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Runway Safety

Aviation's #1 Safety Priority

Adolfo Zavala

ICAO Air Navigation Bureau

Consultant - Implementation Planning and Support Section

Eastern Caribbean Runway Safety Team (RST)
Implementation Workshop
Saint John's, Antigua and Barbuda
8 to 11 November 2016



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Runway Safety Programme



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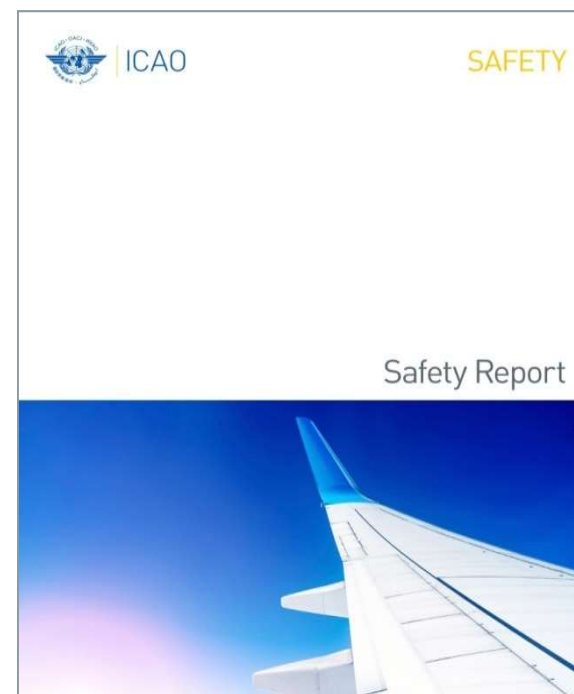
Evolution of the Runway Safety Programme

- ICAO NAM/CAR/SAM Regions Runway Safety/Incursion Conference, Mexico City, October 2002
- ICAO/ERAU Runway Safety Toolkit - 2005
- ICAO Manual on the Prevention of Runway Incursions First Edition — 2007
- ICAO/FAA Runway Incursion Severity Classification (RISC) – 2009
- ICAO Assembly Resolution 37-6 on Runway Safety - 2010
- ICAO/IATA Runway Excursion Risk Reduction Toolkit - 2011
- ICAO Global Runway Safety Symposium, Montreal, May 2011
- ICAO RSP Regional Runway Safety Seminars - 2011 – 2015
- ICAO Runway Safety Implementation Kit (I-Kit) and new web site - 2014
- ICAO Runway Safety Team Handbook - 2014
- ICAO Runway Safety Go-Team Methodology – 2014
- RASG Runway Safety SEIs, DIPs, WGs, Regional Safety Advisories/Circulars - 2015



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ICAO ANNUAL SAFETY REPORT 2016 EDITION





State

Chart 9: High-risk category accident overview

Table 1: Departures, accidents and fatalities by RASG region

RASG	Estimated Departures (in millions)	Number of accidents	Accident rate (per million departures)	Fatal accidents	Fatalities
AFI	0.8	6	7.3	0	0
APAC	9.8	24	2.5	3	98
EUR	8.1	24	3.0	1	150
MID	1.2	3	2.5	1	224
PA	13	34	2.6	1	2
WORLD	33	92	2.8	6	474

