

Transportation Safety Board of Canada Bureau de la sécurité des transports du Canada

Presentation to CEPA Incident Forum 2017

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Outline

- Safety and integrity management
- Safety culture
- Accident investigation evolution
- Measuring progress



About the Transportation Safety Board of Canada

Mandate: To advance transportation safety in the marine, pipeline, rail, and air modes by:

- conducting independent investigations
- identifying safety deficiencies
- identifying causes and contributing factors
- making recommendations to eliminate/reduce safety deficiencies
- It is not the function of the Board to assign fault or determine civil or criminal liability
- TSB is not a regulator
- TSB is independent from other government departments and agencies



A bit of history

1974 Flixborough Explosion at petrochemical facility

• First requirement for a "safety case"

1976 Seveso

1988 Piper Alpha

Release of 6 tons of chemicals, including 1 kg dioxin

• European safety regulations

Explosion/fire on North Sea oil & gas rig

- Enquiry by Lord Cullen
- Recommended: formal assessments of major hazards to be identified and mitigated (i.e., a "safety case")
- To be updated regularly and on the occurrence of change of circumstances



NEB requirements for safety management

 Meant as a "framework" to address vulnerabilities before a failure

• Processes are used to help manage risk, but processes alone are not sufficient



Three approaches to safety management

The Person Model

What it is

- Traditional Occupational Safety Approach
- Unsafe Acts
- Accidents/Injuries
- "Iceberg" or "pyramid"

Outcomes

- "Blame and retrain"
- Write another procedure
- Traditional discipline





The technical/engineering model

Process safety

What it is

Reliability engineering

Ergonomic and cognitive engineering

Assessing and managing risk

Human reliability

Hazard analysis Risk assessments Technical safety audits Human reliability assessments Cognitive task analysis Ergonomic guidelines

Outcomes



The organization model

What it is



Errors are symptoms of latent conditions in the system

Latent conditions are the result of:

- Management decisions
- Design
- Changes introduced after earlier accidents

Having pro-active (or leading) indicators of the health of the system

Success defined by

Safety decision making embedded throughout the organization

Organization performance: find opportunity for actions to prevent accidents ("find trouble before trouble finds you")



Safety, leadership, and culture



Source: Leading with Safety. Tom Krause, Behavioral Sciences Technologies



Accident investigation: an evolution

- The way we think about accident causation has evolved:
 o from: "what broke?"
 - o to: "why did someone make that decision?"
- If we focus too much on "rule-breaking," we miss out on the **operational context.**



TSB findings: Causes and contributing factors for 47 pipeline accidents (1990-2014)





What is safety culture?







Is safety a "top priority" or a "value" in your organization?



Assessing the outcomes

- Do what you say you will do
- Just culture
- Reporting culture
- Learning culture



SMS: The regulatory conundrum

- Success of SMS enabling processes required by regulation depends upon the sustaining systems
- Evaluation of sustaining systems is subjective and beyond the ambit of the safety regulator
- Safety culture assessments provide some of the "why"
- BUT leaders' beliefs and behaviours create the culture.
- SMS regulations do not create safety culture.
- How does the regulator change leaders' beliefs and behaviours?



Words to consider ...

"No amount of regulations for safety management can make up for deficiencies in the way in which safety is actually managed. The quality of safety management ... depends critically, in my view, on effective safety leadership at all levels and the commitment of the whole workplace to give priority to safety."

> Lord Cullen 2013 Conference, 25th Anniversary Piper Alpha



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QUESTIONS?



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