



Agenda Item 4: Follow up on Bogotá Declaration

PROGRESS ON THE IMPLEMENTATION OF SAFETY OVERSIGHT IMPROVEMENT

(Presented by the Secretariat)

SUMMARY	
<p>This working paper (WP) presents updated information on the follow up of the goals related to safety established in the Declaration of Bogota, regarding the following areas:</p> <ul style="list-style-type: none">✓ Safety oversight;✓ accidents;✓ runway excursions;✓ aerodromes certifications; and <p>implementation of the state safety programme (SSP) and of the safety management system (SMS)</p>	
References:	
<ul style="list-style-type: none">- Global coordination meeting (GCM) of the Planning and implementation regional groups (PIRG) and Regional aviation safety groups (RASG) (Montreal 19 March 2013)- Report of the First Meeting of SAM Air Navigation and Safety Directors (Lima, Peru, 21-22 October 2013)- Report of the Second Meeting of SAM Air Navigation and Safety Directors (Lima, Peru, 14-16 September 2015)- First edition of the ICAO Global aviation safety plan (GASP), revised version, (Doc 10004, 2013)- A38-2 Resolution –<i>ICAO global planning for safety and air navigation</i>-	
ICAO Strategic Objectives:	<i>A - Safety</i>

Introduction

1.1 ICAO continues incorporating in all its processes performance measuring methods for its different strategic objectives, through the establishment of a group of indicators and metrics, as well as through performance dashboards for each region.

1.2 In this regard, and under the principle of transparency in the use of shared information,

ICAO is leading the creation of the *safety performance dashboard* in the web page of each ICAO Regional Office in order to measure performance of the following safety areas:

- ✓ Safety oversight;
- ✓ accidents and serious incidents;
- ✓ runway excursions and incursions;
- ✓ aerodromes certification; and
- ✓ State safety programme (SSP) and safety management system (SMS) implementation.

1.3 The *safety performance dashboard* will permit a safety measure-based management in the States and the SAM Region. The rationale of this approach is based on the following fundamental principles:

- ✓ Work by results; and
- ✓ Management based in measuring.

1.4 In the First edition of ICAO Global aviation safety plan (GASP), revised version, (Doc 10004, 2013), establishes that continuous enhancement of global aviation safety is fundamental for guaranteeing that air transport continues with the important function of promoting sustainable economic and social development in the whole world.

1.5 This revised version of the GASP also establishes the global objectives for air navigation safety, as well as *the milestones and specific priorities* that States regional planners should take into account for the enhancement of aviation safety.

1.6 On 21 to 22 October 2013, the First Meeting of Air Navigation and Flight Safety Directors of the SAM Region, in Lima, Peru. In this meeting, the safety directors agreed on the following safety goal up to December 2016:

- **Safety oversight:** Have 80% of effective implementation (EI) in the SAM Region.
- **Accidents:** Reduce the SAM regional accident rate gap in 50% with regard to the global accident rate.
- **Runway excursions:** Reduce runway excursions in 20% with regard to the average rate of the Region (2007 – 2012).
- **Aerodrome certification:** Have 20% of the international aerodromes certified.
- **State Safety Programmes (SSP) and Safety Management System (SMS) Implementation:**
 - Reach 67% of SSP implementation.
 - Reach 100% of the service providers SMS oversight capacity.

1.7 Likewise, from 4 to 6 December 2013, the Thirteenth Meeting of Civil Aviation Authorities of the SAM Region (RAAC/13) was held in Bogota, Colombia. In this meeting, through the Declaration of Bogota, the States committed to achieve the goals agreed in the First Meeting of Air Navigation and Flight Safety Directors of the SAM Region.

2 Follow up to the goals agreed in the Declaration of Bogota

2.1 Safety oversight – Effective implementation (EI)

2.1.1 Between 2011 and 2012 ICAO went through a transition to the ICAO Universal safety oversight audit programme (USOAP) continuous monitoring approach (CMA) and, from January 2013, USOAP CMA was definitely implemented.

2.1.2 From November 2011 to August 2015, six (06) ICAO coordinated validation missions (ICVM) were carried out to the following South American States: Colombia (2011); Ecuador and Suriname (2012); Argentina and Venezuela (2013) and Uruguay (2014). Likewise, two (02) CMA audits were carried out: to Bolivia (2013) and Peru (2014), respectively, and one (01) activity ex situ to Brazil (2015).

2.1.3 During this period, SAM States improved their EI as follows: Colombia **16%**, Ecuador **12.4%**, Suriname **9.6%**, Argentina **9.1%**, Venezuela **10.9%**, Peru **6.21%**, Uruguay **16.66%** and Brazil (**1.72%**). The only States that did not improve its EI was Bolivia, decreasing the EI from 72.08 to 67.99% (- **4.09%**).

2.1.4 Based on the results obtained, the average EI from the SAM Region increased from **66.31%** in 2011 to **72.08%** in August 2015 (**5.77%**), which represents an average of improvement by activity of approximately **0.64%**.

2.1.5 Considering that the target for December 2016 is that the SAM Region should improve its EI in **8%** to comply with the goal of the Declaration of Bogota, it is necessary that Panama, Ecuador, Brazil, Guyana, Paraguay and Bolivia improve their individual rates in **17.34%** during the CMA activities programmed for 2015 and 2016.

2.1.6 Also, Argentina, Venezuela, Colombia, Peru, Chile, Uruguay and Suriname, in the case they have completed more than 50% of the corrective action plans (CAPs), may request an activity ex situ to support the SAM Region in achieving the goal of 80%.

2.1.7 WP/12 presents updated information on Panama audit (24 August to 03 September 2015), as well as estimations of Ecuador ICVM (23 to 29 September 2015) and Brazil ICVM (09 to 13 November 2015). In this regard, the performance of ICVMs of Guyana, Paraguay and Bolivia programmed for 2016 is being estimated.

2.1.8 *Appendix A* to this WP presents a detailed analysis of the indicators, goals and mitigations measures to improve the area of safety oversight.

2.2 Accidents

2.2.1 According to the goal established in the Declaration of Bogota, in 2014 the SAM Region should decrease the gap of the accidents rate in **50%** in relation to the global accident rate.

2.2.2 Considering the data obtained at ICAO iSTARS website, and using 2013 information as a baseline, it can be observed in the following table that the SAM Regional accident rate for aircraft above 5,700 kg in scheduled operations of commercial air transport has had the following performance since 2014. The goal in 2014 was to reduce the gap to 0.35. However, results showed that the gap in that year was 0.5, rate which needed to be reduced 0.15 more in order to comply with the goal. For 2015, the goal

was to reduce the gap to 0.25. Up to 31 August 2015, since no accidents have been reported in the SAM Region up to this date, the GAP was 1.7 in positive.

	2013	2014	2015
SAM rate	3.6	4.6	0
Global rate	2.9	4.1	1.7
GAP	0.7	- 0.5	+ 1.7
50% of the GAP	- 0.35	- 0.25	
Results	At the beginning of the exercise	0.15 above the goal	Goal complied with (up to 31 August 2015)

2.2.3 *Appendix B* to this WP presents a detailed analysis of indicators, goal and mitigation measures to improve aviation accidents.

2.3 *Runway excursions*

2.3.1 Runway excursions goal agreed upon on the Declaration of Bogota was: *Reduce runway excursions in 20% with regard to the average rate of the Region (2007 – 2012).*

2.3.2 Performance indicators for runway excursions in the SAM Region were obtained from ADREP application of SPACE iSTARS 2.0 at ICAO website. Information taken for the samples was on all kind of aircraft above **5 700 kg** and for accidents by the State of occurrence since 2007 up to 31 August 2015.

2.3.3 The average rate of runway excursions between 2007 and 2012 was of **2.24** accidents per million departures. When reducing 20% the rate of 2.24 %, the SAM Region goal is adjusted to a rate of **1.80** accidents per one million departures.

2.3.4 When analysing the information of indicators in the SAM Region, a decrease in accidents can be observed from 2007 to 31 August 2015, reaching a rate of 0 in 2012, 1.56 in 2013, 0.51 in 2014 and 0 up to 31 August 2015, reason why the SAM Region is presently fulfilling the goal established in the Declaration of Bogota for runway excursions.

2.3.5 *Appendix C* to this WP present a detailed analysis of indicators, goals and mitigation measures addressed to improve runway excursion accidents rate.

2.4 *Aerodromes certification*

2.4.1 The goal agreed on the Declaration of Bogota for AGA is to reach 20% certified aerodromes at the end of 2016. Up to date 12% certified aerodromes has been reached. With the implementation of Aerodromes PANS and the initial certification definition, it is probable that in the medium term the aerodromes certification plan turns to be more ambitious. *Appendix D* to this WP presents the proposed aerodromes certification plan.

2.5 *Implementation of the State safety programme (SSP) and the safety management system (SMS)*

2.5.1 According to the Declaration of Bogota, SAM States committed to achieve the following goals regarding the implementation of the State Safety Plan (SSP) and the Safety Management System (SMS):

- ✓ *Reach 67% of SSP implementation.*
- ✓ *Reach 100% of the service providers SMS oversight capacity.*

2.5.2 According to the Fourth Annual Meeting of State Safety Plan Coordinators (Lima, 16 to 18 March 2015), the SSP implementation reached a regional rate of 42%, which makes necessary to improve 15% up to December 2016.

2.5.3 In the same meeting, States reported a progress of 83% in the implementation of the SMS, which indicates 17% mission up to December 2016 in order to achieve the established goal in the Declaration of Bogota. It is worth to point out that SSP and SMS implementation rates are only estimations done by the States.

2.5.4 *Appendix E* presents the milestones for SSP and SMS implementation used to measure progress. *Appendix F* presents a summary figure on the SSP and SMS implementation rate by State, and *Appendix G* presents a summary table on SSP and SMS implementation milestone by State.

2.5.5 In the Second Meeting of Air Navigation and Safety Directors (Lima, Peru, 14 to 16 September 2015) it was agreed that the Secretariat send a survey to the SAM States to measure with accuracy the SSP and SMS implementation progress and commitment in the region.

3. *Suggested actions*

3.1 The Meeting is invited to:

- a) Take note of the information presented in this working paper and appendices, and
- b) Analyse and comment on:
 - ✓ the behaviour of the indicators;
 - ✓ the current status of the safety performance goals; and
 - ✓ the mitigation measures proposals for each area that has been analysed.

APPENDIX A

SAFETY OVERSIGHT

1. Safety performance indicators

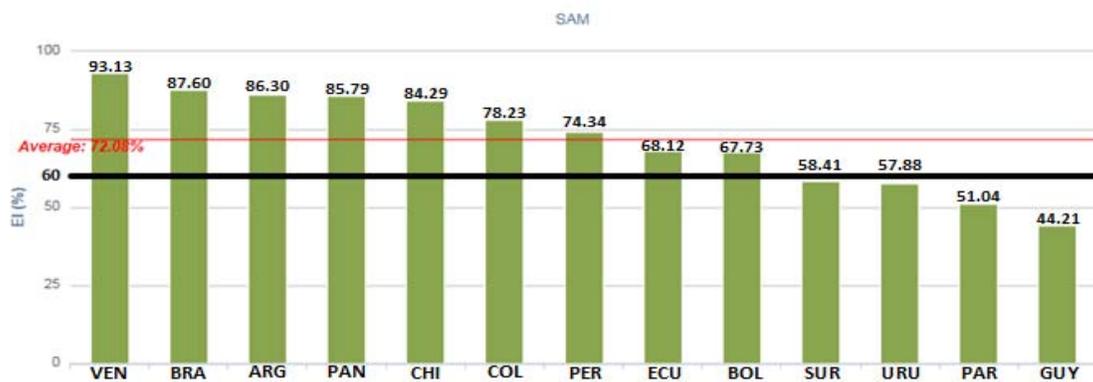
1.1 Once the transition period of the continuous monitoring approach (CMA) of the Universal safety oversight audit programme (USOAP) started in 2011, the average effective implementation (EI) of the SAM Region increased by **5.77%**, from 66.31% to **72.08%**, in nine (09) activities of the USOAP CMA, which represents an average improvement of approximately **0.64%** per State.

1.2 Between November 2011 and August 2015, the following States were the object of a USOAP CMA activity:

- ✓ **ICAO coordinated validation mission (ICVM):** Colombia in 2011; Ecuador and Suriname in 2012; Argentina and Venezuela in 2013; and Uruguay in 2014.
- ✓ **CMA audits:** Bolivia in 2013; and Peru in 2014.
- ✓ **Off-site activity:** Brazil in 2015

1.3 According to Table A-1 – Average effective implementation (EI) in the SAM Region (updated in August 2015), seven (7) States (Venezuela, Brazil, Argentina, Panama, Chile, Colombia, and Peru) are above the average for the Region (72.08%), two (2) States (Ecuador and Bolivia) are very close to reach the average, and four (4) States (Suriname, Uruguay, Paraguay, and Guyana) are below the aforementioned average.

Table A-1 – Average effective implementation (EI) in the SAM Region



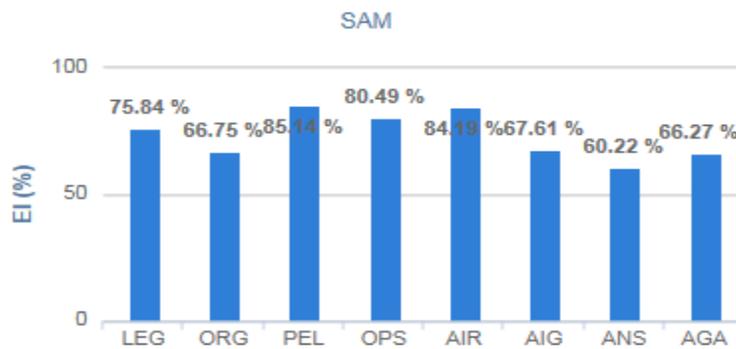
1.4 Following the activities carried out during the period 2011-2015, SAM States improved their EI as follows: Colombia **16%**, Ecuador **12.4%**, Suriname **9.6%**, Argentina **9.1%**, Venezuela **10.9%**, Peru **6.21%**, Uruguay **16.66%**, and Brazil **1.72%**. The only State that made no improvement was Bolivia, whose EI dropped from 72.08 to 67.99% (- **4.09%**).