Regional accident rates remain low					
PA	13	34	2.6	1	2
WORLD	33	92	2.8	6	474

No CFIT accidents in 2015					
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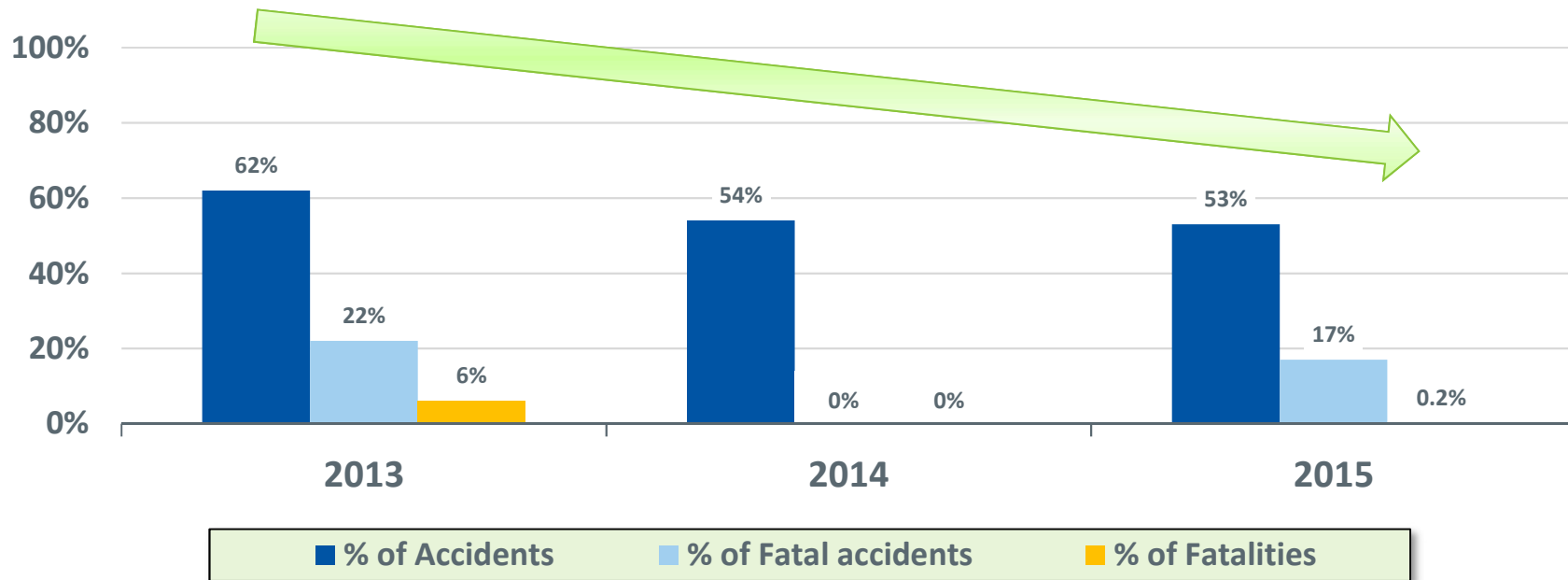
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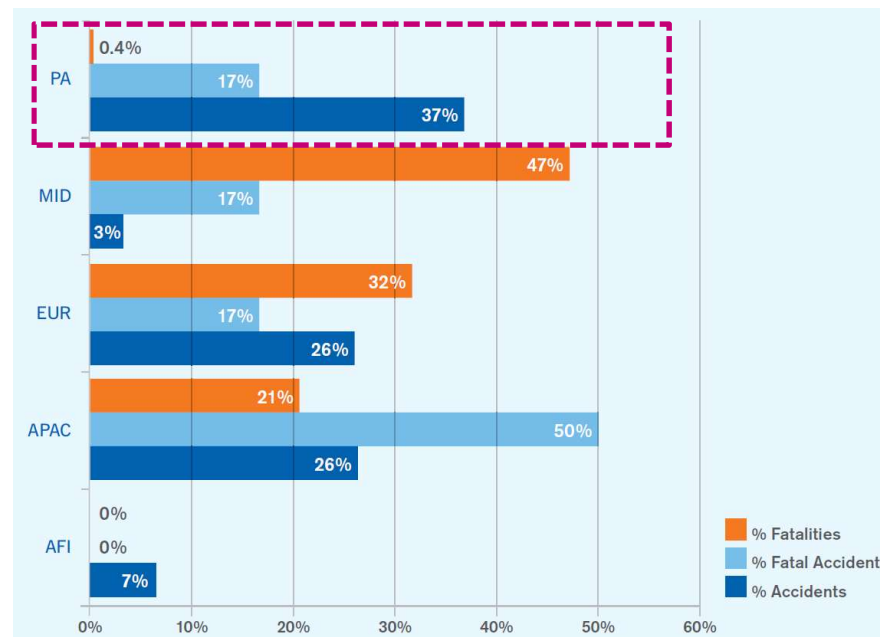
Runway Safety related Accidents





Regional Accidents Overview (2015)

