Twentieth Pan America — Regional Aviation Safety Team Meeting (PA-RAST/20)
San Jose, Costa Rica, 14 to 16 July 2015

Agenda Item 6: **Safety Enhancement Team (SET) 3 — Runway Excursion (RE) Detailed Implementation Plan (DIP)**

RUNWAY EXCURSION SAFETY TEAM REPORT

(Presented by the Secretariat)

EXECUTIVE SUMMARY	
This working paper presents four Detailed Implementation Plans DIP´s reviewed by the Runway Excursions (RE) Safety Enhancement Team (SET).	
Action:	The meeting is invited to review the DIPs developed and if considers appropriate continue with the next steps for its implementation.
Strategic Objective:	• Safety
References:	• Fourteenth Pan America — Regional Aviation Safety Team Meeting (PA-RAST/14) • Seventeenth Pan America — Regional Aviation Safety Team Meeting (PA-RAST/17)

1.   Background

1.1   During the Fourteenth Pan America — Regional Aviation Safety Team Meeting (PA-RAST/14) that took place in Lima, Peru, from 18 to 19 September 2013, different working groups denominated SET were conformed to analyse in depth flight safety information and studies available on the principal risk areas identified by RASG-PA:

- RE: Runway Excursions
- LOC-I: Loss of Control Inflight
- CFIT: Controlled Flight Impact into Terrain
- MAC: Mid-Air Collision

1.2   The ICAO South American Office offered to lead the Runway Excursion Safety Enhancement Team (RE SET). In this regard States and Industry were requested to participate, and three working groups were conformed. (**Appendix A** refers).

1.3　　　　At the Seventeenth Pan America — Regional Aviation Safety Team Meeting (PA-RAST/17), held in Lima, Peru, from 10 to 12 June 2014, the initial results of analysis undertaken by the group was presented. This analysis identified three types of mitigation actions, requirement/procedures, training and technology.

2.　　　　Analysis

2.1　　　　In the above context, mitigation actions required to deploy should be aimed at:

Requirements/Procedures:

- Adherence to SOP, including the incorporation of standards requirements in the Operations Manual of each operator on stabilized approaches policies and braking procedures.
- Development of uniform criteria on non-stabilized approach
- RSTs implementation
- Runway maintenance

Training

- Training to pilots and controllers on all RE contributing factors.

Technology

- PBN implementation priority in airports presenting RE high risk
- On-board technology implementation to avoid RE

2.2　　　　The Nineteenth Pan America — Regional Aviation Safety Team Meeting (PA-RAST/19); held in Miami from 17 to 18 March 2015; took note about the Safety Enhancements (SE) United States Commercial Aviation Safety Team (CAST) CAST SEs 216, 217, 218 and 219 which also had the same guidelines considered in the SET 3. In that sense and the willingness to support the work of SET 3, Boeing offered assistance for the development of RE DIPs.

2.3　　　　Four DIPs have been circulated and reviewed by the RE SET or SET 3, these are:

- RASG-PA/RE/1- Air carriers define, publish, and train proper techniques for stabilized approach, flare, touchdown, and use of available airplane stopping devices during landing, with emphasis on realistic scenarios that contribute to runway excursions. (See **Appendix B**)

- RASG-PA/RE/217 – Airline Operations and Training – Take-off Procedures and Training. (See **Appendix C**)

- RASG-PA/RE/218 – Implementation of on-board technologies to reduce or prevent landing overruns on new and existing airplane designs on transport category airplanes. (See **Appendix D**)

- RASG-PA/RE/4 – Modified air traffic control training on factors that contribute to the risk of runway excursions. (See **Appendix E**)

2.4   One consideration for the development of these improvements in training is to involve the authorities to thereby facilitate its implementation in the regional aviation system. On the other hand, a task for controllers training has been added relating to conduct a regional survey on the progress of the training oversight by the AAC.

2.5   The RASG-PA/RE/218 about on-board technologies refers to activities already undertaken and supported by the SRVSOP, therefore is only pending to know the progress of the industry in the implementation of this technologies.

3.   Conclusions

3.1   The DIPs RASG-PA/RE/1; RASG-PA/RE/217; RASG-PA/RE/218 and RASG-PA/RE/4, attached in the Appendices B, C, D and E, has been reviewed by the RE SET; so to proceed with the approval requires that the Meeting's review and comment each and if considered appropriate recommend continuing the approval process.

