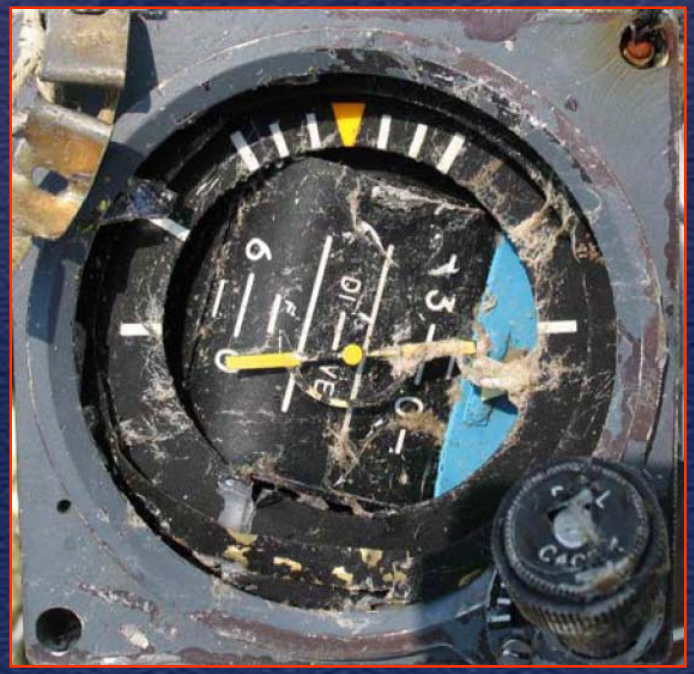
NTSB National Transportation Safety Board

A Practical Look at Establishing a Safety Culture

Robert Sumwalt

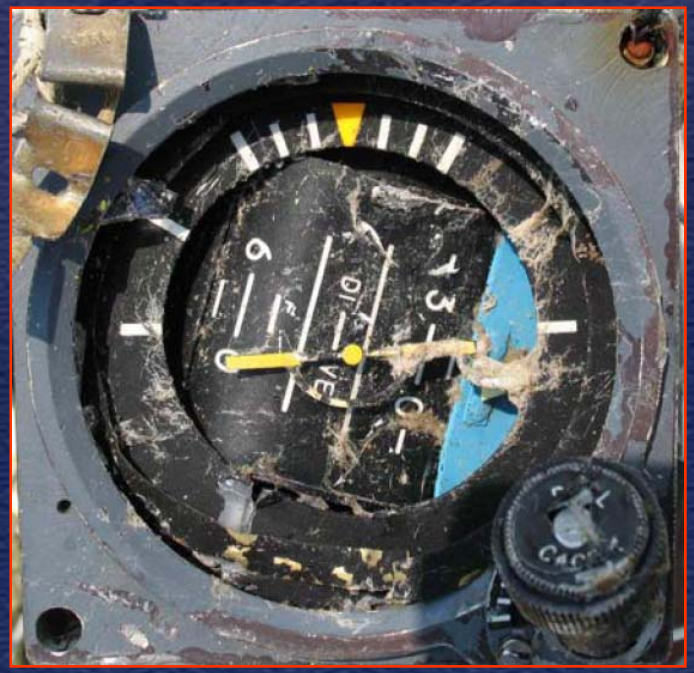
May 5, 2011

Safety Culture



Do you have
the right attitude?

June 4, 2007



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What the investigation found

Captain/chief pilot/check airman

- had prior certificate revocation
  - Information provided to Marlin Air
- routinely failed to comply with procedures and regulations
- falsified training records

Marlin Air

- had financial difficulties
- did not ensure those who operated their aircraft were properly trained.

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NTSB Finding

- "Marlin Air's selection of the accident captain (who routinely failed to comply with procedures and regulations) to the positions of company chief pilot and check airman, with responsibility for supervision and training of all company pilots, contributed to an inadequate company safety culture that allowed an ill-prepared first officer to fly in Part 135 operations."

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NTSB Finding

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Do you have a good safety culture?

