

Collaborating to address

LOSS OF CONTROL IN-FLIGHT

Upset Prevention and Recovery Training Workshop



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Module 2 – Day 1

UPRT in FSTDs and Aeroplanes

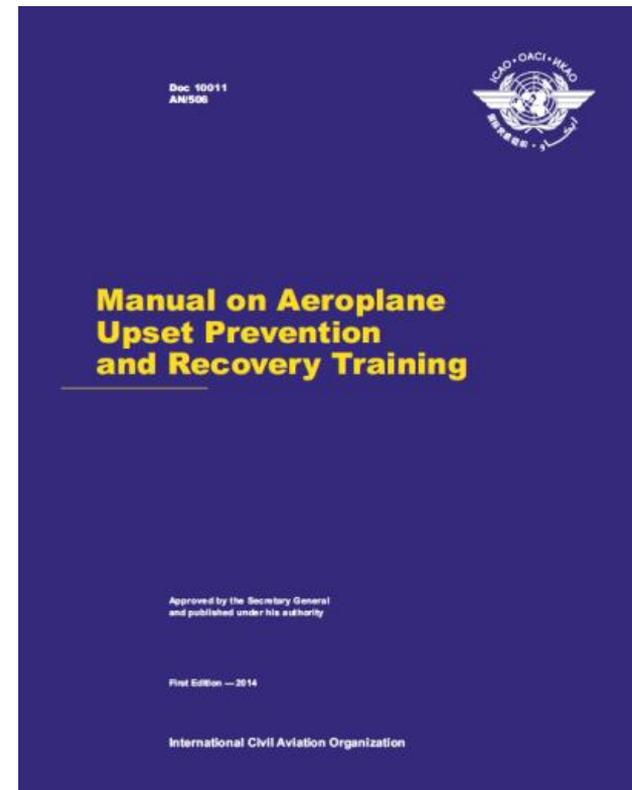
Overview

- Navigating the Manual
- Core Resource Requirements
 - Platforms and Mediums
 - Human and Technical Requirements
- High-level ATO Impact
 - Flight Schools
 - Airline Training Providers
 - Integrated Programs



ICAO Manual on AUPRT

- In development since 2009
 - Royal Aeronautical Society's ICATEE
 - 40 Organizations
 - 80 Members
 - 16 WG Meetings
- 2012: ICATEE, FAA, EASA and ICAO combined efforts (7 meetings)
 - LOCART
- Diversity of organizations including CAAs, OEMs and SMEs.



Navigating ATO Relevant Sections

- Entire Manual: High level Resource
- Chapter 3: Aeroplane Training
 - SMS: airplanes, ops, maneuvers and instructors
- Chapter 4: FSTD Fidelity Requirements
- Chapter 5: UPRT Instructors
 - Academic / On-aeroplane / FSTD
- Chapter 6: Regulator Oversight

6. Regulatory Oversight

- Competency Based Training Preferred
 - Targeted competencies vs. events
- SMS
 - On-aeroplane maneuvering and aeroplane certification
 - Instructor competence
 - Avert negative training (includes sim fidelity)
- QA and SMS Evaluations
 - Approval process
 - Sustainable outcomes
 - Graduated UPRT integration options
- Approval and On-going Surveillance

Considerations when developing UPRT regulations

- Consider implementing a UPRT requirement for the issue of a new CPL
- On-aeroplane UPRT requires:
 - Fit-for-purpose aeroplanes:
 - Specially trained instructors
 - The ATO to use appropriate resources to monitor and mitigate
 - Have inspectors trained and provide adequate oversight of the programme.

Strongly recommended for Core SMEs, FSTD Instructors, CPL; required for MPL.

Considerations when developing UPRT regulations

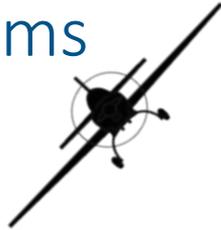
- UPRT conducted in FSTD requires :
 - Qualified FSTDs for the training tasks;
 - FSTD software updates for instructor tools and select training tasks;
 - Instructors to understand the limitations of the FSTDs and have experience using the necessary training tools (see Doc 9625);
 - The regulator to have inspectors trained and qualified to provide adequate oversight of the UPRT programme.