1.5 In order to improve the overall average effective implementation (EI) of the SAM Region, Ecuador, Bolivia, Suriname, Paraguay, Guyana, and Uruguay need to advance in the solution of the findings from the latest ICAO USOAP CMA activities or from the last audit cycle based on the comprehensive systems approach (CSA). The Regional Office will continue supporting States through the provision of direct and continuous advice for the drafting of their CAPs to handle USOAP CMA activities.

1.6 Table A-2 – Average effective implementation (EI) by audit area, shows that the LEG, PEL, OPS, and AIR areas are above the average for the Region, while ANS, AGA, ORG, and AIG are below average.

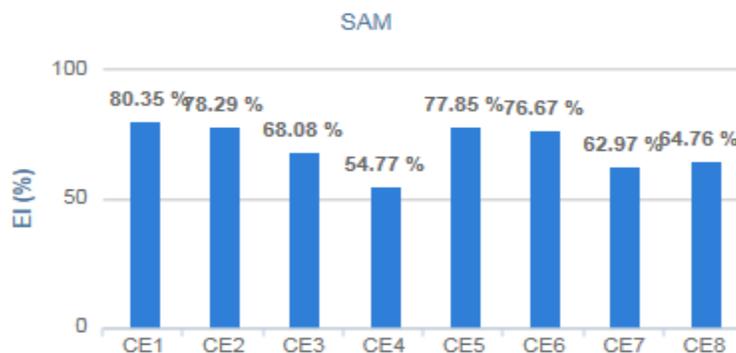
1.7 In order to improve effective implementation in audit areas, the States must make greater efforts in ANS (60.22%), AGA (66.27%), ORG (66.75%), and AIG (67.61%).

Table A-2 – Average effective implementation (EI) by audit area



1.8 Table A-3 – Average effective implementation (EI) by critical element (CE), shows that CEs 1, 2, 5, and 6 are above average (72.08%), while CEs 3, 4, 7, and 8 are below average, where CE-4 – Qualification and training of technical personnel, has an EI of 54.77% and requires the greatest improvement.

Table A-3 – Average effective implementation (EI) by critical element



1.9 In order to improve CE-4, States must implement an effective **competence definition and control** system. Competence definition involves issues such as the existence of a job description manual containing the profile of each safety inspector position. Likewise, for each task performed by the inspectors, it is necessary to establish the **knowledge, attitude, experience, and skill** requirements for its effective performance. A safety inspector should not be assigned any unsupervised task if there is no documented evidence of his/her ability to perform such certification or oversight task.

2. Safety improvement proposals

2.1 Improving average effective implementation (EI) in the SAM Region

2.1.1 In order to achieve 80% of the goal established in the Declaration of Bogota, the following six States must improve their individual average by **17.34%**: Panama, Ecuador, Brazil, Guyana, Paraguay, and Bolivia. These States will receive a CMA activity in 2015 and 2016, respectively.

2.1.2 Likewise, Argentina, Venezuela, Colombia, Peru, Chile, Uruguay, and Suriname may request an off-site activity to help the SAM Region achieve its 80% goal, provided they have completed more than 50% of their corrective action plans (CAPs).

2.1.3 In addition to improving the CAPs, the following specific safety improvements are proposed for SAM States and members of the Regional Safety Oversight Cooperation System (SRVSOP), during the period **2016-2019**:

2.1.3.1 For SAM and SRVSOP States:

- ✓ achieve 80% harmonisation of PEL, OPS, AIR, AGA, ANS, and AIG LAR sets;
- ✓ harmonisation of guidance material for inspectors;
- ✓ harmonisation of guidance material for service providers; for example, advisory circulars (ACs), acceptable means of compliance (MAC), and explanatory and interpretative material (MEI);
- ✓ assistance to States that so require in the following areas:
 - USOAP CMA;
 - SSP/SMS;
 - certification;
 - oversight;
 - approvals;
 - training, etc.
- ✓ Effective implementation of the following oversight systems for air operators:
 - Apron safety inspection data exchange programme (IDISR);
 - Dangerous goods coordinated oversight programme (VCMP) (SRVSOP members);
 - Registration of the air operator certificate (AOC)

2.2 Improving effective implementation (EI) by audit area

2.2.1 ANS

- ✓ Period between January 2015 - December 2019:
 - Development of ANS LARs.
 - Development of ANS LAR guidance material.
 - Harmonisation of ANS regulations among SAM States.
 - Effective implementation of ANS requirements and procedures.
 - Implementation of SMS in ANS providers.

2.2.2 AGA (see WP/08)

2.3 Improving effective implementation (EI) by critical element

2.3.1 CE- 4 – Qualification and training of technical personnel

- ✓ Period between January 2016 - December 2019:
 - Standardisation of SAM inspector training programmes.
 - Support to SRVSOP through training courses for States upon request.
 - Development and effective implementation of a multinational training system using on-line applications on the website of the ICAO South American Regional Office and of the SRVSOP.

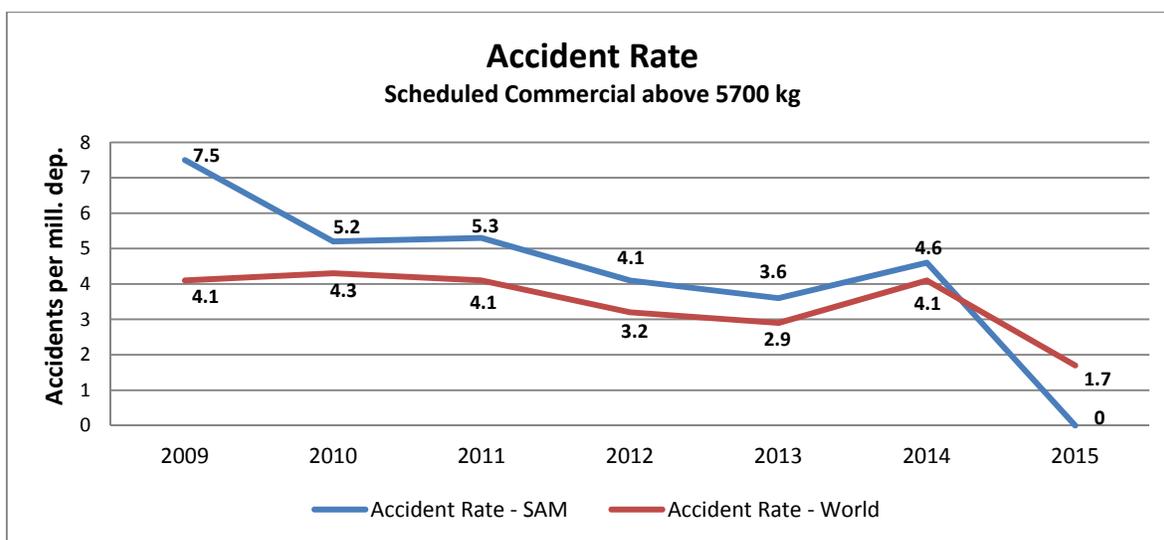
APPENDIX B

ACCIDENTS

1. Safety performance indicators

1.1 Table B-1a below shows that the accident rate in the Region has been gradually decreasing up until 2013. However, there was a slight increase in said rate in 2014 and a drastic drop in 2015, year in which no accidents have been recorded up until 31 August. The table also shows the difference between the SAM rate (blue line) and the global rate (red line).

Table B-1a – Accident rate



1.2 According to the goal established in the Declaration of Bogota, the SAM Region should have *reduced the accident rate gap by 50% with respect to the global accident rate* as of 2014.

1.3 Taking into account the data obtained from the ICAO SPACE iSTARS 2.0 site, and using 2013 as the baseline year, the following figure shows that the accident rate in the SAM Region for aircraft above 5700 kg conducting scheduled commercial air transport operations had the following performance since 2014. In 2014, the goal was to reduce the gap to 0.35. However, the gap that year was 0.5, 0.15 above target. The goal for 2015 was to reduce the gap to 0.25. By 31 August 2015, the gap was 1.7 in favour, since no accidents had occurred in the SAM Region until that date.

	2013	2014	2015
SAM rate	3.6	4.6	0
Global rate	2.9	4.1	1.7
Gap	0.7	- 0.5	+ 1.7
50% of gap	- 0.35	- 0.25	
Results	Start of period	0.15 above target	Goal exceeded by 31 August 2015

1.4 The information contained in the previous tables refers to accidents occurred in scheduled commercial air transport operations using aircraft with a weight above 5700 kg.

1.5 Table B-1b – Number of accidents, shows that the number of accidents in the SAM Region remained almost constant during the period 2009-2014. It also shows the difference between the SAM rate (blue line) and the global rate (red line).

Table B-1b – Number of accidents



1.6 Table B-1c – Number of fatalities, shows the number of fatalities per year in the SAM Region. This table shows that fatalities have been decreasing until reaching zero (0) in 2014. This table also shows the difference between the number of fatalities in the SAM Region (blue line) and the number of fatalities at global level (red line).

Table B-1c – Number of fatalities



2. Method for calculating safety performance goals

2.1 Method based on a retrospective risk analysis using safety improvements

2.1.1 This method is based on a retrospective risk analysis that assesses the effectiveness of the improvements proposed for each selected event or condition. This is achieved by assessing what chances would the improvement have had to prevent the event if it had been hypothetically applied before the occurrence of such event.

2.1.2 In this regard, the Commercial Aviation Safety Team (CAST), an association of the aviation industry of the United States government committed to reducing the mortality rate in commercial aviation in that country and all over the world, conducted a risk analysis of the accidents that had occurred in the SAM Region during the 2002-2012 period (*see Attachment 1 to this appendix*), applying the following nine (9) safety enhancements (SE) of the Regional Aviation Safety Group – Pan America (RASG-PA): *RE/04, RE/09, CFIT/02, CFIT/04, LOC-I/06, LOC-I/07, LOC-I/9, RE/8, and RE/11* (*see the RASG-PA safety enhancements in Attachment 2 to this appendix*).

2.1.3 Based on this analysis and the application of weighting factors to both risks and the severity of events, the CAST determined that **18.9%** of all accidents that had occurred during the period 2002-2012 in the SAM Region could have been prevented.

2.1.4 Using the figure of 18.9%, it is possible to determine the number of accidents that could have been avoided during the period 2002 – 2012 if the 9 SE had been applied. Accordingly, 20% (18.9%) is applied to the average of 10 (10.7) accidents occurred during the last 11 years (2002-2012), obtained a result of 2 accidents less.

2.1.5 In the event all SAM States were to apply the 9 SE in a uniform manner, a reduction of 2 accidents from the current average of 10 accidents could be foreseen, leaving 8 accidents for the period 2014-2018. Regarding the number of departures, it is estimated that for the year 2016 (halfway through the period 2014-2018), there will be 2,150,000 departures in scheduled operations based on an annual growth of 3.1%. These figures give in an annual accident rate of **3.72** per million departures [$8 \times 1,000,000 \div 2,150,000 = 3.72$], which would be the proposed performance goal for 2018 in case this methodology were to be accepted.

3. Proposed safety performance goals

3.1 Taking into account that the goal of the Declaration of Bogota is to be met in December 2016 and that the goal remains unchanged from year to year, it is suggested that the 50% reduction be applied to the gap between the SAM average rate and the global average rate of the last five (5) years for which information is available.

4. Main categories of mortal accidents in the SAM Region

4.1 The following are the three main categories of mortal accidents to be taken into account in the Region:

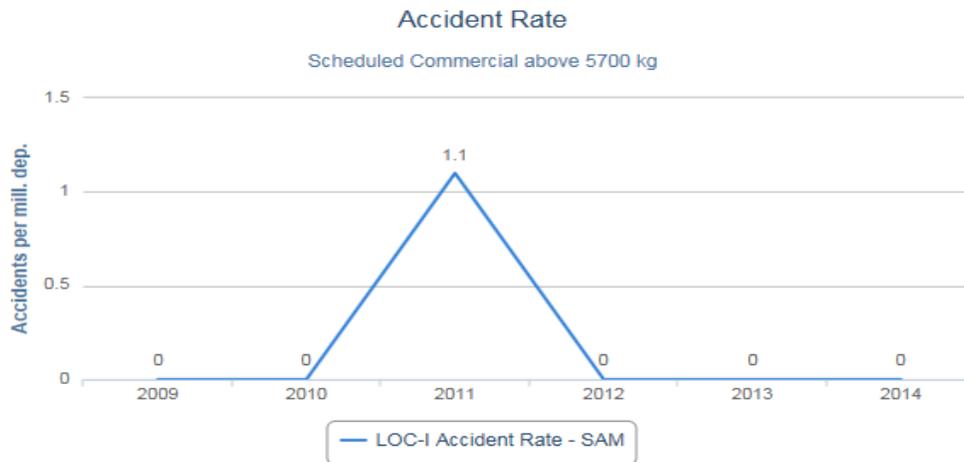
- ✓ loss of control in flight (LOC-I);
- ✓ runway excursions (RE); and

- ✓ controlled flight into terrain (CFIT).

4.2 **Loss of control in flight (LOC-I)**

4.2.1 Table B-4a – Accident rate due to LOC – I, shows a linear projection of zero (0) accidents during the period 2009-2014, except in 2011, where two (2) accidents were recorded, resulting in an accident rate of 1.1 accidents per million departures, and causing 38 fatalities.

Table B-4a – Accident rate due to LOC-I

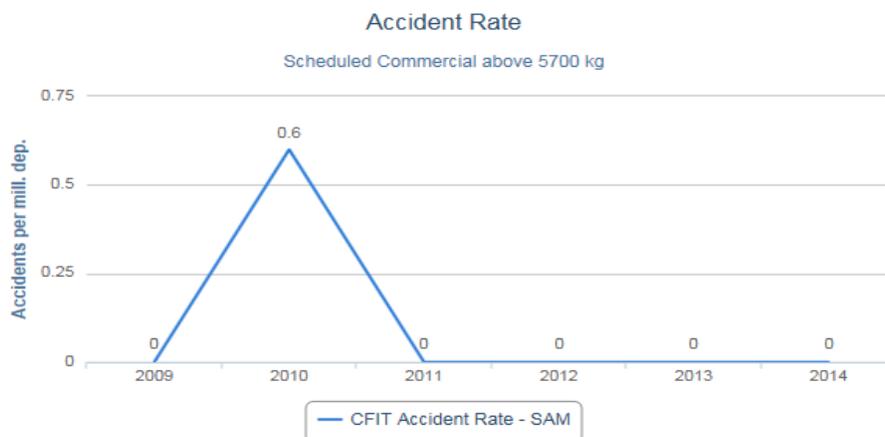


4.3 **Runway excursions (RE)** (see Appendix C to this working paper)

4.4 **Controlled flight into terrain (CFIT)**

4.4.1 Table B-4b shows that there were no accidents due to CFIT in 2009 or between 2011 and 2014. One (1) accident occurred in 2010, resulting in a rate of 0.6 accidents per million departures, with no fatalities.

