NTSB National Transportation Safety Board

# Understanding the Critical Role of Leadership in Preventing Organizational Accidents

Presentation to Leadership Team of SteelRiver Infrastructure Partners

Robert L. Sumwalt, NTSB Board Member

# What is Leadership?

"Leadership is about influence. Nothing more. Nothing less."

- John Maxwell

# As a leader …

- You can negatively influence safety.
- You can positively influence safety.

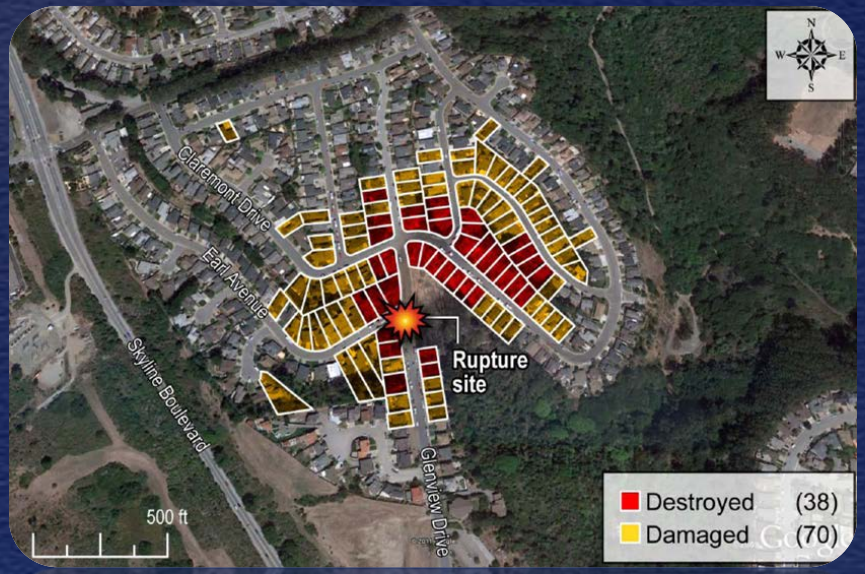
Which influence will you provide?

# Negatively influencing safety

**WARNING: DO NOT TRY THIS AT WORK!**

# 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 report of Washington, DC Metro subway accident

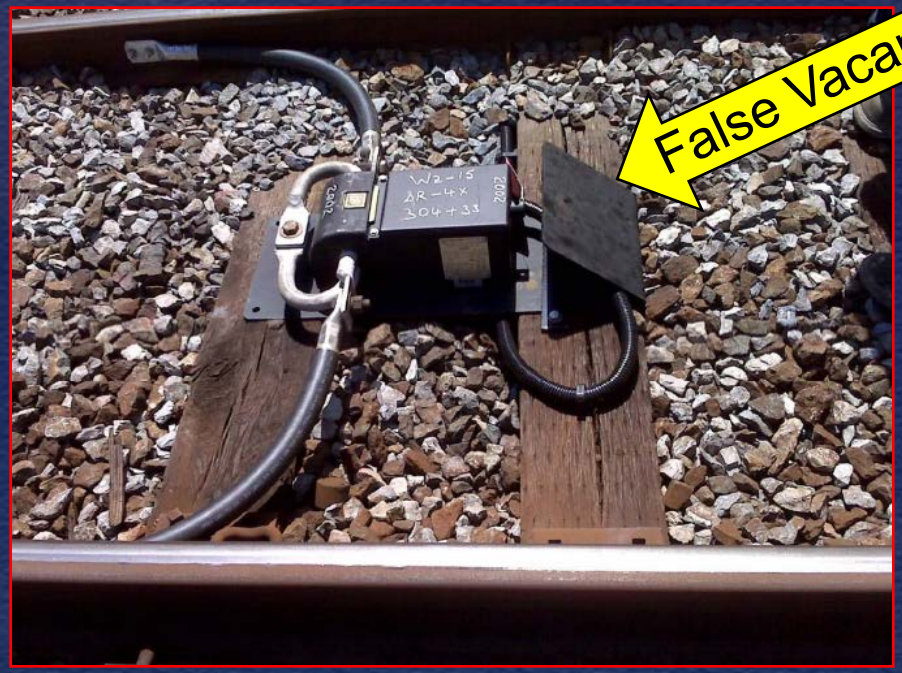

- " … the accident did not result from the actions of an individual but from the 'accumulation of latent conditions within the maintenance, managerial and organizational spheres' making it an example of a 'quintessential organizational accident.'"

