

1st Asia Pacific Workshop on Flying at High Altitude under Adverse Weather Conditions

Upset Prevention & Recovery Training (UPRT) A CAAS Perspective

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Organisers



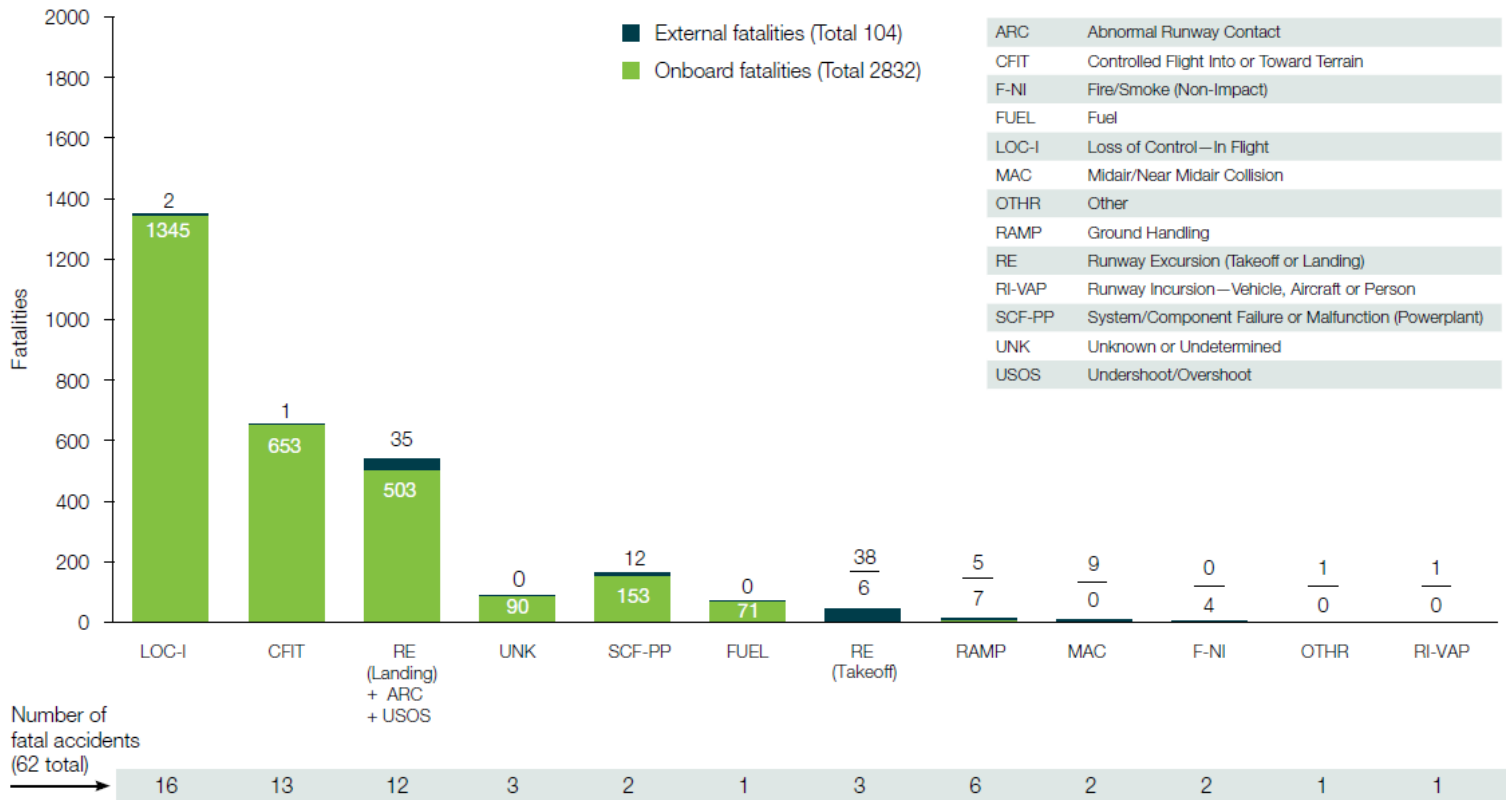
Supporting Partners



- . Background
 - . LOC-I fatalities statistics
 - . Developments in UPRT
 - . Guidance Materials
- . UPRT Implementation
 - . CAAS Advisory Circular
 - . MPL/CPL/Type-rating
 - . Knowledge-Skills-Attitude (KSA)
 - . Flight Crew responses to UPRT
- . Surveillance
- . Conclusion

Fatalities by CICTT Aviation Occurrence Categories

Fatal Accidents | Worldwide Commercial Jet Fleet | 2007 through 2016



Note: Principal categories as assigned by CAST.