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Do you have a good safety culture?

- "… it is worth pointing out that if you are convinced that your organization has a good safety culture, you are almost certainly mistaken."
- " … a safety culture is something that is striven for but rarely attained…"
- "…the process is more important than the product."

- James Reason, "Managing the Risks of Organizational Accidents."

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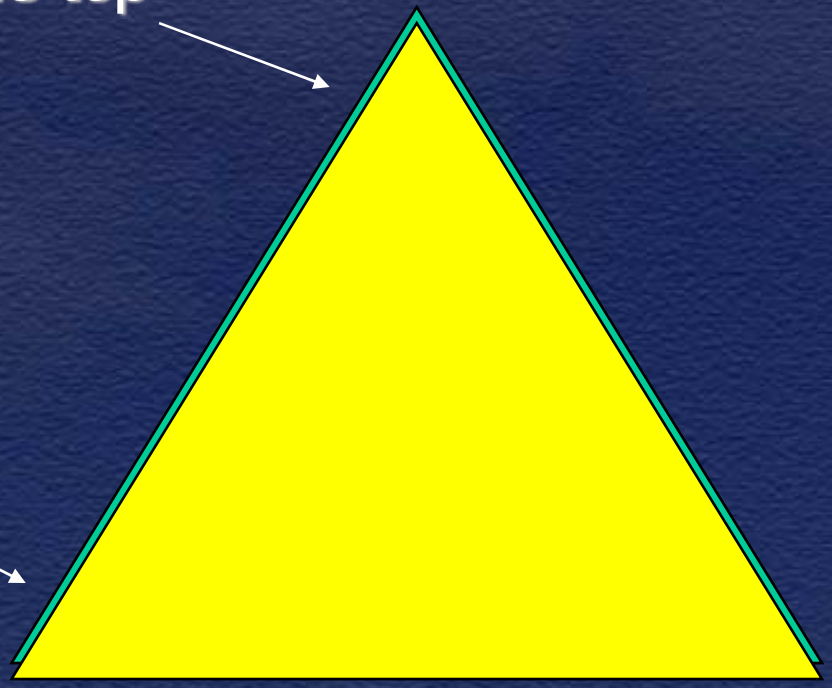
Safety Culture is:

Triggered at the top

Measured at the bottom



Safety culture starts at the top of the organization and permeates the entire organization.

Safety Culture

Doing the right things, even when no one is watching.

Roadmap to Safety Culture

1. Management Commitment and Emphasis
2. Standardization and Discipline
3. Training
4. Data Collection and Quality Assurance Programs

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Roadmap to Safety Culture

1. Management commitment and emphasis on safety
   - Safety begins at top of organization
   - Safety permeates the entire operation

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July 10, 2007, Sanford, FL

- Cessna 310 owned by NASCAR
- Flight planned Daytona Beach to Lakeland
- 5 fatalities