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Core UPRT Resource Requirements

Platforms & Mediums



- Academic Delivery
 - Distance learning
 - Live instructor-led
- On-Aeroplane
 - Aerobatic
 - Upset Prevention and Recovery Program

Human & Technical Resources

- Core SMEs, FSTD Instructors, CPL; required for MPL.
- Core Instructor
 - Compliant with ICAO and resulting CAA guidance
 - Transferrable and complementary to future UPRT
- SMS



Academic Delivery

- Web-based
 - Internet accessible
 - Inter-browser compatible
 - LMS
 - Track activity
 - Record results (optional)
- Tablet solutions
 - Potentially web-disconnected
 - Tracking
- Live instructor-led
 - *More later on ground UPRT instructors...*

On-Aeroplane Platform

- Aerobatic capable
 - Availability
 - Expanded all-attitude training
 - Positively transferrable training
- Non-aerobatic capable
 - Normal vs. utility category
 - Maneuvering limitations



Why use a real aeroplane? (Part 1)



Why use a real aeroplane? (Part 2)



Simulators

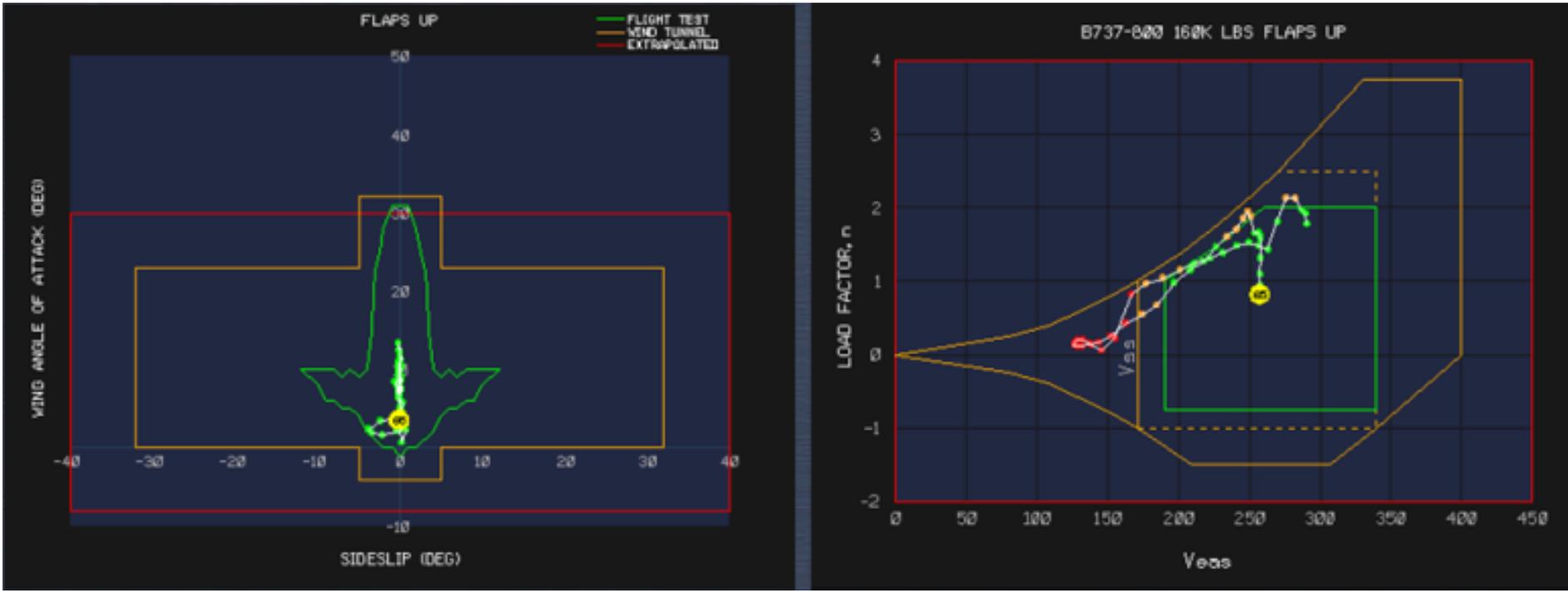
- Motion vs. non-motion
- Fidelity requirements
- Enhancements
 - Flight envelope for full stall training
 - Instructor operating station