Table B-4b – Accident rate due to CFIT



5. Safety improvement proposals

5.1 For the following categories: loss of control in flight (LOC-I), runway excursions (RE), and controlled flight into terrain (CFIT), the following safety improvements are proposed:

5.1.1 Loss of control in flight (LOC-I)

- ✓ Period 2017-2019:
 - Effective implementation of upset prevention and recovery training (UPRT) requirements in all SAM States. These requirements will permit mitigation of events related to loss of control in flight. The standards of Annex 1 and Annex 6, Part I, as well as LAR 121 and 135 requirements became effective on 13 November 2014.
 - Effective implementation of systems for the collection of reactive and proactive data, hazard identification, and management of risks related to LOC-I.
 - Effective implementation of ICAO's advanced qualification programme (AQP) or evidence-based training (EBT), as applicable.
 - Effective implementation of systems for predictive data collection, hazard identification, and management of risks related to LOC-I.
 - Implementation of an advanced oversight system that includes LOC-I reactive, proactive, and predictive processes.

5.1.2 **Runway excursions (RE).**- Performance indicators and goals for this category of mortal accidents, as well as their safety improvements, are described in detail in Appendix C to this working paper.

5.1.3 Controlled flight into terrain (CFIT)

- ✓ Period 2017-2019:
 - Continue with the effective implementation in all SAM States of the CFIT training aid that contains the ALAR tool kit of the Flight Safety Foundation (FSF).
 - Effective implementation of reactive and proactive systems for data collection, hazard identification, and management of risks related to CFIT.
 - Effective implementation of ICAO's advanced qualification programme (AQP) or evidence-based training (EBT), as applicable.
 - Effective implementation of predictive systems for data collection, hazard identification, and management of risks related to CFIT.
 - Implementation of an advanced oversight system that includes CFIT reactive, proactive, and predictive processes.

CAST Spreadsheet Tool

Panamanian and South American Operator Accidents

RASG-PA Safety Enhancements

RE/04, RE/09, CFIT/02, CFIT/04, LOC-I/06, LOC-I/07, LOC-I/9, RE/8, RE/11

Accident Set Used For Evaluation

2002-2012 Hull Loss and Fatal Accidents (46) - (Panamanian and South American Domicile Operators With Operations Similar to Part 121)

Notes:

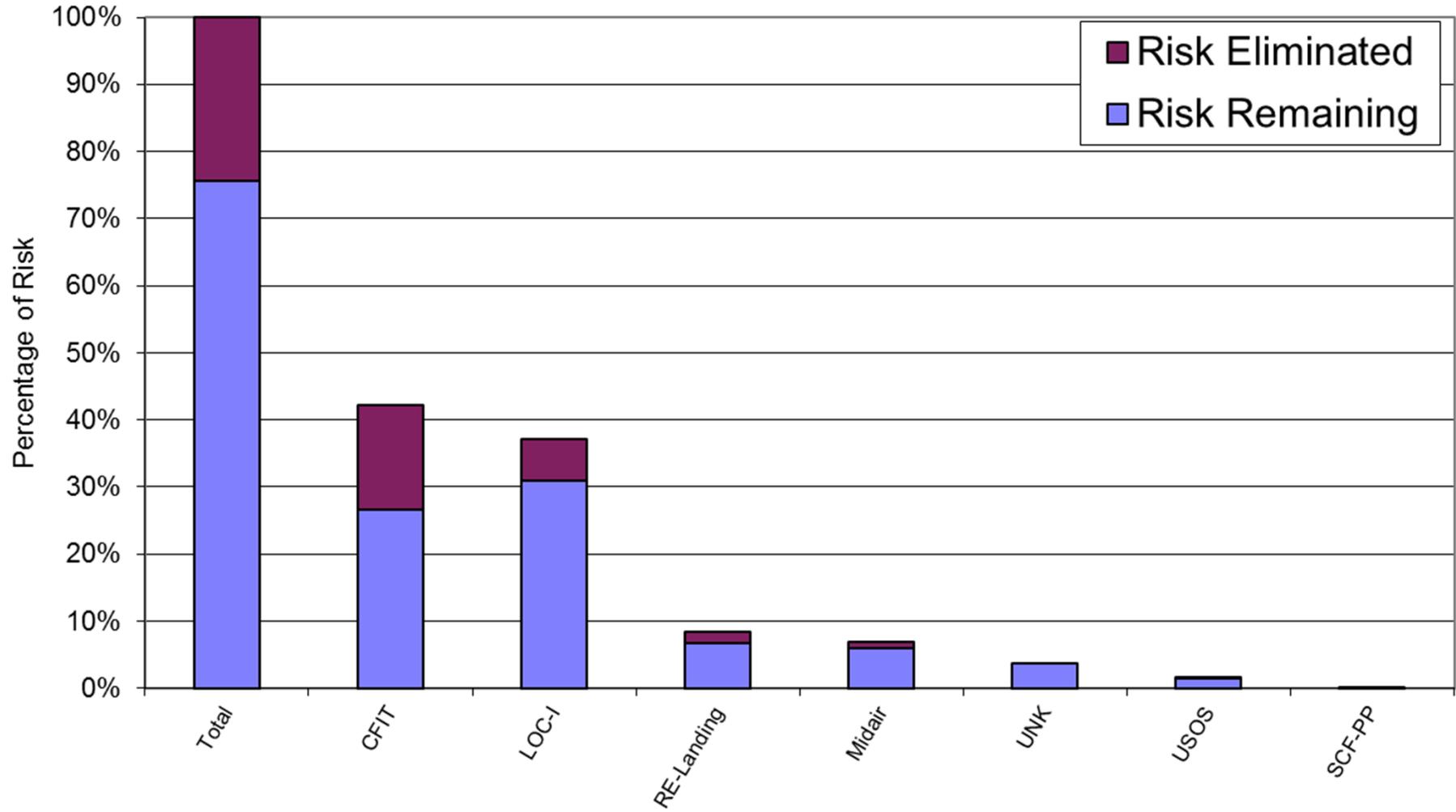
Preliminary Assessment (SE Effectiveness Values) performed by FAA AVP-200;

A Preliminary SE Implementation Value of 50% was used for all 9 SEs
(Portion of Fleet or Risk Population with SE Implemented)

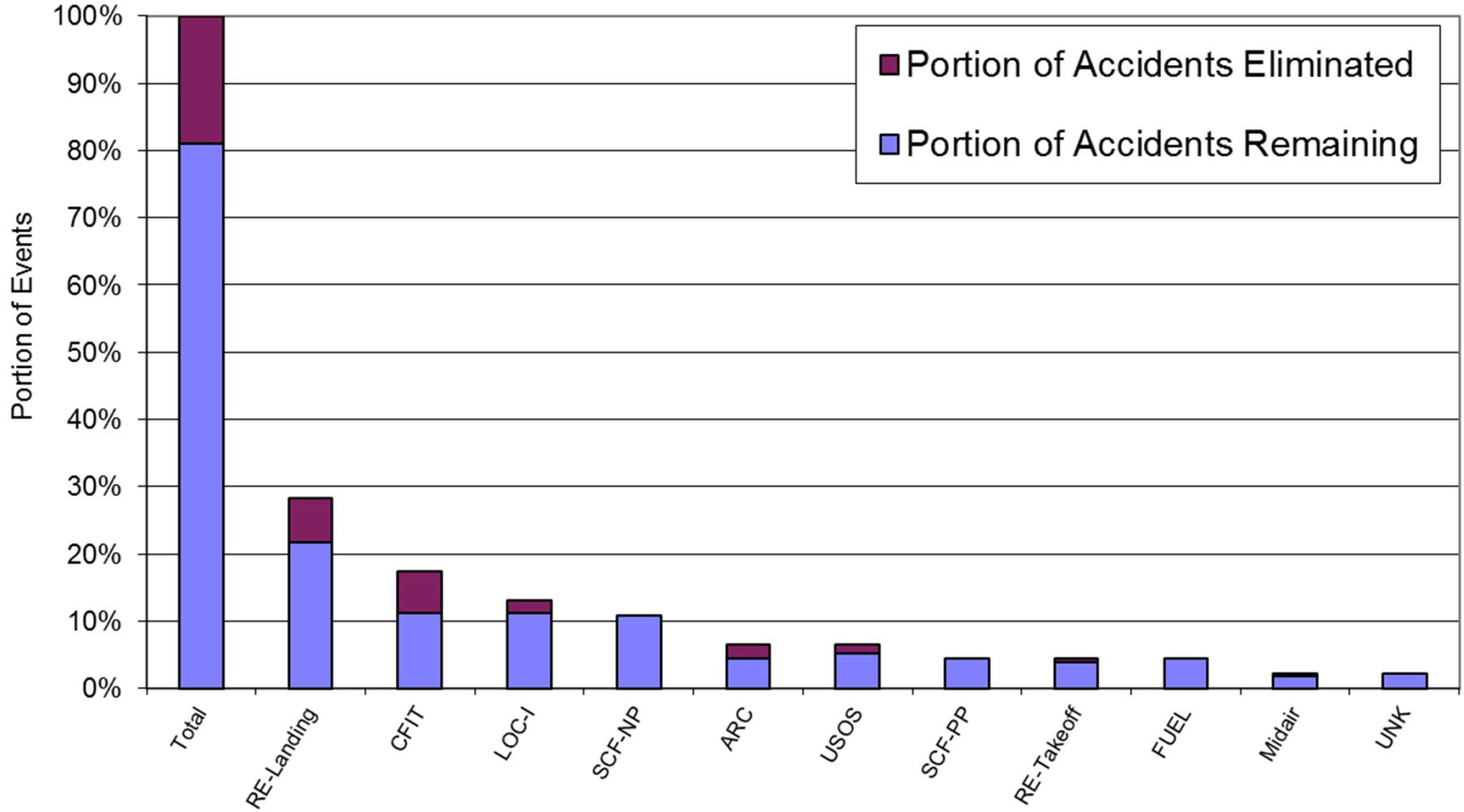
Date	Airplane	Jet/Turbo Prop	Airline	Location	Portion of Event Eliminated	Safety Enhancement								
						RE/04	RE/09	CFIT/02	CFIT/04	LOC-I/06	LOC-I/07	LOC-I/9	RE/8	RE/11
						Implementation Value						Implementation Value		
						.500	.500	.500	.500	.500	.500	.500	.500	.500
Safety Enhancement Effectiveness (%/100)						Safety Enhancement Effectiveness (%/100)								
1/28/2002	B727-100	Jet	TAME	(near) Ipiales	.420	.150	.100	.375	.150	.050	.000	.200	.000	.000
3/18/2002	B727	Jet	VARIG	Belo Horizonte, BR	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
6/14/2002	DC-9	Jet	Inter (Colombia)	Neiva, CO	.487	.300	.300	.000	.200	.250	.150	.050	.000	.000
8/30/2002	Fokker 100	Jet	TAM Linhas Aereas	Birigui, BR	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
8/30/2002	EMB-120 Brasilia	TP-Small	RICO Linhas Aereas	(near) Rio Branco,	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
9/14/2002	ATR 42	TP-Large	Total Linhas Aereas	(near) Paranapanema	.220	.000	.050	.000	.000	.400	.000	.000	.000	.000
1/9/2003	Fokker F.28	Jet	TANS	(near) Chachapoyas	.462	.300	.100	.150	.400	.000	.000	.200	.000	.000
1/26/2003	B737 (JT8D)	Jet	VASP	Rio Branco, BR	.306	.000	.050	.150	.000	.200	.200	.100	.000	.000
10/20/2003	Fokker F.27	TP-Large	TAVAJ	Tarauaca, BR	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
10/26/2003	Fairchild FH-227	TP-Large	CATA Linea Aerea SA	(near) Buenos Aires	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
12/13/2003	B737 (JT8D)	Jet	Nuevo Continente	Lima, PE	.522	.500	.300	.000	.000	.000	.000	.500	.000	.000
12/18/2003	DC-9	Jet	Lineas Aereas Suram	(near) Mtu, CO	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
5/14/2004	EMB-120	TP-Small	RICO Linhas Aereas	(near) Manaus, BR	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
10/23/2004	B707	Jet	Beta Cargo	Manaus, BR	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
11/18/2004	Jetstream 31	TP-Small	Venezolana	Caracas, VE	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
1/8/2005	MD-80	Jet	AeroRepublica Colomb	Cali, CO	.469	.500	.200	.000	.300	.100	.000	.050	.000	.000
2/22/2005	Convair 580	TP-Large	TAM - Transporte Aer	Trinidad, BO	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
4/7/2005	Fokker F.28	Jet	ICARO Air	Coca, EC	.213	.300	.000	.000	.000	.000	.000	.050	.100	.000
8/16/2005	MD-80	Jet	West Caribbean Airwa	(near) Machiques,	.536	.000	.000	.000	.050	.300	.600	.400	.000	.000
8/23/2005	B737 (JT8D)	Jet	TANS	(near) Pucallpa, PE	.563	.500	.100	.150	.400	.000	.300	.050	.000	.000
4/16/2006	Fokker F.27	TP-Large	TAM - Transporte Aer	Guayaramerin, BO	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
6/1/2006	Jetstream 31	TP-Small	Air Panama	Bocas de Toro, PA	.166	.200	.000	.000	.000	.000	.000	.050	.100	.000
8/17/2006	B727	Jet	Aerosucre Colombia	Bogota, CO	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
9/29/2006	B737 (NG)	Jet	GOL Linhas Aereas	(near) Peixote Aze	.145	.000	.000	.000	.100	.000	.000	.200	.000	.000
11/17/2006	DC-10	Jet	Cielos Airlines	Barranquilla, CO	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
11/18/2006	B727	Jet	Aerosucre Colombia	(near) Leticia, CO	.541	.400	.100	.150	.550	.000	.000	.200	.000	.000
2/4/2007	DC-8-71F	Jet	Tampa Cargo	MIAMI	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
7/17/2007	Airbus A320	Jet	TAM Linhas Aereas	Sao Paulo, BR	.248	.200	.000	.000	.100	.100	.000	.050	.100	.000
7/17/2007	EMB 190	Jet	AeroRepublica Colomb	Santa Marta, CO	.707	.500	.125	.150	.400	.500	.000	.500	.000	.000
10/31/2007	Fokker F.27	TP-Large	Air Panama	Panama City, PA	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
1/28/2008	Dash 8-200	TP-Large	Aires Colombia	Bogota, CO	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
2/1/2008	B727-200	Jet	LAB	Near Trinidad	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
2/21/2008	ATR-42-300	TP-Large	Santa Barbara Airlines	(near) Merida, VE	.575	.050	.000	.400	.500	.200	.300	.100	.000	.000
7/23/2008	F.27-400	TP-Large	TAM - Transporte Aer	70nm from Guayara	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
9/22/2008	F-28-4000	Jet	ICARO	QUITO	.231	.200	.000	.000	.200	.000	.000	.000	.100	.000
10/16/2008	B737-200	Jet	Rutaca	CARACAS	.188	.200	.000	.000	.100	.000	.000	.000	.100	.000
5/17/2009	DHC-6-300	TP-Small	Aeroperlas	Carti, PA	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
5/5/2010	ERJ-145LR	Jet	SATENA	Mtu-Fabio, Colomb	.373	.500	.100	.000	.100	.100	.000	.050	.000	.000
8/16/2010	B737-73V (WL)	Jet	AIRES Colombia	San Andres, Colomb	.375	.500	.100	.000	.200	.000	.000	.050	.000	.000
9/13/2010	ATR-42-320	TP-Large	Conviasa	Puerto Ordaz, Vene	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
1/25/2010	Embraer 110C Ban	TP-Small	Piquituba Táxi Aéreo	near Senador José	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
5/18/2011	SF34A (26)	TP-Large	SOL Lineas Aéreas	Prahuaniyeu, Arge	.123	.000	.000	.000	.200	.000	.050	.000	.000	.000
9/6/2011	SA-227BC Metro III	TP-Small	Aerocon	Trinidad, Bolivia	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
9/16/2011	EMB 190(5)	Jet	TAME	Quito, Ecuador	.390	.500	.100	.150	.000	.000	.000	.050	.100	.000
9/26/2011	DC-9(35)	Jet	Aeropostal	Puerto Ordaz, Vene	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
8/24/2012	Boeing (McDonnell	Jet	Aserca Airlines	Mayor Buenaventu	.451	.500	.100	.150	.200	.100	.000	.050	.000	.000

