminating or from recordings that are intended to be used only for safety purposes. It is essential to protect such safety information from inappropriate use in order to ensure its continued availability. The use of safety information for other than safety-related purposes can inhibit the future availability of such information with an adverse effect on safety.

A “Just Culture” is defined as an atmosphere of trust in which people are encouraged and even rewarded for providing essential safety-related information, even if self-incriminating, but in which all parties clearly understand which types of behaviors are acceptable or unacceptable.

In the GASR, the term “open reporting” refers to incident reporting. Such reporting is *open* in the sense that it encourages reporting and use beyond that which is mandated. It is also *confidential* in that the reporter’s identity is protected.

Open reporting systems are intended to:

- Clearly identify and understand the hazards or risks
- Protect the identity of persons reporting information

State legislation must include provisions that protect privacy, prevent self-incrimination and properly apportion criminal liability for actions. Without these basic features full disclosure of safety related information will be extremely difficult.

4A - 2

---

The following questionnaire seeks to collect information on implementation of legislation, regulations and programmes to promote the flow of safety risk information.

1. Indicate the status of **legislation** implemented in your State that promotes the effective flow of aviation safety hazard and incident information.
- 
- 

- a) Legislation approved, *indicate date of approval by governmental entity, attaching documentation.*

---

- b) If in process of approval, *indicate estimated date of approval by governmental entity, attaching documentation of legislation.*

---

- c) The legislation has not been developed yet.

---

2. Indicate the status of your State with reference to the implementation of **regulations** to promote the effective flow of aviation safety hazard and incident information.
- 

- a) If the regulation is approved, *indicate the date of approval, attaching a copy of the regulation.*

---

- b) If in process of approval, *indicate the expected approval date and attach documentation of the regulation.*

---

- c) The regulation has not been developed yet.

---

**3.** Has your State developed a **programme** to promote the effective flow of critical operational safety information.

- a) Yes (*attach copy of the programme*).
- b) Implementation in process (*attach copy of the programme*).
- c) No, the programme has not been developed yet.

**4.** **Additional information** (*attach any relevant information*).

**INICIATIVA PARA ARMONIZAR  
LA LEY DE AVIACIÓN CIVIL CON  
EL ANEXO 13 DE OACI. LA  
CULPABILIDAD DESDE EL  
PUNTO DE VISTA PENAL EN  
INCIDENTES Y ACCIDENTES DE  
AVIACIÓN.**

Noviembre de 2008  
Fernando Perfecto Cruz

**JERARQUÍA DE LEYES**



| <b>DERECHO INTERNACIONAL PÚBLICO</b> |   |
|--------------------------------------|---|
| ■                                    | "...conjunto normativo destinado a reglamentar las relaciones entre sujetos internacionales." (Seara Vázquez) |
| ■                                    | "...conjunto de normas jurídicas que rigen las relaciones internacionales." (Guggenheim)                      |
| ■                                    | "...rama del derecho que regula el comportamiento de los Estados y demás sujetos atípicos..." (Ortiz Ahlf)    |

| <b>DELITO</b> |  |
|---------------|--|
|               | "...acto típicamente antijurídico culpable, sometido a veces a condiciones objetivas de penalidad, imputable a un hombre y sometido a una sanción penal." (Luis Jiménez de Asúa) |

## **DOLO**

"...existe cuando se produce un resultado típicamente antijurídico, con consciencia de que se quebranta el deber, con conocimiento de las circunstancias de hecho y del curso esencial de la relación de causalidad existente entre la manifestación humana y el cambio en el mundo exterior, con voluntad de realizar la acción y con representación del resultado que se quiere o ratifica." (Luis Jiménez de Asúa)

## **CULPA**

"existe culpa cuando se produce un resultado típicamente antijurídico por falta de previsión del deber de conocer, no sólo cuando ha faltado al autor la representación del resultado que sobrevendrá, sino también cuando la esperanza de que no sobrevenga ha sido fundamento decisivo de las actividades del autor, que se producen sin querer el resultado antijurídico y sin ratificarlo." (Luis Jiménez de Asúa)

|  |  |
|--|--|
|  | <p style="text-align: center;"><b>TRANSPORTE AÉREO COMERCIAL</b></p> <ul style="list-style-type: none"><li>■ Riesgo creado (aeronave = cosa intrínsecamente peligrosa); responsabilidad objetiva</li><li>■ Socialmente aceptable</li><li>■ Contrato de transporte aéreo</li><li>■ Actualización del riesgo = indemnización contractual (Sistema de Varsovia) o extracontractual (Roma)</li></ul> |
|--|--|

|  |   |
|--|---|
|  | <p style="text-align: center;"><b>INCIDENTES Y ACCIDENTES DE AVIACIÓN</b></p> <ul style="list-style-type: none"><li>■ Pueden transgredir:<ul style="list-style-type: none"><li>- valores de la comunidad (responsabilidad penal)</li><li>- valores de la personalidad (responsabilidad civil)</li><li>- ambos (responsabilidad penal y civil)</li></ul></li></ul> |
|--|---|

■ En principio, el transportista debe asumir la responsabilidad, sin intentar trasladarla al Personal Técnico Aeronáutico ("PTA") o a otros empleados, propios o de otras entidades.

