



# Upset Prevention and Recovery

Global requirements, training needs and Boeing plans to support them

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# Agenda

- **History**
- **Next steps:**
  - Regulators
  - Organizations
  - Pilots and Instructors
- **Focus areas**
- **Boeing efforts**
- **Summary**
- **Questions**

# History of progress

## ▪ Where did we start?

- Upset **Recovery** trained as maneuver only
- (Approach to) stalls trained as “precision exercise” with powered recovery and minimum altitude loss as passing requirement
- No prevention trained for stalls or generic upsets, only recovery
- Minimal to no training during Licensing part
- No integrated academics

## ▪ What was done up to this point by regulators?

- FAA Stall/Stick Pusher WG
- FAA ARC 208
- ICAO LOCART
- FAA AC publication
- EASA RMT 0.581/0.582

## ▪ What is next???

# Next Steps for Regulators

## ▪ Regulators:

- Incorporation of global recommendations into suitable regulation
  - On airplane training for Licensing
  - Simulator Training for Type Rating and beyond
  - Instructor and Inspector licensing, qualification training and standardization
- Don't add or redo industry work, there is rhyme and reason behind everything that has been published
- Appropriate oversight
- Support and approve Operators and Training Organizations in creating standard scenarios that improve manual handling to prevent edge of envelope excursions
- Identify appropriate risk mitigations, especially for on-airplane training

# Next Steps for Organizations

## ▪ **Operators and Training Organizations:**

- Incorporation of local Regulation and recommendations
- Create standard scenarios that improve manual handling to prevent edge of envelope excursions
- Instructor training and standardization
- Train to proficiency regarding techniques and procedures
  - Identify specific training needs when and where appropriate
  - Start “in the middle” and “work towards the edges”
- All elements, including operation close to maximum operating altitude
- Appropriate risk mitigations
- Incorporate the OEM into scenario development if needed
- Incorporate this training into normal training, do not “bolt on” these items unless absolutely necessary

# Next Steps for Individuals

## ■ Pilots:

- Use well qualified schools with expert instructors for CPL/MPL/ATPL licensing training
- Invest in knowledge and applied skills
- Gain and maintain proficiency
- This is a career long effort!

## ■ Instructors:

- Standardize, don't experiment
- Identify training needs for the individual
- Use scenarios that transfer correct learning skills
- Be aware of "platform limitations"
- Teach correct habits, procedures and techniques and don't judge on secondary factors

# Focus areas

- **Prevention is key, however, recovery skills need to be maintained. Don't forget to train both**
- **Scenario Based training needs to supplement recovery skills**
- **Do not start setting artificial requirements such as altitude loss, g-load limitations etc. at any level, either at regulator, management or via instructor expectation**
- **Don't change simulators without OEM cooperation**
- **Share experiences and scenarios. This is an industry problem that cannot be solved by individuals!**
- **Please coordinate with your OEM and do not experiment! OEMs are independent, safety oriented, knowledgeable, and have the expertise and willingness to support**

**Do no harm!**

# Boeing Efforts

- **Boeing is aware of all global requirements:**
  - Working on updating all simulators to meet FAA requirement for full stall within our own campuses
  - Providing customers with Simulator Data Package availability
  - Updating Boeing courseware for Type Ratings and Recurrent Training
  - Updating FCOM, QRH and guidance in the FCTM
  - Participation in industry meetings and events
  - Customer support
- **To ensure appropriate training, coordinate with Boeing when creating training for UPRT through established channels**



# Questions???

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