

UPRT Preliminary Thoughts on Sriwijaya 182

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Administration



Main points

- **These are my personal thoughts**
- **These are not official FAA thoughts**

Background



- Jan. 9, 2021
- 737-500
- Sea impact five minutes after departure from Jakarta
- 62 fatalities
- During climb, throttle split (left throttle reduced, right did not)
- A/P disengagement at 10,000 ft, left roll > 45 degs, then A/T disengage
- Resulting sideslip will cause airplane to roll
- Other factors
 - Experienced crew (18,000 and 5,000 hrs in two seats)
 - Recent and recurring autothrottle maintenance
 - Poor weather in area

KNKT preliminary report

- Issued Feb. 9, 2021
- Sriwijaya Operation Manual states upset recovery training occurs every 24 months with an upset maneuver in their proficiency check
- Sriwijaya FCTM refers pilots to Airplane Upset Prevention and & Recovery Training Aid for detailed information and discusses this aid emphasizes recognition and avoidance
- Sriwijaya FCTM states URPT should emphasize the entire operational flight envelope to develop pilot awareness and handling skills in both manual and automated flight

KNKT preliminary report

- Sriwijaya FCTM, for nose low, high bank angles, states may need to apply nose-down elevator, and that full aileron and spoiler input should be used if necessary to smoothly establish a recovery roll rate toward the nearest horizon
- Sriwijaya FCTM, for high bank angles, states primary objective is to maneuver the lift of the airplane to directly oppose the force of gravity by rolling in the shortest direction to wings level...and a smooth application of full lateral control should provide enough roll control power to establish a very positive recovery roll rate
- Sriwijaya developed a training aid document for upset recovery

KNKT preliminary report

- Report states “The investigation was unable to find procedures pertaining to the delivery of upset prevention and recovery training, and guidance from the DGCA to aircraft operators and/or approved training organizations (ATOs) to enable and support the implementation of effective upset prevention and recovery training”
- One recommendation was to develop guidance to increase the effectiveness of UPRT

Throttle splits

- TAROM 371 (A310, March 1995) – no survivors
 - A/T engaged during climb, supposedly entered IMC
 - Less drag after flap retraction, so less thrust needed
 - #2 throttle stuck in takeoff position, so #1 engine goes to idle
 - Crew knew of pre-existing anomaly
 - Captain apparently lost consciousness just prior to event
 - Left roll and unsuccessful recovery (supposedly F/O tried to re-engage A/P during roll)
- China Southern 3943 (737-300, Nov 1992) – no survivors
 - A/T engaged during descent
 - #2 throttle at idle
 - Right roll without recovery
- A history of 737 Classic A/T splits, which were caused by
 - Failure of a A/T clutch switch
 - A/T computer failure (Smiths redesigned and adopted via AD)
- In 737 simulators, can fail A/T clutch motor, but in modern 737s, A/T will disengage with significant thrust difference while exceeding a wheel deflection tolerance

Preliminary thoughts

- Accurate UPRT content in the FCTM (e.g., references, key concepts, and recovery strategy)
- Without details of the practical training content, cannot assess the training effectiveness
- As with most all cases, better flight deck awareness could have prevented the upset
- Barring unknown failures, had the stated recovery strategy been applied, a recovery appeared possible
- Suspect surprise and startle may have interfered with applying the recovery strategy
- On Feb 15, 2021, FAA issued a Continued Airworthiness Notification to the International Community
 - One item emphasized UPRT

Summary

- More may be known with impending final report
- Expect continued highlighting of maintenance system and UPRT
- Even with a perfect UPRT program, how do we best determine its effectiveness?