										1	2	3	4	5	6	7	8	9		
Category Definition	Number of Events by Category	Sum total of severity by category	% Severity by category	% Events by category	% of Category Severity Eliminated	Total Events Eliminated by Category	Total Severity Eliminated by Category	% Total Fatality Risk Eliminated	% Total Events Eliminated	Safety Enhancement										
										RE/04	RE/09	CFIT/02	CFIT/04	LOC-I/04	LOC-I/07	LOC-I/9	RE/8	RE/11		
										Implementation Value										
										0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		
										Severity eliminated by SE										
CFIT	8.00	6.06	42.1%	17.4%	36.8%	2.87	2.23	15.5%	6.2%	0.55	0.17	0.57	0.88	0.13	0.21	0.36	0.00	0.00		
LOC-I	6.00	5.33	37.1%	13.0%	16.5%	0.88	0.88	6.1%	1.9%	0.00	0.03	0.00	0.13	0.15	0.53	0.20	0.00	0.00		
RE-Landin	13.00	1.22	8.5%	28.3%	20.3%	3.01	0.25	1.7%	6.5%	0.10	0.00	0.00	0.05	0.05	0.00	0.03	0.05	0.00		
SCF-PP	2.00	0.03	0.2%	4.3%	0.0%	0.00	0.00	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
SCF-NP	5.00	0.00	0.0%	10.9%		0.00	0.00	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Midair	1.00	1.00	7.0%	2.2%	14.5%	0.15	0.15	1.0%	0.3%	0.00	0.00	0.00	0.05	0.00	0.00	0.10	0.00	0.00		
FUEL	2.00	0.00	0.0%	4.3%		0.00	0.00	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
RE-Takeof	2.00	0.00	0.0%	4.3%		0.23	0.00	0.0%	0.5%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
UNK	1.00	0.52	3.6%	2.2%	0.0%	0.00	0.00	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
WSTRW	0.00	0.00	0.0%	0.0%		0.00	0.00	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
USOS	3.00	0.22	1.5%	6.5%	2.7%	0.59	0.01	0.0%	1.3%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
ADRM	0.00	0.00	0.0%	0.0%		0.00	0.00	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
ARC	3.00	0.00	0.0%	6.5%		0.99	0.00	0.0%	2.2%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
FIRE-NI	0.00	0.00	0.0%	0.0%		0.00	0.00	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Ramp	0.00	0.00	0.0%	0.0%		0.00	0.00	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	0.00	0.00	0.0%	0.0%		0.00	0.00	0.0%	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Total	46	14.39				8.7	3.5	24.4%	18.9%	.7	.2	.6	1.1	.3	.7	.7	.1	.0		
	Events	Total Severity																		
										JIMDAT Score (Percentage of Risk and Accidents Eliminated by SE Acting on its Own)										
										1	2	3	4	5	6	7	8	9		
										RE/04	RE/09	CFIT/02	CFIT/04	LOC-I/04	LOC-I/07	LOC-I/9	RE/8	RE/11		
Color Coding																				
	Data Entry Field									% Fatality Risk Eliminated	24.4%	4.6%	1.4%	3.9%	7.7%	2.3%	5.1%	4.8%	0.3%	0.0%
	Linked Field									% Total Event Eliminated	18.9%	6.8%	2.0%	2.0%	4.5%	2.1%	2.2%	3.2%	0.7%	0.0%
	Calculation/Output Field																			
	Calculation/Output Field																			
	Summary Output																			

Portion of Fatality Risk Mitigated by Proposed Safety Enhancements

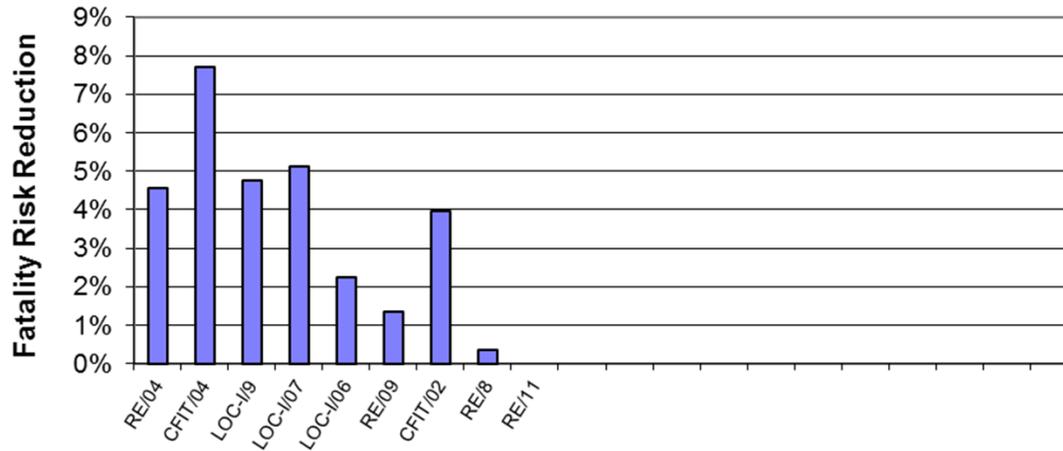


Portion of Accidents Mitigated by Proposed Safety Enhancements

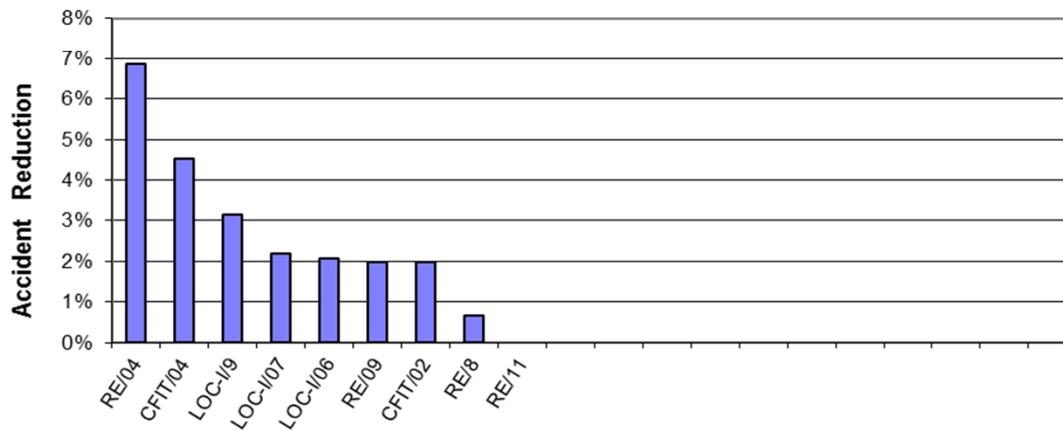


Assumes Each Safety Enhancement is Acting on Its Own

Percentage of the Fatality Risk Eliminated by the Proposed Enhancements



Percentage of the Accidents Eliminated by the Proposed Enhancements



Unmitigated Fatality Risk From High to Low

Category	Date	Airplane	Jet/Turbo Prop	Airline	Location	Remaining Severity
LOC-I	10/26/2003	Fairchild FH-227	TP-Large	CATA Linea Aerea SA	(near) Buenos Aires, AR	1.000
LOC-I	12/18/2003	DC-9	Jet	Lineas Aereas Surame	(near) Mitu, CO	1.000
CFIT	9/6/2011	SA-227BC Metro	TP-Small	Aerocon	Trinidad, Bolivia	0.889
LOC-I	5/18/2011	SF34A (26)	TP-Large	SOL Líneas Aéreas	Prahuaniyeu, Argentina	0.878
MIDAIR	9/29/2006	B737 (NG)	Jet	GOL Linhas Aereas	(near) Peixote Azevedo, BR	0.855
LOC-I	9/14/2002	ATR 42	TP-Large	Total Linhas Aereas	(near) Paranapanema, BR	0.780
CFIT	8/30/2002	EMB-120 Brasilia	TP-Small	RICO Linhas Aereas	(near) Rio Branco, BR	0.767
RE-Landin	7/17/2007	Airbus A320	Jet	TAM Linhas Aereas	Sao Paulo, BR	0.752
CFIT	1/28/2002	B727-100	Jet	TAME	(near) Ipiales	0.580
CFIT	1/9/2003	Fokker F.28	Jet	TANS	(near) Chachapoyas, PE	0.538
UNK	5/14/2004	EMB-120	TP-Small	RICO Linhas Aereas	(near) Manaus, BR	0.524
LOC-I	8/16/2005	MD-80	Jet	West Caribbean Airway	(near) Machiques, VE	0.464
CFIT	11/18/2006	B727	Jet	Aerosucre Colombia	(near) Leticia, CO	0.459
CFIT	2/21/2008	ATR-42-300	TP-Large	Santa Barbara Airlines	(near) Merida, VE	0.425
LOC-I	9/13/2010	ATR-42-320	TP-Large	Conviasa	Puerto Ordaz, Venezuela	0.333
USOS	1/25/2010	Embraer 110C Ba	TP-Small	Piquiatuba Táxi Aéreo	near Senador José Porfirio, Bra	0.200
RE-Landin	11/18/2004	Jetstream 31	TP-Small	Venezolana	Caracas, VE	0.190
CFIT	8/23/2005	B737 (JT8D)	Jet	TANS	(near) Pucallpa, PE	0.178
RE-Landin	4/16/2006	Fokker F.27	TP-Large	TAM - Transporte Aere	Guayaramerin, BO	0.032
SCF-PP	7/23/2008	F.27-400	TP-Large	TAM - Transporte Aere	70nm from Guayaramerin, BO	0.028
USOS	8/16/2010	B737-73V (WL)	Jet	AIRES Colombia	San Andres, Colombia	0.010

	A	B	C	D	E	F	G	H
1					DETAILED IMPLEMENTATION PLANS (DIPs) by PA-RAST/11			
2	#	DIP	Description	Champion	Output	Deadline	Status	Comments
3	1	RE/04	Promote pilot adherence to Standard Operating Procedures (SOPs) for approach procedures including go-around decision making process	ALTA	1) Distribution	18/01/11	Completed	
4					2) Training		Completed	
5	2	RE/09	Specific Training for pilots and air traffic controllers to avoid unstabilized approaches	ALTA	1) ALTA will conduct a survey within its operators regarding the actions taken to mitigate unstable approaches.	20/02/11	Completed	
6					2) Develop a strategy to deliver safety seminars for pilots and controllers in Pan America that targets recognition and avoidance of unstable approaches.	31/12/12	In process	Updated: 5 December 2012. ALTA, IFALPA, IFATCA currently working on the script and working on video budget funding.
7								
8								
9	3	CFIT/02	Specific ALAR/CFIT Training for Pilots	IATA	1) CAA conducts a review of all operators to ascertain which operators have CFIT prevention training and procedures in their approval training	20/02/11	Completed	
10					2) If an operator does not have a CFIT training, it will be encourage to incorporate CFIT training into the airline training program.	20/12/11	Completed	
11	4	CFIT/04	CRM/Situational Awareness for pilots and air traffic controllers	IFALPA & IFATCA	1) Incorporate and/or update CRM/situational awareness training programs for all flight crew members of air transport operators emphasizing aircraft position with relation to terrain and reviewing past	20/02/12	In process	IFALPA is coordinating with IATA and IFATCA the development of a video for pilots and air traffic controllers regarding Crew Resource Management (CRM).
12					2) Incorporate CRM/situational awareness training programs for all air traffic controllers and air navigation service providers (ANSP) emphasizing aircraft position with relation to minimum allowable	20/08/12	In process	
13								
14								
15	5	LOC-I/06	LOC Training – Human factors and automation	PA-RAST	1) Review and evaluate the advisory circular created by the ICAO COSCAP's in Asia	20/02/11	Completed	
16					2) ICAO will distribute a copy of the developed generic advisory circular to each State in the region.	20/03/11	Completed	
17					3) Each State in the region wil use the generic advisory circular as a template to prepare a State Advisory Circular on mode awareness and energy state management aspects of flight deck automation.	20/09/11	Completed	
18					4) Mode awareness and energy state management aspects of flight deck automation guidance is provided by operators to all their pilots.	20/09/12	Completed	
19								
20								
21	6	LOC-I/07	LOC Training – Advanced maneuvers	ALTA	1) Listing of training materials available from regulators, industry, operators, academia and other resources.	18/01/11	Completed	
22					2) Advanced Maneuvers Training provided to all operators.	18/04/11	Completed	
23					3) Advanced Maneuvers Training provided by all operators. The expectation is that this training will be accomplish during initial training and as part of the recurrent training program via ground and simulator instruction within the certified flight envelope, with emphasis on recognition, prevention and recovery technique.	18/08/13	Superseded	
24								
25								
26	7	LOC-I/9	Loc Training - Pilot monitoring policies and procedure for the operator and training program for crews	IFALPA	1) Listing of training materials available from industry, operators and other resources.	20/02/11	Completed	
27					2) Raise awareness of availability and need of Pilot Monitoring Training.	20/03/11	Completed	
28					3) Pilot Monitoring Training material provided to all operators.	20/03/11	Completed	
29					4) Pilot Monitoring Training provided by operators to all their pilots.	20/09/12	Completed	
30	8	RE/8	Guidance in maintaining runway in accordance with Annex 14	ACI-LAC	1) Create a guide that collects best practices for runway maintenance	18/04/12	Completed	
31					2) Promote and encourage the use of the guide		In process	ESC requested ACI-LAC to provide enhanced Manual for approval and dissemination.
32					3) Airports implement their maintenance plans according to the runway maintenance guide.		In process	
33								
34								
35					1) Gather and publish in the RASG-PA website available material that		Completed	