For a complete description of CAST/ICAO Common Taxonomy Team (CICTT) Aviation Occurrence Categories, go to www.intlaviationstandards.org.

Recent Airplane Upset Incidents/Accidents

- Serious Incident
 - Challenger 604 LOC-I due wake turbulence from an A380
- Serious Accident
 - AF 447 LOC-I due possible pitot-static system malfunction and subsequent crew action/inaction.
 - Air Asia's QZ8501 LOC-I due rudder travel limiter failure followed by inappropriate crew response.

Joint Study by ICATEE and RAeS – June 2009

- Several areas of concern, namely:
 - High Altitude Upsets/Stall,
 - Manual Flying Skills
 - Flight in IMC
 - Startle Factor
 - Monitoring

Guidance Materials

- ICAO Doc 10011 Manual on Aeroplane UPRT
- ICAO Doc 9868 Training – Chapter 7
- ICAO 9625 Manual of Criteria for the Qualification of FSTDs Vol I (Edn 4)
- ICATEE – Teaching UPRT by Dr Sunjoo Avani
- FAA-AC-120-109A – Stall & Stick Shaker Training
- FAA-AC-120-111 – UPRT
- EASA Annex II to ED Decision 2015

In addition, training aids material in UPRT were developed by OEMs ie. AURTA (Airplane Upset and Recovery Training Aid)

Implementation of UPRT in Singapore

- Develop and updated CAAS Advisory Circular on UPRT in Aug 2016
 - Incorporating UPRT in MPL/CPL and Type-rating Courses, Instructor Course in UPRT
 - Recurrent Training for line pilots
 - Manual Flying Skills
 - Introduce element of surprise to FSTD training exercises (Scenario Based training)

Extract of CAAS Advisory Circular on UPRT

AC AOC-39(0)
2 August 2016



Advisory Circular

UPSET PREVENTION AND RECOVERY TRAINING (UPRT)

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Focus on Training for UPRT

- Better understanding of threats and hazards
- Better education on aircraft behavior
- Training on Upset Recovery from Ab-initio stage of pilot training, (MPL, CPL)
- UPRT in Type Rating Courses (as designed by the OEM)
- Periodic Recurrent Training
- Training the Trainers

