NTSB National Transportation Safety Board

Human, Organizational, and Cultural Factors in Accidents

Transportation Research Board
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NTSB Board Member

Two types of accidents

- <u>Individual accidents</u> – those resulting from the actions/inactions of people.
  - i.e., An individual, following properly established procedures, loses balance and falls of ladder
- <u>Organizational accidents</u> – those resulting largely from actions/inactions of companies/organizations.
  - i.e., A train runs into back of another train, claiming multiple lives
    - Employees develop work-arounds instead of following procedures
    - Organization does not learn from prior events and precursors
    - Senior management is focused on finances and customer service
    - Organization uses wrong metrics to gauge safety
    - Regulatory oversight is not sufficient

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Washington DC Subway (WMATA)

NTSB report of Washington, DC Metro subway accident

- " … the accident did not result from the actions of an individual but from the 'accumulation of latent conditions within the maintenance, managerial and organizational spheres' making it an example of a 'quintessential organizational accident.'"

NTSB Finding

- "Shortcomings in WMATA's internal communications, in its recognition of hazards, its assessment of risk from those hazards, and its implementation of corrective actions are all evidence of an <u>ineffective safety culture</u> within the organization."

PG&E San Bruno Explosion

- 8 fatalities

- 10 serious injuries

- 48 minor injuries

- 108 houses affected
  - 38 homes destroyed
  - 17 homes severe-to-moderate damage
  - 53 minor damage
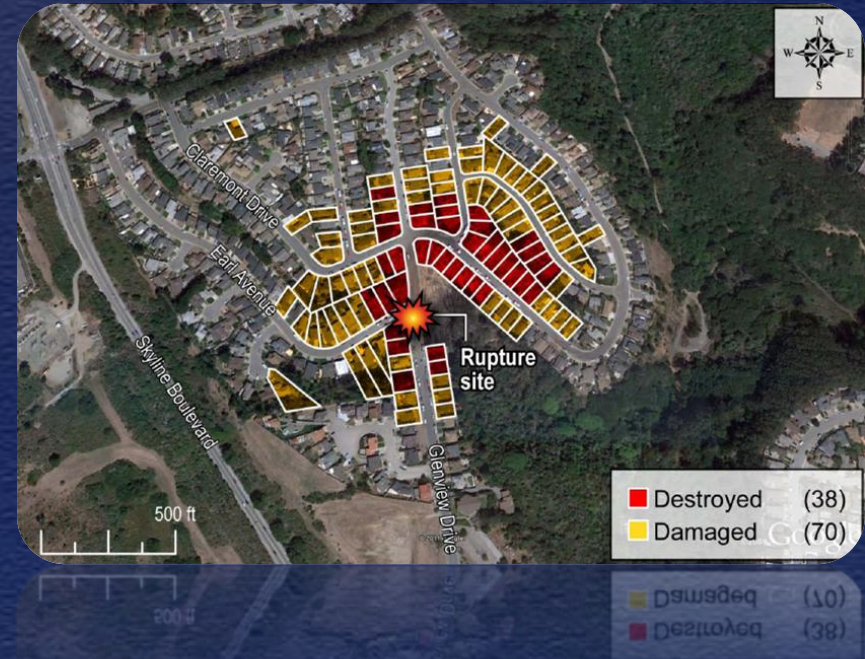
NTSB's report of PG&E Accident

"The character and quality of PG&E's operation, as revealed by this investigation, indicate that the San Bruno pipeline rupture was an organizational accident."

NTSB Safety Culture Forum

July 9 & 10, 2013

What is Safety Culture?

"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

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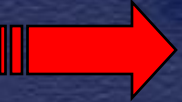# Do you have a good safety culture?

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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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Roadmap to Safety Culture

1. Management Commitment and Emphasis

2. Personal Accountability and Empowerment

3. Culture of Compliance

4. Continuous Learning and Risk Awareness

5. Just Culture

6. Questioning Attitude

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From NTSB report of WMATA Accident

- "Organizations with effective safety cultures are generally described as having a commitment to safety that permeates the entire organization; that is, senior management demonstrates a commitment to safety and a concern for hazards that are shared by employees at all levels within the organization." (p. 98)

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Personal accountability

- Employees recognize their role in safety promotion and actions, and hold themselves and others accountable. (NRC, 2011)

- Employees have a substantial voice in safety decisions, and have the leverage to initiate and achieve safety improvements. (Wiegman, et al, 2002)

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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
- Et cetera

> A commitment to doing things right. Always.