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APPENDIX A

CONFORMATION OF GROUPS — SET RE

Group 1

1. Fredy Nuñez (ATM and SSP DGAC-Peru) Leader
2. Lia Ricalde (AGA, ICAO SAM)
3. Miguel Camacho (Pilot, SSP, AIG, UAEAC - Colombia)
4. Francisco Silva (Embraer)
5. Javier Puente (OPS, AIG, SRVSOP)
6. Fernando Correia (ANAC - Brazil)

Group 2

1. Roque Hauser (AIR, AIG, ANAC - Argentina) Leader
2. Gerardo Hueto (Safety Specialist, AIR, Boeing)
3. Verónica Chávez (AIR, ICAO SAM)
4. Winston San Martin (Pilot, AIG, DGAC - Chile)
5. Fabio Catani (Embraer).

Group 3

1. Gabriel Acosta (AIR, Safety Specialist IATA) Leader
2. Marcelo Ureña (OPS ICAO SAM)
3. Antonio (SSP, ANAC Argentina)
4. Robert Noges (Safety Specialist, Boeing, CAST)
5. Marcelo Veras (Embraer)

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APPENDIX B

ESC APPROVED DETAILED IMPLEMENTATION PLANS (DIPS)

Rast No	Safety Enhancement Action	Reference	GSI	Safety Impact	Changeability	Indicator	Priority	Time Frame
RAST-PA/RE/1	Landing Training for Flight Crews		#	High	Easy	P1	#	Short

Safety Enhancement

Air carriers define, publish, and train proper techniques for stabilized approach, flare, touchdown, and use of available airplane stopping devices during landing, with emphasis on realistic scenarios that contribute to runway excursions. This training should include performance of a landing distance assessment at the expected time of arrival, when manufacturer advisory landing performance data are available.

Action (expanded):

Develop and distribute training guidance materials
Gain consensus between regional stakeholders on implementation approach at carriers
Implement training scenarios in initial and recurrent training

Statement of Work:

To reduce runway excursion accidents, air carriers should define, publish, and train proper techniques for stabilized approach, flare, touchdown, and use of available airplane stopping devices for the following scenarios:

1) Assessment of actual stopping distance expected based on conditions at the time of arrival, when manufacturer advisory landing performance data are available
2) Landing with reduced or minimal landing distance margin resulting from one or more of:
    a. Wet or contaminated conditions
    b. Tailwind, including gusts
    c. Runway closures that reduce available landing distance
3) Landing with conditions conducive to directional control issues, resulting from one or more of:
    a. Crosswind, including gusts
    b. System failures (thrust, brakes, nose gearing steering, etc.) or Minimum Equipment List (MEL) conditions that results in directional asymmetries

Champion Organization: IATA

Human Resource: IATA, ALTA, FSF, Boeing, Airbus, Embraer, IFALPA, air carriers, commercial training providers, Bombardier, ATR, CAAs, Labor Organizations, Civil Aviation Authorities

Financial Resource: To be determined

Relation Current Aviation Community Initiative:
CAST SE-215 RE – Airline Operations and Training – Landing Distance Assessment
CAST SE 216 RE – Airline Operations and Training – Flight Crew Landing Training
FAA SAFO 06012, Landing Performance Assessments at Time of Arrival (Turbojets)

Performance Goal Indicators:	Goal 1: Achieve 50% fatality risk reduction by 2020 based on 2010 performance, for all part 121 equivalent operations
	Indicator: RE fatality risk rate in Pan America as measured by RASG-PA's ASR Team
	Goal 2: Inclusion of scenarios in training for air carriers in the region that correlate to a higher risk of RE
	Indicator: survey of air carrier training programs
	Goal 3: Reduction in precursor RE events including long landings, improper/untimely deployment of stopping devices, and unstable approaches

Key Milestones:

DIP Milestone	Time
Output 1 Develop guidance material	4 months
Output 2 Conduct Outreach Workshop	6 months
Output 3 Implement Training at Air Carriers	48 months

Potential Blockers: Cost of implementing training

Concurrence from regional regulatory authorities for training revisions

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

PA-RAST/RE/1 Output 1

Description: RASG-PA develops guidance material for conducting flight crew landing training, including performance of a landing distance assessment were applicable.

