



NTSB National Transportation Safety Board

A Practical Look at the Road to Safety Culture

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Flight Safety Foundation 66th Annual International Air Safety Summit



Safety culture is about attitude.



June 4, 2007
6 Fatalities



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What the investigation found

Captain/chief pilot/check airman

- had prior certificate revocation
- 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

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.”

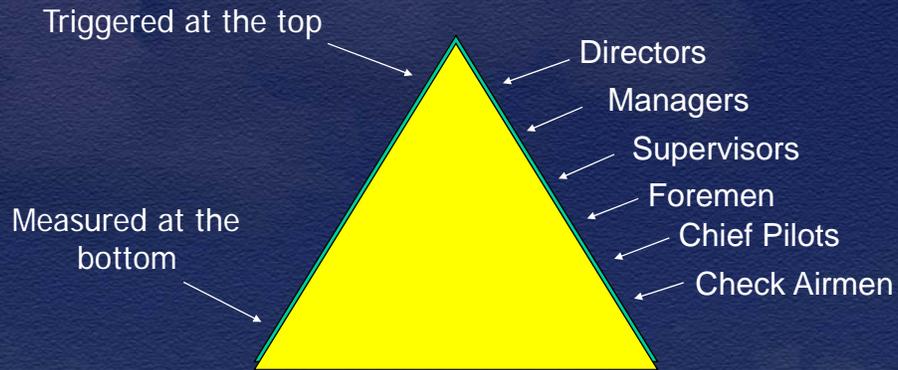


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Safety Culture is:



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

Leadership Drives Safety Culture

**“Leadership is about influence.
Nothing more. Nothing less.”**

- John Maxwell

How leaders influence safety

“The safety behaviors and attitudes of individuals are influenced by their perceptions and expectations about safety in their work environment, and they pattern their safety behaviors to meet demonstrated priorities of organizational leaders, regardless of stated policies.”

– Dov Zohar, as cited in NTSB accident report



Three leadership questions

- 1) Is safety the top priority of your organization?
- 2) Do you have a good safety culture?
- 3) Are you on the right track?



1) Is safety the top priority of your organization?



Priority or Core Value?

“Safety culture is the core values and behaviors resulting from a collective commitment by leaders and individuals to emphasize safety over competing goals to ensure protection of people and the environment.”

Source: U.S. Nuclear Regulatory Commission



2) Do you have a good safety culture?



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."



3) Are you on the right track?



Are you on the right track?

“Even if you're on the right track, you'll get run over if you just sit there.”



- Will Rogers



A Word of Caution:

NEVER EVER BELIEVE GOOD NEWS



The collage features three USA Today newspaper front pages and a photograph of an aircraft crash site. The left page, dated January 12, 2009, has the headline "Airlines record safest 2 years" and a sub-headline "No one killed in crash of a U.S. flight". The right page, dated January 16, 2009, has the headline "'Miracle on the Hudson'" and a sub-headline "Jet lands on water, pilot picks jet carrying 155 to safe landing". The bottom center photograph shows the wreckage of an aircraft on a grassy field with a traffic cone in the foreground.

Monday's Headlines
January 12, 2009

Friday's Headlines
January 16, 2009

4 Weeks Later
February 12, 2009

“Good can be Bad”

- With good safety performance, people/organizations can easily become complacent.
- Don't ever believe that a lack of accidents means you are “safe.”
- To counter this complacency, there must be a leadership obsession with continuous improvement.