	A	B	C	D	E	F	G	H
36	9	RE/11	Develop guidance material and training programs to create action plans for runway safety teams	DGAC Mexico	may be used in to mitigate hazards related to runway safety.			
37								
38								
40					2) Electronic checklist development.		In process	Updated: 6 December 2012. Mexico DGAC is developing the Toolkit to be presented to the PA-RAST for approval. Considering that the electronic checklist will be part of the Toolkit they requested that Output 2 be removed from the DIP.
41					3) Establishment of a regional Runway Safety Database.	25/02/12	In process	Updated: 6 December 2012. Mexico DGAC considered that the Output 3 would not be feasible and request to be removed from the DIP.
43					4) Develop a roll out plan.	25/08/12	In process	Updated: 6 December 2012. Mexico DGAC considered that the Output 4 must be coordinated with PA-RAST due to the need of resurces for delivering the workshops.
44					X) Launch of the RST Toolkit			Updated: 6 December 2012. Mexico DGAC suggested to include the new Output X for launching the Toolkit
45					5) Review and update of the Runway Safety Teams.		In process	Updated: 6 December 2012. Mexico DGAC considered that the Output 5 is monitored by the ICAO NACC and SAM and RASG-PA, and the material is updated by ICAO HQ. Therefore, they requested to be removed from the DIP.

Rast No	Safety Enhancement Action	Reference	GSI	Safety Impact	Changeability	Indicator	Priorit
RAST-PA/LOC-I/07	LOC Training – Advanced maneuvers	SE 31	9	High	Moderate	P2	1
Safety Enhancement Action (expanded):	Promote LOC Training – Advanced maneuvers Pilots will be better trained to avoid and recover from excursions from normal flight and loss of control.						
Statement of Work:	Advanced Maneuvers Training (AMT) focuses on training to prevent and recover from hazardous flight conditions outside of the normal flight envelope, such as upsets, stalls, ground proximity and wind shear escape maneuvers, and inappropriate energy state management conditions. There has been a recent increase in accidents where loss of control was a contributing factor.						
Champion Organization:	ALTA						
Human Resource:	Airline Associations, Pilot Associations; Safety, Flight Operations, and Training managers, aircraft manufacturers, ICAO, flight simulation device manufacturer centers, existing training aids, and new materials developed by manufacturers.						
Financial Resource:	The total cost associated with this project would be determined by the number of crew personnel that need to be trained and the amount of training time required. This initiative is considered essential for flight safety, there would be no cost associated with the development.						
Relation Current Aviation Community Initiative:	<ul style="list-style-type: none"> •Voluntary training currently being done – both ground and flight •Wind shear training required since 1988 •Airplane Upset Recovery Training Aid •Commercial training products becoming available 						
Performance Goal Indicators:	<p>Goal 1: Develop and make available AMT material for operators approved training programs Indicator: Availability of the AMT material within 8 months of SCA.</p> <p>Goal 2: All operators incorporate AMT in their approved training programs. Indicator: Operators incorporate AMT material within 36 months of SCA.</p> <p>Goal 3: Reduce occurrence of LOC accidents. Indicator: A measurable reduction of loss of control incidents and accidents related to excursion from normal flight.</p>						
Key Milestones:	<p>The following milestones are based on the date of Steering Committee Approval (SCA) (months):</p> <ul style="list-style-type: none"> •Distribute currently available Training Aids ALTA SCA +8 •Track adoption of AMT ALTA SCA +8 •Track Implementation SCA+8 and on a yearly basis 						
Potential Blockers:	<ul style="list-style-type: none"> •Some special interests might discredit AMT simulator training •Operators might ignore AMT materials •Operators might not accept the potential cost of this training •Operators may not recognize the safety enhancement benefits 						

DIP Notes:

Advanced Maneuvers Training (AMT) refers to training to prevent and recover from hazardous flight conditions outside of the normal flight envelope. Examples include in-flight upsets, stalls, ground proximity and wind shear escape maneuvers, and inappropriate energy state management conditions. This safety enhancement provides advanced maneuver training material and encourages operators to use these materials to implement advanced maneuver ground and flight training appropriate flight training equipment. Emphasis should be given to stall onset recognition and recovery, unusual attitudes, upset recoveries, effects of icing, awareness and management, and causal factors that can lead to loss of control.

RAST-PA/LOC-I/07 Output 1

Description: Listing of training materials available from regulators, industry, operators, academia and other resources.

Resources:

Resource Notes: RAST-PA Secretariat (NACC office) will produce a comprehensive list, with input from all RAST-PA members. All aircraft manufacturers should provide a list of available training materials and aids. FAA Airplane Upset Recovery Training Aid: is available on its public web site.

Time Line: SCA+ 5 months

Actions: RAST-PA should distribute the Airplane Upset Recovery Training Aid to all appropriate regional stakeholders.

Target Completion Date:

RAST-PA/LOC-I/07 Output 2

Description: Advanced Maneuvers Training provided to all operators.

Resources: 10000

Resource Notes: Estimated distribution costs in USD.
ALTA, IATA

Time Line: Output 1 Complete + 3 months

Actions: ALTA should provide the training materials to each operator in the region. IATA should support ALTA's initiative. ALTA should report the level of commitment by operator's flight operations and training departments.

Target Completion Date:

RAST-PA/LOC-I/07 Output 3

Description: Advanced Maneuvers Training provided by all operators. The expectation is that this training will be accomplished during initial training and as part of the recurrent training program, via ground and simulator instruction within the certified flight envelope, with emphasis on recognition, prevention and recovery techniques.

Resources:

Resource Notes: Costs may vary from operator to operator and would need to consider;
1) Revising the training program for AMT.
2) Assessing the simulator time allotted on the initial and recurrent syllabuses to accommodate AMT.
3) It is estimated that AMT training would require 30 minutes or less of simulator time.

Time Line: Output 2 Complete + 28 months

Actions: ALTA and IATA should promote a high level of commitment to advanced maneuvers training (AMT) by operator flight operations and training departments. Advanced maneuvers training will be conducted emphasizing energy state management and early recognition and recovery from flight outside the certified aircraft operating envelope. Flight conditions outside of the certified flight envelope include inflight upsets, stalls, ground proximity and wind shear escape maneuvers, and inappropriate energy state management conditions. The training will be accomplished via ground and simulator instruction within the certified flight envelope, with emphasis on recognition, prevention and recovery techniques. The simulator instruction will be within the limitation of the training device being utilized.

Target Completion Date:

Rast No	Safety Enhancement Action	Reference	GSI	Safety Impact	Changeability	Indicator	Priority
RAST-PA/LOC-1/09	LOC Training – Pilot monitoring policies and procedure for the operator and training program for crews.		9	High	Easy	P1	2

Safety Enhancement Action (expanded):	Promote Pilot Monitoring Techniques and Training. Monitoring performance can be significantly improved by training these skills
Statement of Work:	<p>The purpose of this project is to collect and provide pilot monitoring training material and to encourage operators to use these materials to implement pilot training and flight procedures.</p> <p>Inadequate flight crew monitoring has been cited by a number of sources as a problem for aviation safety. A collaborative research effort by NASA-Ames, 21 airlines and the University of Texas Human Factors Research Program, which observed more than 2,000 airline flights, noted that roughly 62 percent of unintentional errors went undetected by flight crews. In addition, the Flight Safety Foundation, ALAR working group, has established that poor monitoring has been a factor in 62 percent of approach and landing accidents. ICAO has also determined that 50 percent of CFIT accidents had pilot monitoring as a common factor.</p> <p>The term 'Pilot Monitoring' (PM) should be used as an alternative to 'Pilot Not Flying' (PNF) since it reflects clearly the most important function of a PNF.</p> <p>Conventionally, when two pilots fly a fixed-wing airplane the aircraft commander occupies the left hand seat, and the co-pilot or first officer occupies the right seat. Before the commencement of each flight leg, the aircraft commander decides which pilot will take direct responsibility for flying the aircraft and they become 'Pilot Flying' (PF) for that leg. The other pilot is then 'Pilot Not Flying' (PNF) and carries out supporting duties such as communications and check-list reading. In some operators use alternative terms for PF and PNF.</p> <p>Several major airlines have recently revised their procedures to maximize the monitoring of aircraft trajectory, automation and systems. They have tried to remove or eliminate concurrent procedures that conflict with crew monitoring.</p>
Champion Organization:	IFALPA
Human Resource:	<p>Pilot Associations, IATA, ALTA, ICAO, Flight Operations, and Training managers, training centers, existing training aids.</p> <p>The total cost associated with this project would be determined by the number of flight crews that need to be trained and the amount of time required. This is considered essential for flight safety.</p> <p>Estimated 2 meetings of RAST representatives to implement Output 1.</p>
Financial Resource:	
Relation Current Aviation Community Initiative:	<ul style="list-style-type: none"> •Aligns with major findings by ICAO, FSF, NTSB. •Aligns with components of CRM
Performance Goal Indicators:	<p>Goal 1:Reduce occurrence of LOC accidents. Indicator: A measurable reduction of loss of control incidents and accidents related to deviations from normal flight.</p> <p>Goal 2: Pilot Monitoring Training material is readily available. Indicator: Availability of the Pilot Monitoring Training material in each operator's organization within 2 months of Output 3.</p> <p>Goal 3: All operators incorporate Pilot Monitoring Training in their approved training programs. Indicator: Pilot Monitoring Training is provided to all transport airplane pilots. Within 18 months of Output 4.</p>

Key Milestones: The following milestones are based on the date of Steering Committee Approval (SCA) (months):

- Distribute currently available Training Aids ALTA SCA+5
- Track adoption of Pilot Monitoring Training ALTA SCA+12

Potential Blockers:

- Operators might not accept the potential cost of this training
- Operators may not recognize the safety enhancement benefits

DIP Notes:

Pilot Monitoring policies and procedure for the operator and training program for crews.

RAST-PA/LOC-I/09 Output 1

Description: •Listing of training materials available from industry, operators, and other resources.

Resources:

Resource Notes: RASG-PA Secretariat (NACC office) will produce a comprehensive list.

Time Line: SCA + 5 months

Actions: RASG-PA should distribute the Pilot Monitoring Training Aid to all appropriate regional stakeholders (IATA, ALTA, CAA, etc.).

Target Completion Date:

RAST-PA/LOC-I/09 Output 2

Description: •Raise awareness of availability and need of Pilot Monitoring Training.

Resources:

Resource Notes: IFALPA, Local Pilot Associations

Time Line: Completion of Output 1 + 1 months

Actions: IFALPA, ALTA and local pilot associations should market and promote ongoing activities that develop a higher level of commitment to Pilot Monitoring Training by operator's flight operations, standards and training departments.

Target Completion Date:

RAST-PA/LOC-I/09 Output 3

Description: •Pilot Monitoring Training material provided to all operators.

Resources:

Resource Notes: ALTA, IATA, CAA's

Time Line: Completion of Output 1 + 2 months

Actions: ALTA should provide the training materials to each operator in the region. IATA should support ALTA's initiative. ALTA should report to RASG-PA the level of commitment by the operator's flight operations and training departments.

Target Completion Date:

RAST-PA/LOC-1/09 Output 4

Description: •Pilot Monitoring Training provided by operators to all of their pilots.

Resources:

Resource Notes: Operator's flight operations, standards and training departments, pilot associations.

Time Line: Completion of Output 3 + 18 months

Actions: Each operator should carefully developed procedures and guidelines that support pilot monitoring in their training programs. Each transport airplane pilot should be trained to the Pilot Monitoring procedures and guidelines developed by their organization.

