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Upset Recovery Training (UPRT) for Type Rating Course

2016

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Capt. B767

15 years of TRI/TRE B767, B737, F50

Agenda

Less than an hour brief summary of:

- UPRT legislation for Type Rating qualification training
- Boeing published philosophy
- ET Type Rating training modules
- Training content and methodology
- FSDT fidelity and IOS options
- Instructor involvement during training session for UPRT

UPRT legislation for Type Rating

Annex 1, Amendment 172 on UPRT.

Detailed procedures for UPRT are contained in PANS-TRG, Doc 9868

Guidance for UPRT is presented in Prevention and recovery training manual (Doc 10011).

UPRT legislation for Type Rating

PANS-TRG Doc 9868

- Background of the requirements
- General training philosophy
- Ref. to Doc 10011 for training program development
- Highlights of potential problems and gaps

UPRT legislation for Type Rating

Doc 10011 addresses in detail the following distinct areas for UPRT:

- Single-pilot training on-aeroplane
- Multi-crew training in an FSTD
- non-type-specific and type-specific
- FSTD requirements for UPRT
- Operational Evaluation Board (OEB) from manufactures

UPRT legislation for Type Rating

Airbus, ATR, Boeing, Bombardier, and Embraer have provided input for the creation of the two predominant schemes of UPRT, which are known as:

- STALL RECOVERY TEMPLATE (with associated rationale) and
- Nose-high and Nose-low recommendation or UPSET RECOVERY TEMPLATE

Both serve as straightforward guidance to recovery from u.psets

UPRT legislation for Type Rating

- Recovery exercises assume that prevention has failed and an upset condition exists
- The instructor, not the crew, takes responsibility for the creation of the upset condition
- Training starts after the upset condition has been established.
- The ultimate training objective is to effectively apply recovery actions and to return the aircraft to a stabilized flight path

Therefore, recovery training should mainly be delivered as maneuver-based training.

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Boeing published philosophy

- Boeing fleet standards are set in FCTM and QRH for each type of airplane
- Number of upset scenarios are presented in Boeing Training manuals
- Standard methodology across the fleet for different upset situations
- Stall recovery has the priority
- Contributory factors for upset and possible avoidance technique.

Boeing published philosophy

Contributory factors for upset:

- Stall
- Icing
- Turbulence
- Wake turbulence
- Over control and High altitude
- Wind shear
- Low level intercept during GA

…

ET Type Rating training modules

(Example B777 Type Rating course)

Session 1S (FFS)
UPRT for climb, cruise and descent.
Total time: one FSTD session
Session (FFS)
Stall recovery low/high altitude
Total time: one FSTD session

Training content and methodology

Initial UPRT is done during the first FFS session in line with controllability and flight envelope protection modes demonstration.

Training enforcement is incorporated into Stall recovery, Wind shear recovery and GPWS warning recovery training modules.

FSTD fidelity

- In general FSTD fidelity is only ensured within normal flight envelope
- Exercises outside the VTE can create misperceptions, as the FSTD‘s simulation model may not satisfactorily represent the airplane behavior.
- Therefore, exposing crews to un-validated flight regimes should be avoided
- Stall recovery training should presently be limited to approach-to-stall training.

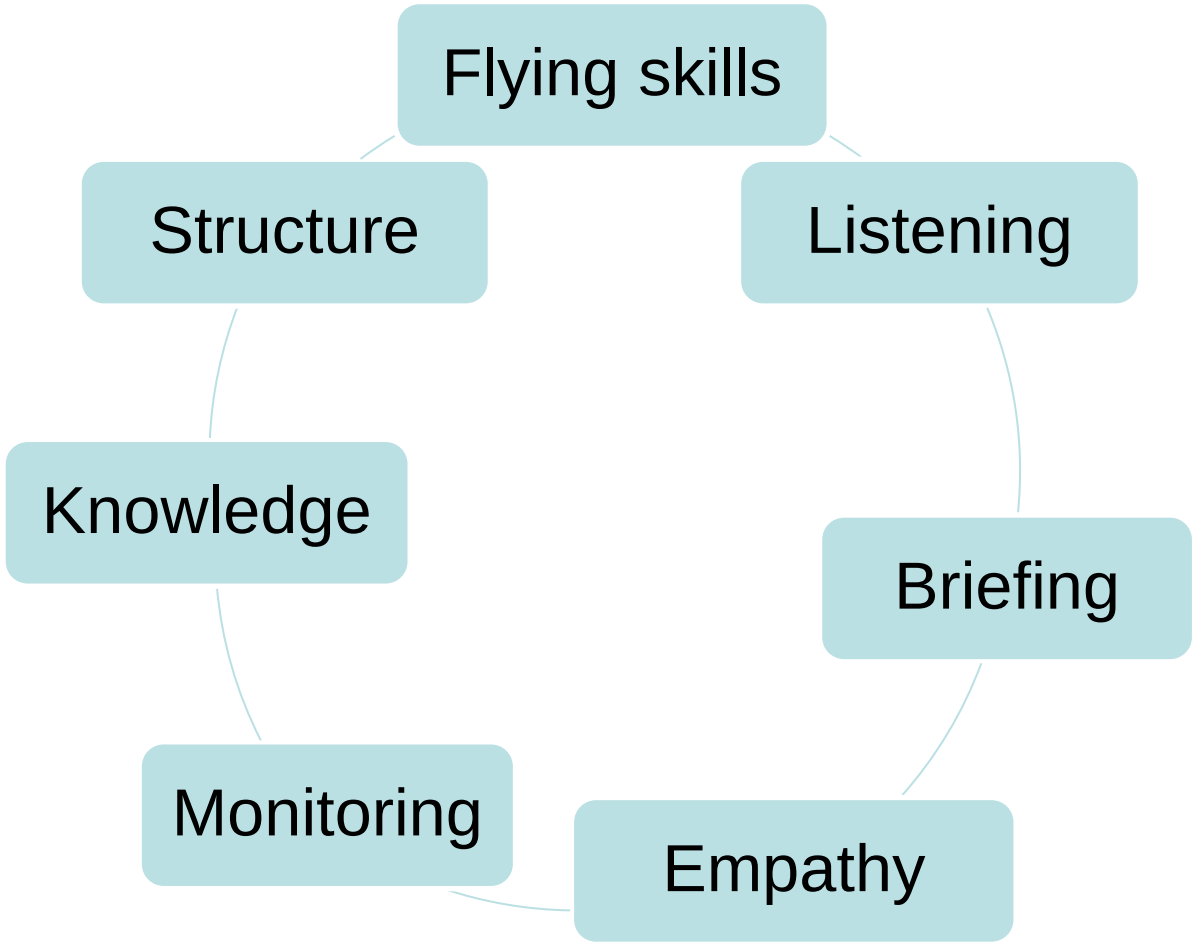
IOS possible options: Preset upset situations.