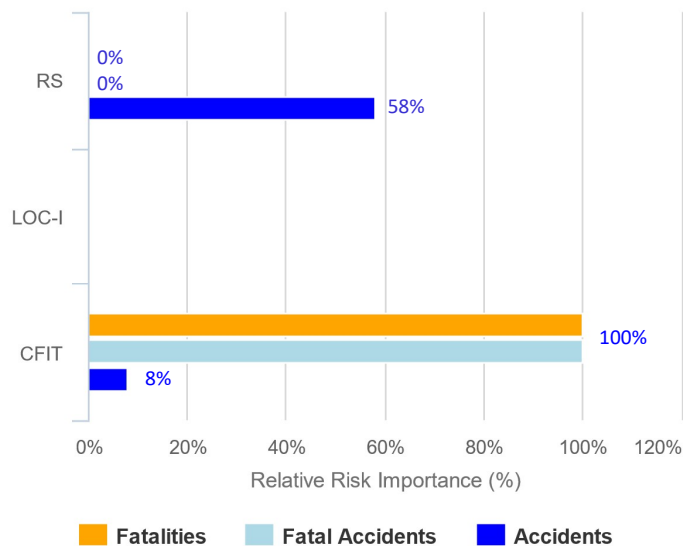
RASG-PA region accounted for 37% of total accidents and 0.4% of fatalities





Risk Distribution for the Top 3 Safety Priorities

Scheduled commercial above 5 700kg for 2011 - 2015



Continue focus on the **Top 3 Safety Priorities** (RS, CFIT, LOCI)



Source: *ISTARS 3.0 – ADREP et al.* (<https://portal.icao.int/space>)



Runway Safety in 2016*

Year	2016* (2015 Total)
Number of accidents involving Runway Safety	53 (71)

*Preliminary data not validated, as of 21 October 2016



List of Runway Safety Accidents – up to 21 October 2016

Date	Airport	Aircraft Type	Flight Phase
03/01/2016	CHICAGO O'HARE INTL (KORD), Chicago, IL (USA)	Canadair CL-600-2C10 Regional Jet CRJ-702	Standing
09/01/2016	RONDONOPOLIS (SWRD), Rondonopolis, Brazil	ATR ATR 72	Approach
14/01/2016	HOSEA KUTAKO INTL (FYWH), Windhoek, Namibia	Airbus A319-112	Approach
28/01/2016	SHAHID HASHEMI NEJAD INTL (OIMM), Mashhad, Iran	Boeing (McDonnell-Douglas) MD-80	Landing
14/02/2016	PRES JUSCELINO KUBITSCHEK INTL (SBBR), Brasilia, Brazil	Boeing 737 (NG)	Standing
03/03/2016	CHHATRAPATI SHIVAJI INTL (VABB), Mumbai, India	Boeing 737 (NG)	Taxi
04/03/2016	BOLE INTL (HAAB), Addis Ababa, Ethiopia	Boeing 787	Standing
15/03/2016	HONG KONG INTERNATIONAL AIRPORT (VHHH), Hong Kong, China	Boeing 747	Landing
19/03/2016	ROSTOV-ON-DON AIRPORT (URRR), Rostov-on-Don, Russia	Boeing 737	Approach
21/03/2016	GUARANI INTL (SGES), Ciudad Del Este, Paraguay	Airbus A320	Landing
23/03/2016	PERETOLA (LIRQ), Florence, Italy	BAE SYSTEMS (Avro) RJ Avroliner	Landing
27/03/2016	ASTANA (UACC), Astana, Kazakhstan	Fokker 100	Landing
28/03/2016	LIC BENITO JUAREZ INTL (MMM), MEXICO CITY	Sukhoi Superjet 100	Take-off
04/04/2016	HALIM INTL (WIHH), Jakarta, Indonesia	Boeing 737 (NG)	Take-off
15/04/2016	LOS ANGELES INTL (KLAX), Los Angeles, CA (USA)	Boeing 747	Landing



