

Title Page

Mike

Introductions

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Mike

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 - How behavior and decisions can change when humans are put under pressure
- Poisoned Judgement
 - We'll discuss the story of the H.M.S Thetis
 - How our environment and equipment changes our behavior and decisions.
- Fear and Fury
 - We'll discuss the story of the Titanic
 - How mood can affect judgements
 - When its times for others to step in and take over
- Over the Edge
 - We'll discuss when the human body and mind is pushed to the brink.
- Systems with similar problems
 - We'll discuss similar stories such at the Exxon Valdez and Bohpal gas tragedy
- Finally we'll wrap up the presentation with some discussion topics and we'll take any questions.

Overview

Brett

Short on Sleep

Curtis

- Sleep deprivation can affect our productivity, as well as have some mental effects (hallucination)
- Companies are more considerate to cost rather than the well-being of the workers
 - cheaper to pay overtime than hire second shift
- Companies are often bending rules to get workers to work longer hours
- Effects of sleep deprivation aren't as apparent if the person is highly motivated to complete the task. Once the motivation is lost, sleep is hard to avoid
- Rotating shifts...
- Communication also halts, except for common back & forth speech

The Can-Do Man

Brett

British airliner story (Details)

- June 1990
- Maintenance manager
- worked graveyard shift
- work done at night to avoid aircraft downtime
- twin engined passenger jet
- front windshield needed replaced

- his crew was busy, so he took on the task of replacing the 60 pound windshield
- began at 3am
- had replaced windshields before but still read through the manual quickly
- 90 bolts
- wanted to replace all of the bolts
- 7D
- went to storeroom and man told him he needed type 8D bolts anyway, not enough bolts
- proper bolt: 8D
- parts depot 2 miles away
- got 84 8C bolts. was dark, sized up by eye
- one-fortieth of an inch narrower than the 7Ds
- only 6 bolts correct.
- 17,000 feet bolts came loose
- wind broke flight deck off
- captain pulled out of chair and into the window opening
- temp 0 degrees and windspeeds of 396 mph
- flight attendants help him in the plane until landing
- arrived at hospital with frostbite, broken elbow, wrist and thumb

Discussion

- example of pushing the human body to the limit, human endurance and strength
- Payne Stewart crash

Poisoned Judgement

Mike

Details

- Carbon dioxide poisoning doesn't have as rapid as an onset as oxygen starvation but it's effects are just as detrimental
- H.M.S Thetis was a coastal patrol submarine of the Royal Navy that was launched and sunk in the same year 1939
- Full 53 man crew plus 50 from the shipyard and catering crew
- As testing began, the additional crew did not want to leave and Lt. Commander Guy Bolus allowed them to stay
- Extra crew halved the submarines 48 hour oxygen supply.
- After repeated attempts to dive failed, Bolus sent to check if the forward torpedo tubes were flooded
- Testing equip was choked with paint so tubes were checked manually. Test chamber 5 began to flood the vessel.
- As the sub began to flood, the bulk head doors failed to seal off the compartments because of cheap substitutes.
- With two compartments flooded the sub sank and hit the ocean floor.
- As attempts to repair the sub went on, the carbon dioxide level increased
- With increased carbon dioxide, the crew was not able to think clearly.
- New attempts to recover the sub were met with more mistakes.
- The final mistake came when an escape hatch was opened too soon sending salt water into the engine room which started a fire.

Discussion

- The error lies with the designers
 - Equipment required superhuman abilities to operate

- Fredrick Taylor: Work needs to fit people rather than the other way around.

Fear and Fury

Brett

Details

- People get angry at inanimate objects,
- sometimes it is better to put someone else "at the wheel"
- author driving a truck with mining equipment up forested mountainside
- gave control to brother instead of getting angry
- Titanic
 - angry radiotelegraph operator
 - business and social messages (a lot)
 - radio stopped working for a few hours, got behind
 - iceberg warnings took low priority
 - Californian stopped and warned titanic, the operator told them to "shut up" and that he was busy
 - so the Californian shut its radio off and went to bed
- "Young Men and Fire" - Norman MacLean
 - August 5, 1949
 - 16 US forest service smoke jumpers
 - Western Montana called Mann Gulch
 - fire wasn't considered serious - contained 100 acres
 - 30 foot high flames jumped across to their side of the gulch
 - 2 ideas about survival: light fires near them to burn the area and turn it into ash before the main fire got to them, run
 - men panicked and ran
 - all runners died except for 2
 - man who lit small fire lived (13 total died)

Over the Edge

Curtis

- Hypervigilance
 - Hands shake, hyperventilation, heart rates soar
 - errors are very likely under these circumstances
- Our perception changes, only to take in the most vital things
- One problem of simulation - can't simulate the effects on the human mind
- Fight or Flight - that moment when we decide to face the problem or run like crazy
- How can manager's assess an applicant's red-line
- Jim Lovell, phosphorescent trail of his carrier in the sea of japan

Systems with Similar Problems

Mike

-The Bhopal Disaster

- Discuss the general overview
- Problems
 - Attempts to reduce expenses affected the factory's employees and their conditions.
 - A pipe leaked? Don't replace it, employees said they were told ...
 - Workers needed more training? They could do with less.
 - Promotions were halted, seriously affecting employee morale and driving some of the

- most skilled ... elsewhere".[24]
 - Workers were forced to use English manuals, even though only a few had a grasp of the language.[15][25]
- Outcomes
 - The official immediate death toll was 2,259 and a confirmed a total of 3,787 deaths.
 - Others estimate that 8,000 died within the first weeks and that another 8,000 have since died from gas-related diseases.
 - In 2006: 558,125 injuries including 38,478 temporary partial and approximately 3,900 severely and permanently disabling injuries.
 - Bhopal was the worlds worst industrial catastrophe.

-Exxon Valdez

- Do not overview, most people are aware of this disaster.
- Problems
 - Exxon Shipping Company failed to repair the Raycas radar system, which would have indicated to the third mate an impending collision with theBligh reef.[13]
 - The third mate failed to properly maneuver the vessel, possibly due to fatigue or excessive workload.[14]
 - Exxon Shipping Company failed to supervise the master and provide a rested and sufficient crew for *Exxon Valdez*. [14]
- Outcomes
 - Thousands of animals died immediately
 - 100,000 to as many as 250,000 seabirds. At least 2,800 sea otters. Approximately 12 river otters, 300 harbor seals. 247 bald eagles, 22 orcas as well as the destruction of billions of salmon and herring eggs.
 - 2007: More than 26 thousand gallons of oil remain in the sandy soil of the shoreline, declining at a rate of less than 4% per year.

Discussion and Questions