IOS VTE Depictions (Part 1)



IOS VTE Depictions (Part 2)



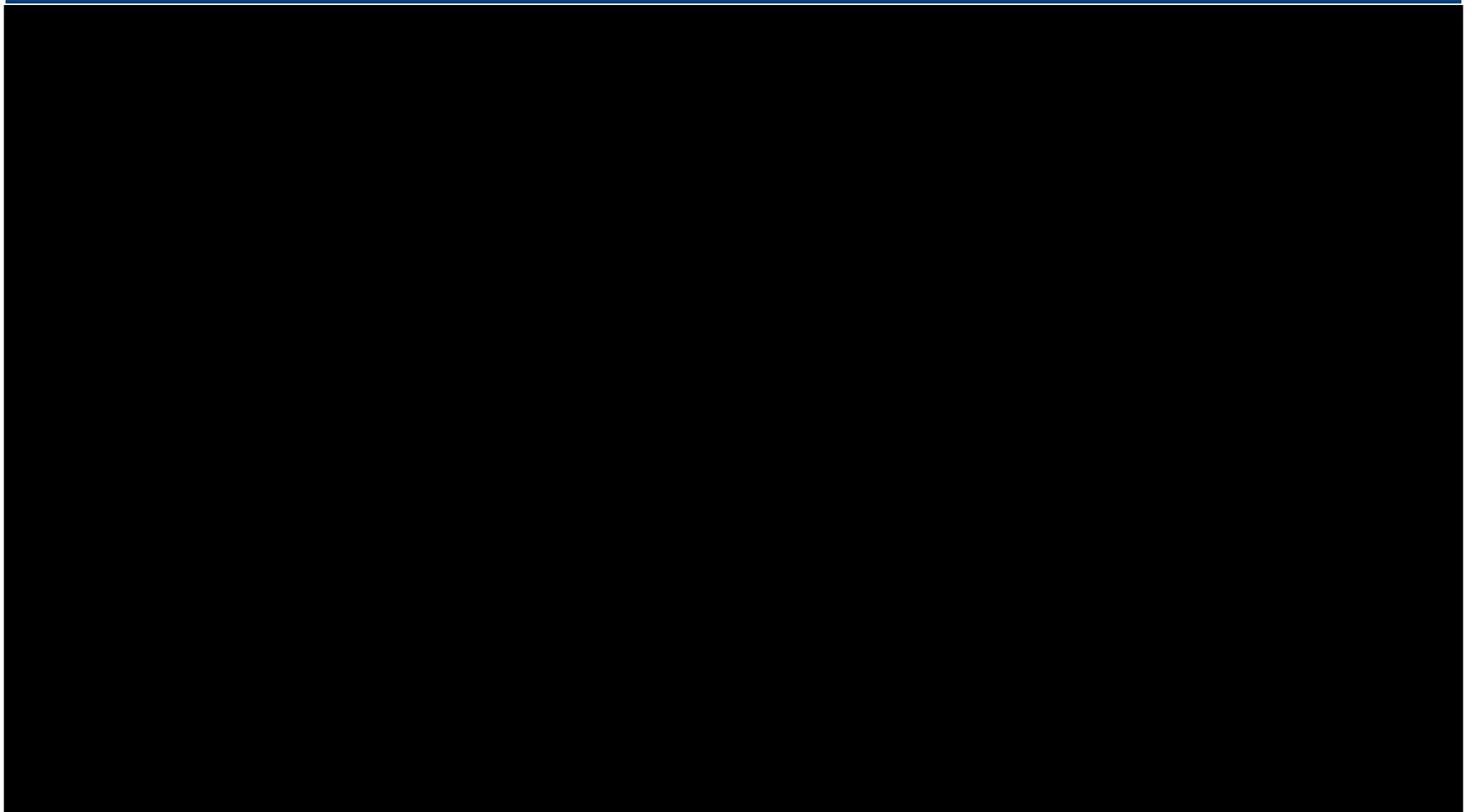
Misuse of rudder during a Wake Turbulence encounter (2 videos)