- Courtesy of Jim Schultz



Road to Safety Culture

- ➔ 1. Management Commitment and Emphasis
2. Culture of Compliance
3. Continuous Learning and Risk Awareness
4. Just Culture & Trust



Management Commitment

Management commitment and emphasis on safety

- Safety begins at top of organization
- Safety permeates the entire operation



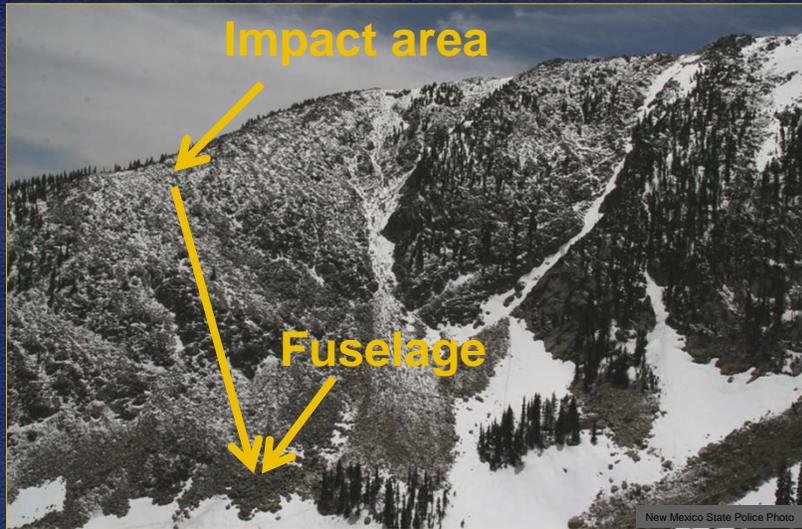
History of Flight



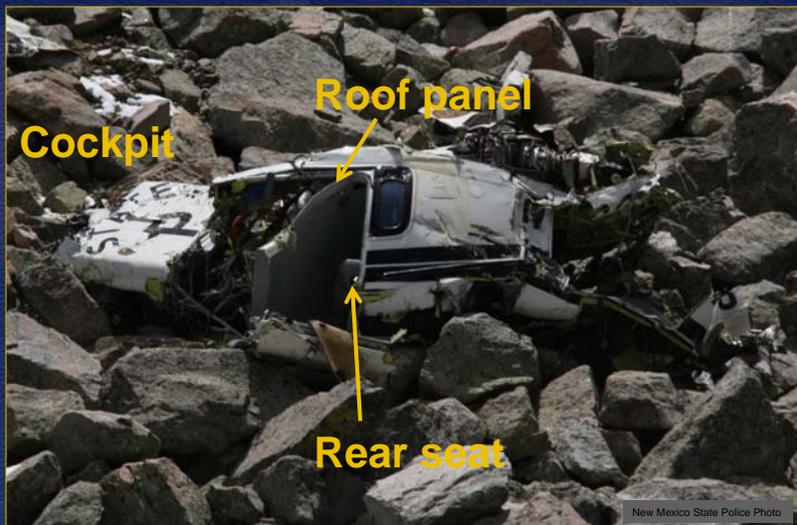
- June 9, 2009
- Agusta A-109E
- Search and rescue flight
- New Mexico State Police (NMSP)
- Near Santa Fe, New Mexico
- Pilot and passenger killed
 - spotter seriously injured



