



# Group 2 Safety Day

JANUARY | 2019





# Logistics



- Recording
- Bathrooms / kitchen
- Emergency exits
- Signup sheet
- WINGS credit
- Schedule (flexible):
  - 10am to 11:30am: Review of accidents and incidents
  - 11:30am to 12:30pm: Lunch
  - 12:30pm to 2pm: CRM, crew coordination, risk management
  - 2:30pm to 4pm: Incidents/accidents, 62-2, open discussion



# Review of Some CAWG CAP Incidents

**JANUARY | 2019**





# Pushback



- Plane pushed back
- Observer didn't inform pilot that he would be walking under the wing
- Pilot didn't see observer
- Plane swung around too fast
- Observer let go of the wing
- Observer was struck by the elevator



# Wing strike



- **Plane parked too close to a fence**
  - Closer than usual
- **When making the turn to park, wing struck the fence**

# Wing strike



# Wing strike





# Orientation Flight Low Level Stall



- Prior to takeoff, the pilot performed an engine run-up and verified that all flight controls were free and correct
- The pilot then initiated a soft-field takeoff procedure on the bumpy grass runway
- Everything seemed normal as he began to climb out of ground effect at 60 knots
- At that time, the nose pitched up abruptly and the pilot pushed the yoke forward as hard as he could while engaging nose down electric elevator trim; however, the airplane continued to climb at an excessive angle of attack and stalled. It subsequently rolled left, descended to the ground and came to rest inverted



# Orientation Flight Low Level Stall



- Trim was found to be 10 degrees down (max is 24)
- One passenger did not recall the pilot doing a preflight inspection, use a checklist, or perform any type of check and engine run-up prior to takeoff. The other passenger recalled an abbreviated preflight inspection and use of a checklist before and after engine start; however, he did not recall any stopping prior to entering the runway, engine run-up, or control check except for flaps moving. Both passengers sustained concussions in the accident



# Runway Overrun



- The weather began to deteriorate during the previous approach and the airplane encountered updrafts and downdrafts. Additionally, it began to rain, and he aborted the landing
- During the next approach, there was a variable crosswind and that the updrafts and downdrafts continued
- During the landing roll, the wind direction may have shifted to a tailwind and that the brakes did not have "the normal stopping effect."
- The airplane overran the runway



# Runway Overrun (Runway 23)



- Ten minutes before the accident, the METAR at the airport reported that the wind was from 260° at 9 knots and lightning was in the distance
- At the time of the accident, the wind was from 350° at 24 knots, gusting to 33 knots with a peak wind from 350° at 33 knots and lightning
- Cause: The pilot's decision to land with a tailwind in variable crosswind and downdraft and updraft conditions on a wet runway, which resulted in a runway overrun



# Review of Landmark Accidents

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# Introduction



- We will review some landmark accidents that highlight:
  - CRM
  - Situational awareness (SA)
  - Decision making
  - External pressures
  - Others
  
- Purpose is to learn from the mistake of others
  - Also discuss some relevant human factors
  
- These pilots are not necessarily “high risk”
  - They succumbed to human nature



# List of Accidents



- Colgan Air 3407
- Civil Air Patrol 2016
- American Airlines 1420
- Cockpit workload management (Bill tape)
- Single pilot over Bakersfield
  - Time permitting



**COLGAN AIR 3407**



# Colgan Air 3407



CAM: [increase in ambient noise]



National Transportation Safety Board Public Hearing

22:16:51

**114** knots **1130** feet **Shaker ON** **Pusher ON**



Pedal [ L R ]



Flight Mode: OFF  
Gear: UP



# Obvious Cause



- Captain's failed recovery from a stall
- But lets dig deeper



# What Did You Notice?



- Checklist usage
- Sterile cockpit
- Response to stick shaker and pusher
  - Both timing and actual reaction
- FO's role



# Reaction to Stick Pusher



- Captain had been instructed (not practiced) on the stick pusher, but pulled back instead of forward when presented with a stall
  
- Why?