Target Completion Date:

GSI #	Description	Champion	Output	Deadline	Status	Comments
3	Protection of Safety Information	COCESNA				
12	Sharing of Information Safety Data	RASG-PA	ASIAS/RASG-PA data sharing			
		IATA/ALTA	IATA/ALTA Trend Sharing Program			
		DGAC CR	PASO			
		ANAC	BRAZIL			
4	Accident/Incident Regional Board	COCESNA				
	Business case for thechnology to mitigate runway excursions	ICAO LIM				
	Spanish Standard Phraseology	ALTA				Using PANS-ATM (DOC 4444) Chapter 12
	Bird Strike Risk Reduction Program	IATA/ALTA	PTY	Aug-13	To start Jun 2012	Biologist apointed, gathering pre-assessment requierements
GYE			Aug-13	To start Jun 2012		

ESC Approved Detailed Implementation Plans (DIPs)

Rast No	Safety Enhancement Action	Reference	GSI	Safety Impact	Changeability	Indicator	Priority	Time Frame
RAST-PA/RE/04	Promote pilot adherence to Standard Operating Procedures (SOPs) for approach procedures including go-around decision making process.		9	High	Easy	P1	1	Short
Safety Enhancement Action (expanded):	Promoting pilot adherence to Standard Operating Procedures (SOPs) which would include stabilized approach criteria and go/no go take-off decision making procedures is key to preventing and reducing the risk of runway excursions. Reviewing existing operational policies, procedures and programs is also part of an overall strategy in mitigating runway excursion risk.							
Statement of Work:	Runway Excursion has been identified as the highest safety risk area in Pan America. In order to proactively reduce this risk, RASG-PA chartered the Regional Aviation Safety Team (RAST) to review runway excursion information and develop mitigation strategies to reduce this risk.							
Champion Organization:	ALTA							
Human Resource:	ICAO (NACC, SAM, HQ), IATA, ALTA, ACSA, FSF, CANSO, aircraft manufacturers, ALPA, IFALPA, IFATCA, CAA's, and other stakeholders.							
Financial Resource:	10000							
Relation Current Aviation Community Initiative:	IATA Runway Excursion Risk Reduction toolkit/FSF: ALAR toolkit (version June 2010) Colegio de Pilotos Aviadores de México: Aeronautical Decision Management Training							
Performance Goal Indicators:	<p>Goal 1: target audience(s): Latin America and Caribbean, will value the information provided</p> <p>(1) Objective: educate the target audience(s)</p> <p>(2) Indicator: to reach 80% of the airlines pilots in the Region</p> <p>(3) Indicator: to reach 80% of other stakeholders as determined by the research.</p> <p>Goal 2: increase the awareness on runway excursions</p> <p>(1) Objective: reduce the number of events</p> <p>(2) Indicator: reduction of 80% of the events in the region</p>							
Key Milestones:	<ul style="list-style-type: none"> • Authorization by IATA to upload copyright material from RERR Toolkit in RASG-PA website: pending • Release of State letters from RASG-PA Secretariat recommending establishment of SOPs: SCA+02 • RAST – PA Report from metrics regarding RE/04: Upon completion of Output 2 +03 							
Potential Blockers:	<p>a)Strategic Challenges</p> <p>i)Incorporate new audience in addition to airline's pilots</p> <p>ii)Distribution of training material to airlines</p> <p>iii)Distribution of training material to non-airline pilots</p> <p>iv)Establish and maintain communication with the Pan American pilots and other stakeholders</p> <p>v)Operators to include recommendations into their Manual of Operations</p> <p>vi)Operators to include recommendations into their training programmes</p> <p>vii)Get feedback</p> <p>viii)Metrics to determine penetration of this programme</p>							
DIP Notes:	<p>1. Research to determine the target audience(s) Determine the specific groups of pilots to be reached in order to achieve our objective Determine other stakeholders that would benefit.</p> <p>2. Communication and distribution options: Letter from RASG-PA Secretary to recommend that all operators establish SOP's that include stabilized approach criteria for pilots and a no fault go-around policy for unstable approaches, mentioning the FSF/IATA Runway Excursion Risk Reduction Tool Kit. Letter from RASG-PA Secretary to States recommending that all operators establish SOP's that include stabilized approach criteria for pilots and a no fault go-around policy for unstable approaches, mentioning the FSF/IATA Runway Excursion Risk Reduction Tool Kit.</p> <p>3. Press releases from ALTA, IATA, IFALPA. 4. RASG-PA website news release, uploading of training material and E-mails to target audience</p>							

Keep in mind that there is no contradiction with the pressure for pilots in the subsequent flight analysis.

RAST-PA/RE/04 Output 1

Description: Distribution

Resources:

Resource Notes: Cost of the material and distribution to the operators.

Time Line: SCA+ 5 months

Actions: 1. RAST/RE recommends that all operators establish SOP's that include stabilized approach criteria for pilots and a no fault go-around policy for unstable approaches. 2. In coordination with FSF and IATA, RAST/RE should develop an awareness campaign to promote the adherence to SOP's for approach procedures including the go-around decision making process. The campaign will distribute the FSF/IATA Runway Excursion Risk Reduction Tool Kit, the Colegio de Pilotos Aviadores de Mexico Aeronautical Decision Management training, and any other available material. 3. Time to train trainers

Target Completion Date: 12

RAST-PA/RE/04 Output 2

Description: Training

Resources:

Resource Notes: Variable costs depending on the operator.

Time Line: SCA+ 15 months

Actions: Operators to include material in training programs.

Target Completion Date:

Rast No	Safety Enhancement Action	Reference	GSI	Safety Impact	Changeability	Indicator	Priority	Time Frame
RAST-PA/RE/08	Guidance in maintaining runway in accordance with Annex 14 (put this point next to 6)	Annex 14, Doc 9137 ICAO	1	High	Easy	P1	3	Short

Safety Enhancement Action (expanded):	To reduce runway condition/maintenance related accidents and incidents at airports by following a runway maintenance guide in accordance with ICAO Annex 14.								
Statement of Work:	Establish a team who will compile and develop, if necessary, runway maintenance guidance for airports in the Panamerican region.								
Champion Organization:	ACI-LAC								
Human Resource:	CAAs, ICAO, ACI, IATA, ALACPA, Airport Operators, Maintenance staff and providers.								
Financial Resource:	To be determined, in-kind support to develop the guidance material.								
Relation Current Aviation Community Initiative:	ACI Airside Safety Handbook Annex 14 ICAO Doc 9137 Airport Services Manual Par 2 – Pavement Surface Conditions ICAO Doc 9157 Part 4 Visual Aids Runway excursion risk reduction toolkit								
Performance Goal Indicators:	<p>Goal 1: Create a guide that collects best practices for runway maintenance. Indicator: Online availability of the guide.</p> <p>Goal 2: Promote and encourage the use of the guide. Indicator: RASG-PA promotion of the guide.</p> <p>Goal 3: airports implement their maintenance plans according to this guide. Indicator: A measurable amount of airports that incorporate the use of the guide into their action plans.</p> <p>Goal 4: Reduce the occurrence of runway condition related incidents and accidents. Indicator: A measurable and continued reduction in runway condition related incidents and accidents.</p>								
Key Milestones:	<table border="0"> <tr> <td>DIPESC X</td> <td>Approval</td> </tr> <tr> <td>Output 1 The guide</td> <td>ESC X Date + 6</td> </tr> <tr> <td>Output 2 Promote</td> <td>Output 1 + 12</td> </tr> <tr> <td>Output 3 Implementation of the guide</td> <td>Output 1 + 18</td> </tr> </table>	DIPESC X	Approval	Output 1 The guide	ESC X Date + 6	Output 2 Promote	Output 1 + 12	Output 3 Implementation of the guide	Output 1 + 18
DIPESC X	Approval								
Output 1 The guide	ESC X Date + 6								
Output 2 Promote	Output 1 + 12								
Output 3 Implementation of the guide	Output 1 + 18								
Potential Blockers:	<ul style="list-style-type: none"> - Lack of resources to establish the plans correctly - Differences between CAAs and airport operators - Weaknesses in regulatory oversight - Airport operators may not recognize safety enhancement benefits of implementing the plan according to the guidelines - Data sharing 								
DIP Notes:	RASG-PA, Annual Safety Report Team (ASRT), will review collected data on a yearly basis. This data will be reflected in the annual RASG-PA Safety Report								

RAST-PA/RE/08 Output 1

Description:	Create a guide that collects best practices for runway maintenance.
Resources:	

Resource Notes: ACI

Time Line: 6 months

Actions: Establish a team who will compile and develop, if necessary, runway maintenance guidance for airports in the Pan American region. The team should be composed of at least; an ICAO Annex 14 expert, a representative from aerodromes and Aerodrome cognizant CAA representative. Once available the guidance should be translated into Spanish.

Target Completion Date:

RAST-PA/RE/08 Output 2

Description: Promote and encourage the use of the guide.

Resources:

Resource Notes: RASG-PA

Time Line: 12 months

Actions: Produce information material that may be disseminated at events throughout the Region. Call on RASG-PA Members to disseminate the information.

Target Completion Date:

RAST-PA/RE/08 Output 3

Description: Airports implement their maintenance plans according to the runway maintenance guide.

Resources:

Resource Notes: ACI, RST's

Time Line: 18 months

Actions: Use a data-driven approach to identify aerodromes that could benefit from improved runway maintenance. Encourage RST at Airports to use the runway maintenance guide and track outcomes through their action plans. Track aerodrome action plans to determine the number of aerodromes that are using the guide.

Target Completion Date:

Rast No	Safety Enhancement Action	Reference	GSI	Safety Impact	Changeability	Indicator	Priori
RAST-PA/RE/09	Specific Training for pilots and air traffic controllers to avoid unstabilized approaches		9	High	Easy	P1	2

Safety Enhancement Action (expanded):	Develop safety seminars for pilot and air traffic controllers to mitigate the causes of unstable approaches in Pan America.
Statement of Work:	Runway Excursion has been identified as one of the highest safety risk area in Pan America. In order to proactively reduce this risk, RAST in collaboration wi develop safety seminars for pilots and controllers that will provide specific training and tools to mitigate the causes of unstable approaches and related acti required.
Champion Organization:	ALTA
Human Resource:	IATA, ATA, ATAC, ACSA, ICAO, aircraft manufacturers, IFALPA, IFATCA, flight data analysis companies (Sagem, ADI, Airfase, etc.), organizations, CANSO, local traffic controller associations, flight academies, training centers and other stakeholders.
Financial Resource:	Costs would be shared by the operators, manufacturers, pilot associations and governments.
Relation Current Aviation Community Initiative:	- Runway Safety Action Teams (RSAT); local equivalent collaborative teams in Pan America.
Performance Goal Indicators:	Goal: reduce occurrence of runway excursion accidents. Indicator: a measurable reduction of runway excursion incidents and accidents.
Key Milestones:	The following milestones are based on the date of SCA approval (months): - Survey & Reports SCA + 6 - Seminars Output 1 + 24
Potential Blockers:	- Insufficient funds to conduct seminars - Inadequate implementation of recommendations from outputs - Participation from industry - Human resources, specialists, facilitators - Language barriers - Obtaining copyright approval for available training material - Political barriers - Data sharing restrictions - Time availability
DIP Notes:	Impact on Aviation Safety in the Region: This project would have a positive impact on aviation by avoiding accidents and incidents related to runway excursion.

RAST-PA/RE/09 Output 1

Description:	ALTA will conduct a survey within its operators regarding the actions taken to mitigate unstable approaches.
Resources:	
Resource Notes:	ALTA members
Time Line:	SCA + 6 months

Actions: The information obtained will be presented and be used to prepare the content for the safety seminars.
The goal will be to identify needs and share best practices to improve training methods.

Target Completion Date:

RAST-PA/RE/09 Output 2

Description: Develop a strategy to deliver safety seminars for pilots and controllers in Pan America that targets recognition and avoidance of unstable approaches.

Resources:

Resource Notes: Stakeholders as listed above

Time Line: Output 1 + 24 months

Actions: Develop a strategy and timeline to deliver safety seminars for pilots and controllers.

At a minimum the following topics should be covered:

- Stabilized Approaches
- Go Around Gates and Missed Approach Criteria
- Approach Procedures and Briefings
- Non Normal Aircraft Conditions
- Transfer of Aircraft Control
- CRM/TRM and human factors
- Weather conditions and information dissemination including tail wind landings

During the safety seminars participant will be asked to provide additional mitigation measures that will be compiled and used as the basis of future safety enhance for runway excursions.

Target Completion Date:

Rast No	Safety Enhancement Action	Reference	GSI	Safety Impact	Changeability	Indicator	Priority												
RAST-PA/RE/11	Develop guidance material and training programs to create action plans for runway safety teams.	Annex 14, ICAO Doc. 9137, IATA, FAA, IFALPA Airport Liaison Program	9	High	Easy	P1	1												
Safety Enhancement Action (expanded):	To reduce runway related accidents and incidents at airports by identifying airport specific hazards and developing mitigations.																		
Statement of Work:	Establish the framework to create Runway Safety Teams (RST) which will evaluate airports for hazards and implement the appropriate mitigations. Facilitate of data, training material, mitigations, and workshops.																		
Champion Organization:	Mexico																		
Human Resource:	CAAs, ICAO, Airport Operators, Air Operators, Air Traffic Management/Communication Navigation Surveillance providers, Fixed Base Operators, Pilots.																		
Financial Resource:	Database creation, workshops, RASG-PA resources for material compilation.																		
Relation Current Aviation Community Initiative:	ICAO Global and Regional Runway Safety Initiative, Flight Safety Foundation Runway Safety Initiative, Commercial Aviation Safety Team Safety Enhancement																		
	Material currently available:																		
	<ul style="list-style-type: none"> - ICAO (http://www2.icao.int/en/RunwaySafety/Pages/Toolkits.aspx) - Flight Safety Foundation (http://flightsafety.org/current-safety-initiatives/runway-safety-initiative-rsi) - Federal Aviation Administration (http://www.faa.gov/airports/runway_safety/resources/lrsat/) - EUROCONTROL (http://www.eurocontrol.int/runwaysafety/public/standard_page/keyActions.html) - IFALPA (http://ifalpa.org/ifalpa-training/alr/alr.html) 																		
Performance Goal Indicators:	<p>Goal 1: Establish a runway safety team (RST) at the busiest airport of each contracting State in the Pan American region in terms of operations per year. Indicator: Twelve teams established per year.</p> <p>Goal 2: Establish a RST at all international airports of each contracting State in the Pan American region. Indicator: Twelve teams established per year.</p> <p>Goal 3: Reduce the occurrence of runway related incidents and accidents. Indicator: A measurable reduction in runway related incidents and accidents.</p>																		
Key Milestones:	<table border="0"> <tr> <td>DIP</td> <td>ESC X Approval</td> </tr> <tr> <td>Output 1 Gather & Publish information</td> <td>ESC 10 Date + 3</td> </tr> <tr> <td>Output 2 Checklist</td> <td>Output 1 + 6</td> </tr> <tr> <td>Output 3 Database</td> <td>Output 1 + 6</td> </tr> <tr> <td>Output 4 Roll out plan</td> <td>Output 3 + 6</td> </tr> <tr> <td>Output 5 Review and update</td> <td>Output 4 + 6</td> </tr> </table>							DIP	ESC X Approval	Output 1 Gather & Publish information	ESC 10 Date + 3	Output 2 Checklist	Output 1 + 6	Output 3 Database	Output 1 + 6	Output 4 Roll out plan	Output 3 + 6	Output 5 Review and update	Output 4 + 6
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Potential Blockers:	<ul style="list-style-type: none"> - Lack of resources to establish RSTs - Differences between CAAs and airport operators - Airport operators may not recognize safety enhancement benefits - Data sharing - Lack of resources to implement mitigations 																		
DIP Notes:	RASG-PA, Annual Safety Report Team (ASRT), will review collected data on a yearly basis. This data will be reflected in the annual RASG-PA Safety Report.																		