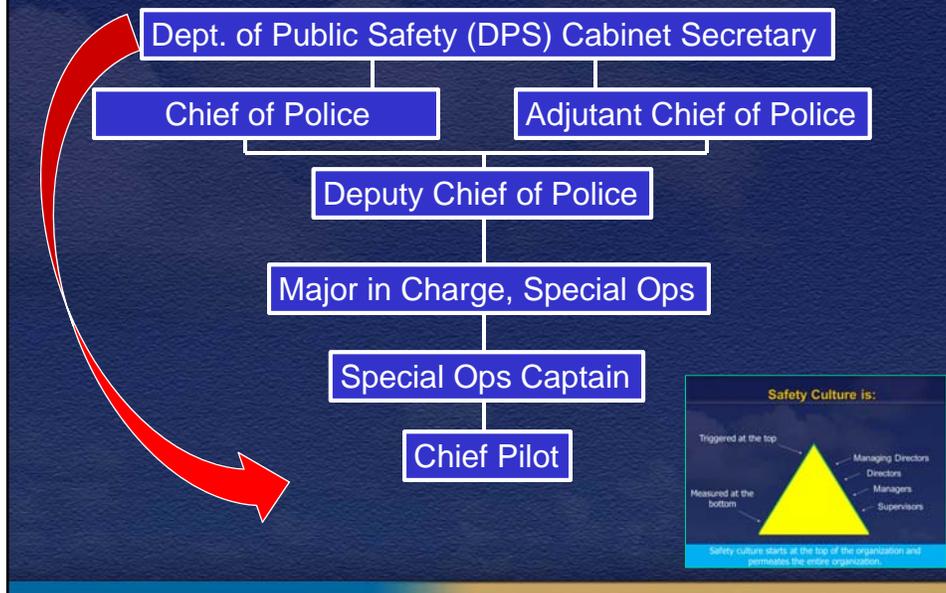
History of Flight



Fuselage



NMSP Reporting Structure



DPS Cabinet Secretary

- Had formerly been a NMSP chief pilot
- Liked to be involved with aviation section, but did not ensure it had an effective safety program
 - Wrote memo saying that accident pilot was authorized to operate the accident helicopter
- Took actions that were detrimental to safety
 - Dismissed former chief pilot for tuning down missions
 - Demanded explanations whenever a pilot declined a flight
 - Complained vigorously when New Mexico National Guard pilots launched when NMSP declined
 - Would ask NMSP pilots to continue checking the weather when they had already declined mission due to weather

NTSB Finding

“... there was evidence of management actions that emphasized accepting all missions, without adequate regard for conditions, which was not consistent with a safety-focused organizational safety culture, as emphasized in current safety management system guidance.”



NTSB Probable Cause:

- The pilot's decision to take off from a remote, mountainous landing site in dark (moonless) night, windy, instrument meteorological conditions.
- Contributing to the accident was an organizational culture that prioritized mission execution over aviation safety, and
- the pilot's fatigue, self-induced pressure to conduct the flight, and situational stress.

(Continued)



Also Contributing to the Accident

- Deficiencies in the NMSP aviation section's safety-related policies, including:
 - lack of a requirement for a risk assessment at any point during the mission
 - inadequate pilot staffing
 - lack of an effective fatigue management program for pilots
 - and inadequate procedures and equipment to ensure effective communication between airborne and ground personnel during search and rescue missions.



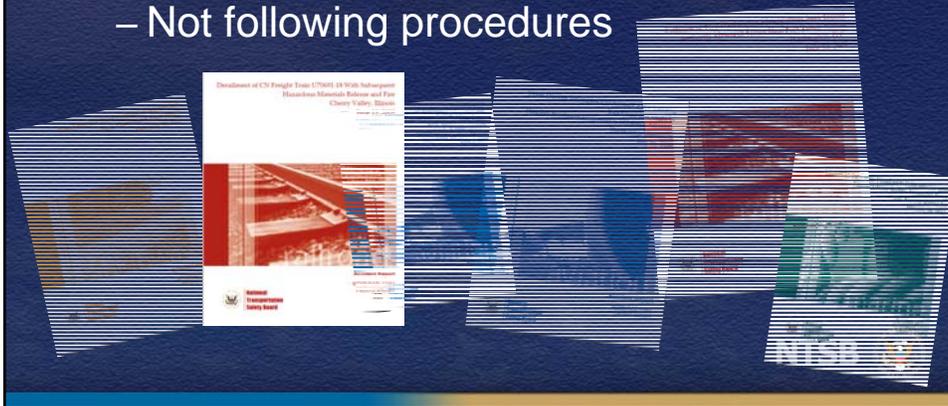
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A persuasive problem

- One of the most common factors in accidents investigated by NTSB:
 - Not having adequate procedures
 - Not following procedures



Lautman-Gallimore Study

- Found that having a strong commitment to standardization and discipline were among the “key elements of safe operations” observed in a Boeing study.
- “Cockpit procedural language is tightly controlled to maintain consistency and to avoid confusion from non-standard callouts Callouts and responses are done verbatim”

A Culture of Compliance

- Internal company policies, procedures, rules
- Ethical principles
- Company code of conduct
- Federal, state, and local laws and ordinances
- Industry best practices
- Financial guidelines and principles
- Etc.