# Two types of accidents

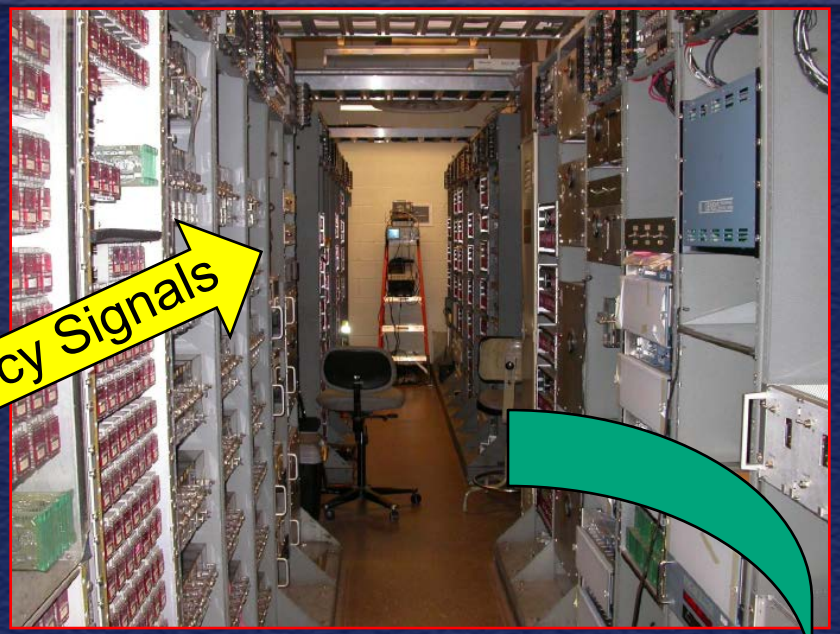
- Individual accidents – those resulting from the actions/inactions of people.
  - i.e., An individual, following properly established procedures, loses balance and falls of ladder
- Organizational accidents – those resulting largely from actions/inactions of companies/organizations.
  - i.e., A train 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

# Washington DC Subway (WMATA)

# Technical failure



False Vacancy Signals



# Probable Cause


- Failure of the track circuit modules
- WMATA's failure to ensure that an enhanced track circuit verification test was institutionalized and used system-wide after a 2005 precursor event (near-collisions)

# Contributing to the Accident

- WMATA's lack of a safety culture
- WMATA's failure to effectively maintain and monitor performance of the ATC system
- GRS/Alstom failure to provide a maintenance plan to detect spurious signals that could cause a malfunction
- Ineffective oversight by WMATA Board of Directors
- Ineffective oversight by State Safety Oversight agency and its lack of safety oversight authority
- FTA's lack of statutory authority to provide Federal safety oversight



NTSB

# 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."

– D. Zohar, as cited in NTSB report of WMATA accident

# What did employees perceive?

"the mentality now is move trains"

Post-accident statements made by the supervisor of the construction, installation, and testing crew were indicative of an emphasis on maintaining operations over safety.

# The environment at WMATA

- Punitive culture – employees feared retribution from management and co-workers for reporting safety-related problems
- FTA audit found WMATA managers were reactive rather than proactive in assessing and addressing the agency's most serious safety hazards
- WMATA did not learn from prior events
  - A loss of shunt detection procedure – one that could have detected the track circuit problem – was never institutionalized
- Widespread procedural non-compliance

# NTSB finding

"The low priority that WMATA Metrorail managers placed on addressing malfunctions in the train control system before the accident likely influenced the inadequate response to such malfunctions by automatic train control technicians, operations control center controllers, and train operators."

# Board of Directors

- Viewed themselves solely as a “policy board”
- Relied on the General Manager to bring safety-related information to them
- Used the wrong metrics to gauge rail safety
  - Rail passenger injuries, escalator injuries, derailments, smoke and fire event, crime
- Did not insist in following-up on prior audit findings, despite a requirement to do so
- Placed much of the blame for causing and much of the responsibility for preventing accidents on frontline personnel

# Conflicting goals

- Customer Services, Operations, and Safety Committee

# NTSB finding

"The WMATA Board of Directors did not exercise oversight responsibility for the system safety of the WMATA system."

# NTSB finding

"Before the accident, the WMATA Board of Directors did not seek adequate information about, nor did it demonstrate adequate oversight to address, the number of open corrective action plans from previous Tri-State Oversight Committee and Federal Transit Administration safety audits of WMATA."