Resources: IATA, ALTA, air carriers, commercial training providers, Airbus, Boeing, Embraer, Bombardier, ATR, Labor Organizations, Civil Aviation Authorities

Resource Notes:

Time Line: 4 months

Actions:

1. RASG-PA designate an appropriate working group develop guidance material related to landing training, including a landing distance assessment when applicable.   The guidance material should draw from the following resources:
    a.   FAA SAFO 06012, Landing Performance Assessments at Time of Arrival (Turbojets)
    b.   CAST SE-215 RE – Airline Operations and Training – Landing Distance Assessment
    c.   CAST SE 216 RE – Airline Operations and Training – Flight Crew Landing Training
    d.   FAA Advisory Circular (AC) 121.195(d)-1A, Operational Landing Distance for Wet Runways; Transport Category Aircraft

2. The working group will develop relevant guidance as directed by action #1 in an appropriate format for distribution to Pan American air carriers, to include the following key elements:
    a.   <u>Landing Distance Assessment</u>.   The guidance material should provide:
        i.   Recommendations for air carrier procedures for the use of airplane performance data by flight crews when making the landing distance assessment, including when the assessment should be performed.
        ii.   Background information on manufacturer-provided landing distance data, including description of content and accuracy required for factors that affect the landing distance and standards for reporting runway conditions.

    b.   <u>Landing Scenarios with Reduced or Minimal Landing Distance Margin.</u>   The guidance material should describe scenarios that include:
        i.   Wet or contaminated runway conditions, with emphasis on variability and inconsistency of conditions along the length of the runway
        ii.   The effects of tailwind, including gusts, on airplane landing distance (due to higher ground speed) and on airplane handling characteristics during the flare
        iii.   Runway closures that reduce available landing distance
        iv.   Late runway changes to a shorter-than-planned-for runway and timely re-assessment of the landing decision

    c.   <u>Landing Scenarios with Reduced or Minimal Directional Control.</u>   The guidance material should describe scenarios that include:
        i.   Wet or contaminated runway conditions, with emphasis on variability and inconsistency of conditions along the length of the runway and the impact of directional controllability.
        ii.   The effects of crosswind including gusts, on airplane on airplane handling characteristics during the flare, touchdown, and rollout.
        iii.   System failures (thrust, brakes, nose gearing steering, etc.) or minimum equipment list (MEL) conditions that result in directional asymmetries.

3.   RASG-PA to distribute guidance material to air carriers in the PA region through IATA, ALTA, IFALPA, and other organizations as applicable.
    a.   DG meetings (Working Papers for SAC and NACC)
    b.   ALTA Safety Summit (plenary and break out session)
    c.   Training Provider
    d.   OEMs
    e.   Air carrier flight training and safety departments
    f.   CAA Air Carrier Certificate Managers – flight training oversight
    g.   Others

4.   Through IATA/ALTA Surveys, determine AQP programs in the region

Target Completion TBD

PA‑RAST/RE/1 Output 2

Description: Conduct a series of joint industry-government workshop in the PA region to develop consensus between air carriers, manufacturers, Civil Aviation Authorities, and other stakeholders on implementation of proposed training in the region.

Resources: IATA, ALTA, air carriers, commercial training providers, Airbus, Boeing, Embraer, Bombardier, ATR, CAAs, FAA, Training Service Providers (other than OEM), Labor Organizations

Resource Notes:

Time Line: 6 months

Actions:
1.   RASG-PA identifies target audience for the workshop
    a.   Air carrier training departments
    b.   CAA certificate management offices – training oversight
    c.   OEMs
    d.   Training service providers (other than OEM)
    e.   Labor Organizations?
    f.   Others

2. RASG-PA sponsors a workshop to develop a consensus industry-government approach for implementing improved flight crew landing training in the PA region, including:
    a. Prepare executive summary for both CAAs/certificate managers and Air Carriers
    b. RASG-PA communication of the CAST ASA study findings and results
    c. RASG-PA review of the RE Safety Enhancement Team (SET) accident set and fatality risk methodology
    d. CAA involvement and buy-in for approval of training programs
    e. CAA, manufacturer, and training provider involvement in simulator qualification
    f. Others

3. Workshop participants develop working agreements between CAAs and air carriers to streamline implementation and approval of revised training.
    a. Draft working agreement template
    b. Develop a prototype (willing CAA and air carrier to enter agreement)

PA‑RAST/LOC‑I/## Output 3

Description: Air carrier recurrent and initial flight crew training procedures are revised to include performance of landing distance assessment, when applicable, and scenarios that correlate to higher risk of runway excursion.

