

## Company Culture

- Company Culture
  - Normalization of Deviance
  - Proper *Engineering* Decision vs. Proper *Management* Decision
  - Groupthink
  - Problem of Many Hands
  - Case Study: Challenger *STS-51-L* (Jan 28, 1986)
  - Whistleblowing

## Normalization of Deviance

- Tendency to come to consider behavior that carries from either design or good engineering practice as acceptable.
- “Nothing bad has happened *yet*”

## Proper *Engineering* Decision vs. Proper *Management* Decision

- PEDs should be made by an **engineer** according to **engineering/ethical standards**.
  - Protecting the public/property
- PMDs should be made by **managers** because it involves factors affecting the **health of the organization** and does not encourage engineers to compromise their technical/ethical standards.
- doesn’t necessarily mean the decision turned out to be *correct*...

## Groupthink

- situations in which groups come to agreement at the expense of critical thinking
- Ideas
  - Illusion of invulnerability to failure
  - Us-vs-them attitude
  - Pressure to silence dissenters
  - Exclusion of external contrary views

## Problem of Many Hands

- When many people are jointly responsible for an outcome, it becomes impossible to *assign responsibility* to each individual. (backward)
- It becomes difficult to step up and *take responsibility* in a large group. (forward)

### Case Study: Challenger *STS-51-L* (Jan 28, 1986)

- Focus on reducing price to get to space
- Rushed schedule - first teacher, Kennedy's challenge, beat Russia
- Warnings:
  - Field joints were aligned with O-rings
    - \* eroded, gases partially burned through O-rings
  - Thikol engineer Roger Boisjoly sends letter regarding O-rings (doesn't mention temperature)
  - NASA meets, but still designs to continue flying the design
  - Very cold day in Cape Canaveral (freezing + rain)
- Explosion:
  - Solid Rocket Booster (SRB) continues to burnout
  - Visible leakage from SRB
  - Joint rotation
  - Pre-flight leak
- Analysis:
  - Normalization of Deviance
    - \* *flown before, leakage is normal*
  - PMD & PED
    - \* Boisjoly told to act as a manager
    - \* PMD - Morton Thickol decision to fly

### Whistleblowing

- going outside normal channels, outside the chain of command, usually to address a dangerous or potentially harmful situation
  - **internal**: going above a boss to someone *within* the organization
  - **external**: going to someone *outside* the organization