■ PTA:

- seleccionado y contratado por el transportista
- capacidades y aptitudes técnicas, médicas y psicológicas avaladas por el Estado Mexicano
- capacitación y adiestramiento = adecuada operación + garantía máxima posible de seguridad para usuarios

■ Investigación de un incidente o accidente:

- intervención exclusiva de la Autoridad Aeronáutica (reporte final: prevención de sucesos futuros similares)
- en realidad, dependiendo de la magnitud del daño: intervención del Ministerio Público, Fiscal o Procurador con el único propósito de encontrar presuntos responsables para consignarlos ante la autoridad judicial sin esperar la conclusión de la investigación y sin tomar en cuenta el reporte final emitido por la Autoridad Aeronáutica

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|  | <ul style="list-style-type: none"><li>- Regla general: Ministerio Público, Fiscal o Procurador y Jueces no son peritos en materia aeronáutica</li></ul>  |
|  | <ul style="list-style-type: none"><li>- por lo tanto, no son aptos para valorar objetivamente un incidente o accidente de aviación</li><li>■ Necesario y obligatorio armonizar la Ley de Aviación Civil con el Convenio de Chicago:<ul style="list-style-type: none"><li>- seguridad y certeza jurídicas</li></ul></li></ul> |

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|  | <ul style="list-style-type: none"><li>- observancia de los principios generales del Anexo 13 del Convenio de Chicago:</li></ul>   |
|  | <ul style="list-style-type: none"><li>*prevenir futuros incidentes o accidentes</li><li>* no determinar culpa o responsabilidad</li><li>* adecuada y necesaria administración de justicia cuando el caso así lo amerite</li></ul> |

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|  | <p>*protección de la información obtenida por medio de sistemas de recopilación y procesamiento de datos sobre seguridad operacional</p> |
|  | <p>* establecimiento de sistemas de notificación obligatoria y voluntaria de incidentes exentos de sanciones</p>                         |

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|  | <p>EN TODO CASO, LA PRESUNTA RESPONSABILIDAD PENAL EN CASO DE INCIDENTES O ACCIDENTES DE AVIACIÓN NO DEBE LIMITARSE AL PERSONAL TÉCNICO AERONÁUTICO O A OTROS TRABAJADORES RELACIONADOS CON LA OPERACIÓN DE UNA AERONAVE.</p> <p>TAL RESPONSABILIDAD DEBE SER DESLINDADA A NIVEL SISTÉMICO EN LA ORGANIZACIÓN ADMINISTRATIVA DE UN TRANSPORTISTA Y ABARCAR HASTA LOS MÁS ALTOS NIVELES EJECUTIVOS.</p> |
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|  | <b>CONTENIDO CONCEPTUAL DE LA INICIATIVA DE REFORMA (MÉXICO)</b>   |
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|  | <ul style="list-style-type: none"><li>■ Transportistas exclusivamente responsables por daños causados a pasajeros, carga y equipaje en el transporte o a bienes en la superficie</li><br/><li>■ Adopción de las definiciones de accidente, incidente e incidente grave contenidas en el Anexo 13 del Convenio de Chicago</li></ul> |

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|  | <ul style="list-style-type: none"><li>■ La investigación de incidentes y accidentes corresponde única y exclusivamente a la Autoridad Aeronáutica</li></ul>   |
|  | <ul style="list-style-type: none"><li>■ El único objetivo de la investigación es la prevención de futuros eventos similares y no determinar culpa o responsabilidad</li><br/><li>■ Si hay lugar a ello, la Autoridad Aeronáutica hará del conocimiento de la autoridad competente los informes preliminar y final, para que dicha autoridad, mediante la participación de expertos técnicos en materia de aviación, de investigadores y dictaminadores de accidentes aéreos, en dado caso y a partir del contenido de los mencionados informes, determine lo conducente</li></ul> |

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|  | <ul style="list-style-type: none"><li>■ Adopción de las excepciones contenidas en el Adjunto E del Anexo 13 del Convenio de Chicago en materia de protección de la información sobre seguridad operacional</li></ul>   |
|  | <ul style="list-style-type: none"><li>■ No aplicación de sanciones para las personas que emitan reportes dirigidos a la Autoridad Aeronáutica relativos a incidentes cuyo conocimiento facilite la recopilación de información, comprendidos dentro de un sistema de notificación voluntaria de incidentes</li></ul> |

**Agenda Item 5: Project Funding**

**Prioritization/Action Plan**

5.1 Under this agenda item, the Meeting recalled that aviation is dynamic and work should be done through projects using the GASR as the backbone for guiding work to avoid losing focus. In this regard, it was emphasized that RASG-PA projects should result from the analysis of the GSIs.

5.2 The Meeting was informed that as a result of the Bogota Workshop, three GSIs have been analyzed, which generated three projects including the creation of the RASG-PA.

5.3 It was highlighted that many activities can be worked through regional safety oversight organizations with support from the ISSG. States can also provide valuable support through in-kind human resources to develop specific projects. However, in spite of having these resources available, financial resources are also required in order to implement some initiatives.

5.4 In this regard, several options were presented as options to obtain financial support. These included the use of ICAO Regional Office administrative mechanisms, implementation of an ICAO Technical Cooperation Regional Project, the International Financial Facility for Aviation Safety (IFFAS), among others.

5.5 Likewise, the possibility to obtain financing from the Western Hemisphere Transport Initiative (WHTI) through the Group of Experts of Aviation Safety Security and Assistance (GEASA), which Transport Canada and Colombia participate, was mentioned. Finally, the Meeting was informed that financial support could also be sought from aviation insurance companies.

