Upset Prevention & Recovery Training

Mitigating Loss of Control In Flight

Aviation's Most Lethal Threat

SOUTH AFRICAN AIRWAYS

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UPRT Project Manager


00173
AK
ELMENDORF

South African Airways UPRT Program

Specialized UPRT Instructor Training

Aviation Performance Solutions (APS)

IDT Recommendations to SAA – Nov 2013

- Develop integrated training program
  - iPad eLearning course
  - Train-the-Trainer
  - Simulator upgrade

- Co-operate with Civil Aviation Authority
- Persue support from Insurers

ICATEE

PREVENT - AVOID - RECOVER

INTERNATIONAL COMMITTEE FOR AVIATION TRAINING IN EXTENDED ENVELOPES

SOUTH AFRICAN AIRWAYS

Specialized UPRT Instructor Training

Specialized UPRT Instructor Training

July 2013 – Train The Trainer UPRT Program Evaluation at APS Arizona – 4 Instructors

Sept 2014 – 6 Additional Instructors complete the TTT program at APS Netherlands

July 2015 – 2 Additional Instructors complete the TTT UPRT program at APS Netherlands

Specialized UPRT Instructor Training

A319 / A320
4 Instructors

A330 / A340
4 Instructors

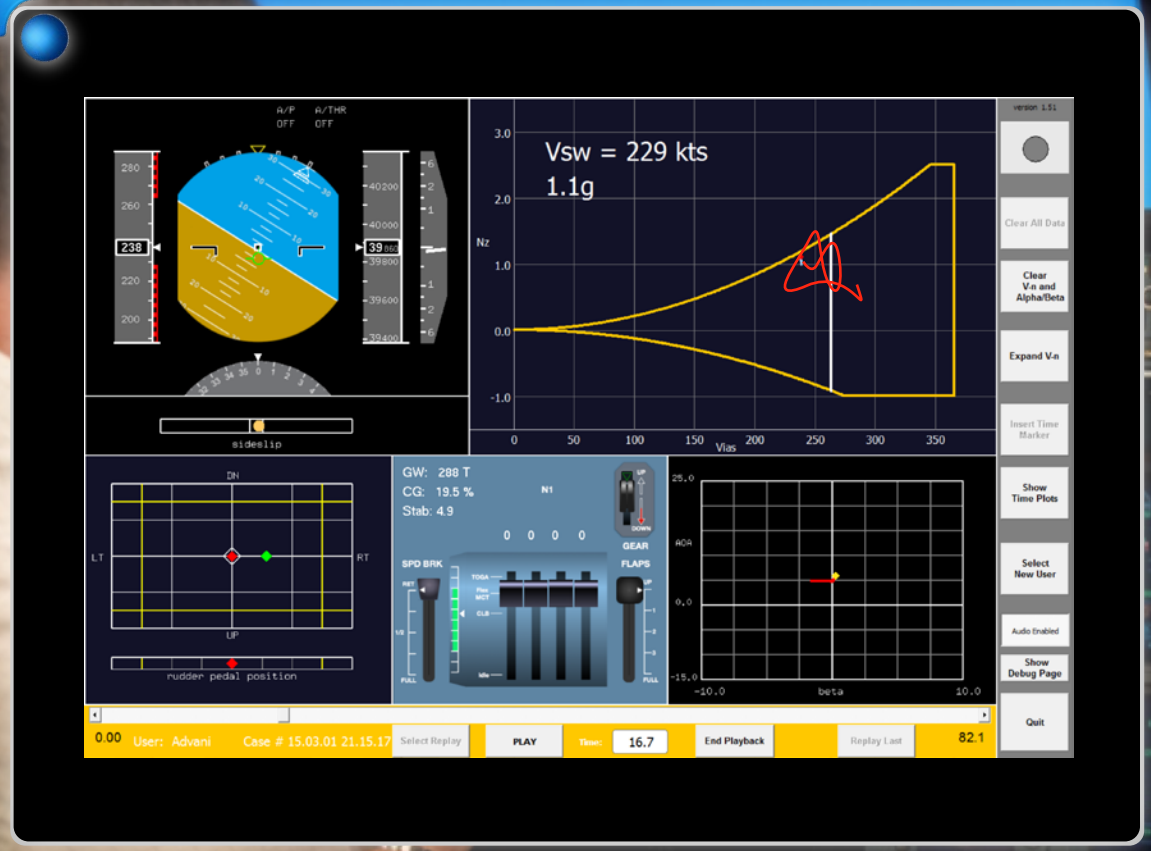
B737-800
2 Instructors

Specialized UPRT Instructor Training

Oct to Dec 2014 – Each Instructor completes SIX 4-hour simulator sessions = 24 Hours Simulator Training