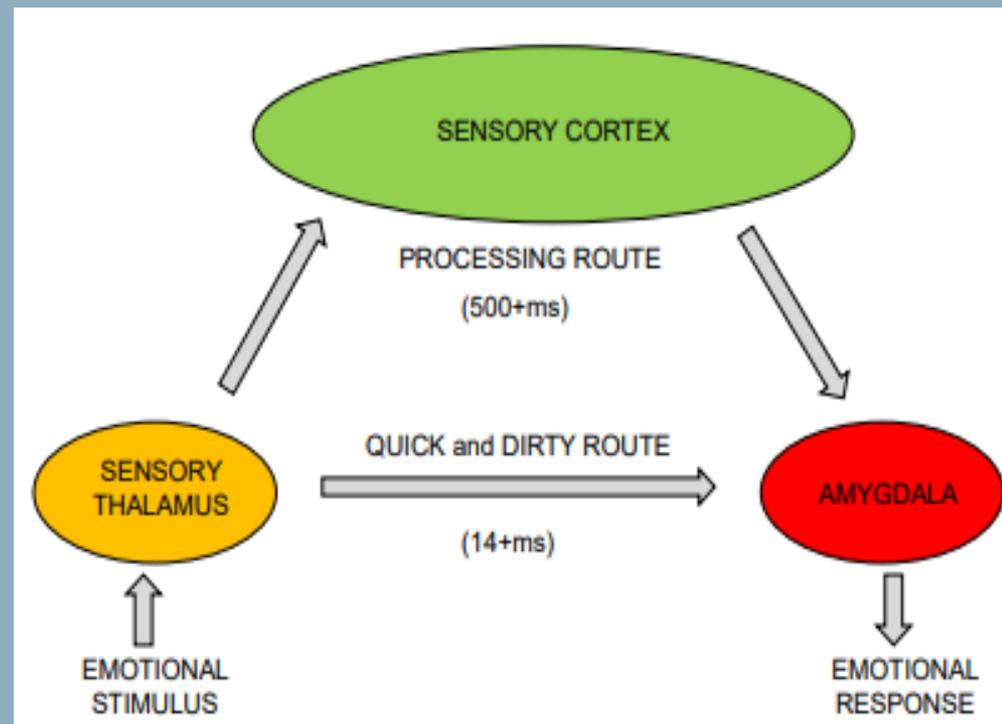


# The Startle Effect



## The Effects of Startle on Pilots During Critical Events: A Case Study Analysis

- The conditioned expectation of normalcy amongst pilots may contribute to underperformance during surprise critical events, resulting in poor handling of complex situations
- These effects may seriously impair situational awareness, decision making and problem solving





# The Startle Effect



- Why is the startle effect important for training?



# FO's Role



- The FO is largely passive
- Failed to challenge the captain's action and monitor important data
- Poor CRM



# Distraction?



- At 22:16 now down to 2,300 feet with flaps 10° set, an “ice detected” message appeared on the screen
- Pilots had been shown videos of tail stalls



# Fatigue



- Do you suspect it in this case?
- Has anyone reached pushed 14 hours of being awake and on duty?



# Fatigue – Colgan Air



- Captain awake for 15 hours. Flying during his normal sleep hours
- FO 6 hour nap on a recliner
  - Awake for 9 hours after that
- Two yawns were heard
- Weak fatigue policy – Do you have one?
  
- Incorrect and slow reactions
  - Known symptoms of fatigue



# Illness?



- At 21:56 Capt. Renslow instructed F.O Shaw to descend after she mentioned that it would be easier on her ears due to her being ill, she can be heard yawning, sneezing and sniffing



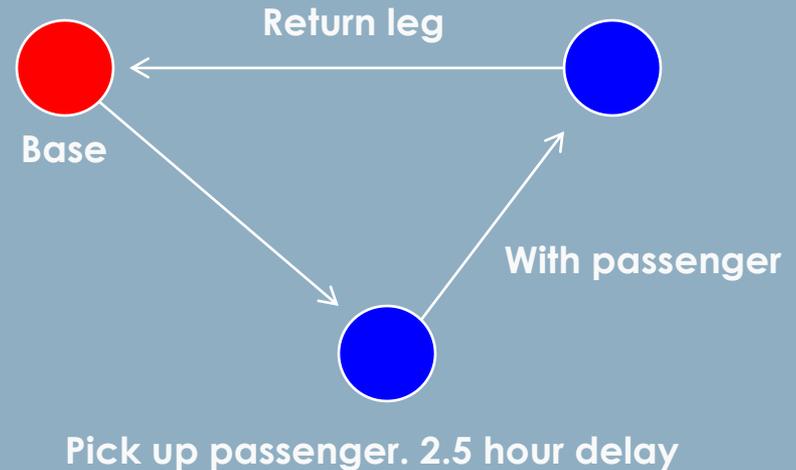
# CIVIL AIR PATROL 2016



# Civil Air Patrol 2016



- Two person crew
- Compassion flight
  - Transport passenger from FL to LA
- 2.5 hour delay at FL
- Final leg back to base (BFM)





# Facts



- All flights IFR
  - Pros and cons?
  
- Squadron meeting was scheduled that night
  
- During the third leg to BFM (base), destination weather deteriorated to IMC with low clouds and visibilities with fog
  - Conditions were forecasted
  - How would you flight plan for this?
  
- Selected alternate was 10 miles away and was affected by the same weather



## More Information



- ORM was completed and discussed before the delay and weather change
- Alternate did not meet legal requirements to be chosen as alternate
- A witness said the crew wanted to attend their squadron meeting
- Pilot's failure to climb consistent with somatographic illusion
- FBO owner was concerned and offered them a courtesy car with assistance for night accommodations



# Causes / Factors



- **Failure to follow missed approach procedures even though ATC reminded them several times**
  - Possibly the pilot was “shaken”. Lack of currency? Stress? Disorientation?
  
- **There were early signs of changing weather**
  - Nobody was assertive in voicing concerns

# Root Causes?





# AMERICAN AIRLINES 1420

# American Airlines 1420





# Facts / Factors



- Crew received warning of thunderstorms from dispatch before departure
- In flight, dispatch sent a message noting the incoming storm and suggesting the crew expedite to beat the storm
- Concerns were not voiced assertively
- Plane was not properly configured at 1000 AGL



# More Facts / Factors



- Setting up for the ILS, the crew thought they had “some time” before the storm
  
- Crosswinds were higher than company maximums for wet runways (20 knots)
  
- At 400 AGL the FO said “go around” but not in a strong voice
  - He then checked to see if the captain heard him but thought the captain was flying well
  
- 76-knot microburst arrived two minutes later



# NASA Study on Crew Decision Errors



- Cues that signal a problem are not always clear and that a decision-maker's situation assessment may not keep pace with conditions that deteriorate gradually
- A recurring problem is that pilots are not likely to question their interpretation of a situation even if it is in error. Ambiguous cues may permit multiple interpretations
- Pilots under stress might not evaluate the consequences of various options



# WORKLOAD MANAGEMENT

# Workload Management

## Bill Tape





# SINGLE PILOT OVER BAKERSFIELD

# Single Pilot over Bakersfield