5.6 In this regard, the Meeting agreed to formulate the following Conclusion:

**CONCLUSION RASGPA 01/3 FUNDING OPTIONS FOR RASG-PA PROJECTS**

That the RASG-PA Executive Steering Committee pursue alternative options for financial/other support for RASG-PA projects, including but not limited to the ISSG and other industry partners, IFFAS, aviation insurance providers, GEASSA/Transport Canada, the U.S. Trade Development Association, and other institutions and organizations having a vested interest in aviation safety; results to be reported at the next RASG-PA Meeting in 2009.

**Agenda Item 6: Other Business**

**Regional Approach Towards Implementation of the Global Aviation Safety Plan (GASP)**

6.1 The Meeting recalled that the implementation of the GASR and associated Global Aviation Safety Plan concepts should proceed in a systematic manner. The step-by-step planning process contained in the GASR was already in use in Pan America to develop appropriate action plans which, in turn, defined the specific activities and projects that should take place in order to improve safety on a State, regional and subregional basis.

6.2 To further enhance the implementation of the GASP as the overall framework for governing planning in Pan American States in the area of safety, it was proposed that performance framework forms (PFF), based on the already established and mature approach used for planning air navigation facilities and services, be incorporated into the methodology established by the Regional Aviation Safety Group – Pan America, as well as its Executive Steering Committee. The Meeting recalled that the air navigation systems planning methodology used forms developed by ICAO to assist in development of air navigation plans so as to be consistent with the Global Aviation Navigation Plan (GANP). These forms were already in use within the CAR/SAM Regions for air navigation system(s) implementation.

6.3 The Meeting recognized that the performance framework forms were a management tool. They would first be completed at the regional level to establish an overarching regional plan that is in line with the GASP. Following this, sub-regional and national action plans would be developed so as to align activities to be consistent with the global and regional plans, including the overarching timeframes for meeting GASP objectives. The Meeting was advised that once completed they would also serve as a means to monitor the status of implementation of the various components of the plan at a sub-regional and State basis.

6.4 The Meeting agreed that the forms should be used as a management tool and to establish the overarching timeframes for establishing national and subregional implementation plans and meeting the objectives of the GASP. The Meeting requested clarification on how these timeframes would be established within the context of the RASG-PA. It was agreed that the Executive Steering Committee should develop timeframes for the completion of the short, medium and long-term objectives of the GASP and propose those timeframes to the members of the RASG-PA for their concurrence. To complete this exercise on a timely basis, it was also agreed that this consultation should be done via correspondence. Based upon the above deliberations, the Meeting adopted the following Conclusion:

**CONCLUSION RASG-PA/01/4 REGIONAL APPROACH TOWARDS THE IMPLEMENTATION OF THE GLOBAL AVIATION SAFETY PLAN**

That:

- a) the Executive Steering Committee adopt the performance framework forms (PFF) at the **Appendix** to this part of the Report and establish overarching timeframes for completion of the short, medium and long-term objectives of GASP/GASR, in consultation with all members of the RASG-PA; and

- b) the RASG-PA use the performance framework forms as a management tool for use by States, sub-regional organizations and the region to track the progress of implementation of the GASP/GASR.

6.5 Under this agenda item, the Latin America Air Transport Association (ALTA) made a presentation concerning their structure and the safety enhancement initiatives they had developed for Latin America and Caribbean safety. In addition, the goals and strategic objectives of ALTA were presented as they pertain to safety improvement, costs, loss reduction and responsibilities.

6.6 ALTA informed the Meeting that insurance costs could be reduced as a result of improved safety levels. Moreover, it was mentioned that cost savings could also be obtained by reduction of ground handling incidents.

6.7 Regarding the ALTA initiative, the Meeting agreed on the following Conclusion:

**CONCLUSION RASG-PA/01/5                      ALTA    INITIATIVE    FOR    INCREASING  
OPERATIONAL SAFETY**

That, in order to avoid duplicity of efforts, the RASG-PA Executive Steering Committee analyze the scope and objectives of the safety enhancement initiatives (SEI) of ALTA with IATA safety initiatives and make appropriate recommendations.

6.8 The Meeting also exchanged points of view on the future of the Pan American Aviation Safety Team (PAAST). In this regard, IATA stated that the integration of PAAST into the RASG-PA should be considered, and it was agreed that this issue could be incorporated into the agenda of the next RASG-PA meeting.

6.9 The RASG-PA Chairperson requested that the Meeting consider the venue for the next RASG-PA meeting that should be held in the SAM Region. Colombia offered to host the Meeting and it was unanimously accepted by the Meeting.