Resources: IATA (IOC), ALTA, air carriers, commercial training providers, Airbus, Boeing, Embraer, Bombardier, ATR, Civil Aviation Authorities

Resource Notes:

Time Line: 48 months

Actions:
1. Air carriers review RASG-PA RE guidance material, and revise their training programs as necessary to ensure the components are included in recurrent and initial training, as detailed in the guidance developed and distribution in Output 1.
2. Air carriers coordinate with their pilot labor organizations, as applicable, to communicate these revisions and the rationale supporting them to the line pilot community.
3. Air carriers coordinate with their Civil Aviation Authority (CAA) to determine training approval requirements.
4. Air carriers implement revised training in accordance with agreements their CAA and labor organizations, as applicable.
5. Air carriers actions are complete for this output when the following are accomplished:
    a. The air carrier has revised their flight crew training, as necessary, to reflect the guidance material developed in Output 1.
    b. All pilots have received the training (initial or recurrent)
6. IATA and ALTA will track implementation of their member carriers and report progress to RASG-PA.
    a. Compel IOC to update ISSA and IOSA instruments (12 mos)
7. RASG-PA will track implementation for non-IATA/ALTA members and report progress to RASG-PA
    a. ISSA for smaller carriers
    b. Identify and survey commercial training providers
    c. Survey non-member air carriers directly
    d. Survey CAA certificate managers and ask if they have recently approved changes to training related to RE

Target Completion TBD

For output 3 (three themes):

1. Update for the PTS is annual and then another 6 months to actually change (18 months)
2. Three cycles/sections to expose flight crew to all recommendations (36 months)
3. Track implementation

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APPENDIX C

ESC APPROVED DETAILED IMPLEMENTATION PLANS (DIPS)

Rast No	Safety Enhancement Action	Reference	GSI	Safety Impact	Changeability	Indicator	Priority	Time Frame
RAST-PA/RE/217	Airline Operations and Training – Take-off Procedures and Training		#				#	Short

Safety Enhancement   Improve take-off safety through revised procedures and training for take-off planning and rejected take-off (RTO) decision making.

Action (expanded):   Develop and publish guidance material for training

Implement training per guidance

Statement of Work:

To reduce runway excursion accidents, air carriers should improve take-off safety through the following actions:

1. RASG-PA develops guidance for air carrier standard operating procedures to ensure accurate take-off performance data and RTO decision.
2. Conduct Workshops to obtain consensus
3. Air carrier adoption of the guidance material in procedures and training for take-off including procedures and training for the RTO decision.

Champion Organization: IATA

Human Resource: IATA, ALTA, FSF, Boeing, Airbus, Embraer, IFALPA, air carriers, commercial training providers, Bombardier, ATR, Civil Aviation Authorities CAAs, Labour Organizations, ICAO (LOC working group)

Financial Resource: To be determined

Relation Current Aviation Community Initiative: ICAO RE Workshops
CAST SE-217 RE – Airline Operations and Training – Take-off Procedures and Training

Performance Goal Indicators: Goal 1: Achieve 50% fatality risk reduction by 2020 based on 2010 performance, for all part 121 equivalent operations, regarding RE accidents
Indicator: RE fatality risk rate in Pan America as measured by RASG-PA's ASR Team

Goal 2: Reduction in runway overrun excursions during take-off

Goal 3: Reduction in RTO events above V1

Key Milestones:

DIP Milestone	Time
Output 1 Develop guidance material	18 months
Output 2 Conduct Outreach Workshop	6 months
Output 3 Implement Training at Air Carriers	36 months

Potential Blockers:

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

PA-RAST/LOC-1/## Output 1

Description: RASG-PA develops guidance for air carrier standard operating procedures to ensure accurate take-off performance data and RTO decision.

