Deep Water Horizon Case Study and Industry Comparison

As a leader, how deep are you willing to drill down to find the right RISK Threshold.....?
April 20, 2010

What happened from a survivor’s perspective
The Eleven Souls who shall never be forgotten
The worst environmental disaster in U.S. History
Human And Organizational Failures of the Deep Water Horizon Event
Simplified “Swiss Cheese” Model for Deep Water Horizon

1. Well Integrity Was Not Established or Failed
2. Hydrocarbons Entered the Well Undetected and Well Control Was Lost
3. Hydrocarbons Ignited on Deepwater Horizon
4. Blowout Preventer Did Not Seal the Well

FIRE AND SPILL

Reservoir Hydrocarbons

Annulus Cement

Mechanical Barriers

Pressure Integrity Testing

Well Monitoring

Well Control Response

Hydrocarbon Surface Containment

Fire and Gas System

Explosion and Fire

BOP Emergency Operation
World Industry Operating Experience from the past:

Three Mile Island 1979

Piper Alpha 1988

Texas City 2005

NASA Challenger 1986

Southwest Blackout 2011

Bhopal India 1984
Lessons Learned from BP Texas City Fire and the Deep Water Horizon Fire

“Both of these disasters have shown us the clear differences between WORKER SAFETY and SYSTEM SAFETY,

One does not assure the other…….”
Organizational Balance

WORKER SAFETY

SYSTEM SAFETY
The Human Performance PDC Model

**Prevention**
- Organizational Culture
- Training and Use of HP Tools
- Clear Definition of Behaviors
- Communication

**Detection**
- Observations
- Event Entry – Self Reporting
- Trends and Common Cause Assessments

**Correction**
- Incident Investigation
- Corrective Action Program
- Effectiveness Reviews
Anatomy of an Event

Vision, Beliefs, & Values

Initiating Action

Vision, Beliefs, & Values

Mission Goals Policies Processes Programs

Latent Organizational Weaknesses

Error Precursors

Event

Flawed Defenses

Flawed Defenses
How we become **OVER CONFIDENT**

- Amount of Risk
- Perceived Risk
- Real Risk Level
- Time

**DRIFT**

Instant Feedback & Constant Reinforcement from Coaching
Administrative Procedure Non-Compliance Model

\[ \text{APNC} = \frac{\text{Burden (Mental/Physical)}}{\text{Risk} + \text{Coaching Culture}} \]

- **Severity of Punishment**
  - Hi

- **Probability of being Observed**
  - 0%
  - 30%
  - 100%

- **Instant Feedback & Constant Reinforcement**
Operational Excellence =

Results + Operational Discipline
Operational Excellence

Target No.1

Target No.2
Summary

Duke Energy Leadership’s Closing Thoughts

[Image of a balance scale with "RISK" in the center, weighing "WORKER SAFETY" on the left and "SYSTEM SAFETY" on the right.]

P D C
As a leader, how deep are you willing to drill down to find the right RISK Threshold.....?
Breakout Session Guidance

- Divide Group into equal breakout numbers
- Group elects Team Facilitator
- Team Facilitator selects group spokes person
- Spokesperson reports out on 4 key Questions from Case Study
* Are we effectively striking the balance between the emphasis on worker safety behaviors and System Safety Processes?

* Are we so focused on personal safety that there is erosion in safety system discipline?

* Do we see signs of complacency /drift in our safety systems?

* As a leader, what is my risk threshold, and what is the risk threshold for my work group?

* How much drift is occurring day to day, what are some examples you’ve seen, and how do we address the drift effectively?