**APPENDIX**

**GLOBAL SAFETY INITIATIVES AND OBJECTIVES**

| <b>GSI-1: Consistent Implementation of International Standards and Industry Best Practices</b>  |   |                  |                       |               |
|---|---|------------------|-----------------------|---------------|
| <b>Objectives</b>   |   |                  |                       |               |
| 1a  | States implement ICAO SARPs and best practices consistently.  |                  |                       |               |
| 1b  | Perform gap assessment for those States that cannot comply. Establish plans to reach desired compliance, including international support where necessary.   |                  |                       |               |
| 1c  | Compliance with international SARPs is assessed on a continuing basis through ICAO USOAP and other equivalent means of assessment. Coordinated international support is being provided where necessary. |                  |                       |               |
| <b>Benefits</b>   |   |                  |                       |               |
| <ul style="list-style-type: none"> <li>• Regulatory framework that is robust and able to meet safety challenges.</li> <li>• Uniformity with other States improves safety and efficiency.</li> <li>• International recognition.</li> </ul> |   |                  |                       |               |
| <i>Strategy</i>   |   |                  |                       |               |
|   | <b>TIME FRAME FOR OBJECTIVES</b>  | <b>START-END</b> | <b>RESPONSIBILITY</b> | <b>STATUS</b> |
|   | Objective 1a:   |                  |                       |               |
|   | Objective 1b:   |                  |                       |               |
|   | Objective 1c:   |                  |                       |               |
|   | <b>TASKS</b>  |                  |                       |               |
| <b>Short term</b>   | <ul style="list-style-type: none"> <li>• Select the subregion (e.g. Banjul Accord) or State for analysis.</li> </ul>  |                  |                       |               |
|   | <ul style="list-style-type: none"> <li>• Identify key stakeholders</li> </ul>   |                  |                       |               |
|   | <ul style="list-style-type: none"> <li>• Outline the safety strengths and enablers</li> </ul>   |                  |                       |               |
|   | <ul style="list-style-type: none"> <li>• Identify the existing and emerging risks.</li> </ul>   |                  |                       |               |
|   | <ul style="list-style-type: none"> <li>• Perform a gap analysis</li> </ul>  |                  |                       |               |
|   | <ul style="list-style-type: none"> <li>• Develop prioritized recommended actions</li> </ul>   |                  |                       |               |
|   | <ul style="list-style-type: none"> <li>• Develop an action plan.</li> </ul>   |                  |                       |               |
| <b>Medium term</b>  | <ul style="list-style-type: none"> <li>• Implement the action plan</li> </ul>   |                  |                       |               |
| <b>References</b>   | GSI-1; and Focus Area 1 of the Roadmap  |                  |                       |               |

| <b>GSI-2: Consistent Regulatory Oversight</b>   |  |                  |                       |               |
|---|--|------------------|-----------------------|---------------|
| <b>Objectives</b>   |  |                  |                       |               |
| 2a  | States ensure that their Regulatory Authority is independent in the conduct of its safety functions, competent and adequately funded.  |                  |                       |               |
| 2b  | States establish appropriate systems to ensure continued effectiveness of their regulatory function.   |                  |                       |               |
| <b>Benefits</b>   |  |                  |                       |               |
| <ul style="list-style-type: none"> <li>• States can license and certify in accordance with ICAO Standards and best practices.</li> <li>• States can conduct safety oversight of all air operators and approved maintenance organizations.</li> <li>• States can oversight foreign air operations in their territories.</li> <li>• States can resolve safety issues in a timely manner.</li> </ul> |  |                  |                       |               |
| <i>Strategy</i>   |  |                  |                       |               |
|   | <b>TIME FRAME FOR OBJECTIVES</b>   | <b>START-END</b> | <b>RESPONSIBILITY</b> | <b>STATUS</b> |
|   | Objective 2a:  |                  |                       |               |
|   | Objective 2b   |                  |                       |               |
|   | <b>TASKS</b>   |                  |                       |               |
| <b>Short term</b>   | <ul style="list-style-type: none"> <li>• Select the subregion (e.g. Banjul Accord) or State for analysis.</li> <li>• Identify key stakeholders</li> <li>• Outline the safety strengths and enablers</li> <li>• Identify the existing and emerging risks.</li> <li>• Perform a gap analysis</li> <li>• Develop prioritized recommended actions</li> <li>• Develop an action plan.</li> <li>•</li> </ul> |                  |                       |               |
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|   |  |                  |                       |               |
| <b>Medium term</b>  | <ul style="list-style-type: none"> <li>• Implement the action plan</li> </ul>  |                  |                       |               |
| <b>References</b>   | GSI-2; and Focus Area 2 of the Roadmap   |                  |                       |               |

| <b>GSI-3: Effective Errors and Incidents Reporting</b>   |  |                  |                       |               |
|--|--|------------------|-----------------------|---------------|
| <b>Objectives</b>  |  |                  |                       |               |
| 3a   | States introduce legislative changes to support the “just culture”, encourage open reporting systems and protect data collected solely for the purpose of improving aviation safety. |                  |                       |               |
| 3b   | ICAO implements review of States’ activities to identify gaps in their legislative action to encourage open reporting systems. Develop a plan to address gaps.                       |                  |                       |               |
| 3c   | Collate regional safety data.  |                  |                       |               |
| 3d   | Implement international sharing of data/global data reporting system.  |                  |                       |               |
| <b>Benefits</b>  |  |                  |                       |               |
| <ul style="list-style-type: none"> <li>• Encourages personnel to report errors.</li> <li>• Required to implement a proactive and predictive approach towards safety management.</li> </ul> |  |                  |                       |               |
| <i>Strategy</i>  |  |                  |                       |               |
|  | <b>TIME FRAME FOR OBJECTIVES</b>   | <b>START-END</b> | <b>RESPONSIBILITY</b> | <b>STATUS</b> |
|  | Objective 3a:  |                  |                       |               |
|  | Objective 3b:  |                  |                       |               |
|  | Objective 3c:  |                  |                       |               |
|  | Objective 3d:  |                  |                       |               |
|  | <b>TASKS</b>   |                  |                       |               |
| <b>Short term</b>  | <ul style="list-style-type: none"> <li>• Select the subregion (e.g. Banjul Accord) or State for analysis.</li> </ul>   |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>• Identify key stakeholders</li> </ul>  |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>• Outline the safety strengths and enablers</li> </ul>  |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>• Identify the existing and emerging risks.</li> </ul>  |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>• Perform a gap analysis</li> </ul>   |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>• Develop prioritized recommended actions</li> </ul>  |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>• Develop an action plan.</li> </ul>  |                  |                       |               |
| <b>Medium term</b>   | <ul style="list-style-type: none"> <li>• Implement the action plan</li> </ul>  |                  |                       |               |
| <b>References</b>  | GSI-3; and Focus Area 3 of the Roadmap   |                  |                       |               |

