International Civil Aviation Organization

Second Meeting of the Middle East Regional Aviation Safety Group (RASG-MID/2)

(Abu Dhabi, UAE, 12 - 14 November 2012)

Agenda Item 2: **Global Developments related to Aviation Safety**

INITIATIVES TO REDUCE LOSS OF CONTROL IN-FLIGHT (LOC-I) ACCIDENTS

(Presented by the Secretariat)

SUMMARY

While ICAO Annex 6 requires training on all types of emergency and abnormal situations, it does not specifically mention loss of control or upset recovery training. PANS Training (Doc 9868) mandates upset recovery training as an MPL training requirement. Aircraft jet manufacturers recommend upset training and an Airplane Upset Recovery Training Aid has been developed to provide guidance in this regard.

Action by the meeting is at paragraph 3.

1. **INTRODUCTION**

1.1   Loss Of Control In-flight (LOC-I) category is responsible for the highest percentage of fatalities–approximately 30% of the total even though less than 5% of all accidents were classified as being related to loss of control.

2. **DISCUSSION**

ICAO LOC-I Initiatives

2.1   ICAO will host the FAA Aviation Rule Making Committee (ARC) on LOC-I, which will serve as the international forum to review Loss of Control issues. Participants to the ARC will include major manufacturers, the Royal Aeronautical Society International Committee of Aviation Training in Extended Envelope (ICATEE), regulatory authorities, IATA, IFALPA and industry. Six meetings have taken place from March through to August 2012 and it is anticipated that the outcomes from this group of experts may result in amendment to ICAO training requirements and related guidance material. Subsequently, ICAO may also convene a Loss of Control Symposium and Regional Seminars to facilitate the implementation of these requirements.

ICAO Universal Safety Oversight Programme

2.2   Over the past six years, ICAO has conducted audits of Member States implementation of ICAO SARPs and related guidance material under the Universal Safety Oversight Audit Programme (USOAP). The data from these audits related to LOC-I initiatives could be utilized to determine some priorities on the development and implementation of safety enhancement initiatives. **Appendix A** to this working paper outlines the Lack of Effective Implementation (LEI) of these ICAO SARPs for consideration by the meeting.

Note: *The Safety Enhancement Initiatives that follow refers to initiatives of other well established safety teams in other ICAO Regions. Some examples of actions that have been taken by these safety teams to reduce safety risks are provided.*

Safety Enhancement Initiative LOC 1 - LOC SOPs (Safety Impact Low)

2.2 Air operators should publish and enforce clear, concise, and accurate flight crew standard operating procedures (SOP). These procedures should include procedures in normal and non-normal operations during pre/post flight and all phases of flight (i.e., checklists, simulator training, PF/PNF duties, transfer of control, automation operation, rushed and/or unstabilized approaches, rejected landings and missed approaches, in-flight pilot icing reporting, and flight crew coordination). Operator instructors and check pilots should ensure these SOPs are trained to proficiency. The establishment, maintenance, and appropriate use of flight crew SOPs will reduce the risk of LOC-I accidents.

Example of Safety Team Outputs

2.3 Some safety teams have issued an Advisory Circular (AC) - Standard Operating Procedures for Flight Crew Members, developed as part of response to Safety Enhancement Initiative CFIT 2, also included SOPs to reduce the risk of a LOC-I events.

Safety Enhancement Initiative LOC 2 - Risk Assessment and Management (Safety Impact High)

2.4 This Safety Enhancement was reviewed by some safety teams in 2009 and it was decided that this initiative had been overtaken by the introduction of SMS requirements.

Safety Enhancement Initiative LOC 3 - Safety Information (Safety Impact Medium)

2.5 Essential safety information and operational procedures generated by airplane manufacturers must be included in companies' operating manuals, documentation and training programs for pilots and other appropriate personnel. ICAO SARPs in Annex 6, Operations of Aircraft, Part I, require that an operator establish a flight safety documents system for the use and guidance of operational personnel as part of its Safety Management System (SMS).