# Where was safety?

## WMATA mission statement:

- "Metro provides the nation's best transit service to our customers and improves the quality of life in the Washington metropolitan area."

## WMATA Board of Directors Procedures

- "…determines agency policy and provides oversight for the funding, operation and expansion of transit service …"

# Positively influencing safety

# Creating a 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

# Do you have a good safety culture?

# Do you have a good safety culture?

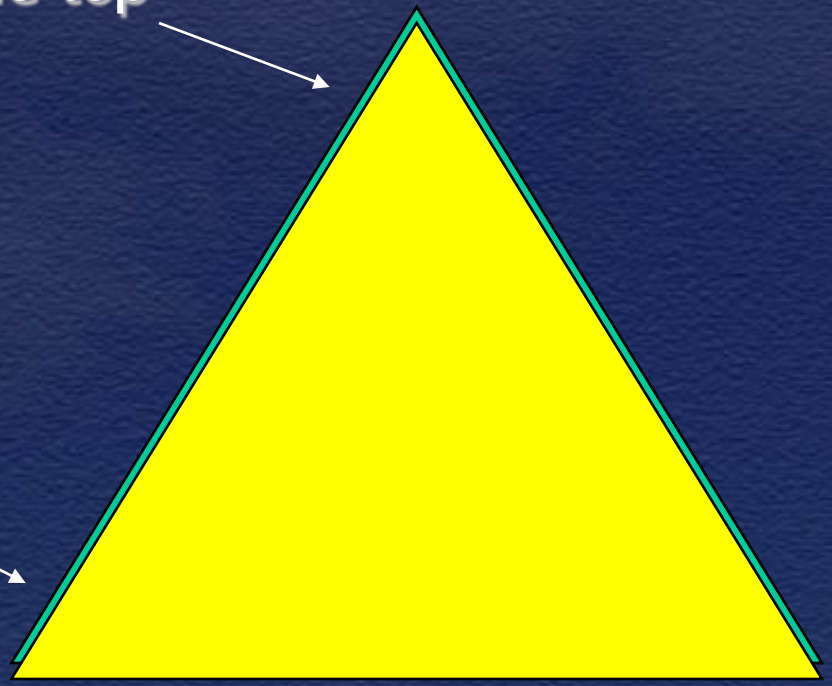
- "… it is worth pointing out that if you are convinced that your organization has a good safety culture, you are almost certainly mistaken."
- " … a safety culture is something that is striven for but rarely attained…"
- "…the process is more important than the product."

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

# 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. Personal Accountability and Empowerment
3. Culture of Compliance
4. Continuous Learning and Risk Awareness
5. Just Culture
6. Questioning Attitude

# 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)

# 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

# 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)

# 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

# A Culture of Compliance

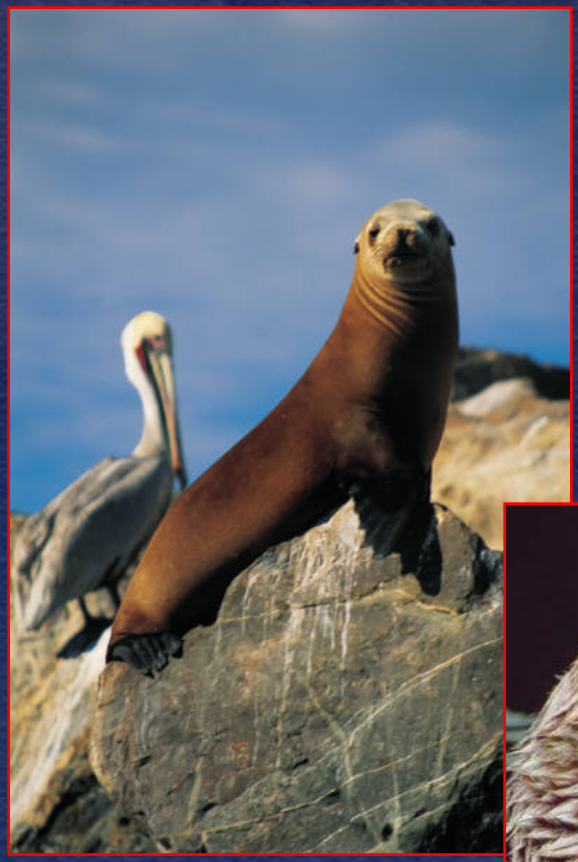
- Internal company policies, procedures, rules
- Ethical principles
- Company code of conduct
- Federal, state, and local laws and ordinances
- Industry best practices
- Financial guidelines and principles
- Et cetera

A commitment to doing things right.
Always.