| <b>GSI-4: Effective Incident and Accident Investigation</b>  |  |                  |                       |               |
|--|--|------------------|-----------------------|---------------|
| <b>Objectives</b>  |  |                  |                       |               |
| 4a   | States implement ICAO Annex 13 principles and the introduction of, or access to, an adequately funded, professionally trained, independent and impartial investigative body. Action is taken on recommendations. |                  |                       |               |
| 4b   | States institute a legal framework for the protection of safety data, with the purpose of accident prevention, not assignment of blame.  |                  |                       |               |
| 4c   | Implement international cooperation and information sharing of accidents and incidents.  |                  |                       |               |
| <b>Benefits</b>  |  |                  |                       |               |
| <ul style="list-style-type: none"> <li>• Encourages personnel to report errors.</li> <li>• Required to implement a reactive, proactive and predictive approach towards safety management.</li> </ul> |  |                  |                       |               |
| <i>Strategy</i>  |  |                  |                       |               |
|  | <b>TIME FRAME FOR OBJECTIVES</b>   | <b>START-END</b> | <b>RESPONSIBILITY</b> | <b>STATUS</b> |
|  | Objective 4a:  |                  |                       |               |
|  | Objective 4b:  |                  |                       |               |
|  | Objective 4c:  |                  |                       |               |
| <b>TASKS</b>   |  |                  |                       |               |
| <b>Short term</b>  | <ul style="list-style-type: none"> <li>• Select the subregion (e.g. Banjul Accord) or State for analysis.</li> </ul>   |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>• Identify key stakeholders</li> </ul>  |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>• Outline the safety strengths and enablers</li> </ul>  |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>• Identify the existing and emerging risks.</li> </ul>  |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>• Perform a gap analysis</li> </ul>   |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>• Develop prioritized recommended actions</li> </ul>  |                  |                       |               |
| <b>Medium term</b>   | <ul style="list-style-type: none"> <li>• Develop an action plan.</li> <li>•</li> </ul>   |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>• Implement the action plan</li> </ul>  |                  |                       |               |
| <b>References</b>  | GSI-4; and Focus Area 4 of the Roadmap   |                  |                       |               |

| <b>GSI-5: Consistent Coordination of Regional Programmes</b>  |  |                  |                       |               |
|---|--|------------------|-----------------------|---------------|
| <b>Objectives</b>   |  |                  |                       |               |
| 5a  | Design regional mechanisms and build on existing ones in order to foster consistency.                                |                  |                       |               |
| 5b  | Assign priority to action to regions on the basis.   |                  |                       |               |
| <b>Benefits</b>   |  |                  |                       |               |
| <ul style="list-style-type: none"> <li>• Rationalization of resources.</li> <li>• More effective implementation of action plans.</li> <li>• Sustainable.</li> </ul> |  |                  |                       |               |
| <i>Strategy</i>   |  |                  |                       |               |
|   | <b>TIME FRAME FOR OBJECTIVES</b>   | <b>START-END</b> | <b>RESPONSIBILITY</b> | <b>STATUS</b> |
|   | Objective 5a:  |                  |                       |               |
|   | Objective 5b:  |                  |                       |               |
|   | <b>TASKS</b>   |                  |                       |               |
| <b>Short term</b>   | <ul style="list-style-type: none"> <li>• Select the subregion (e.g. Banjul Accord) or State for analysis.</li> </ul> |                  |                       |               |
|   | <ul style="list-style-type: none"> <li>• Identify key stakeholders</li> </ul>  |                  |                       |               |
|   | <ul style="list-style-type: none"> <li>• Outline the safety strengths and enablers</li> </ul>                        |                  |                       |               |
|   | <ul style="list-style-type: none"> <li>• Identify the existing and emerging risks.</li> </ul>                        |                  |                       |               |
|   | <ul style="list-style-type: none"> <li>• Perform a gap analysis</li> </ul>   |                  |                       |               |
|   | <ul style="list-style-type: none"> <li>• Develop prioritized recommended actions</li> </ul>                          |                  |                       |               |
|   | <ul style="list-style-type: none"> <li>• Develop an action plan.</li> </ul>  |                  |                       |               |
| <b>Medium term</b>  | <ul style="list-style-type: none"> <li>• Implement the action plan</li> </ul>  |                  |                       |               |
| <b>References</b>   | GSI-5; and Focus Area 5 of the Roadmap   |                  |                       |               |

