Strengthening Offshore Oil and Gas Industry Safety Culture

Marine Board
Board on Human-Systems Integration

October 18, 2016
Peter Velez
Offshore Energy Safety Institute
NASA, Houston, TX

Committee

Nancy T. Tippins, *Chair*, CEB-SHL Talent Measurement Solutions
Deborah A. Boehm-Davis, George Mason University
John S. Carroll, Massachusetts Institute of Technology
Elmer P. Danenberger, III, Minerals Management Service (retired)
David A. Hofmann, The University of North Carolina at Chapel Hill
William C. Hoyle, U.S. Chemical Safety and Hazard Investigation (retired)
Robert Krzywicki, DuPont (retired)
Todd R. LaPorte, University of California, Berkeley
Karlene H. Roberts, University of California, Berkeley
Peter K. Velez, Peter Velez Engineering, LLC
Timothy Vogus, Vanderbilt University
James A. Watson, IV, American Bureau of Shipping
Warner Williams, Chevron Corporation (retired)
***James Card**, U.S. Coast Guard (retired)

*Marine Board Liaison

The National Academies of
SCIENCES · ENGINEERING · MEDICINE

TRB
TRANSPORTATION RESEARCH BOARD

Study Goal and Tasks

Goal: Aid industry, government, and other stakeholder efforts to strengthen offshore industry safety culture.

Tasks:

- Identify
  - essential characteristics of a strong safety culture;
  - barriers to achieving a strong safety culture in the offshore industry;
  - strategies to measure and assess safety culture effectively; and
  - the role of the regulators in achieving a proper safety culture.
- Recommend
  - options for industry, regulators, and policy makers to strengthen offshore safety culture;
  - research to close knowledge gaps.

Outline of Report

Safety Culture Definition

BSEE definition

- "The core values and behaviors of all members of an organization that reflect a commitment to conduct business in a manner that protects people and the environment."

- shares elements (next slide) common to most other definitions; and

- elements are grounded in empirical research.

Industry and regulators should adopt this definition and its essential elements.

Essential Elements – "BSEE 9"

- Leadership commitment to safety values and actions;
- Respectful work environment;
- Environment for raising concerns;
- Effective safety and environmental communication;
- Personal accountability;
- Inquiring attitude;
- Hazard identification and risk management;
- Work processes; and
- Continuous improvement.

Include in RP 75

Safety Culture Barriers

- Safety culture is an ambiguous concept that is difficult to measure

- Fragmented and diverse industry

- Varied leadership commitment across organizations

- Gradual, uneven shift in industry culture from risk-taking to commitment to occupational and process safety

- Regulators have difficulty building expertise to support industry transformation.

Recommendations to Industry

- Adopt the BSEE definition of safety culture and its essential elements.

- Encourage collective and collaborative actions to effect change across industry.

- Define, in collaboration with regulators, the optimal mix of regulation and voluntary activities to strengthen safety culture across entire industry.

- Create guidance on safety culture expectations and responsibilities for operators, contractors, and subcontractors.

- Amend Recommended Practice 75 to add a safety culture chapter.

Recommendations to Industry (cont.)

- Offshore industry should have an independent safety organization modeled after the Institute of Nuclear Power Operation (INPO).

  – Make Center for Offshore Safety fully independent of API or create new, fully independent organization committed solely to safety.

  – Participation in the independent safety organization should be a key element of the fitness to operate for operators, contractors, and subcontractors working in the offshore industry.

Recommendations to Company Leadership

- Commit to and be personally engaged in the long and challenging safety culture journey.

- Assess safety culture regularly as part of SEMS using multiple assessment methods and indicators.

- Build internal company competence in safety culture by using internal resources, external assistance, or both.

- Take advantage of resources available from other companies, industry associations, and regulators.

Recommendations to Regulators

- Rely on risk principles in determining inspection frequency and methods:
  - shift from compliance-based to risk-based principles of SEMS, and
  - rely on audit results for inspection programs and schedules.
- Define data reporting requirements (what data, what agency, what schedule).
- Determine critical accident precursors.
- Improve transparency of incident, accident, and inspection data (subject to confidentiality requirements).

Recommendations to Regulators (cont.)

- Secretary of Interior and USCG Commandant should seek prominent industry leaders to
  - champion safety culture improvement,
  - develop guidance and share it among companies,
  - facilitate information exchange.
- Develop BSEE, USCG, and PHMSA Memorandum of Understanding regarding:
  - safety culture concepts,
  - complementary implementation plans,
  - accountabilities.
- Develop competence in safety culture assessment to offer advice, training, tools, and guidelines to industry.
- BSEE should become clearinghouse of information.

Key Research Questions

- What core competence do companies require to enhance safety culture?

- What assessment methods are appropriate for companies of different sizes and types?

- How does an organization sustain progress and avoid complacency?

- What is the best way to develop industry-level data on near misses, incidents and safety culture measures?

Research Questions (cont.)

- What is the best method to share lessons learned across diverse, fragmented industry?

- What is the best way to encourage decision makers across industry to enhance safety culture?

- What are the most effective and efficient strategies to enhance safety culture?

- What safety culture elements have the most impact on safety outcomes?

Report Availability and Path Forward

- Full report printed book available soon and already online http://www.nap.edu/download/23524

- Short Derivative report available in booklet and online

- July 27th - OOC SEMS Forum

- August 9th – RP 75 Rewrite Committee

- September 20th – 21st - Leader meeting at COS Safety Forum

- October 4th - 2016 IADC Human Factors Conference

- October 12th - NAS Houston Workshop for Leadership

- October 18th – OESI Meeting

- November 1st -2nd – USCG NOSAC Committee

- May 2017 – Planned Topical Lunch at OTC

QUESTIONS?