IFALPA
The Global Voice of Pilots

Position

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Loss of Control In-Flight

POSITION

A strong upset prevention and recovery training (UPRT) program provided throughout a pilot's career is an effective means to mitigate loss of control in-flight incidents.

INTRODUCTION

Loss of Control In-Flight (LOC-I) has been a contributing factor in aircraft accidents. LOC-I incidents are typically induced by aircraft systems, environment conditions, and/or pilot actions. Additionally, the loss of control may startle, as well as confuse the flight crew which can delay an effective response.

The pilot must be well trained and have recency of experience in order to effectively recover from any upset. UPRT should be provided throughout a pilot's career, and focus on skill development to prevent, recognize and recover from such events.

DEFINITIONS

- **Aircraft upset.** An airplane, in flight, unintentionally allowed to exceed the parameters normally experienced in line operations or training:
  - Pitch attitude greater than 25 degrees nose up.
  - Pitch attitude greater than 10 degrees nose down
  - Bank angle greater than 45 degrees.
  - Within the above parameters, but flying at airspeeds inappropriate for the conditions.
- **Undesired Aircraft State.** A position, condition, or attitude of an aircraft that reduces or eliminates safety margins, including low energy states.
- **Startle.** An uncontrollable, automatic muscle response, raised heart rate, blood pressure, etc., elicited by an event that violates a pilot's expectations.
- **Surprise.** An unexpected event that violates a pilot's expectations and can affect the mental processes used to respond to the event.
- **Prevention.** Pilot actions to avoid any divergence from a desired airplane state.
- **Recognition**. Pilot recognition of conditions of an impending divergence, a developing or developed upset.
- **Recovery.** Pilot actions that return an airplane that is diverging to a safe airplane state.

TRAINING PHILOSOPHY

UPRT is additional specialized training that should be taught both as a stand-alone course and be fully integrated throughout the overall training scheme, including initial and recurrent training. UPRT should not be used to replace training requirements for basic flying skills training.

Initial Training. Theoretical knowledge and flight instruction for the issuance of license shall include upset prevention and recovery training. The flight instruction shall include on-aeroplane training.

Recurrent Training. While basic aerodynamics and unusual attitude training are required elements for a pilot's private, multi-crew, commercial, and airline transport pilot license, it is important to reinforce and expand upon this training throughout a pilot's career.

IFALPA recommends that a UPRT refresher course be provided at least once each 36 month period. Certain aspects of the course should be carried out annually (ICAO Doc 10011).

Train-to-proficiency. Upset prevention and recovery is a training manoeuvre and should not be considered an evaluation manoeuver during a check ride.

INSTRUCTORS

Instructors should undergo specific UPRT instructor training prior to providing UPRT to other pilots. Since instructors are key to the success of any training, specialized instructor skills and training are necessary for the proper delivery of UPRT.

- Be trained and qualified to conduct training in the FSTD or aircraft.
- Understand the capabilities and limitations of the FSTD, to avoid negative transfer of training.
- Hold a certificate and rating in the category, class and type of aircraft for which they are training.
- Have operational experience on type.
- Must have received specialized UPRT instructor training.

SIMULATORS

Motion limitations for each specific FSTD used for UPRT have the potential to introduce negative transfer of training.

Simulators must meet the following requirements:

- Approved by the Regulator to provide UPRT.
- Updated to meet the latest industry simulator standards for UPRT.
- Provide proper cues.
- Only be used within the capabilities of the aerodynamic model. Type specific "representative" data must be available to conduct accurate aerodynamic stall training.

AIRCRAFT

Aircraft used to deliver UPRT training must meet the following requirements:

- Provide a margin of safety for the manoeuvring to be performed.
- Have an all-attitude/all-envelope capability.

INDUSTRY DEVELOPED GUIDANCE

IFALPA recommends the use of Industry developed guidance for Upset Prevention and Recovery Training. These resources include the following:

- Industry Airplane Upset Recovery Training Aid (AURTA), Revision 2.
- RAeS paper - "Aeroplane Upset Recovery Training, History, Core Concepts & Mitigation".
- FAA Advisory Circular 120–109, "Stall and Stick Pusher Training".
- ICAO UPRT Manual (doc 10011).
- IATA Guidance Material and Best Practices for the Implementation of UPRT.

TRAINING CONSIDERATIONS

The main challenge is to provide realistic training that can be retained by the flight crew.

Academic Knowledge. Academic instruction establishes the foundation from which situational awareness, insight, knowledge, and skills are developed, and therefore must be accomplished prior to training the associated flight events in an FSTD or aircraft.

Awareness and Prevention. Training with an emphasis on awareness and prevention provides pilots with the skills to recognize conditions that could lead to an upset event if not effectively managed. Training must be inclusive of the air carrier's standard operating procedures (SOP's) and Crew Resource Management (CRM) techniques for the most effective prevention and threat mitigation strategies.

Availability of Visual References. To develop a pilot's ability to recover from an upset, FSTD manoeuvres training should be done in both visual and instrument conditions, as well as day and night. This allows pilots to practice recognition and recovery under all conditions in order to experience important physiological factors.

Pilot Monitoring. Training should emphasize crew interaction to vocalize the divergence conditions. A progressive intervention strategy is initiated by communicating a flight path deviation (alert), then suggesting a course of action (advocacy and assertion), and then directly intervening, if necessary, by taking the controls to prevent an incident or accident.

Startle or Surprise. The goal of using startle or surprise in training provides the crew opportunity to apply prevention and recovery skills in an unexpected and possibly alarming context.