| <b>GSI-6: Effective Errors and Incidents Reporting and Analysis in the Industry</b>   |  |                  |                       |               |
|---|--|------------------|-----------------------|---------------|
| <b>Objectives</b>   |  |                  |                       |               |
| 6a  | Industry commits to a “Just Culture” of reporting all safety-related and potential safety issues without fear of reprimand to involved parties.  |                  |                       |               |
| 6b  | Identify and implement common metrics and descriptors of precursor events needed to enable adoption of a proactive approach to managing risk.  |                  |                       |               |
| 6c  | Establish and integrate across the industry shared incident/error databases. Demonstrate and disseminate the benefits of open reporting.   |                  |                       |               |
| <b>Benefits</b>   |  |                  |                       |               |
| <ul style="list-style-type: none"> <li>• Enables a proactive and predictive approach towards managing safety.</li> <li>• Prerequisite to implement a Safety Management System.</li> </ul> |  |                  |                       |               |
| <i>Strategy</i>   |  |                  |                       |               |
|   | <b>TIME FRAME FOR OBJECTIVES</b>   | <b>START-END</b> | <b>RESPONSIBILITY</b> | <b>STATUS</b> |
|   | Objective 6a:  |                  |                       |               |
|   | Objective 6b:  |                  |                       |               |
|   | Objective 6c:  |                  |                       |               |
| <b>TASKS</b>  |  |                  |                       |               |
| <b>Short term</b>   | <ul style="list-style-type: none"> <li>• Select the subregion (e.g. Banjul Accord) or State for analysis.</li> <li>• Identify key stakeholders</li> <li>• Outline the safety strengths and enablers</li> <li>• Identify the existing and emerging risks.</li> <li>• Perform a gap analysis</li> <li>• Develop prioritized recommended actions</li> <li>• Develop an action plan.</li> <li>•</li> </ul> |                  |                       |               |
| <b>Medium term</b>  | <ul style="list-style-type: none"> <li>• Implement the action plan</li> </ul>  |                  |                       |               |
| <b>References</b>   | GSI-6; and Focus Area 6 of the Roadmap   |                  |                       |               |

| <b>GSI-7: Consistent Use of Safety Management Systems (SMS)</b>  |  |                  |                       |               |
|--|--|------------------|-----------------------|---------------|
| <b>Objectives</b>  |  |                  |                       |               |
| 7a   | SMS is mandated across all sectors and disciplines of the industry.  |                  |                       |               |
| 7b   | Develop a plan for incorporation of SMS into audit processes.  |                  |                       |               |
| 7c   | Develop audit processes to assess operation of SMS function.   |                  |                       |               |
| 7d   | Implement review of SMS during audits.   |                  |                       |               |
| 7e   | Define interface points between industry focus areas and develop a plan for SMS programme integration across all interfaces. |                  |                       |               |
| <b>Benefits</b>  |  |                  |                       |               |
| <ul style="list-style-type: none"> <li>• Enables a proactive and predictive approach towards managing safety.</li> <li>• Prerequisite to implement an effective Safety Management System.</li> </ul> |  |                  |                       |               |
| <b>Strategy</b>  |  |                  |                       |               |
|  | <b>TIME FRAME FOR OBJECTIVES</b>   | <b>START-END</b> | <b>RESPONSIBILITY</b> | <b>STATUS</b> |
|  | Objective 7a:  |                  |                       |               |
|  | Objective 7b:  |                  |                       |               |
|  | Objective 7c:  |                  |                       |               |
|  | Objective 7d:  |                  |                       |               |
|  | <b>TASKS</b>   |                  |                       |               |
| <b>Short term</b>  | <ul style="list-style-type: none"> <li>• Select the subregion (e.g. Banjul Accord) or State for analysis.</li> </ul>         |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>• Identify key stakeholders</li> </ul>  |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>• Outline the safety strengths and enablers</li> </ul>                                |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>• Identify the existing and emerging risks.</li> </ul>                                |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>• Perform a gap analysis</li> </ul>   |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>• Develop prioritized recommended actions</li> </ul>                                  |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>• Develop an action plan.</li> </ul>  |                  |                       |               |
| <b>Medium term</b>   | <ul style="list-style-type: none"> <li>• Implement the action plan</li> </ul>  |                  |                       |               |
| <b>References</b>  | GSI-7; and Focus Area 7 of the Roadmap   |                  |                       |               |