Resources: IATA, ALTA, air carriers, commercial training providers, Airbus, Boeing, Embraer, Bombardier, ATR, ICAO LOC, Labour Organizations, Civil Aviation Authorities

Resource Notes:

Time Line: 18 months

Actions:

1. RASG-PA publish guidance material for air carriers on take-off planning to:

    a) Emphasize timely (i.e., before commencement of taxi) communication and coordination between gate agents, ground crew chiefs, load agents/dispatchers, and flight crews on accurate take-off weight and balance information.

    b) Encourage development and use of software "flags" to alert all air carrier personnel involved in dispatch of aircraft to gross data entry errors.

    c) Emphasize the importance for both flight crew members to cross-check take-off performance data and/or calculations.

    d) Provide guidance on training for hazards/risks of incorrect data entry into the Flight Management Systems (FMS), electronic flight bags (EFB), or laptops for takeoff performance calculations.

    e) Address proper processing and communication of late changes to passenger/cargo loads, weather and runway conditions, departure runway or clearance, etc.

    f) Address both "paper" information and electronically transmitted information, e.g., Aircraft Communication Addressing and Reporting Systems (ACARS).

    g) Utilize the guidance as recommended in the 2005 revision of the take-off Safety Training

Target Completion TBD

PA-RAST/RE/## Output 2

Description: Conduct a series of joint industry-government workshop in the PA region to develop consensus between air carriers, manufacturers, Civil Aviation Authorities, and other stakeholders on implementation of proposed training in the region.

Resources: IATA, ALTA, air carriers, commercial training providers, Airbus, Boeing, Embraer, Bombardier, ATR, CAAs, FAA, ICAO, Training Service Providers (other than OEM), Labor Organizations, Civil Aviation Authorities

Resource Notes:

Time Line: 12 months

Actions:

1. RASG-PA identifies target audience for the workshop
    a. Air carrier training departments
    b. CAA certificate management offices – training oversight
    c. OEMs
    d. Training service providers (other than OEM)
    e. Labor Organizations?
    f. Others?

2. RASG-PA sponsors a workshop to develop a consensus industry-government approach for implementing UPRT in the PA region, including:
   a. Prepare executive summary for both CAAs/certificate managers and Air Carriers
   b. RASG-PA communication of the CAST ASA study findings and results
   c. RASG-PA review of the RE Safety Enhancement Team (SET) accident set and fatality risk methodology
   d. CAA involvement and buy-in for approval of training programs
   e. CAA, manufacturer, and training provider involvement in simulator qualification
   f. Other?
3. Workshop participants develop working agreements between CAAs and air carriers to streamline implementation and approval of revised training.
   a. Draft working agreement template
   b. Develop a prototype (willing CAA and air carrier to enter agreement)

PA-RAST/LOC-I/## Output 3

Description: Air carriers modify standard operating procedures and training to ensure accurate take-off performance data and RTO decision in accordance guidance from output 1.

Resources: IATA (IOC), ALTA, air carriers, commercial training providers, Airbus, Boeing, Embraer, Bombardier, ATR, Civil Aviation Authorities

Resource Notes:

Time Line: 36 months

Actions:

1. Air carriers review and revise their take-off performance procedures and training, as necessary, in accordance with the guidance from output 1
2. Air carriers define and update standard operating procedures (SOP) related to the RTO decision, utilizing guidance as recommended in the 2005 revision of the Take-off Safety Training Aid, and train to the procedures.   Procedures and associated training for the RTO decision should address the following points as a minimum:
   a. Utilize good crew resource management (CRM) in briefing for a possible RTO and crew responsibilities during an RTO.
   b. Awareness of and adherence to SOP regarding the RTO decision, including emphasis on startle effect.
   c. Emphasis in training scenarios on RTO decision making on "non-engine-failure" related events that occur during the take-off roll, such as—
      i. Airspeed discrepancies;
      ii. Take-off configuration warnings;
      iii. Cargo/door warning lights;
      iv. Mechanical issues;
      v. Tire failures;
      vi. Air Traffic Control (ATC) comments, "instruction" to reject, or cancelled clearance;
      vii. Birdstrike; and
      viii. Scenarios (other than engine failure) that, per air carrier SOP, should instigate an RTO.
   d. Reinforce in training the underlying rationale for the RTO procedures, based on airplane stopping characteristics

Target Completion TB

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APPENDIX D

ESC APPROVED DETAILED IMPLEMENTATION PLANS (DIPS)

Rast No	Safety Enhancement Action	Reference	GSI	Safety Impact	Changeability	Indicator	Priority	Time Frame
RAST-PA/RE/218			#					

Safety Enhancement   Implementation of on-board technologies to reduce or prevent landing overruns on new and existing airplane designs on transport category airplanes

Statement of Work: To reduce landing overrun accidents operators should implement on-board technologies to reduce or prevent landing overruns on new and existing airplane designs, as applicable and feasible, through purchase on new airplanes and retrofit on existing transport category airplanes.