# Establishing a Culture of Compliance

- Procedures must not be developed in a vacuum - 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 seals, sea otters, and walruses.
- Avoid “Normalization of deviance.”
- Avoid selective compliance.

# Avoid seals, sea otters, and walruses



# Avoid seals, sea otters, and walruses

Deepwater Horizon

NTSB

# 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**

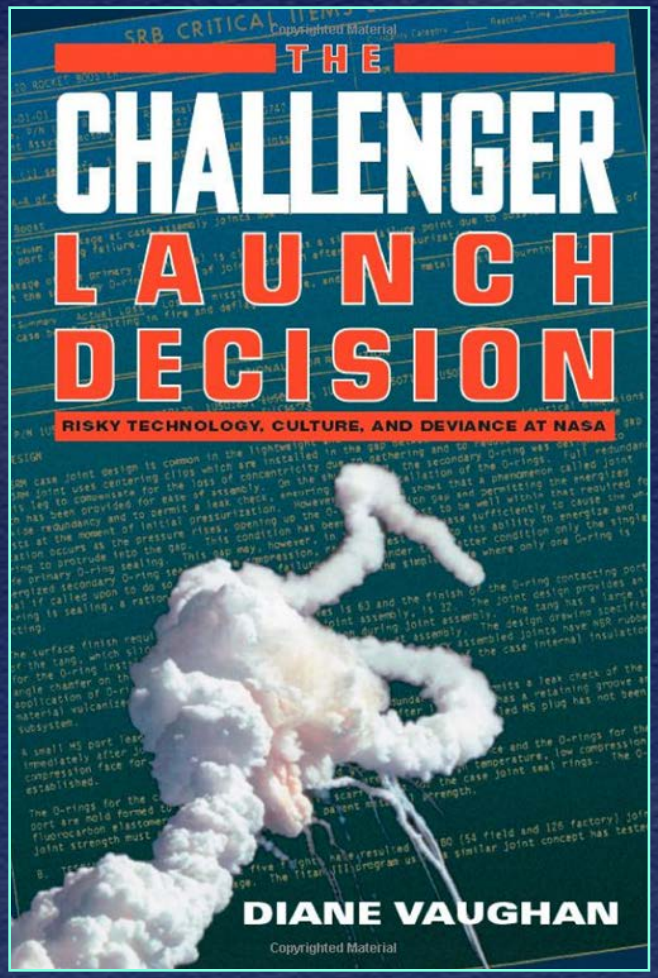
# Avoid seals, sea otters, and walruses

In other words…

Make sure your procedures reflect the way you intend to operate,

and then operate that way.

# Avoid "Normalization of Deviance"




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



NTSB

# Enbridge Disaster at Marshall, MI

- “Enbridge became increasingly tolerant of the procedural violations designed to minimize the adverse consequences of a rupture.”

- “Enbridge control center staff had developed a culture that accepted not adhering to the procedures.”

- “No system can operate safely when a culture of deviance from procedural adherence has become the norm, as the evidence suggests occurred in the Enbridge control center.”

  – NTSB report of Enbridge pipeline accident, Marshall, MI

# Avoid Selective Compliance


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

NTSB

# 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

# Why Continuous Learning?

- "WMATA failed to recognize that the near-collisions at Rosslyn in 2005 represented an unacceptable hazard …and failed to communicate that hazard to the affected divisions in the organization for resolution."

  - NTSB report of WMATA accident

# Why Risk Awareness?

- "A thorough work risk assessment of dispatching operations may have identified several deficiencies that, if corrected, would have ensured safety-critical tasks were addressed appropriately."
  - From NTSB report of CN derailment


NTSB

# 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.

# Measure the right things

- Are you measuring the right things?
- Are they the most appropriate predictors of catastrophic events?

NTSB

# How do you stay informed?

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

# 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?

# Employees


NTSB

# 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

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.

We will not use this reporting system to initiate disciplinary proceedings against an employee who discloses in good faith a hazard or occurrence involving safety that is the result of conduct which is inadvertent, unintentional or not deliberate.

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

# 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

# "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.

# 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

# 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

# Do you have a good safety culture?

# 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

# What is Leadership?

"Leadership is about influence. Nothing more. Nothing less."

- John Maxwell


# NTSB