IDT UPRT Simulator Tool

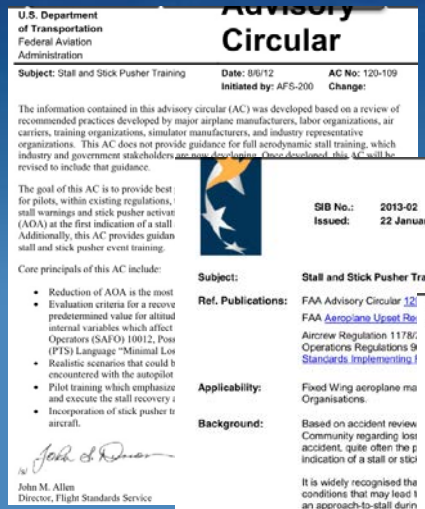
Checking of Simulator QTG



- Control Inputs
- Aircraft settings
- Flight Modes
- PFD
- V-n
- Alpha-Beta
- Replay function with audio

SAA UPRT Course Development - Resources

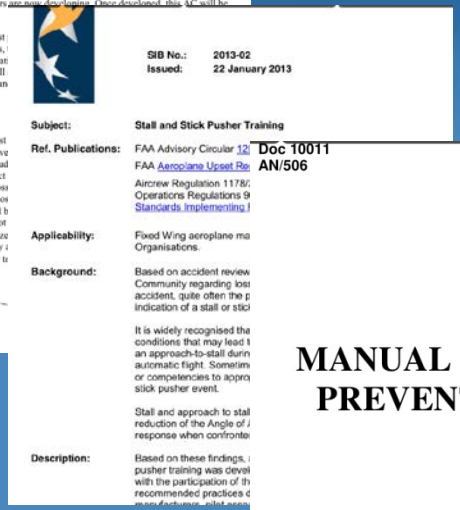
AURTA Rev2 - 2008


U.S. Department of Transportation
Federal Aviation Administration

Advisory Circular

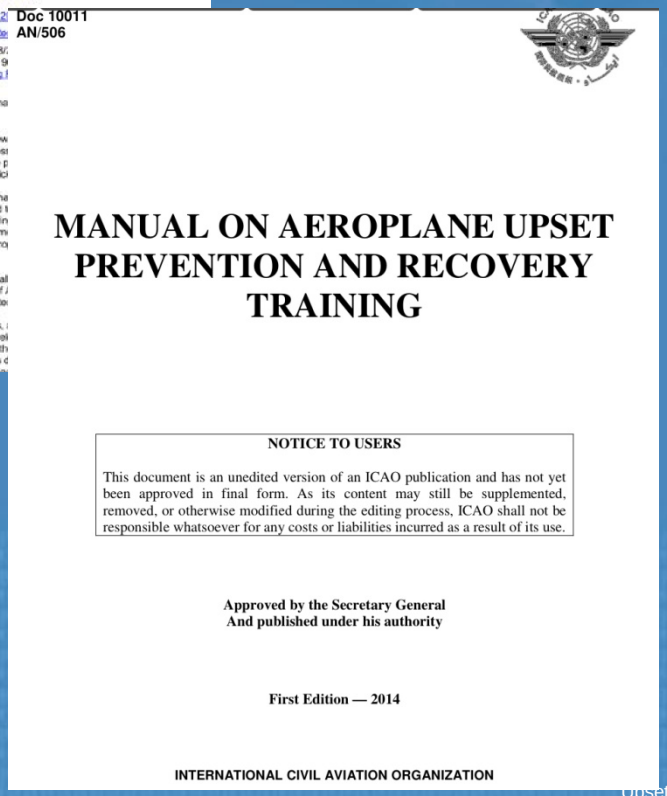
Subject: Stall and Stick Pusher Training
Date: 8/6/12
AC No: 120-109
Initiated by: AFS-200
Change:

FAA AIC120-109
June 2012


SIB No.: 2013-02
Issued: 22 January 2013

Subject: Stall and Stick Pusher Training

EASA SIB 2013-02
January 2013


Doc 10011
AN/506

MANUAL ON AEROPLANE UPSET PREVENTION AND RECOVERY TRAINING

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And published under his authority

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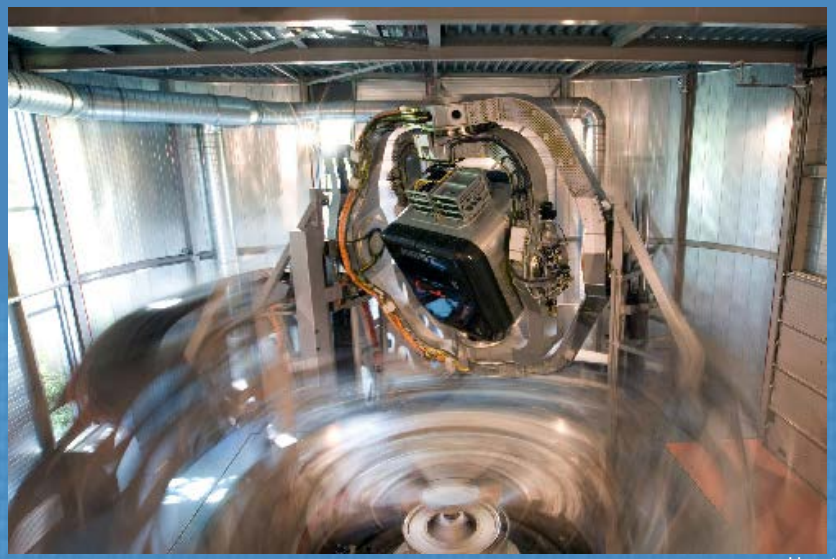
February 2014

Upset Recovery Training Limitations

- Airbus Flight Control Laws and Protections – Recognition and Avoidance, Improving manual handling skills
- Inability to simulate low-angle of attack sustained unloading-G for flight conditions critical to effective upset recovery training,
- Inability to present physiological G-awareness cues.
- Fidelity Limitations: The simulator cannot realistically simulate the forces of high sideslip angles.



SAA Upset Recovery Training Objectives

- Better understanding of Aerodynamic principles
- Application of flight controls
- Recognize situations that may lead to aircraft upsets so that they may be prevented.
- Recognize and confirm an aircraft upset.
- Confidence in maneuvering the aircraft.
- Develop Skills for recovery

SAA UPRT Course Description

Home Study – Knowledge-Based iPad App.

- 32 Page SAA UPRT Student Manual

Airplane Upset Recovery

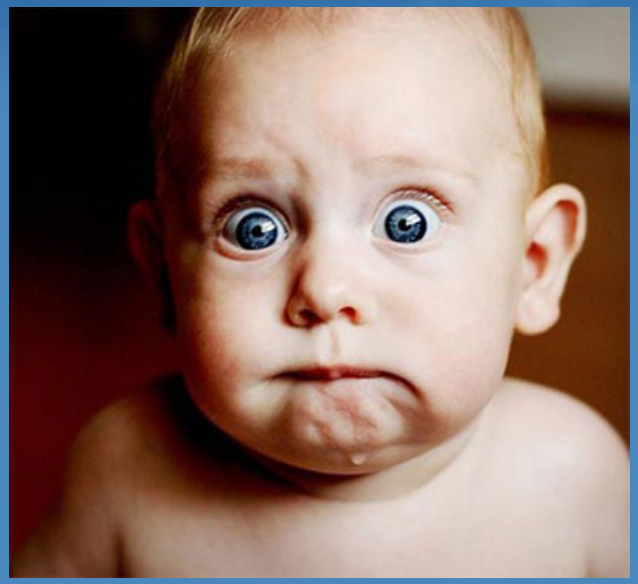
2-Hour Classroom Briefing

1. Backround
2. Objectives
3. Limitations
4. Definition
5. Causes
6. General Flight Dynamics – Incl. Airbus Video
7. High Altitude Operations
8. APS All Attitude Upset Recovery Strategy™
9. Review of Airbus Flight Control Laws and Protections

SAA UPRT Course Description

4-Hour Dedicated UPRT Simulator Session:

- RECOGNITION
- AVOIDANCE
- RECOVERY



STARTLE!