Cont'd

Date	Airport	Aircraft Type	Flight Phase
20/04/2016	GANDER INTL (CYQX), Gander, Canada	Hawker Beechcraft 1900	Landing
27/04/2016	GUANGZHOU BAIYUN INTERNATIONAL AIRPORT (ZGGG), Guangzhou, China	Boeing 737	Take-off
28/04/2016	MARISCAL LAMAR (SECU), Cuenca, Ecuador	Embraer 190	Landing
30/04/2016	CATANIOA-FONTANAROSSA (LICC), Catania, Italy	Fokker 50	Landing
01/05/2016	KANGDING (ZUKD), Kangding, China	A319	Approach
02/05/2016	PRISTINA INTERNATIONAL AIRPORT (BKPR), Pristina, Kosovo	Boeing 737	Landing
03/05/2016	KHOVD AIRPORT (ZMKD), Khovd city, Mongolia	Boeing 737 (NG)	Take-off
07/05/2016	DEVI AHILYABAI HOLKAR INTERNATIONAL AIRPORT (VAID), Indore, India	ATR 72	Landing
11/05/2016	PARIS CHARLES DE GAULLE AIRPORT (LFPG), Paris, France	Airbus A320-214	Taxi
27/05/2016	TOKYO INTERNATIONAL AIRPORT (RJTT), Tokyo, Japan	Boeing 777	Take-off
28/05/2016	MANCHESTER AIRPORT (EGCC), Manchester, England	Airbus A320	Taxi
06/06/2016	INCHEON INTERNATIONAL AIRPORT (RKSJ), Seoul, South Korea	McDonnell-Douglas MD-11	Take-off
15/06/2016	SOUTH BIMINI AIRPORT (MYBS), Bimini, Bahamas	Hawker Beechcraft Beech 99	Landing
19/06/2016	Kharg Airport (OIBQ), Kharg Island, Iran	BAE SYSTEMS (HS) 146	Landing
21/06/2016	GOMA INTERNATIONAL AIRPORT (FZNA), Goma, Democratic Republic Of The Congo	Fairchild/Dornier 228	Landing



Cont'd

Date	Airport	Aircraft Type	Flight Phase
27/06/2016	SINGAPORE CHANGI AIRPORT (WSSS), Changi, Singapore	Boeing 777	Landing
12/07/2016	CALGARY INTERNATIONAL AIRPORT (CYYC), Calgary, AB	Hawker Beechcraft 1900	Landing
03/08/2016	MBUJI MAYI AIRPORT (FZWA), Mbuji Mayi, Democratic Republic of the Congo	Boeing 737	Landing
03/08/2016	DUBAI INTERNATIONAL AIRPORT (OMDB), Dubai, United Arab Emirates	Boeing 777	Landing
05/08/2016	SAINT MAARTEN INTERNATIONAL AIRPORT (TNCM), Saint Martin	Fairchild Metro	Landing
05/08/2016	ORIO AL SERIO INTERNATIONAL AIRPORT (LIME), BERGAMO, ITALY	Boeing 737	Landing
08/08/2016	BENAZIR BHUTTO INTERNATIONAL AIRPORT (OPRN), ISLAMABAD, Pakistan	Airbus A320	Landing
12/08/2016	UFA AIRPORT (UWUU), Ufa, Russia.	YAK-42	Landing
14/08/2016	NARITA INTERNATIONAL AIRPORT (RJAA), Tokyo, Japan	Boeing 787	Take-off
08/09/2016	HONG KONG INTERNATIONAL AIRPORT (VHHH), Hong Kong, China	Airbus 330	Taxi
14/09/2016	TEHRAN IMAM KHOMEINI INTERNATIONAL AIRPORT (OIIE), Tehran, Iran	Fokker 100	Taxi
16/09/2016	TONCONTÍN INTERNATIONAL AIRPORT (MHTG), Tegucigalpa, Honduras	SAAB 340	Take-off
17/09/2016	RIGA INTERNATIONAL AIRPORT (EVRA), Riga, Latvia	Dash 8	Landing
24/09/2016	GAUTAM BUDDHA AIRPORT (VNBW), Siddharthanagar, Nepal.	Jetstream 41	Landing
27/09/2016	TEHRAN IMAM KHOMEINI INTERNATIONAL AIRPORT (OIIE), Tehran, Iran	Airbus A310	Taxi



Cont'd

Date	Airport	Aircraft Type	Flight Phase
30/09/2016	DEADMAN'S CAY AIRPORT (MYLD), Deadman's Cay, Bahamas	Beechcraft 1900	Landing
01/10/2016	TAIWAN TAOYUAN INTERNATIONAL AIRPORT (RCTP), Taipei, Taiwan	Airbus A330	Landing
06/10/2016	Orlando International Airport (KMCO), Orlando, Florida	Airbus A330	Standing
09/10/2016	PALMA DE MALLORCA AIRPORT (LEPA), Palma, Majorca, Spain	Airbus 320	Landing
11/10/2016	SURABAYA JUANDA INTERNATIONAL AIRPORT (WARR), Surabaya, Indonesia	Boeing 737	Landing
11/10/2016	BELAYA GORA AIRPORT (UESG), Belaya Gora, Russia	Antonov AN-26	Approach
13/10/2016	HENRI COANDĂ INTERNATIONAL AIRPORT (LROP), Bucharest, Romania's	ATR 72	Take-off
21/10/2016	Recife/Guararapes Airport (SBRF), Recife, Brazil	Airbus A300	Landing