- Examples runway overrun prevention systems that meet the intent of this safety enhancement include systems from the following manufacturers
  - Airbus Runway Overrun Protection System (ROPS)
  - Boeing Runway Situation Awareness Tools (RSAT)
  - Embraer (?)
  - Honeywell Smart Landing system

Champion Organization: IATA

Human Resource: IATA, ALTA, Boeing, Airbus, Embraer, Bombardier, air carriers, CAAs, Labour Organizations, ICAO, FSF (LOC working group).

Financial Resource: To be determined

Relation Current Aviation Community Initiative: CAST SE-218 RE– Design – Overrun Awareness and Alerting System

Performance Goal Indicators: Goal 1: Achieve 50% fatality risk reduction by 2020 based on 2010 performance, for all part 121 equivalent operations, regarding runway excursion overrun accidents
Indicator: Fatality risk rate in Pan America as measured by RASG-PA's ASR Team

Goal 2: Estimated Reduction of Runway Excursion Accidents

Standalone risk reduction of runway excursion:	23.3% reduction for full implementation in all airplanes
Incremental risk reduction above other RE SEs:	15.0% for full implementation in all airplanes

Goal 3: Influence on Contributing Factors Measureable by FOQA
- Reduction of unstable approaches as indicated by Flight Operational Quality Assurance (FOQA)
- Increase in go-arounds from unstable approaches, as indicated by FOQA
- Reduction in long landings as indicated by FOQA
- Increase in go-arounds from long landings, as indicated by FOQA
- Reduction in delayed deployment / use of speed brakes (where applicable) as indicated by FOQA

Key Milestones:	DIP Milestone	Time
	Output 1 :	
	Action 1:Air carriers study the feasibility of incorporating these technologies into their specific fleet (both existing airplanes and new purchases) and operations	36 months
	Action 2: Air carriers implement systems based on results of their feasibility assessments, where applicable,	Timeline for implementation of systems is not included as this will vary depending on results of assessments
	Output 2: Joint industry-government workshop in the PA region to develop consensus	12 Months (concurrently with Output 1, action 1

Potential Blockers   Cost of implementing design changes and associated training.

Fleet commonality

Mitigation of Potential: Potential savings in Insurance Premiums for airlines

PA-RAST/LOC-1/## Output 1

Description: To reduce landing overrun accidents operators should implement onboard technologies to reduce or prevent landing overruns on new and existing airplane designs, as applicable and feasible, through purchase on new airplanes and retrofit on existing transport category airplanes.

- Examples runway overrun prevention systems that meet the intent of this safety enhancement include systems from the following manufacturers
    - Airbus Runway Overrun Protection System (ROPS)
    - Boeing Runway Situation Awareness Tools (RSAT)
    - Embraer (?)
    - Honeywell Smart Landing system

Champion: IATA/ALTA

Resources: IATA, ALTA, air carriers, commercial training providers, Airbus, Boeing, Embraer, Bombardier, ATR, ICAO LOC, Labour Organizations, FSF

Resource Notes: Air carriers: (0.5 FTE per air carrier to assess available or potentially available systems for their fleet)

- Does not include cost of equipage, which will vary based on system options chosen and other factors.
- Cost-benefit analyses by operators to assess system effectiveness are assumed to be part of normal process in assessing airplane and equipment purchases.

JIMDAT has developed a cost assessment methodology for CAST SW 218 that allows operators to account for variations in their specific fleet demographics and expected remaining service life to aid them in

Time Line: Action 1:36 months

Action 2: Timeline for implementation of systems is not included as this will vary depending on results of assessments

Actions:

1) Air carriers study the feasibility of incorporating these technologies into their specific fleet (both existing airplanes and new purchases) and operations.   Studies should take into account current and potential future availability of systems from manufacturers, with consideration of available systems from the airplane manufacturers and avionic suppliers

2) Air carriers implement systems based on results of their feasibility assessments, where applicable, and report whether or not they intend to incorporate systems in their fleet to airline industry associations.