SAA UPRT Course Description

Recurrent Training:

- Dedicated Simulator Handling Session Per Year

Simulator Exercises:

- Handling Exercises
- Performance Evaluation Exercises
- AURTA Training Exercises
- Line Orientated Scenario Based Training

Handling Exercises

Low and High Altitude Handling Exercises:

- Maneuver Margins
- Thrust Available
- High Alt Slowdown & Use of VS Climb Mode
- Pitch vs Performance (ROC & ROD)
- Maneuver Stability
- High Altitude Approach to Stall Recognition and Recovery

Performance Evaluation Exercise

- Roll rate with full aileron/spoiler input
- Roll rate with rudder input
- Pitch change using stabilizer trim only
- Pitch change with the use of thrust adjustments
- Pitch change with the use of speedbrakes

Performance Evaluation Exercises

(Continued)

- Yaw motion and resultant roll due to asymmetric thrust in Normal Law with autopilot off
- Yaw motion and resultant roll due to asymmetric thrust in Direct Law with autopilot off
- Approach to stall recovery using only pitch control

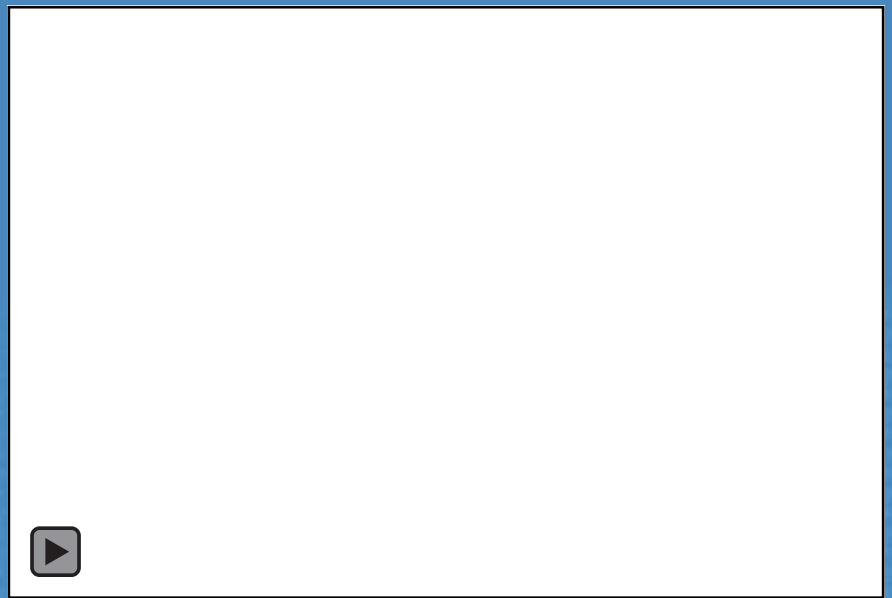
AURTA Training Exercises

Exercise 1 –Nose High Characteristics

Iteration 1: Use of Nose-down Elevator

Iteration 2: Use of Bank Angle

Iteration 3: Thrust reduction on Underwing Mounted Engines



AURTA Training Exercises *(Continued)*

Exercise 2 – Nose – Low Characteristics

Iteration 1: Nose low Overbanked Recovery

Iteration 2: Accelerated Stall Demonstration

Line Orientated Scenario Training Exercises

Exercise 3 – Recovery from Upset After Take Off

Exercise 4 – Unreliable Airspeed (loft)

Exercise 5 – Approach to Stall in Landing Configuration (loft)

Exercise 6 – Inadvertent Alpha Floor Activation at LOC Intercept (Evidence Based)

Exercise 7 – Practice using all techniques

Any Questions ?

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