| <b>GSI-8: Consistent Compliance with Regulatory Requirements</b>   |  |           |                |        |
|--|--|-----------|----------------|--------|
| <b>Objectives</b>  |  |           |                |        |
| 8a   | With full management support, execute independent assessment and gap analysis within the industry of regulatory compliance to address areas of non-compliance. |           |                |        |
| 8b   | Perform regular independent audits of operational safety to assess ongoing compliance across the industry.   |           |                |        |
| <b>Benefits</b>  |  |           |                |        |
| <ul style="list-style-type: none"> <li>• A safe system can only be attained when the industry complies with the State regulations, which are fundamentally based upon the ICAO Standards and Recommended Practices (SARPs).</li> <li>• Continued and audited compliance with State regulations ensures continued improvement in safety, as these regulations are amended to bring and keep them in full compliance with ICAO SARPs, which are updated to reflect the evolving aviation safety requirements.</li> </ul> |  |           |                |        |
| <b>Strategy</b>  |  |           |                |        |
|  | TIME FRAME FOR OBJECTIVES  | START-END | RESPONSIBILITY | STATUS |
|  | Objective 8a:  |           |                |        |
|  | Objective 8b:  |           |                |        |
|  | TASKS  |           |                |        |
| <b>Short term</b>  | <ul style="list-style-type: none"> <li>• Select the subregion (e.g. Banjul Accord) or State for analysis.</li> </ul>   |           |                |        |
|  | <ul style="list-style-type: none"> <li>• Identify key stakeholders</li> </ul>  |           |                |        |
|  | <ul style="list-style-type: none"> <li>• Outline the safety strengths and enablers</li> </ul>  |           |                |        |
|  | <ul style="list-style-type: none"> <li>• Identify the existing and emerging risks.</li> </ul>  |           |                |        |
|  | <ul style="list-style-type: none"> <li>• Perform a gap analysis</li> </ul>   |           |                |        |
|  | <ul style="list-style-type: none"> <li>• Develop prioritized recommended actions</li> </ul>  |           |                |        |
|  | <ul style="list-style-type: none"> <li>• Develop an action plan.</li> </ul>  |           |                |        |
| <b>Medium term</b>   | <ul style="list-style-type: none"> <li>• Implement the action plan</li> </ul>  |           |                |        |
|  |  |           |                |        |
| <b>References</b>  | GSI-8; and Focus Area 8 of the Roadmap   |           |                |        |

| <b>GSI-9: Consistent Adoption of Industry Best Practices</b>   |  |                  |                       |               |
|--|--|------------------|-----------------------|---------------|
| <b>Objectives</b>  |  |                  |                       |               |
| 9a   | Improve the structures (through management commitment) for maintaining knowledge of best practices and identify future developments in best practices. |                  |                       |               |
| 9b   | With industry openly sharing information regarding the benefits of best practices, implement performance benchmarking of dissemination consistency.    |                  |                       |               |
| <b>Benefits</b>  |  |                  |                       |               |
| <ul style="list-style-type: none"> <li>Enables the incorporation of up-to-date industry best practices, which represent the application of lessons learned by the international aviation industry, through the ongoing acquisition and maintenance of best practices knowledge.</li> <li>Benchmarking of the dissemination of best practices allows the identification of those operators, States or regions where additional efforts are needed to increase best practice adoption.</li> <li>Adoption of these best practices will improve overall safety and/or efficiency.</li> </ul> |  |                  |                       |               |
| <i>Strategy</i>  |  |                  |                       |               |
|  | <b>TIME FRAME FOR OBJECTIVES</b>   | <b>START-END</b> | <b>RESPONSIBILITY</b> | <b>STATUS</b> |
|  | Objective 9a:  |                  |                       |               |
|  | Objective 9b:  |                  |                       |               |
|  | <b>TASKS</b>   |                  |                       |               |
| <b>Short term</b>  | <ul style="list-style-type: none"> <li>Select the subregion (e.g. Banjul Accord) or State for analysis.</li> </ul>                                     |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>Identify key stakeholders</li> </ul>  |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>Outline the safety strengths and enablers</li> </ul>  |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>Identify the existing and emerging risks.</li> </ul>  |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>Perform a gap analysis</li> </ul>   |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>Develop prioritized recommended actions</li> </ul>  |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>Develop an action plan.</li> </ul>  |                  |                       |               |
| <b>Medium term</b>   | <ul style="list-style-type: none"> <li>Implement the action plan</li> </ul>  |                  |                       |               |
| <b>References</b>  | GSI-9; and Focus Area 9 of the Roadmap   |                  |                       |               |

| <b>GSI-10: Alignment of Industry Safety Strategies</b>   |  |                  |                       |               |
|--|--|------------------|-----------------------|---------------|
| <b>Objectives</b>  |  |                  |                       |               |
| 10a  | Design a mechanism for coordination and sharing of safety strategies.  |                  |                       |               |
| 10b  | Coordinate and share safety strategies, seeking to achieve alignment and minimize duplication.                       |                  |                       |               |
| <b>Benefits</b>  |  |                  |                       |               |
| <ul style="list-style-type: none"> <li>• The effectiveness of efforts dedicated to improve aviation safety is increased by aligning strategies, goals and methods, especially when integrated solutions are available at global or regional levels.</li> <li>• Duplication of efforts is minimized.</li> </ul> |  |                  |                       |               |
| <i>Strategy</i>  |  |                  |                       |               |
|  | <b>TIME FRAME FOR OBJECTIVES</b>   | <b>START-END</b> | <b>RESPONSIBILITY</b> | <b>STATUS</b> |
|  | Objective 10a:   |                  |                       |               |
|  | Objective 10b:   |                  |                       |               |
| <b>TASKS</b>   |  |                  |                       |               |
| <b>Short term</b>  | <ul style="list-style-type: none"> <li>• Select the subregion (e.g. Banjul Accord) or State for analysis.</li> </ul> |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>• Identify key stakeholders</li> </ul>  |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>• Outline the safety strengths and enablers</li> </ul>                        |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>• Identify the existing and emerging risks.</li> </ul>                        |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>• Perform a gap analysis</li> </ul>   |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>• Develop prioritized recommended actions</li> </ul>                          |                  |                       |               |
|  | <ul style="list-style-type: none"> <li>• Develop an action plan.</li> </ul>  |                  |                       |               |
| <b>Medium term</b>   | <ul style="list-style-type: none"> <li>• Implement the action plan</li> </ul>  |                  |                       |               |
| <b>References</b>  | GSI-10; and Focus Area 10 of the Roadmap   |                  |                       |               |