A commitment to doing things right.
Always.



Establishing a Culture of Compliance

- Procedures must not be developed alone
- they must have the input of those who are expected to use them.
- It is critical that employees understand the reason for the procedures.
- Avoid selective compliance.



Avoid Selective Compliance



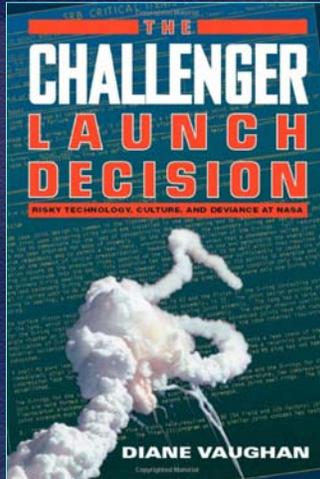
- “That is a stupid rule.”
- “I don’t have to comply with that one.”

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Avoid “Normalization of Deviance”



- Normalization of Deviance: When not following procedures and taking “short cuts” and becomes an accepted practice.

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Continuous Learning and Risk Awareness

- Organizations with a healthy safety focus are constantly learning.
- They actively seek ways to improve safety.
- They learn from their mistakes and those of others.
- Information regarding prior incidents and accidents is shared openly and not suppressed.
- They are ever mindful of risks and are looking for ways to mitigate those risks.



Crash during Flight Test



- Gulfstream G650
- April 2, 2011
- Roswell, New Mexico
- 4 Fatalities



History of Flight

- Planned one-engine inoperative continued takeoff
- Flight crew tried to achieve and maintain V_2 by aggressively rotating aircraft with high rate-of-rotation
- Stall occurred before stall warning activated
- Uncommanded roll, right wing contacted runway







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Factors Leading to Accident

- Gulfstream failed to fully investigate two previous uncommanded roll events
 - November 2010
 - March 2011
- Made persistent attempts to adjust pilot technique to achieve erroneously low V_2
- Used flawed assumptions to determine takeoff speeds

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Factors Leading to Accident

- Overestimated in-ground-effect stall angle of attack
- Set stall warning activation too high
- Failed to establish adequate flight test operating procedures
- Did not adjust flight test schedule to account for program delays
- Failed to develop effective flight test safety management program



NTSB Finding

“If Gulfstream had performed an in-depth aerodynamic analysis of the cause of two previous G650 uncommanded roll events ... the company could have recognized that the ... angle of attack for the accident flight test was significantly lower than the company predicted.”



NTSB Finding

“By not performing a rigorous analysis of the root cause for the ongoing difficulties in achieving the G650 takeoff safety speeds (V_2), Gulfstream missed an opportunity to recognize and correct the low target V_2 speeds.”



NTSB Finding – Risk Awareness

“Gulfstream’s flight test safety program at the time of the accident was deficient because risk controls were insufficient and safety assurance activities were lacking.”



How do you stay informed?

- Internal safety audits
- External safety audits
- Confidential incident reporting systems
- Employee feedback



NTSB Finding

“External safety audits would help Gulfstream monitor the implementation of safety management principles and practices into its flight test operations and sustain long-term cultural change.”



Staying informed

- How do you detect and correct performance deficiencies before an accident?
- How do you know what is going on in your operations?
- Do you have multiple data sources?



Employees



Are employees comfortable reporting?

- They 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



How leaders influence safety

“The safety behaviors and attitudes of individuals are influenced by their perceptions and expectations about safety in their work environment, and they pattern their safety behaviors to meet demonstrated priorities of organizational leaders, regardless of stated policies.”

– Dov Zohar



NTSB Finding

“Gulfstream’s focus on meeting the G650’s planned certification date caused schedule-related pressure that was not adequately counterbalanced by robust organizational processes to prevent, identify, and correct the company’s key engineering and oversight errors.”



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“Just” Culture

- People 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



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.
Flight Safety Digest, March 2005



Three leadership questions

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Is this the safety attitude of your organization?



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