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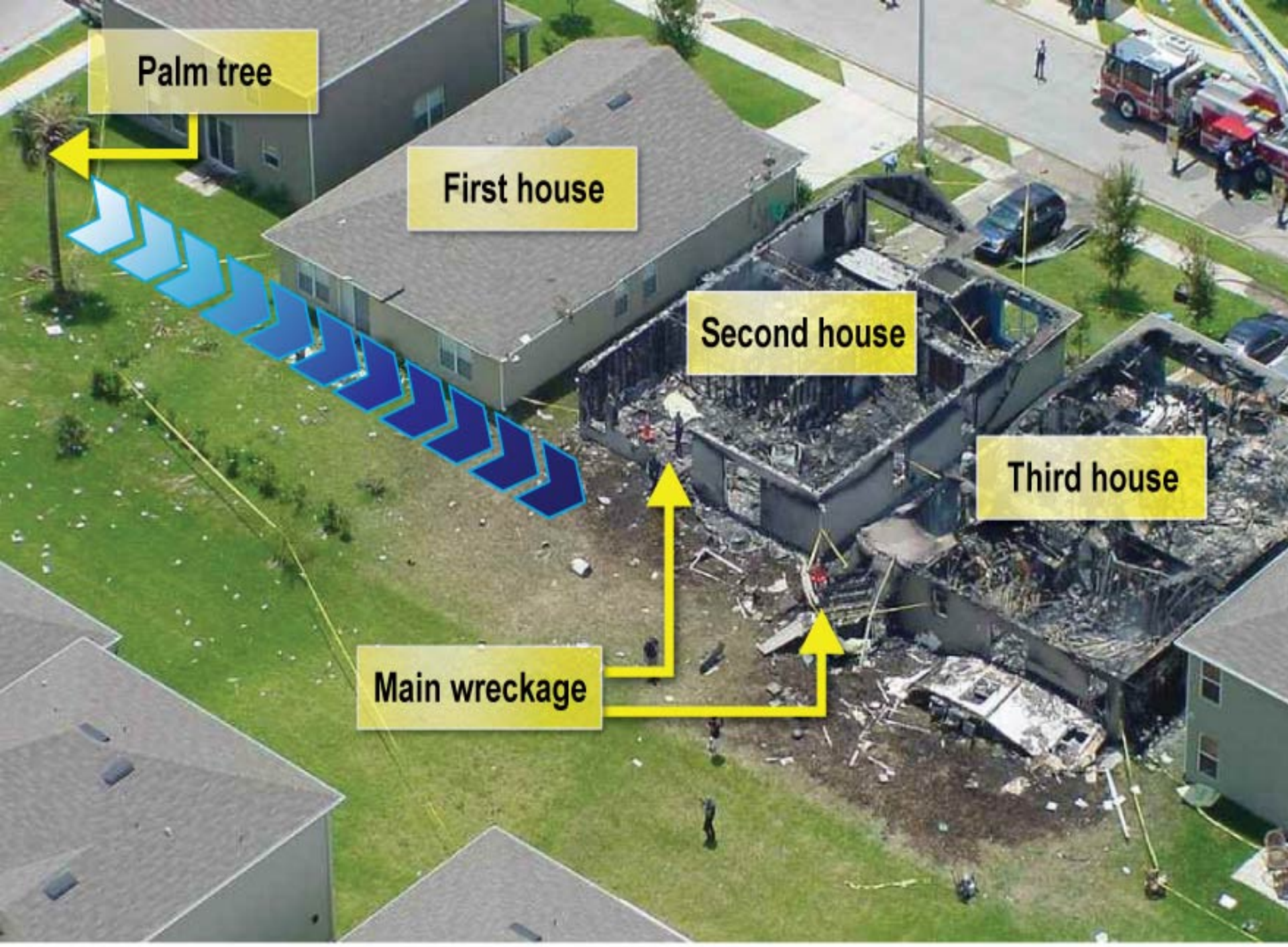
Palm tree
First house
Second house
Third house
Main wreckage

Declared Emergency

“Smoke in the cockpit.”

“Shutting off radios, elec.”