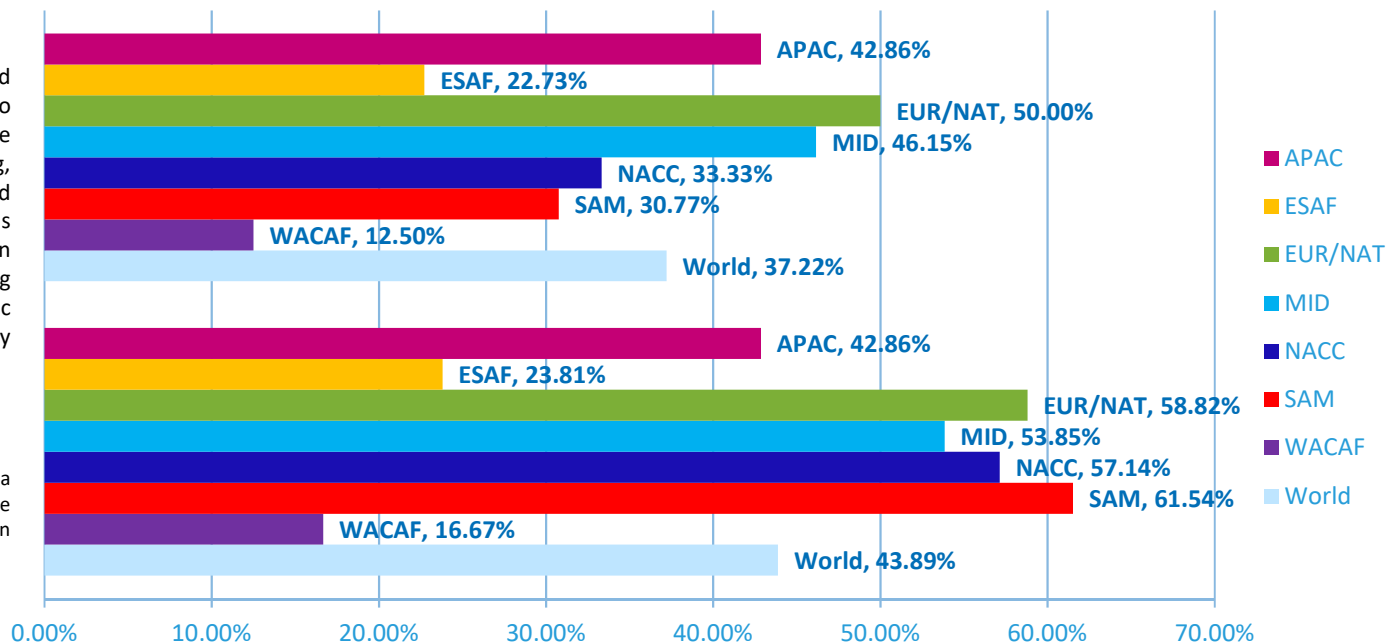
Average EI of PQs: 7.189 & 8.205 for World: 41.02%

PQ 8.205

Has the State established and implemented a process to ensure that an aerodrome operator's plan for lighting, signs and markings is integrated as a whole into the aerodrome's runway incursion and collision avoidance strategy, taking account of different traffic intensities and visibility conditions?

PQ 7.189

Has the State promulgated a regulation requiring the establishment and implementation of a runway safety programme?





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GASP 2017-2019 Edition

- Runway safety related events identified as **one of the top 3 high-risk accident categories**
- **Highest proportion of the accidents worldwide** during the 5-year period (2010 - 2014) involved runway safety events
- Runway safety was the **prevalent accident category** for all the regions
- **Runway safety-related events** include, but are not limited to: abnormal runway contact, bird strikes, ground collisions, events related to damage from ground handling operations, runway excursions, runway incursions, loss of control on the ground, collision with obstacle(s), undershoots and overshoots





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RSP Achievements - 2015

- 2nd edition of ICAO Runway Safety Team (RST) Handbook
- RASG Safety Enhancement Initiatives (SEI) related to runway safety, Detailed implementation plans (DIP), & related activities
- Regional publications – guidance and safety advisories
- ICAO & Partners Runway Safety Go-Team missions
- ACI APEX Airport Safety Reviews
- IATA Unstabilised Approach Guidance
- US FAA Academy ICAO TRAINAIR Standardized Training Package (STP) on “Runway Incursion Prevention”
- Updated Runway Safety implementation kit (iKIT) on ICAO website at www.icao.int/safety/runwaysafety





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Regional Reports





WACAF RO Report

Developed guidance material and training programs to establish and operate runway safety team.