Instructor training

ET FSTD Instructors training for UPRT normally includes:

- Extensive theoretical briefing
- Practical exercise on FSTD from the pilot seat
- Training session observation from the Instructor station

Instructor's skills



Pre-Flight Briefing

Let’s underline some briefing points for UPRT / Stall recovery training session:

- Trainee background / knowledge check
- Sequence of actions during recovery
- Target parameters (pitch, speed, thrust…)

Background check

(Doc 9868)

…Note.— Many LOC-I accident investigations have revealed that the affected flight crew had received misleading information from well-meaning training staff or their organizations. Indeed, some existing trained practices were found to be not only ineffective but were also considered a contributory factor, …. For example, in certain cases, the methodologies being applied in training and checking a recovery from an approach to stall condition of flight were based on the pilot being able to achieve recovery with a minimal loss of altitude. This resulted in training practices emphasizing the importance of a rapid application of power … .

Cessna 172 Maneuvers Guide

ATP Airline Pilot Training & Pilot Career Development — Airline Transport Professionals

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GROUND USE ONLY

Steep Turns

1. Perform two 90° clearing turns
2. 90 KIAS (*2000 RPM) maintain altitude
3. Cruise configuration flow
4. Roll into 45° bank (private, at least 50° for commercial)
5. Maintain altitude and airspeed
   (+ back pressure, + approx. 1-200 RPM)
6. Roll out ½ bank angle prior to entry heading
7. Clear traffic and roll in opposite direction
8. Roll out ½ bank angle prior to entry heading
9. Cruise checklist

Slow Flight

1. Perform two 90° clearing turns
2. *1500 RPM (maintain altitude)
3. Landing configuration flow
4. Maintain altitude - slow to just above a stall
5. Power as required to maintain airspeed
6. Accomplish level flight, climbs, turns, and descents as required
   (ATP - max 30° bank)
7. Recover – full power/maintain altitude/reduce flaps
8. Above V_X, reduce flaps to 0°
9. Cruise checklist

Power-Off Stall

See Policies and Procedures — Stalls

1. Perform two 90° clearing turns
2. *1500 RPM (maintain altitude)
3. Landing configuration flow
4. Stabilized descent at 65 KIAS
5. Throttle idle ***(Slowly)***
6. Wings level or up to 20° bank as assigned
7. Pitch to maintain altitude ***(Slowly)***
8. At stall/buffet (as required) recover – reduce AOA - full power
9. Reduce flaps to 10°
10. Accelerate to 60 KIAS (V_X), positive rate, reduce flaps to 0°
11. Cruise checklist

Power-On Stall

See Policies and Procedures — Stalls

1. Perform two 90° clearing turns
2. *1500 RPM (maintain altitude)
3. Clean configuration
4. At 60 KIAS, simultaneously increase pitch ***(Slowly)*** and apply full power
5. ***Slowly*** increase pitch to induce stall/buffet (approx 15°)
6. At stall/buffet (as required) recover – reduce AOA - full power
7. Cruise checklist

Approach to Stall Recovery

The following is immediately accomplished at the first indication of stall buffet or stick shaker.

Pilot Flying	Pilot Monitoring
• Advance thrust levers to maximum thrust*. • Smoothly adjust pitch attitude** to avoid ground contact or obstacles. • Level the wings (do not change flaps or landing gear configuration). • Retract the speedbrakes.	• Verify maximum thrust. • Monitor altitude and airspeed. • Call out any trend toward terrain contact. • Verify all required actions have been completed and call out any omissions.
When ground contact is no longer a factor: • Adjust pitch attitude to accelerate while minimizing altitude loss. • Return to speed appropriate for the configuration	

During the session

- Skill training or LOFT Scenario
- IMC or VMC
- Realistic environment
- Number of repetitions

During the session

In general an instructor is responsible to create the environment for the trainee to obtain and enhance the correct skills.

Instructor shall closely monitor those skills are applied every time the situation dictate so (i.e. Wind-sheare, OEI, Go-around…)

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Thank You for attention and participation!!!