Multidisciplinary runway safety teams are envisaged to work with airport operators to identify areas of opportunity and available resources to enhance runway safety for specific aerodromes.

RAST-PA/RE/11 Output 1

Description: Gather and publish in the RASG-PA website available material that may be used to mitigate hazards related to runway safety.

Resources:

Resource Notes: ICAO

Time Line: 6 months

Actions: Publish or make links available to websites such as FSF, CAST, FAA, EURCONTROL and IFALPA which RST may use to proposed mitigation actions for identified hazards related to runway safety.

Target Completion Date:

RAST-PA/RE/11 Output 2

Description: Electronic checklist development

Resources:

Resource Notes: ICAO, IFATCA, IATA & ACI

Time Line: 6 months

Actions: Develop an electronic checklist based on best practices and threat and error management that RST may use to identify hazards and propose mitigation actions. The checklists should address the following areas:

- ATM/CNS
- Air operators
- Airport
- Before releasing final versions of the checklists, field test in a pilot project
- Translate Checklists into Spanish

Target Completion Date:

RAST-PA/RE/11 Output 3

Description: Establishment of a regional Runway Safety Database

Resources:

Resource Notes: ICAO

Time Line: 6 months

Actions: Create a Regional database that will house the data from the checklists (Output 2) with at least the following considerations:

- Option to de-identify the source of the information
- Where possible responses should be selectable (rather than free text)
- Contain appropriate level(s) of data entry
- Consider the legal aspects of data sharing

Generate the resulting mitigation actions and their end results

- Capture the resulting mitigation actions and their end result
- Before releasing final versions of the checklists/database interface, field test in a pilot project
- Spanish version

Target Completion Date:

RAST-PA/RE/11 Output 4

- Description:** Develop a roll out plan
- Resources:**
- Resource Notes:** RAST-PA / FSTT-PA
- Time Line:** 6 months
- Actions:** Organize workshops in Pan America to disseminate the information and train on:
- Establishment of RST
 - The use of the DB
 - The use of the checklist
 - Finding Material related to runway safety.

Target Completion Date:

RAST-PA/RE/11 Output 5

- Description:** Review and Update of the Runway Safety Teams
- Resources:**
- Resource Notes:** RAST-PA
- Time Line:** 6 months
- Actions:** Develop a process to review on a two times a year basis the number of RSTs established and ensure that all relevant runway safety material is maintained update

Target Completion Date:

Rast No	Safety Enhancement Action	Reference	GSI	Safety Impact	Changeability	Indicator	Priority	Time Frame
RAST-PA/CFIT/02	Specific ALAR/CFIT Training for Pilots	SE-12, ALAR Toolkit, FSF CFIT Training	9	Medium	Moderate	P5	1	Short

Safety Enhancement Action (expanded):	Promote specific ALAR/CFIT prevention training and procedures to be included in operators approved training curriculums, emphasizing pilot situational awareness and escape procedures for flight crews to use in the event of a terrain warning indication.
Statement of Work:	Controlled Flight Into Terrain (CFIT) has been identified as one of the top three data driven risk areas in Pan-America. CFIT is a significant cause of commercial aviation equipment loss and fatalities, worldwide. CFIT accidents could be substantially reduced if all operators and training centers in Pan America developed CFIT prevention procedures and add them to their approved initial and recurrent training curriculums.
Champion Organization:	IATA
Human Resource:	CAA's, ICAO, IATA, ATA, ALTA and industry partners.
Financial Resource:	
Relation Current Aviation Community Initiative:	<ul style="list-style-type: none"> •RASG-PA has identified CFIT as the number two flight safety risk area in Pan America. •Flight Safety Foundation (FSF) has recently updated (April 2010) the ALAR Toolkit that includes CFIT Education and Training.
Performance Goal Indicators:	<p>Goal 1: A reduction of 80% in ten years of CFIT accidents involving operators in Pan America. Indicator: Operator CFIT accident rate in Pan America is continuously reduced toward the goal.</p> <p>Goal 2: CFIT training and guidance material will be provided to all operators and training centers not conducting CFIT training. Indicator: All operators and training centers are conducting CFIT training.</p> <p>Goal 3: Post CFIT Education and Training Guidance Material on the RASG-PA Website. Indicator: CFIT training material posted on the RASG-PA Website prior to completion of Output 1.</p>
Key Milestones:	<ul style="list-style-type: none"> •CAA's conduct a review of all operators CFIT training programs SCA + 6 months •CFIT Education and Training Guidance Material Available on the Web. SCA + 2 months •Operators and training centers will incorporate CFIT training into their training programs. SCA + 12 months
Potential Blockers:	<ul style="list-style-type: none"> •Availability of CAA resources. •Operators may not recognize the safety enhancement benefits
DIP Notes:	

RAST-PA/CFIT/02 Output 1

Description:	CAA's conduct a review of all operators to ascertain which operators have CFIT prevention training and procedures in their approved training programs.
Resources:	
Resource Notes:	CAA (Flight Safety Oversight Department) Estimate of 2 to 4 CAA man-hours per airline to complete operator review CAA Inspector review checklist
Time Line:	SCA+ 6 months
Actions:	Through the flight safety oversight departments, CAA's will direct inspectors to conduct a review of their operator and identify which operators provide CFIT prevention training and procedures within their approved training programs.
Target Completion Date:	

RAST-PA/CFIT/02 Output 2

Description: If an operator does not have CFIT training, he will be encouraged to incorporate CFIT training into the airline training program.

Resources:

Resource Notes: Operators, CAA's and ICAO
Variable cost depending on the operator and the number of pilots

Time Line: SCA+ 16 months

Actions: Operators will incorporate CFIT prevention training and procedures into their training programs.

Target Completion Date:

Rast No	Safety Enhancement Action	Reference	GSI	Safety Impact	Changeability	Indicator	Priority	Time Frame
RAST-PA/CFIT/04	CRM/Situational Awareness for pilots and air traffic controllers (To include review of actual events when possible)	SE -11, SE-46, SE-47	12	Medium	Moderate	P5	2	Medium

Safety Enhancement Action (expanded):	Include specific CRM/situational awareness training and procedures to all pilots and air traffic controller training curriculums, emphasizing pilot and controller situational awareness with respect to CFIT.
Statement of Work:	Crew Resource Management/Controller Resource Management (CRM) training, situational awareness and CFIT prevention are closely linked. This project will reduce CFIT accidents by promoting comprehensive pilot and air traffic controller CRM training programs.
Champion Organization:	IFALPA/IFATCA
Human Resource:	CAA's, ICAO, ANSP's, IFALPA, IFATCA, IATA and industry partners.
Financial Resource:	
Relation Current Aviation Community Initiative:	<ul style="list-style-type: none"> •RASG-PA website (http://www.mexico.icao.int/RASGPA.html#TrainingRefs) •FSF virtual library (http://flightsafety.org/) •ALAR Briefing Note – Crew Resource Management (http://flightsafety.org/files/alar_bn2-2-crm.pdf) •Airbus (http://www.airbus.com/en/corporate/ethics/safety_lib/) •Boeing operators (www.myboeing.com)
Performance Goal Indicators:	<p>Goal 1: A substantial reduction of CFIT accidents involving air transport operators in Pan America. Indicator: Operator CFIT accident rate in Pan America decreases by 80%.</p> <p>Goal 2: CRM/situational awareness training and guidance material provided to all air transport operators and Air Traffic Personnel. Indicator: Increase in number of operators and Air Traffic Personnel that are conducting CRM/situational awareness training.</p> <p>Goal 3: Post the CRM/situational awareness guidance material on the RASG-PA Website. Indicator: CRM/situational awareness guidance material posted on the RASG-PA Website by the time of SCA +2 months.</p>
Key Milestones:	<ul style="list-style-type: none"> •CRM/situational awareness training and guidance material available on the Web. SCA +2 months •Operators will incorporate CFIT training into their training program. SCA +18 months •ANSP will incorporate CFIT training into their training program. SCA+ 24 months
Potential Blockers:	<ul style="list-style-type: none"> •Availability of CAA/ANSP/State resources. •Operators, States and ANSP may not recognize the safety benefits
DIP Notes:	<p>All communications to States should be conducted through the RASG-PA Secretariat. Guidance on coordinating with ICAO and identifying which operators and ANSPs are providing CFIT prevention training and procedures within their approved training programs may be useful to States.</p> <p><i>ATC training in this area has already been developed</i></p>

RAST-PA/CFIT/04 Output 1

Description:	Incorporate and/or update CRM/situational awareness training programs for all flight crew members of air transport operators emphasizing aircraft position with relation to terrain and reviewing past occurrences.
Resources:	
Resource Notes:	Air transport operators (training departments), Variable cost depending on the operation
Time Line:	SCA+ 18 months
Actions:	Reduce the CFIT accident rate by incorporating CFIT prevention in CRM training programs. Situational awareness will be emphasized as an integral part of the CRM

Actions: Reduce the CRM accident rate by incorporating CRM prevention in CRM training programs. Situational awareness will be emphasized as an integral part of the CRM training required of flight crewmembers of all air transport operators.

Target Completion Date:

RAST-PA/CFIT/04 Output 2

Description: Incorporate CRM/situational awareness training programs for all air traffic controllers of air navigation service providers (ANSP) emphasizing aircraft position with relation to minimum allowable altitudes.

Resources:

Resource Notes: ANSP's (training departments),
CRM/situational awareness guidance material posted on the RASG-PA Website
Variable cost depending on the ANSP

Time Line: SCA+ 24 months

Actions: Reduce the CFIT accident rate by incorporating CFIT prevention in CRM training programs. Situational awareness will be emphasized as an integral part of the CRM training required of air traffic controllers of all ANSPs.

Target Completion Date:

Rast No	Safety Enhancement Action	Reference	GSI	Safety Impact	Changeability	Indicator	Priority	Time Frame
RAST-PA/LOC-I/06	LOC Training – Human factors and automation	SE 30	9	High	Moderate	P2	3	Short
Safety Enhancement Action (expanded):	To improve the overall performance of flight crews to recognize and prevent loss of control accidents, through effective use of automation.							
Statement of Work:	To reduce loss of control accidents, operators will be encouraged to adopt consensus policies and procedures relating to mode awareness and energy state management aspects of flight deck automation, as appropriate to their respective operations.							
Champion Organization:	RASG-PA (RAST-PA)							
Human Resource:	IATA, Pilot Associations; Safety, Flight Operations and Training managers; ICAO, CAA's, aircraft manufacturers, training centers.							
Financial Resource:	The total estimated cost would be X person-years.							
Relation Current Aviation Community Initiative:	<p>The following are some of the activities related to this project:</p> <ul style="list-style-type: none"> •Incident data has shown that flight deck automation is a core issue that needs to be addressed. To enhance safety, a CAST working group, including aircraft manufactures, pilot associations, etc. developed a tactical approach and distributed policies and procedures relating to mode awareness and energy state management. The COSCAP's in Asia used this material to develop a generic advisory circular. •CAST Flight Deck Automation Working Group has been formed to recommend and prioritize actions to address, for current and projected operational use, the safety and efficiency of modern flight deck systems for flight path management (including energy state management). •The Human Factors and Pilot Training Group of the ALPA, Air Safety Structure has identified its position regarding CRM and Human Factors with respect to the use of automation. •SAE G10, Aerospace Behavioral Engineering Technology (ABET) Committee, deals with the philosophies, principles and criteria by which designers, engineers, pilots and behavioral scientists structure systems to achieve maximum human workload compatibility for automation efficiency. The committee has several subcommittees with on-going work into human factors and automation 							
Performance Goal Indicators:	<p>Goal 1: Mitigate the effects of mode confusion and energy state management as contributing factors in loss of control accidents. Indicator: A measurable reduction of loss of control incidents and accidents related to automation.</p> <p>Goal 2: Mode awareness and energy state management aspects of flight deck automation advisory circular is readily available. Indicator: Each ICAO contracting State in the region has issued an advisory circular and distributed it to each operator's in the State. Completion of Output 3.</p> <p>Goal 3: All operators incorporate mode awareness and energy state management aspects of flight deck automation guidance in their approved training programs. Indicator: Mode awareness and energy state management aspects of flight deck automation guidance is provided to all transport airplane pilots Completion of Output 4.</p>							
Key Milestones:	<p>The following milestones are based on the date of Steering Committee Approval (SCA) (months):</p> <ul style="list-style-type: none"> •Review Asian advisory circular IATA SCA+6 •Issue generic advisory circular ICAO Output 1 +1 •Issuance of advisory circular by States in the Region. CAAs Output 2 +6 •Operators develop guidance based on the AC and train pilots. Operators Output 3 + 18 •Track Implementation RASG-PA SCA +12 and yearly 							

- Potential Blockers:**
- Operator might not embrace advisory circular material,
 - Operators might not accept the potential cost of this training,
 - Operators may not recognize the safety enhancement benefits,
 - States may opt not to adopt and issue the advisory circular.

DIP Notes:

To reduce loss of control accidents, air carriers will be encouraged to adopt consensus policies and procedures relating to mode awareness and energy state management, as appropriate to their respective operations.