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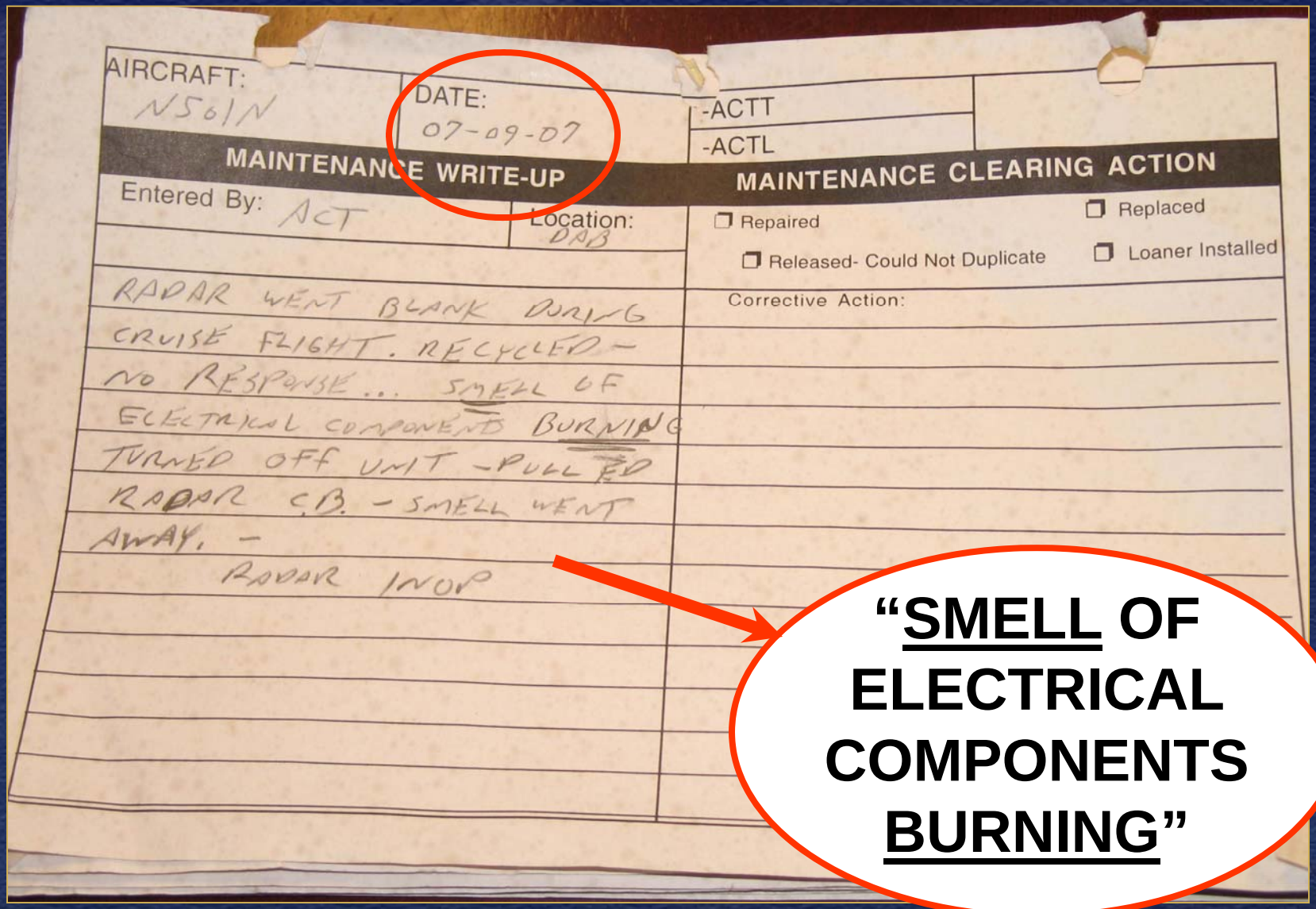
Maintenance Discrepancy Entry



Events - Previous Day

- That pilot followed company procedures
  - White original log sheet left in airplane binder
  - Handed yellow copy to DOM
  - Verbally informed technician
- Brief in-office discussion
- Airplane not inspected, modified, or grounded
- Airplane remained available for flight

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Events - Accident Day

- Maintenance technician did not examine binder or airplane
- ATP dismissed radar issue as unimportant
- Pilots accepted airplane “as is”
- Weather radar circuit breaker likely reset for the flight

Organizational Processes

- Forms not serialized, tracked, or retained
  - Yellow copy never provided
- SOP guidance versus reality
- No assurance discrepancies would be addressed
- Airworthiness status unclear

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Culture of Non-Compliance

- Aviation director could not readily locate SOP manual
- SOP manual viewed as a “training tool”
- Aircraft to only be used for company business
  - Accident flight was a personal flight
- PIC must possess ATP
  - PIC did not possess ATP
- Last 3 maintenance discrepancies had not been addressed

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Inadequate Procedures

- Most often a preflight fact sheet would be taped to airplane with highlighted items signed off by a mechanic
  - Not a requirement, not spelled out in SOP
- No guidance was provided to PIC for determining airworthiness of assigned aircraft

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Latent Conditions

- NASCAR enabled the accident by failing:
  - to have adequate processes and procedures to prevent such an event, and
  - to ensure compliance with the procedures they did have in place.