Runway Safety Workshop

- 53rd ACI Africa Board and Working Groups Meeting & Regional Conference and Exhibition, Casablanca, Morocco, 18 – 22 April 2015

Runway Safety Go-Team missions:

- LEOPOLD SEDAR SENGHOR (GOOY) – Dakar, Senegal (20 – 24 October 2014)
- TOKOIN (DXXX) - Lomé, Togo (14 - 16 July 2015)
- BANJUL INTL (GBYD) - Banjul, Gambia (25-27 August)
- MURTALA MUHAMMED (DNMM) - Lagos, Nigeria (18 – 20 January 2016)
- MAYA-MAYA (FCBB) - Brazzaville, Congo (17 – 19 February 2016)
- A. NETO (FCPP) - Pointe Noire, Congo (23 – 25 February 2016)

Several Go-Teams missions (covering all international aerodromes of the WACAF States) planned in the AfDB Project which is under review.



ESAF RO Report

6 Airports with established Runway Safety Teams

Regional Runway Safety Seminar was held in Livingstone, Zambia, 9 - 10 October 2014

Runway Safety Go-Team missions:

- 4TH OF FEBRUARY (FNLU) - Luanda, Angola (4 - 6 November 2014)
- Planned: Botswana, Seychelles, Uganda, Zambia, Zimbabwe



NACC RO Report

10 Runway Safety Teams established

- 2015 Workshop on Best practices to prevent Runway Incursion/Runway Excursions (Regional Office, 11 to 14 August 2015)

Runway Safety Go Team missions:

- TONCONTIN INTL (MHTG) - Tegucigalpa, Honduras (10 to 14 March 2014)
- LA AURORA INTL (MGGT) - Guatemala City, Guatemala (13 to 17 April 2015)
- JOSE MARTI INTL (MUHA) - Havana, Cuba, in collaboration with FAA to assess functioning of RSTs (13 to 15 October 2015)
- V C BIRD INTL (TAPA) - St. John's, Antigua and Barbuda (Planned 3rd QTR 2016)
- WILLEMSTAD/HATO INTL. (TNCC) - Curacao, Curacao (Planned 1st QTR 2017)

RASG-PA is currently working on the following Runway Safety Enhancement Initiatives (Detailed Implementation Plans (DIPs)):

- 1. RASG-PA/RE/215 – 216 –Landing Training for Flight Crews.
- 2. RASG-PA/RE/217 – Airline Operations and Training – Take-off Procedures and Training.
- 3. RASG-PA/RE/218 – Implementation of on - board technologies.
- 4. RASG-PA/RE/219 – Air Traffic Service Provider Training to Prevent Runway Excursions.



SAM RO Report

- 26 Runway Safety Teams Established
- Regional Mechanism for AIG Cooperation for the SAM Region (ARCM)
 - Taskforce under the AIG-SAM/RE workgroup (part of ARCM) on analysis of associated factors on RE events in 2016 on the SAM Region (on going / 2016)
- Regional Safety Oversight Organization for the SAM Region (SRVSOP)
 - SRVSOP Advisory Circular on Runway Safety Teams under Latin American Regulations (LAR), based on ICAO's RST Handbook and Brazil's experience (2017)
 - Review by OPS Panel on criteria for unstable approach parameters for operators at the SAM region (2017)
- RASG-PA Detailed Implementation Plans:
 - RASG-PA/RE/215 – 216 –Landing Training for Flight Crews.
 - RASG-PA/RE/217 – Airline Operations and Training – Take-off Procedures and Training.
 - RASG-PA/RE/218 – Implementation of on - board technologies.
 - RASG-PA/RE/219 – Air Traffic Service Provider Training to Prevent Runway Excursions.
- Other activities:
 - GREPECAS (SAM Region PIRG) project on Runway Safety under review (Project F2)
 - "Runway Safety Team Awareness" presentation on Latin American Airport Pavement Association (ALACPA) Thirteenth Annual Meeting, November-December 2016
 - CARSAMPAF (CAR/SAM Regional Wildlife committee) task on a Regional Bird Migration Alert System (2017)