RAST-PA/LOC-I/06 Output 1

- Description:** Review and evaluate the advisory circular created by the ICAO COSCAP's in Asia
- ALTA / IFALPA / IATA team to review and evaluate the advisory circular created by the ICAO COSCAP's in Asia related to mode awareness and energy state management of flight deck automation.
 - Based on this review create a generic advisory circular for the Region
- Resources:**
- Resource Notes:** ALTA, IFALPA, IATA, Pilot Associations, Flight Operations, Safety and Training managers, and Aircraft Manufacturers. The estimated cost of a one day meeting of the appropriate persons.
- Time Line:** SCA + 6 months
- Actions:** ALTA / IFALPA / IATA will convene a team to analyze the advisory circular, to verify policies and procedures related to mode awareness and energy state management are appropriate for the Region. The team will develop a generic mode awareness and energy state management aspects of flight deck automation advisory circular for Pan America.
- Target Completion Date:**
-

RAST-PA/LOC-I/06 Output 2

- Description:** •ICAO will distribute a copy of the developed generic advisory circular to each State in the Region.
- Resources:**
- Resource Notes:** ICAO
- Time Line:** Completion of Output 1 + 1 months
- Actions:** ICAO Regional Offices will prepare a cover letter and disseminate the generic advisory circular to each member State in the Region.
- Target Completion Date:**
-

RAST-PA/LOC-I/06 Output 3

- Description:** •Each State in the region will use the generic advisory circular as a template to prepare a State advisory circular on mode awareness and energy state management aspects of flight deck automation.
- Resources:**
- Resource Notes:** State regulatory authorities
- Time Line:** Completion of output 2 + 9 months
- Actions:** States in the Region to issue their own advisory circular on mode awareness and energy state management aspects of flight deck automation.
- Target Completion Date:**
-

RAST-PA/LOC-I/06 Output 4

Description: Mode awareness and energy state management aspects of flight deck automation guidance is provided by operators to all of their pilots.

Resources:

Resource Notes: Operator's flight operations, standards and training departments.

Time Line: Completion of Output 3 + 18 months

Actions: Each operator should carefully developed procedures and guidelines that support the proper use of mode awareness and energy state management aspects of flight deck automation in their training programs. Each transport airplane pilot should be trained to the flight deck automation procedures and guidelines developed by their organization.

Target Completion Date:

APPENDIX C

RUNWAY EXCURSIONS

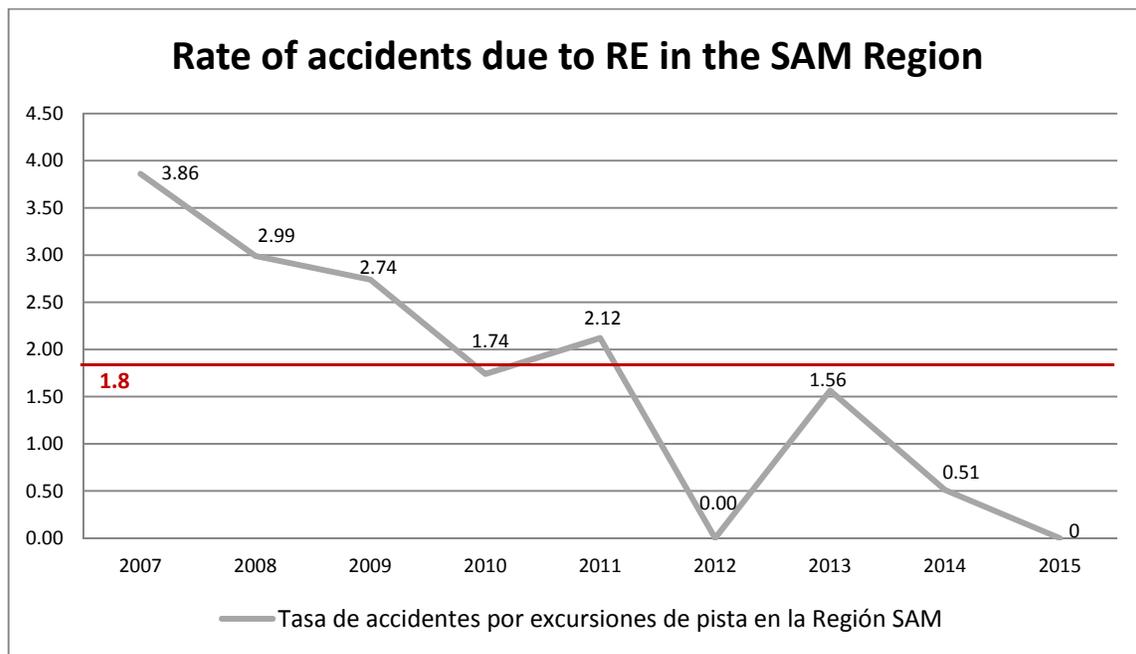
1. Safety performance indicators

1.1 The goal concerning runway excursions was established in the Declaration of Bogota as follows: *Reduce the rate of runway excursions by 20% with respect to the average rate for the SAM Region (2007-2012).*

1.2 With the data presented in Table C-1 – Rate of accidents due to runway excursions in the SAM Region, it was possible to calculate an average rate of **2.24** accidents per million departures during the period 2007-2012.

1.3 The projection of accidents due to runway excursions shows a gradual reduction of these accidents, except in 2011 and 2013, in which the rate had a slight increase. It may also be noted that in 2013 (1.56), 2014 (0.51) and up until 31 August 2015 (0), the accident rate remained below the calculated goal of **1.8** that is obtained by *reducing the runway excursion rate by 20% with respect to the average rate of the SAM Region (2007-2012)*, which is **2.24** [$2.24 - 0.44$ (20% of 2.24) = 1.8].

Table C-1 – Rate of accidents due to runway excursions in the SAM Region



2. Safety performance goal

2.1 For the period 2017-2019, the following goal is proposed: Reduce the runway excursion rate by 50% below the average rate of the SAM Region for the period 2011-2015.

3. Proposed safety improvements to reduce accidents due to runway excursions

2.1 The following safety improvements are proposed in order to reduce the accident rate due to runway excursions:

- ✓ Period 2017-2019
 - Implementation of ICAO's runway safety tool kit.
 - Effective implementation of runway safety teams (RSTs) at international aerodromes.
 - Effective implementation of the flight data analysis programme (FDAP) in commercial air transport operators that have aircraft weighting over 27000 kg.
 - Effective implementation of ICAO's advanced qualification programme (AQP) or evidence-based training (EBT) (unstabilized approach scenarios), as applicable.
 - Effective implementation of an advanced oversight system for reactive, proactive, and predictive processes aimed at addressing hazards related to runway excursions.
 - Implementation of systems for the prevention of runway excursions in aircraft of commercial air operators.

APPENDIX D

Plan for Aerodrome Certification

STATE	No. AERODROMES (Doc. 8733, Vol. II, FASID, Table AOP 1)	AERODROMES CERTIFICATION			RESPONSIBLE AUTHORITY
		Certified	Short Term 2016	Medium and Long Term 2019 - 2022 ⁴	
Argentina	16		1	15	ANAC
Bolivia	4 ¹	3		1	DGAC
Brazil	28	4	4	20	ANAC
Chile	8		1	7	DGAC
Colombia	11		3	8	AEROCIVIL
French Guiana	1			1	CAA
Guyana	2	2			CAA
Ecuador	4	2		2	DGAC
Panama	6 ²			6	DGAC
Paraguay	2		1	1	DINAC
Peru	8	1	1	6	DGAC
Suriname	2		1	1	CAA
Uruguay	2		1	1	DINACIA
Venezuela	7 ³		1	6	INAC
TOTAL	101	12	14	75	

¹ SLTJ to be deleted from CAR/SAM ANP at the request of the CAA in the next amendment to CAR/SAM ANP.

² The Aeronautical Authority has requested the deletion of MPCH and inclusion of MPSM in the next amendment to CAR/SAM ANP.

³ INAC Venezuela has requested the inclusion of SVBM, SVPR, SVSO and SVCS in the next amendment to CAR/SAM ANP.

⁴ Initial Aerodromes certification as described in PANS Aerodromes.

APPENDIX E

MILESTONES FOR SSP IMPLEMENTATION

A. Resources available for SSP implementation.

- | | |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Associate elements | a) Assignment of SSP responsible.
b) The SSP has enough resources (equipment and personnel) to carry out the tasks needed for data collection, analysis and other associate functions according to the size and complexity of the civil aviation systems. |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
-

B. SSP GAP analysis in iSTAR completed and updated in a continuous basis.

C. Information sources identification (reactive, proactive and predictive)

D. Publication of National Annual Safety Oversight Reports.

- | | |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Associate elements | a) High level safety meetings are carried out where analysis, decisions and follow-up of results are made based on the Safety Oversight Annual Report |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
-

E. Definition of Service providers risk profiles.

F. Risk-based oversight programme implemented.

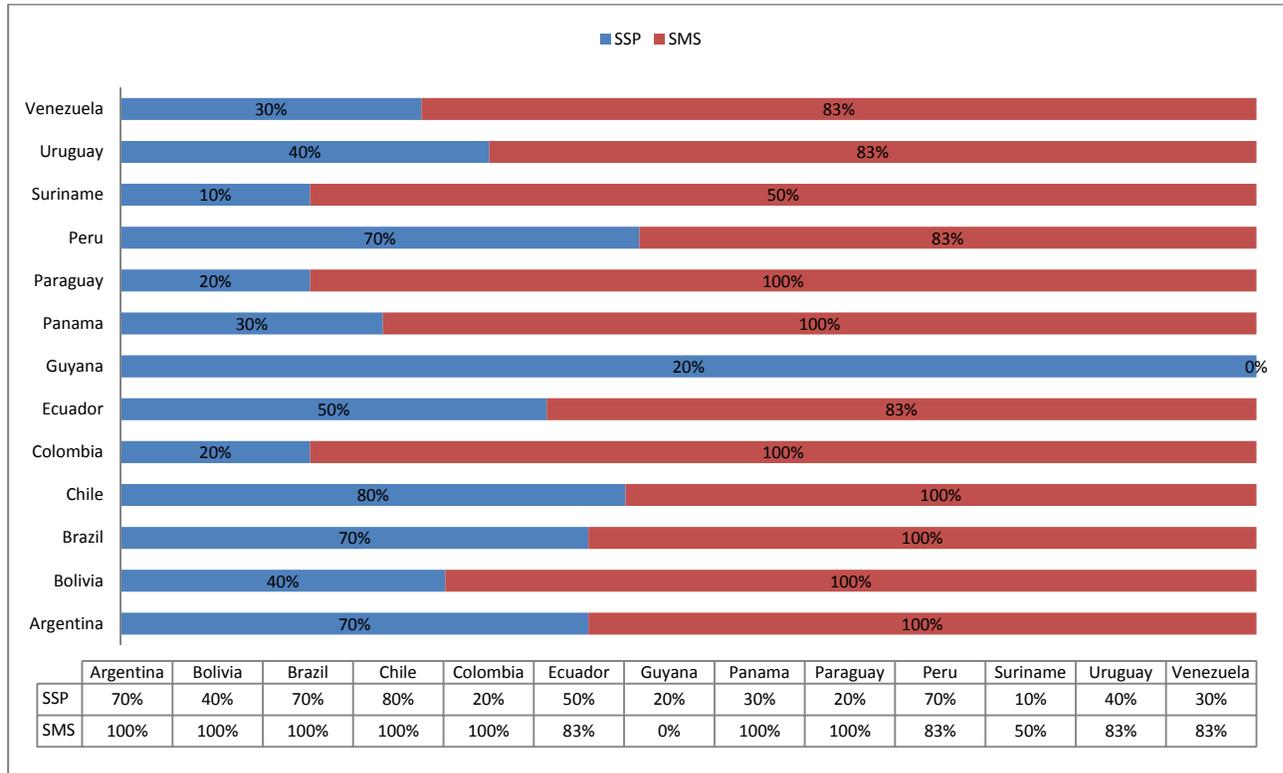
MILESTONES FOR SMS IMPLEMENTATION

A. Publication of the SMS regulation for all operators (AGA, ATS, OPS and AIR).

B. Implementation in the Safety Oversight Plan of State the assessment of the service providers SMS by competent inspectors on SMS evaluation.

APPENDIX F

SUMMARY GRAPH ON SSP AND SMS IMPLEMENTATION RATE BY STATE



Note: This graph shows the results expressed by the States. These data has not been audited by the USOAP.

APPENDIX G

SUMMARY CHART ON STATE SSP AND SMS IMPLEMENTATION BY MILESTONE

Questions		States												
State Safety Programme SSP		ARG	BOL	BRA	CHI	COL	ECU	GUY	PAN	PAR	PER	SUR	URU	VEN
A	Resources available for SSP implementation													
	a) Has the State designated an SSP responsible?	0	1	1	1	1	1	1	1	0	1	1	1	1
	b) Does SSP have enough resources to carry out tasks demanded by data compilation, analysis and other associated functions according to size and complexity of the civil aviation system?	1	1	1	1	0	1	0	0	0	0	0	0	1
B	Analysis of SSP gap in iSTAR													
	a) Has it been completed?	1	0	0	0	0	0	0	0	0	1	0	0	0
	b) Is it being constantly updated?	1	0	0	0	0	0	0	0	0	0	0	0	0
C	Identification of information sources: Information sources are being identified:													
	a) Reactive?	1	1	1	1	1	1	0	1	1	1	0	1	1
	b) Proactive?	1	1	1	1	0	1	0	0	1	1	0	1	0
	c) Predictive	1	0	0	1	0	0	1	0	0	1	0	1	0
D	Publication of National Safety Annual Reports													
	Are high level safety meetings carried out for the analysis; decision making and follow up on the results of the safety annual report?	1	0	1	1	0	1	0	0	0	0	0	0	0
E	Have service providers' risk profiles been determined?	0	0	1	1	0	0	0	1	0	1	0	0	0
F	Has a risk-based Oversight Programme been implemented?	0	0	1	1	0	0	0	0	0	1	0	0	0
	Total	70%	40%	70%	80%	20%	50%	20%	30%	20%	70%	10%	40%	30%
A	Safety Management System (SMS) - Has the State published the SMS regulatory requirements for all its operators?													
	AGA	1	1	1	1	1	1	0	1	1	1	1	1	1
	ATS	1	1	1	1	1	1	0	1	1	1	1	1	1
	OPS	1	1	1	1	1	1	0	1	1	1	0	1	1
	AIR	1	1	1	1	1	1	0	1	1	1	1	1	1
	PEL	1	1	1	1	1	1	0	1	1	1	0	1	1
B	Has the State implemented in its Safety Oversight Plan the SMS assessment of Service providers with qualified inspectors in SMS assessment? <i>Understanding by implemented, that a procedure for establishing an oversight plan has been included in the operators SMS evaluation, and that SMS evaluations are being carried out according to the plan.</i>	1	1	1	1	1	0	0	1	1	0	0	0	0
	Total	100%	100%	100%	100%	100%	83%	0%	100%	100%	83%	50%	83%	83%

Note:

- 1) The value 1 indicates that implementation has been completed; and value 0, that is has not been completed.
- 2) This chart shows the results expressed by States. This has not been audited by USOAP.