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Avoid seals, sea otters, and walruses

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Avoid seals, sea otters, and walruses

Deepwater Horizon

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Avoid seals, sea otters, and walruses

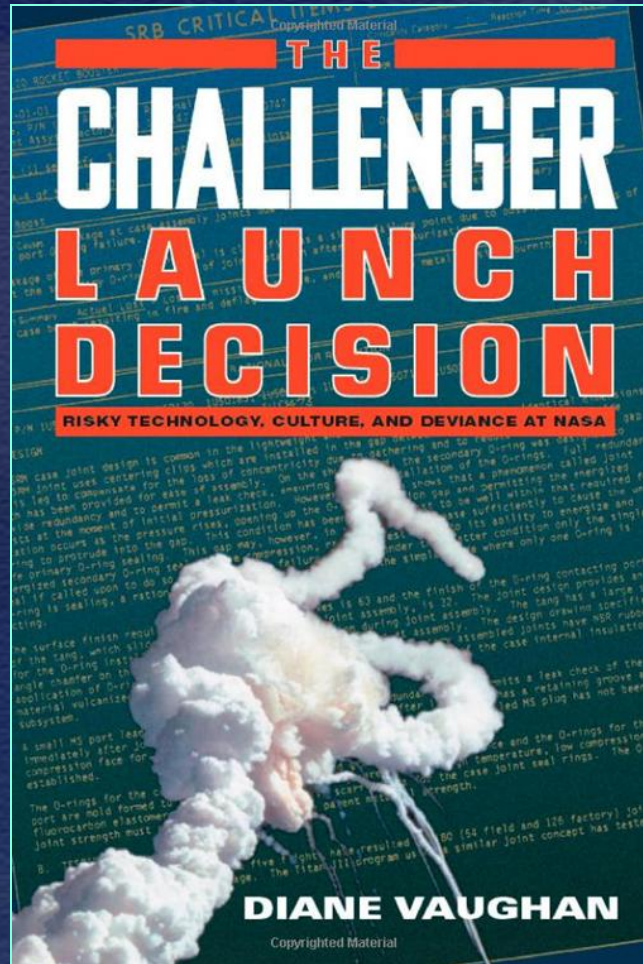BP Spill Response Plan for that Specific Location:

- Listed a wildlife specialist at University of Miami
  - He left University of Miami 20 years earlier
  - Died 4 years before the plan was even *published*

- Listed incorrect and names and phone numbers for marine life specialists at Texas A&M

- Listed instructions for how to deal with seals, sea otters, and walruses
  - **None of these mammals even live in the Gulf of Mexico**

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Avoid seals, sea otters, and walruses

In other words…

Make sure your procedures reflect
the way you intend to operate,
and then operate that way.

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Avoid "Normalization of Deviance"

THE CHALLENGER LAUNCH DECISION

RISKY TECHNOLOGY, CULTURE, AND DEVIANCE AT NASA

DIANE VAUGHAN

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

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Avoid Selective Compliance

- "That is a stupid rule."
- "I don't have to comply with that one."

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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.

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How do you stay informed?

- Internal safety audits
- External safety audits
- Confidential incident reporting systems
- Employee feedback
- MBWA   (Management By Walking Around)

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Keeping Fingers on the Pulse

- 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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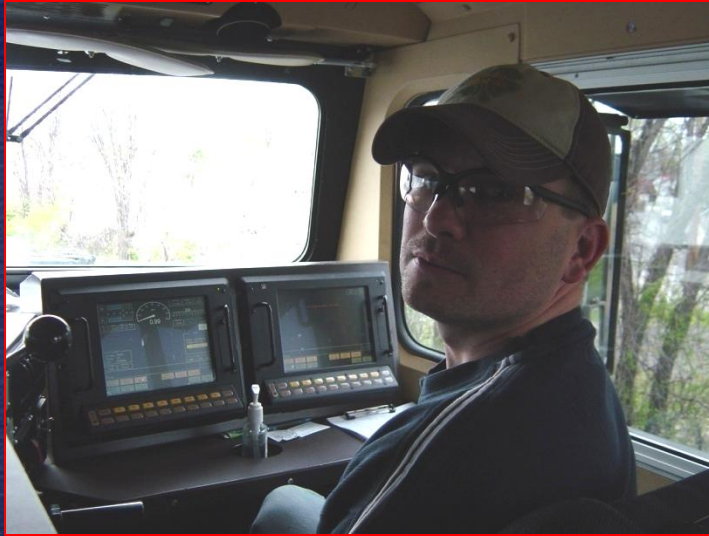
Are employees comfortable reporting?

- 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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"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

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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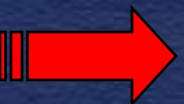
Questioning Attitude

- Individuals avoid complacency and continuously challenge existing conditions and activities in order to identify discrepancies that might result in error or inappropriate action.

- Encourages employees to cultivate a questioning attitude and set up necessary open communication between line workers and middle and upper management.

Source: U. S. Nuclear Regulatory Commission

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