APAC RO Report

Completed Runway Safety RASG-APAC SEIs and publications:

- Runway Safety Maturity Checklist
- Unstable Approaches - ATC Considerations - <https://www.canso.org/unstable-approaches-air-traffic-control-considerations>
- Guidance on runway maintenance and operations – Aerodrome Operator’s perspective - available on ACI website

Other Runway Safety SEIs in progress:

- Model AC on Runway Incursion Standard Operating Procedures – Runway Incursion Prevention and Pilot Training
- Enhanced Surface Marking and Lighting
- Identify the probable causal factors associated with pilot decisions not to go around when a go around is appropriate
- Develop guidance material and training programs to establish and operate runway safety team



MID RO Report

20 RSTs established which represents 30% of the required RSTs of the MID Region aerodromes

Second meeting of the RASG-MID Runway and Ground Safety Working Group (RGS WG/2) held in Cairo, Egypt, 19 to 21 May 2015

Runway Safety Go-Team missions:

- KHARTOUM (HSSS) - Khartoum, Sudan (30 November to 4 December 2014 in conjunction with ACI APEX Safety review)
- KUWAIT INTL (OKBK) - KUWAIT, Kuwait (15-18 February 2016)
- QEEN ALIA INTL (OJAI) - Amman, Jordan (Planned 5th Sep 2016)

RASG-MID Safety Advisories which have been circulated by State Letters and are available on the ICAO MID website at:

www.icao.int/MID/Pages/rasgmid.aspx

- RSA-01 containing Guidance for Harmonising the Use & Management of Stop Bars at Airports - November 2014
- RSA-02 containing Guidance on Regulatory Framework Supporting Establishment of Runway Safety Teams - January 2015
- RSA-03 containing Model Checklist for Runway Safety Teams (RSTs) - March 2015
- RSA-05 containing Aerodromes Certification Toolkit - September 2015
- RSA-10 containing Guidance on Periodic Surveillance Audits of Aerodrome Infrastructure & Maintenance - August 2016
- In the pipeline: RSAs on Aerodrome Safeguarding , Laser Attack, and Wildlife management.



EUR/NAT RO Report

23 Runway Safety Teams reported to ICAO

- In addition, all Russian airports have RSTs established as per order of Russian CAA

SMS/RWY Safety Seminar held on 19-20 July 2016 in Moscow, Russia. The Seminar has been organized with the support of ICAO, IAC, FAA, Rosaviatsia (Russian CAA) and Airbus. The Seminar was attended by over 180 representatives of CAAs and airports of Armenia, the Republic of Belarus, Republic of Kazakhstan, Kyrgyz Republic and Russian Federation.

Runway Safety Go-Team missions:

- BEN GURION (LLBG) - Tel Aviv, Israel (08-10 November 2016)
- ESENBOGA (LTAC) – Esenboga, Turkey (Planned 4th Qtr 2016)

RASG-EUR have two Safety Enhancement Initiatives developed on runway safety

- SEI IE-REST/IE-RSG/01 related to Runway Safety Standard Operating Procedures (SOP) Promotion
- SEI IE-REST/IE-RSG/02 related to Runway Safety Team Guidance and Implementation

RASG-EUR to publish safety advisory on guidance for Air Operators in developing SOP supporting runway safety (scheduled for November 2016)

Translation into Russian of the ICAO RST Handbook on the ICAO EUR/NAT website and at:
http://favt.ru/favt_new/?q=novosti/aktualnaja_informacija/aktualnaja_informacija/4348



Global Runway Safety Teams – 149 Teams Reported to ICAO (2 new teams reported in last 7 days)



Please visit the following link to complete survey and see the complete list of reported Runway Safety Teams:
<http://www.icao.int/safety/RunwaySafety/Pages/Runway%20Safety%20Team%20Register.aspx>