Target Completion TBD

PA-RAST/LOC-I/## Output 2

Description: Conduct a series of joint industry-government workshop in the PA region to develop consensus between air carriers, manufacturers, Civil Aviation Authorities, and other stakeholders on implementation of design features to reduce runway excursion and appropriate training associated with use of these design changes.

Resources: IATA, ALTA, air carriers, commercial training providers, Airbus, Boeing, Embraer, Bombardier, ATR, CAAs, FAA, ICAO, Training Service Providers (other than OEM), Labor Organizations

Resource Notes:

Time Line: 12 months

Actions:
1. RASG-PA identifies target audience for the workshop
    a. Air carrier training departments
    b. CAA certificate management offices – training oversight
    c. OEMs
    d. Training service providers (other than OEM)
    e. Labour Organizations?
    f. Others?
2. Workshop participants develop working agreements between CAAs and air carriers to streamline implementation and approval of revised training associated with design changes.
    a. Draft working agreement template
    b. Develop a prototype (willing CAA and air carrier to enter agreement)

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APPENDIX E

ESC APPROVED DETAILED IMPLEMENTATION PLANS (DIPS)

Rast No	Safety Enhancement Action	Reference	GSI	Safety Impact	Changeability	Indicator	Priority	Time Frame
RAST-PA/RE/4	Air Traffic Service Provider Training to Prevent Runway Excursions		#	High	Easy	P1	#	Short

Safety Enhancement

Modified air traffic control training on factors that contribute to the risk of runway excursions.

Action (expanded):

Develop and distribute training guidance materials
Gain consensus between regional stakeholders on implementation approach air traffic service providers
Implement training scenarios in air traffic controller initial and recurrent training
Consult to CAAs about the status of the controllers training according to their Oversight Plan and the RST program in international airports.

Statement of Work:

To reduce the risk of runway excursion accidents, air traffic service (ATS) providers in the Pan America (PA) region should develop or training for air traffic controllers on the factors that contribute to the risk of runway excursions, including wind conditions, runway conditions, and unstable approaches.

Champion Organization:

IATA

Human Resource:

IATA, ALTA, ATS providers, CAAs, ICAO Regional Offices of NACC and SAM, labour organizations

Financial Resource:

To be determined

Relation Current Aviation Community Initiative:

CAST SE-219 RE – Air Traffic Operations –Policies, Procedures and Training to Prevent Runway Excursions
FAA Training module for Air Traffic Controllers (in development)

Performance Goal Indicators:

Goal 1: Achieve 50% fatality risk reduction by 2020 based on 2010 performance, for all part 121 equivalent operations
Indicator: RE fatality risk rate in Pan America as measured by RASG-PA's ASR Team

Goal 2: Inclusion of training for air traffic controllers in the region on controller actions that can increase the risk of RE
Indicator: survey of air traffic service providers

Goal 3: Reduction in precursor RE events including unstable approaches and tailwind landings

Goal 4: Initial diagnosis on the training of controllers through Runway safety program at international airports.

Key Milestones:

DIP Milestone	Time
Output 1 Develop training material	TBD
Output 2 Conduct Outreach Workshop	6 months
Output 3 Implement Training at ATS Providers	48 months
Output 4 Diagnosis on the controllers training oversight	4 months

Potential Blockers: Cost of implementing training

Concurrence from regional regulatory authorities for training revisions

Lack of appropriate ATSP recurrent training to ATCOs

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

PA-RAST/RE/4 Output 1

Description: RASG-PA develops recommendations for training material for ATS providers to train controllers on factors that increase the risk of RE.