| <b>GSI-11: Sufficient Number of Qualified Personnel</b>   |  |                  |                       |               |
|---|--|------------------|-----------------------|---------------|
| <b>Objectives</b>   |  |                  |                       |               |
| 11a   | Identify requirements for sustaining aviation safety against projected growth of commercial aviation.                |                  |                       |               |
| 11b   | Implement resource plans to deliver appropriate numbers of qualified people.   |                  |                       |               |
| 11c   | Establish audit processes to confirm that people resource plans will deliver the appropriate numbers.                |                  |                       |               |
| <b>Benefits</b>   |  |                  |                       |               |
| <ul style="list-style-type: none"> <li>• The recruitment, training and retention of technically qualified staff, including those engaged in regulatory oversight functions, ensures the potential for growth in commercial aviation while maintaining safety levels.</li> <li>• A core workforce of well trained competent staff is a prerequisite for safety.</li> </ul> |  |                  |                       |               |
| <i>Strategy</i>   |  |                  |                       |               |
|   | <b>TIME FRAME FOR OBJECTIVES</b>   | <b>START-END</b> | <b>RESPONSIBILITY</b> | <b>STATUS</b> |
|   | Objective 11a:   |                  |                       |               |
|   | Objective 11b:   |                  |                       |               |
|   | Objective 11c:   |                  |                       |               |
| <b>TASKS</b>  |  |                  |                       |               |
| <b>Short term</b>   | <ul style="list-style-type: none"> <li>• Select the subregion (e.g. Banjul Accord) or State for analysis.</li> </ul> |                  |                       |               |
|   | <ul style="list-style-type: none"> <li>• Identify key stakeholders</li> </ul>  |                  |                       |               |
|   | <ul style="list-style-type: none"> <li>• Outline the safety strengths and enablers</li> </ul>                        |                  |                       |               |
|   | <ul style="list-style-type: none"> <li>• Identify the existing and emerging risks.</li> </ul>                        |                  |                       |               |
|   | <ul style="list-style-type: none"> <li>• Perform a gap analysis</li> </ul>   |                  |                       |               |
|   | <ul style="list-style-type: none"> <li>• Develop prioritized recommended actions</li> </ul>                          |                  |                       |               |
|   | <ul style="list-style-type: none"> <li>• Develop an action plan.</li> </ul>  |                  |                       |               |
| <b>Medium term</b>  | <ul style="list-style-type: none"> <li>• Implement the action plan</li> </ul>  |                  |                       |               |
| <b>References</b>   | GSI-11; and Focus Area 11 of the Roadmap   |                  |                       |               |

| <b>GSI-12: Use of Technology to Enhance Safety</b>  |  |                  |                       |               |
|---|--|------------------|-----------------------|---------------|
| <b>Objectives</b>   |  |                  |                       |               |
| 12a   | Define proven technology gaps. Industry works together to identify areas where technology might provide significant safety benefits. |                  |                       |               |
| 12b   | Deploy proven technologies that have been developed to enhance safety.   |                  |                       |               |
| 12c   | Integrate measures to close technology gap.  |                  |                       |               |
| <b>Benefits</b>   |  |                  |                       |               |
| <ul style="list-style-type: none"> <li>• Technological advances contribute significantly to major improvement in safety.</li> <li>• The purchase, installation and maintenance of advanced technologies increases strongly the potential for safety improvement, but only when carefully planned, making use of appropriate technology and taking in consideration all regional factors.</li> </ul> |  |                  |                       |               |
| <i>Strategy</i>   |  |                  |                       |               |
|   | <b>TIME FRAME FOR OBJECTIVES</b>   | <b>START-END</b> | <b>RESPONSIBILITY</b> | <b>STATUS</b> |
|   | Objective 12a:   |                  |                       |               |
|   | Objective 12b:   |                  |                       |               |
|   | Objective 12c:   |                  |                       |               |
|   | <b>TASKS</b>   |                  |                       |               |
| <b>Short term</b>   | <ul style="list-style-type: none"> <li>• Select the subregion (e.g. Banjul Accord) or State for analysis.</li> </ul>                 |                  |                       |               |
|   | <ul style="list-style-type: none"> <li>• Identify key stakeholders</li> </ul>  |                  |                       |               |
|   | <ul style="list-style-type: none"> <li>• Outline the safety strengths and enablers</li> </ul>  |                  |                       |               |
|   | <ul style="list-style-type: none"> <li>• Identify the existing and emerging risks.</li> </ul>  |                  |                       |               |
|   | <ul style="list-style-type: none"> <li>• Perform a gap analysis</li> </ul>   |                  |                       |               |
|   | <ul style="list-style-type: none"> <li>• Develop prioritized recommended actions</li> </ul>  |                  |                       |               |
|   | <ul style="list-style-type: none"> <li>• Develop an action plan.</li> <li>•</li> </ul>   |                  |                       |               |
| <b>Medium term</b>  | <ul style="list-style-type: none"> <li>• Implement the action plan</li> </ul>  |                  |                       |               |
| <b>References</b>   | GSI-12; and Focus Area 12 of the Roadmap   |                  |                       |               |