ICAO Activities/Plans - 2016 and beyond

- Maintain Runway Safety web site (I-Kit) & Runway Safety Team Handbook
- Runway safety team survey – 149 RSTs have registered
- Runway Safety Go-Team missions
- Annex 14 Vol. I Amendment 13 – Nov 2016
- PANS-Aerodromes 1st edition (Doc 9981) – Nov 2016
- Global Symposium – 4th Quarter 2017
- PANS-Aerodromes 2nd edition (Chapter 5) including RSP Partners peer review – 2018
- Annex 14 Vol. I Amendment – Nov 2018
- New USOAP audit protocol questions on runway safety provisions - 2018





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Runway Safety Go Team missions

EUR/NAT

- BEN GURION (LLBG) - Tel Aviv, Israel (8 - 10 Nov. 2016)
- ESENBOGA (LTAC) – Esenboga, Turkey (4th Qtr. 2016)

MID

- QUEEN ALIA INTL (OJAI) - Amman, Jordan (week of 5 Sept. 2016)

NACC

- V C BIRD INTL (TAPA) - St. John's, Antigua and Barbuda (3rd Qtr. 2016)
- WILLEMSTAD/HATO INTL. (TNCC) - Willemstad, Curacao (1st Qtr. 2017)



Partner Activities/Plans - 2016 and beyond

- Eurocontrol (EAPPRI v3.0 – PPT attached)
- ACI (APEX, new SMS Handbook, airport safety survey)
- IATA Airport Analyses
- CANSO (SEANS, RS maturity checklist update, Un-stabilized approach guidance – with IATA)
- ICCAIA (Airbus - ROPS)
- IBAC (IS-BAO)
- IFALPA (new position paper to be published soon)





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Questions for Runway Safety Programme

- What more can ICAO and the Runway Safety Programme do to support the implementation of airport runway safety teams?
- How can the benefit of implementing airport RSTs be measured?
- What more can ICAO and the RSP do to support the improvement of runway safety?
- How can the benefit of the RSP be measured?
- Should the ICAO RSP expand its scope from the current runway safety definition (runway strip) to the manoeuvring area (including taxiways), or even the entire movement area (including aprons), the latter aligned with the ICAO accident occurrence categories for events related to runway safety?



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Runway Safety Action Plan Working Group

- Representatives of RSP Partners
- Review quality of runway related accident reporting data
- Review applicability of runway related accident sub-categories – scope of Runway Safety
- Review RS indicators and metrics
- Identify RS data breakdown required for analysis and to be available on iSTARS
- Safety risk assessment of RS category and sub-categories
- Confirm RS safety risk priority and identify main sub-categories
- Identify mitigation measures
- Develop new RS Action Plan
- Advise 2020 – 2022 GASP Roadmap Group
- Present at the next global runway safety event



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Next Steps for RSP

- Next Partners Planning and Coordination meeting – 1st Quarter 2017
 - 2nd Global Runway Safety Symposium (or conference) – 4th Quarter 2017 (Peru has expressed interest in hosting)
 - Quarterly e-mail updates
 - Periodic web site and I-Kit updates
- <http://www.icao.int/safety/RunwaySafety/Pages/default.aspx> (Partners to provide new and revised material to ICAO, add link from RS page to RASGs page)
- <http://www.icao.int/safety/Implementation/Lists/RASGSPIRGS/AllItems.aspx>, add RS Go Team schedule, add RST success stories section, add link to PBN approach procedures page)



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Runway Safety Recommendations

- RASGs to analyze **regional runway safety data** and implement related Safety Enhancement Initiative (SEI) & Detailed Implementation Plans (DIP)
- States to implement **runway safety programmes and aerodrome certification**
- Airports to implement and enhance **Runway Safety Teams (RST) and safety management systems**
- Airports to make use of the **Runway Safety I-Kit, RST Handbook, and other guidance material**
- Airports to request **ICAO Runway Safety Go-Team visits** and/or **ACI APEX Airport Safety Review**



RECOMMENDED



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MONTREAL
(HEADQUARTERS)



PARIS
(EUROPEAN AND
NORTH ATLANTIC)



BEIJING
(ASIA-PACIFIC
SUB-OFFICE)



MEXICO CITY
(NORTH AMERICA AND CARIBBEAN)



CAIRO
(MIDDLE EAST)



DAKAR
(WESTERN AFRICA)



BANGKOK
(ASIA-PACIFIC)



LIMA
(SOUTH AMERICA)



NAIROBI
(EASTERN AFRICA)



THANK YOU!