Example of Safety Team Outputs

2.6 The AC on Flight Safety Document System, issued under Safety Enhancement Initiative CFIT 7, would serve to address this aspect.

Safety Enhancement Initiative LOC 4 - Flight Crew Proficiency (Safety Impact Low)

2.7 From 1 January 2005 Annex 6, Part 1 requires operators of aeroplanes of a maximum certificated take-off mass in excess of 27,000 kg to establish and maintain a flight data analysis programme as part of its Safety Management System. A flight data analysis programme shall be non-punitive and contain adequate safeguards to protect the source(s) of the data.

2.8 Operators should ensure their training and qualification processes utilize trend information from Safety Management Systems (SMS), especially Flight Data Analysis (FDA), to mitigate risk that could lead to a LOC-I incident.

Example of Safety Team Outputs

2.9   The AB-Information to States on Flight Data Analysis (FDA) Programme and AC-Guidance on the Establishment of a Flight Data Analysis (FDA) Programme, developed in response to Safety Enhancement Initiative CFIT 4, also provide data to CAAs and air operators on hazards that can increase the risk of a LOC-I event.

Safety Enhancement Initiative LOC 5 - Human Factors and Automation (Safety Impact Low)

2.10   Mode Awareness and Energy State Management constitute an issue that has been involved in a number of accidents over the years. While the mode awareness is addressed in training material prepared by both Airbus and Boeing, it was determined that an AC would be developed to facilitate understanding of the issue of Mode Awareness and Energy State Management.

Example of Safety Team Outputs

2.11   Some safety teams have issued an AC to alert air operators to the importance that flight crews are aware of the automation mode under which the aircraft is operating. It provides a sample automation policy to support the use of aircraft automation.

Safety Enhancement Initiative LOC 6 - Loss of Control Training (Safety Impact High)

2.12   Advanced Manoeuvres Training (AMT) refers to training to prevent and recover from hazardous flight conditions outside of the normal flight envelope. Additionally, research should be conducted to determine how existing flight simulation devices may be used effectively in AMT.

Example of Safety Team Outputs

2.13   The airplane manufacturers, airlines, pilot associations, flight training organizations, and State and regulatory agencies have collaborated to develop an Airplane Upset Recovery Training Aid which was provided to participants of some safety teams.

Note: The international forum to be hosted by ICAO to review LOC issues outlined in 2.1 will most likely lead to an amendment to the training material related to LOC.

3.   ACTION BY THE MEETING

3.1   The meeting is invited to:

a)   note the initiatives undertaken by ICAO and other organizations;

b)   determine which initiatives should be examined by RASG-MID to reduce the risk of LOC-I accidents; and

c)   consider the information contained in this paper, when addressing/developing the MID Region Safety Enhancement Initiatives related to LOC-I.

APPENDIX A

USOAP Results Related to LOC

Note: The following USOAP protocol questions have some linkages to LOC safety enhancement initiatives and indicate the Lack of Effective Implementation (LEI) in %. The first number represents LEI based on the audit results of 180 States (43% LEI). The second number represents LEI based on the audit results of the MID Region States (33% LEI).

Flight Operations

4.121   Does the aircraft operations organization ensure that an applicant for an AOC has established and maintains a flight safety documents system? OPS STD A6, Part I, 3.3 & Att. H - LEI 45/31.

4.157   Does the aircraft operations organization ensure that the air operator has established a safety management system? OPS STD A6, Part I, 3.3, 4.2.2 & App. 2, 2.1.34 - LEI 53/46

4.203   Does the aircraft operations organization ensure that the air operator has established and maintained a flight data analysis programme as part of its safety management system? OPS STD A6, Part I, 3.2.3 - LEI 51/31

4.305   Does the aircraft operations organization ensure that the air operator has established standard operating procedures (SOPs) which provide guidance to flight operational personnel? OPS PANS Doc 8168, OPS/611, Vol. I, Part XIII, C1 - LEI 21/23

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