- “This accident started before the aircraft even left the ground.”

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Probable Cause

- "…actions and decisions by NASCAR's corporate aviation division's management and maintenance personnel to allow the accident airplane to be released for flight with a known and unresolved discrepancy, and;

- "The accident pilots' decision to operate the airplane with that known discrepancy, a discrepancy that likely resulted in an in-flight fire."

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Lautman-Gallimore Findings: Best Practices

- Standardization and discipline
  - Management stresses need for these items
  - Cockpit procedural compliance, callouts, and checklist usage are tightly controlled.

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East Coast Jets

Owatonna, MN
July 31, 2008
8 fatalities

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Accident sequence

- Wet runway, 8 knot tailwind
- After touchdown, Captain delayed 7 seconds before deploying Lift Dump
- 17 seconds after touchdown, captain initiated go-around/ takeoff attempt
  - Appx. 1200 feet from runway end
  - Appx. 75 – 80 knots
- Collided with localizer antenna

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Finding related to SOPs

- “If, as a Part 135 operator, East Coast Jets had been required to develop standard operating procedures and its pilots had been required to adhere to them, many of the deficiencies demonstrated by the pilots during the accident flight might have been corrected by the resultant stricter cockpit discipline.”

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“When asked about the flight department's standard operating procedures (SOPs), the chief pilot advised that they did not have any...”

“... the flight department had started out as just one pilot and one airplane, and that they now had five pilots and two airplanes...”

SCANA King Air C90B and 350 NORMAL TAKEOFF Actions and Callouts		
Trigger	**PF**	**PM**
Receipt of Takeoff Clearance, or CTAF Announcement of Takeoff Intentions and Before Takeoff Checklist complete	• Power Levers – Advance to Takeoff Power (80% percent torque for 350; 1200 ft lbs torque for C90) **"SET POWER"** • Observe ITT and Torque settings.	• Observe L AUTO FEATHER & R AUTO FEATHER lights illuminated. **"AUTO FEATHER ARMED"** • Observe engine gages and ensure Takeoff Power is set. **"POWER SET"**
Movement of aircraft		• Observe PROP PITCH lights extinguished <350 only> and consider any other CAS annunciator lights <C90B and 350>. • Verify normal engine indications. • Crosscheck airspeed indications.
80 Knots	**"CHECKED"**	**"80 KNOTS"**
V1		**"V1"**
VR	• Rotate to approximately 10 degrees	**"ROTATE"**
After liftoff	• Verify positive rate of climb.	**"POSITIVE RATE"**
	<u>Captain</u> **"GEAR UP"** • Position gear lever to UP • Extinguish Landing and Taxi lights.	• Engage Yaw Damp **"YAW DAMP ON"**
400 feet AGL, or obstacle clearance altitude, whichever is higher and 125 kts minimum < 350 only >	**"FLAPS UP"**	**"FLAPS UP"** • Position flap lever to UP • Observe flaps indicate UP

Continued on the following page.


October 25, 2002

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Standardization

- Maneuvers Guide – contained key procedures for briefing and conducting instrument approaches
  - Pilots were expected to adhere to procedures in Maneuvers Guide
  - Maneuvers Guide was only issued to the chief pilot and instructors

Standardization

- Company check airman: rated company's standardization as "6"
- Company pilot: "Fair to good"
- Lead ground instructor: "Fair"
  - Suspected that some pilots were following SOPs while others were not
  - Aware that some pilots used their own checklists, instead of company checklists
- Another pilot: never seen any standardized callouts documented in any company manual
  - To compensate, she used callouts she used at another company

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Roadmap to Safety Culture

3. Training
   - Strong commitment to training and provide oversight of their training
   - Ensure training standardization and discipline are maintained

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Southwest at Midway

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Onboard Performance Computer

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Air Midwest 5481 Jan 8, 2003

Air Midwest 5481

- “Air Midwest did not have maintenance training policies and procedures in place to ensure that each of its maintenance stations had an effective on-the-job training program.”

