Accidents, Incidents and the Human Factor

John Thorogood
Gretley Mine Disaster, Australia 1996


- Failed to check data
  - assumptions
- Failed to heed warning signs
  - Normalisation of deviance
  - Overlooked evidence
- Trigger Action Response Plans
  - Clear rules and actions
- Mindfulness
  - Chronic unease
Black Hawk Shoot Down – Iraq 1994


• “Normal”: was an inherent property of the system
  – Unreported precursor incident

• F15s: saw what they wanted to see
  – Sense making

• AWACS: failed to intervene
  – “Min comm”, only new information

• Lack of organisational integration
  – Coordination failures: Radios, IFF codes, flight scheduling

• General conditions:
  – Cannot learn from trial & error
  – Time allows practical drift to occur
  – Likelihood of convergence
South Canyon Fire, Colorado 1994
Margaret Crichton, personal communication, February 2011

• 14 fire fighters killed
• 10 critical decisions of which 5 were “sub-optimal”
• Lack of leadership training or preparation
• Poor situation awareness, teamwork and communication
• Ambiguous authority and accountability
• Leadership training programme implemented
Texas City – 2005
Andrew Hopkins, “Failure to Learn”, CCH, 2009

- Casual compliance
  - Procedures known to be inadequate
- Risk Blindness
  - Focus on personal safety
  - Institutional inability to learn
- On-site Risk Assessment
  - Bias to desired outcome
- Cost cutting
  - Discretion versus Compliance
- Organisational Culture
  - Talking versus doing
Oil Industry 2009 - 2010

- Three incidents within 8 months
- Surprises: all in cased hole
- Failure to react to ambiguous or weak signals
- Multiple causes?
- Distractions?
- External pressure?
- Unique to BP?
Vulnerable System Syndrome


- **Blame**
  - Enemy of understanding
  - Destroys trust vital to reporting

- **Denial**
  - It couldn’t happen here
  - We have an excellent safety culture

- **Wrong Focus**
  - Single minded, blinkered focus
  - Cost, on-time running
Characteristics of Risk Denial


- Can’t happen here
- Normalising the evidence
- Confirmation bias, expect to see what you see.
- Ad-hoc criteria
- Downgrading of intermittent warnings
- Onus of proof
- Group-think
Risks in Wellbore Placement

- Ignoring inconsistent data
- Casual compliance with procedures
- Lack of detailed planning
- Failing to follow the plan
  - Being pushed off plan
  - Distracted from SOPs
- Vague roles and responsibilities
- Haphazard MoC
Attributes of a Future Wells Team

- CRM training and immersive exercising
- Competency assessment
- Process safety performance metrics
- Defined command structure
- Detailed planning
- Discipline to follow the plan
- Rigorous MoC Procedure
- Mindfulness: chronic unease
Conclusions

• Disasters will repeat as underlying causes not being tackled
• Complex socio-technical systems require focus on the human contribution
• Short term focus:
  – Acknowledge the problem
  – Structure, process, practice, discipline
• Longer term:
  – No quick fixes, research the human aspects, understand our problems in our domain

“Hubris leads to Nemesis”
Further Reading

• James Reason, “Managing the Risks of Organisational Accidents”, Ashgate, 1997
• Scott Snook, “Friendly Fire”, Princeton, 2000
• Diane Vaughan, “Challenger Launch Decision”, Chicago, 1996
• Andrew Hopkins, “Safety Culture and Risk”, CCH, 2005
• Andrew Hopkins, “Lessons from Gretley”, CCH, 2007
• Andrew Hopkins, “Failure to Learn”, CCH, 2009
• Thorogood, Crichton and Henderson, “Command Skills for Drilling and Completion Teams”, SPE 89901