Resources: IATA, ALTA, air ATS providers, CAAs, labour organizations

Resource Notes:

Time Line: 4 months

Actions:

1. RASG-PA designate an appropriate working group develop recommendations for air traffic controller training on factors that increase the risk of RE, including wind conditions, runway conditions, and unstable approaches.   The recommendations should draw on the following resources:
   a. FAA ATO training for controllers on RE Risk
   b. CAST SE 219 RE – Air Traffic Operations –Policies, Procedures and Training to Prevent Runway Excursions

2. *The working group will develop recommendations on training for air traffic controllers on the following significant factors, among others, that can contribute to the risk of runway excursions:*

   a. Adverse winds effects, including but not limited to:

      i. Tailwind effects on airplane ground speed at touchdown and associated stopping distance

      ii. Tailwind effects on airplane handling characteristics and contribution to float and long landing

      iii. Crosswind effects on airplane lateral control in the air and directional control on the runway, particularly when combined with wet or contaminated runway conditions

   b. Runway surface conditions, including but not limited to:

      i. The effect of wet and contaminated runway conditions on airplane braking capabilities and the nonlinear increase in stopping distance associated with decreasing friction

      ii. The importance of providing pilot reports of runway surface condition to departing or approaching airplanes from airplanes of similar size, weight, and configuration

   c. Unstable approach factors, including but not limited to:

      i. Air traffic controller understanding of generally applicable approach gates that facilitate stable approaches (e.g., "10,000 ft and 250 kts @ 30 nm from the airport")

      ii. Holding airplanes high or fast until late in the approach to facilitate air traffic flow into airports

      iii. Arrivals with multiple speed and altitude crossing restrictions and their impact on flight deck workload and airplane performance

      iv. Late clearances or runway changes and their impact on flight crew planning and use of automation in executing approaches

3. RASG-PA will distribute recommendation to ATS providers in the PA region through TBD, utilizing.
    a. DG meetings (Working Papers for SAC and NACC)
    b. ALTA Safety Summit (plenary and break out session)
    c. CAA Air Traffic Oversight
    d. Others

4. Through IATA/ALTA Surveys, determine AQP programs in the region

Target Completion TBD

PA-RAST/RE/4 Output 2

Description: Conduct a series of joint industry-government workshop in the PA region to develop consensus between air carriers, manufacturers, Civil Aviation Authorities, and other stakeholders on implementation of proposed training in the region.

Resources: IATA, ALTA, air ATS providers, CAAs, labour organizations

Resource Notes:

Time Line: 6 months

Actions:
1. RASG-PA identifies target audience for the workshop
    a. ATS providers
    b. CAA ATS oversight offices
    c. Labour Organizations?
    d. Others
2. RASG-PA sponsors a workshop to develop a consensus industry-government approach for implementing improved flight crew landing training in the PA region, including:
    a. Prepare executive summary for both CAAs/certificate managers and ATS providers
    b. RASG-PA communication of the CAST RE study findings and results
    c. RASG-PA review of the RE Safety Enhancement Team (SET) accident set and fatality risk methodology
    d. CAA involvement and buy-in for approval of training programs
    e. CAA, manufacturer, and training provider involvement in simulator qualification
    f. Others
3. Workshop participants develop working agreements between CAAs and air carriers to streamline implementation and approval of revised training.
    a. Draft working agreement template
    b. Develop a prototype (willing CAA and air carrier to enter agreement)

PA-RAST/RE/4 Output 3

Description: ATS provider training programs include controller training on factors that can increase the risk of RE.

Resources: ATS providers, CAAs, labour organizations

Resource Notes:

Time Line: 48 months

Actions:

1) ATS providers implement training for air traffic controllers on the significant factors that that can contribute to the risk of runway excursions (see Output 2).

Target Completion TBD

PA-RAST/RE/4 Output 3

Description: . Consult to CAAs about the status of the controllers training according to their Oversight Plan and Runway Safety Program at international airports.

Resources: CAAs, Regional Offices

Resource Notes:

Time Line: 4 months

Actions:

1) Develop a regional survey to the Civil Aviation Authorities regarding:

   a. Verify if regulations and procedures of Authority have included the oversight of training activities of controllers and whether this training has included runway safety considerations.

   b. Status of Oversight Plan of ANS providers according to:

      i. The ANS provider SMS (international aerodromes) has established a Safety Performance Indicator (SPI) aimed at improving runway safety including a risk analysis on Runway Excursion;

      ii. The training program is retro-fed by the Runway Safety Program.

   c. The Runway Safety Program at international/main airports includes the prevention of runway excursion incidents

   d. The Runway Safety Program includes incidents prevention that provides guidelines and training in ATC simulators

2) Circulate the survey among CAAs and collect information

3) Prepare a report with the initial diagnosis of the results of the survey and provide recommendations if applicable.

Target Completion TBD

— END —