- “Air Midwest did not ensure that its maintenance training was conducted and documented in accordance with the company’s maintenance training program, which degraded the quality of training and inspection activities at the Huntington, West Virginia, maintenance station.”

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Roadmap to Safety Culture

4. Data Collection and Quality Assurance Programs
   - data-driven risk management
   - safety audits
   - confidential incident reporting systems

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Data collection and analysis

- The organization collects and analyzes "the right kind of data" to keep it informed of the safety health of the organization

  – collects, analyzes
  and disseminates information
  on incidents and near-misses,
  as well as proactive safety checks.

- James Reason, Ph.D.

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Pinnacle Airlines

- Jefferson City, MO
- October 14, 2004
- Bombardier Regional Jet
- Repositioning flight
- Both flight crewmembers killed

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What the investigation discovered

- Intentional activation of stall warning
- Swapping crew seats
- Rudder mishandling
- Climb to FL 410
  - “have a little fun”
- Automation mismanagement
- Airspeed loss, stall, loss of control, double engine failure
- Did not maintain proper speed for engine failure
- Did not fully disclose real problem with ATC

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Why was the crew at 41,000?

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Did the airline …

- Did the airline know about “410 Club?”
- How did airline monitor adherence to SOPs?
- Did they have a FOQA program?
- Did they have an ASAP program?
- Did they have a Safety hotline?

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Data collection and analysis

- How do you detect and correct performance deficiencies before an accident?
- How do you keep your finger on the pulse of your operations?
- Do you have multiple data sources?

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Employees

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Are employees comfortable reporting?

- Employees are open to report safety problems, if they receive assurances that:
  - The information will be acted upon
  - Data are kept confidential or de-identified
  - They will not be punished or ridiculed for reporting
    - Non-reprisal policy signed by CEO

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Non Reprisal Policy
December 2005

SCANA Aviation Department is committed to the safest flight operation possible. Therefore, it is imperative that we have uninhibited good faith reporting of any hazard, occurrence or other information that in any way could enhance the safety and efficiency of our operations. It is each employee's responsibility to communicate any information that may affect the integrity of flight safety.

SCANA Aviation Department has developed a format for reporting information, hazards and safety concerns, whether in the air, on the ground or related to passenger or crew safety. [Reference is hereby made to "SCANA Flight Operations Manual," Section 7.11 Information, Safety and Hazard Reporting Procedure.]

To promote a timely, uninhibited flow of information, this communication must be free of reprisal. SCANA will not use this reporting system to initiate disciplinary proceedings against an employee who discloses in good faith a hazard or occurrence involving flight safety which is the result of conduct which is inadvertent, unintentional or not deliberate.

We urge all employees to use this program to help this Department be a leader in providing our passengers and our employees with the highest level of flight safety.

William B. Timmerman
Chief Executive Officer

Robert L. Sumwalt, III
Manager – Aviation

Reporting culture is essential

- “There is growing realization in the aviation industry that encouraging prompt reporting of safety issues actually reduces the number of accidents and incidents.

- “An environment of ‘open reporting’ is a key element in fostering a ‘just culture’ for the systematic reporting, collection, analysis and dissemination of safety information that will be used solely to prevent accidents.”

  – Flight Safety Foundation “Ramp Safety Operational Procedures – A template for ramp supervisors”

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"Just" Culture

- Employees realize they will be treated fairly
  - Not all errors and unsafe acts will be punished (if the error was unintentional)
  - Those who act recklessly or take deliberate and unjustifiable risks will be punished

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Just Culture

"An atmosphere of trust in which people are encouraged, even rewarded, for providing essential safety-related information, but in which they are also clear about where the line must be drawn between acceptable and unacceptable behavior."