- One video is the flight crew recovery:
 - A/P OFF
 - Manual stick inputs **oscillating** side to side at **max** amplitude
 - Big rudder inputs with **reversions** (sideslips > 9 deg)
 - Many occupants wounded – **exceeds structural load limit**
- Second video has 2 animations showing both:
 - Flight crew recovery – same as previous video
 - Superimposed A/P recovery if left on (reconstruction)
- Available in **Rev 3** Airplane Upset Prev & Recovery T.A.

Contrasting Aeroplane & Simulator (Part 1)



Contrasting Aeroplane & Simulator (Part 2)

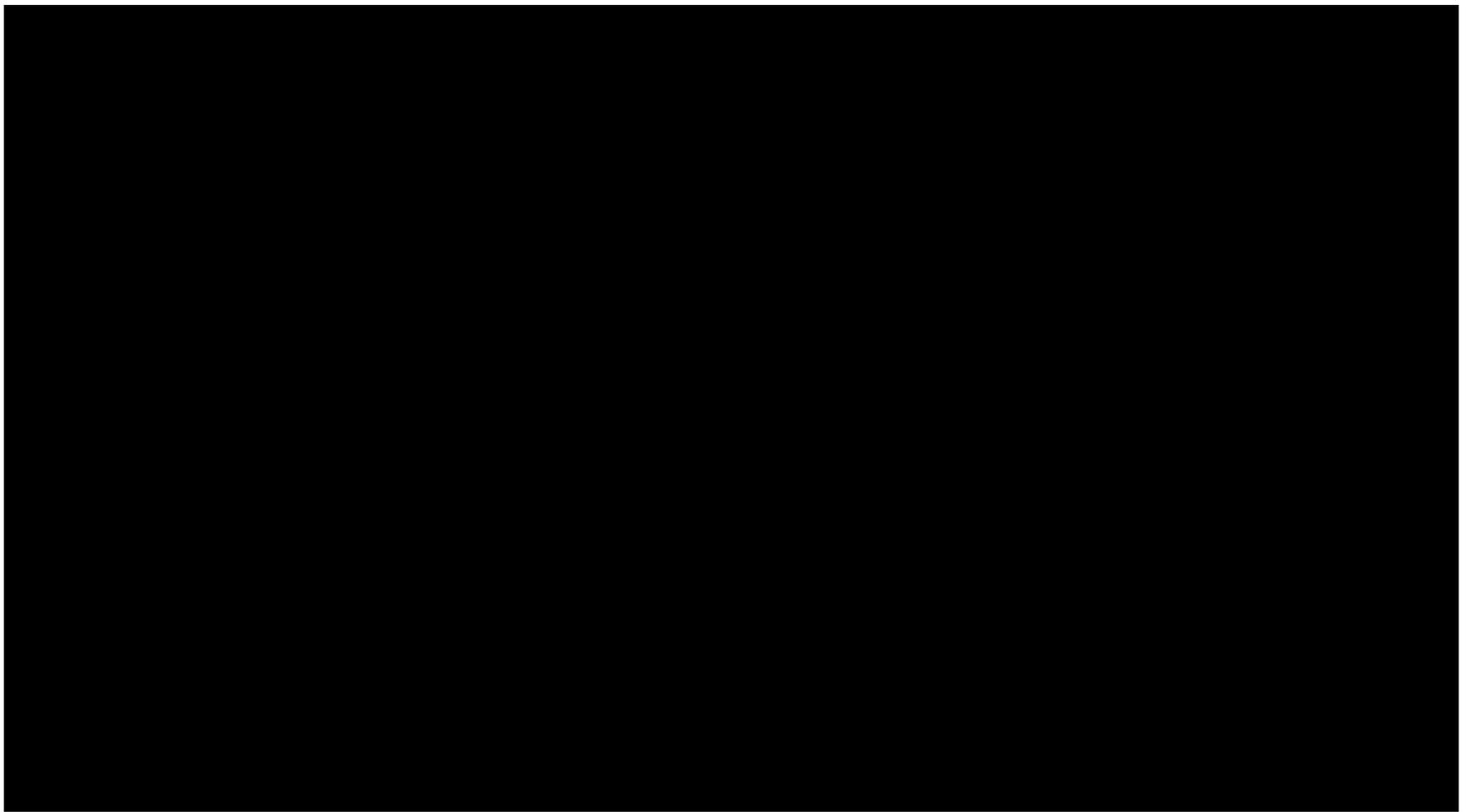


Qualified UPRT Instructor

- The most crucial part of UPRT delivery
 - Experience level
 - Positive rather than negative training (baseline)
 - Averting negative transfer of training (much more difficult to accomplish)
 - Qualifying requirements
 - Specialized knowledge
 - Specialized skills
 - Error analysis
- Ground vs. FSTD vs. on-aeroplane

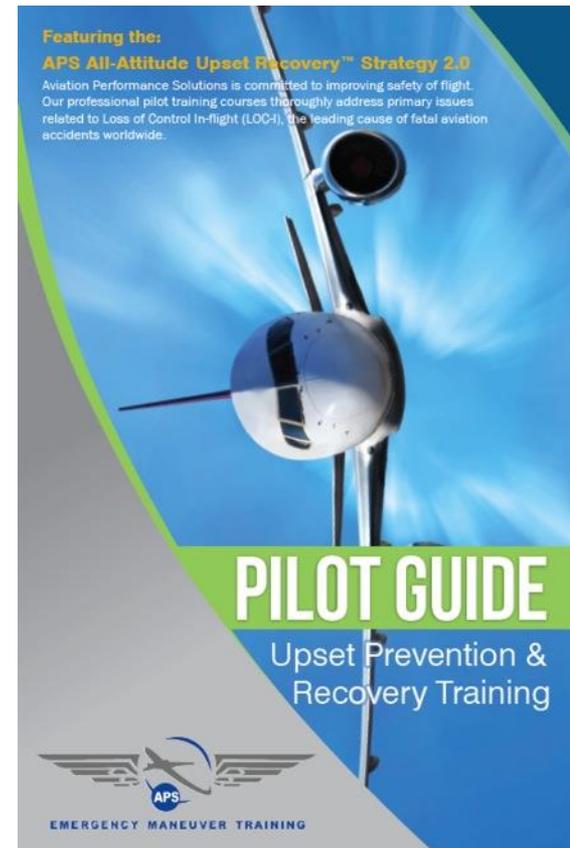


Instructor Training Example



Training Program

- Compliance with ICAO and resulting CAA guidance
- Transferrable and complementary to future UPRT



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On-Aeroplane ATO Impact

- Approved program
- Appropriate training platform
- Qualified instructors
- SMS



Airline Training Impact

- Approved training program;
- Appropriate FSTD platforms for the training tasks, with instructor tools
- Qualified instructors



Integrated Programmes

- Example: MPL
 - Phase 1 / 2
 - On-Aeroplane UPRT
 - Phase 3 / 4
 - Multi-crew environment
 - Non-type specific UPRT, and/or
 - Type specific UPRT



Take-home messages

- A comprehensive approach to the implementation of UPRT using a mix of ground school, on-aeroplane and FSTD training is necessary
 - It should be supported by SMEs
- In different States, the optimum mix will vary according to regional context, experience and resources
- Using inadequately qualified personnel (instructors & course developers) increases the risk of getting this wrong