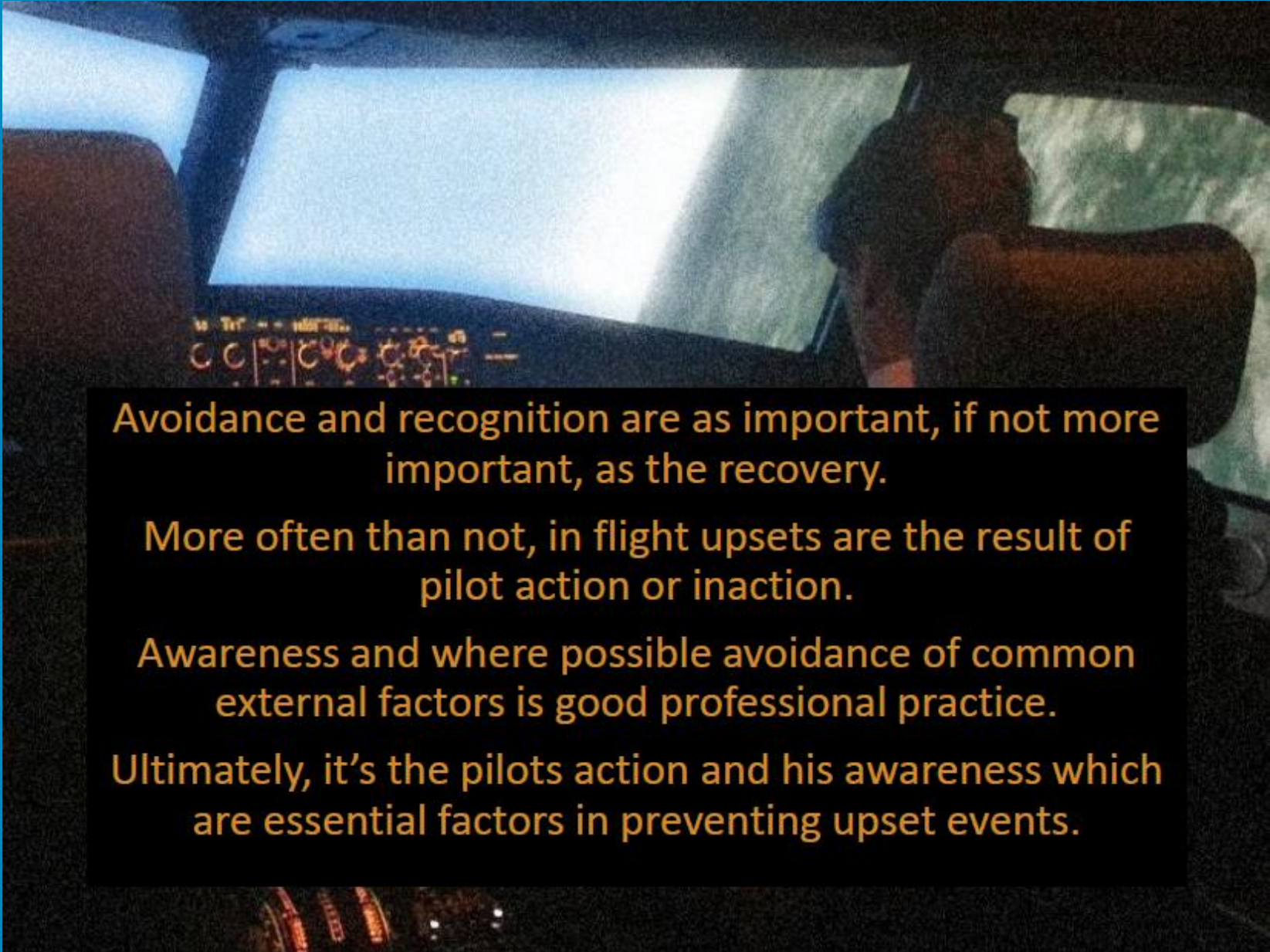
Mandating of Licencing and A/FO Requirement

- Issuance of AC AOC-39 in August 2016
- Mandating UPRT even for CPL /IR Courses
- Approval of UPRT syllabi for MPL, CPL and Type Rating Courses
- Approval of Recurrent Training Programs for AOC Holders

Knowledge-Skills-Attitude

- “ If you know your enemy (Threats) and know yourself (Environment, Technical & Human Factors) you need not fear the results of a hundred battles (Abnormal Situations).”

Sun Tzu
6th century BC



Avoidance and recognition are as important, if not more important, as the recovery.

More often than not, in flight upsets are the result of pilot action or inaction.

Awareness and where possible avoidance of common external factors is good professional practice.

Ultimately, it's the pilots action and his awareness which are essential factors in preventing upset events.

Targets

Elimination of upset Incidents and accidents through:

- Better education of Instructors
- Better training of pilots in building up of knowledge awareness, recognition and recovery skills
- Building up the professionalism of all stakeholders in the industry
- Ensuring the commitment of all industry players to reinforce the safety aspects of commercial, general aviation and leisure flights.

Post UPRT Flight Crew responses:

- UPRT has benefited both air operators and flight crew.
- Flight crew who have undergone the UPRT academic and simulator sessions have expressed a better appreciation and understanding of the techniques in handling upsets. Prior to this, they could only imagine what an upset would look like.
- Instructors who have undergone UPRT instructor training felt the academic knowledge enhanced the Preventive aspect of UPRT. The simulator sessions enhanced the appreciation of Energy Management and the orientation of Lift Vectors.
- Flight crew felt the emphasis on energy management and lift-drag vs power at high altitudes were very beneficial.

Surveillance

- **Licencing**

- i. Annual Audits
- ii. Approval of UPRT Syllabus, Instructor Training Syllabus
- iii. Monitoring of Instructor standards in delivering UPRT
- iv. Monitoring of students ability to recognize environmental factors, prevent, and manage upsets

- **A/FO**

- i. Approval of Recurrent Training Syllabus for UPRT
- ii. Monitoring of Operator's rostering of UPRT in Recurrent Training

Conclusion

- The current development of UPRT is dynamic. It is in our interest to monitor new developments that would arise out of the discussions in this area by safety experts, OEMs and training establishments.
- Looking ahead, with improvements in FSTD fidelity and ability to simulate flight conditions in the extended flight envelope, the use of advanced high fidelity FSTD in UPRT presents an opportunity to further enhance the realism of such training.