- James Reason, Ph.D.

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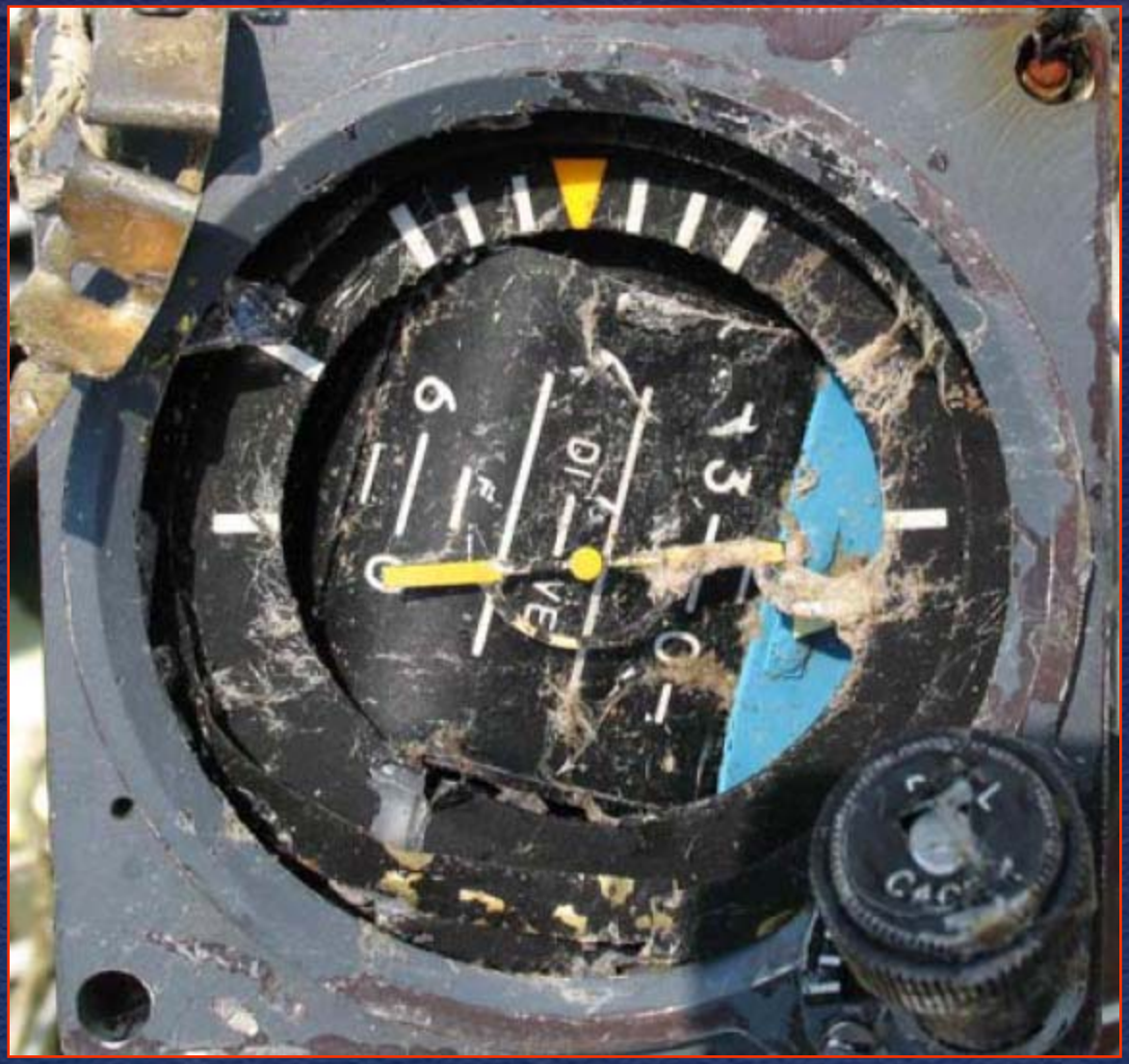
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