Best Practices in H&S for Marine Operations and Testing

Water Power Technologies Office

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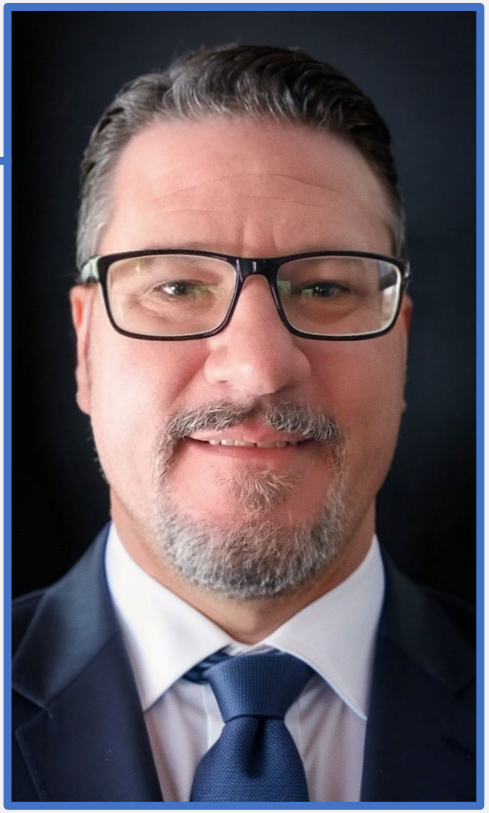
Mark Marien DSc, MBA, PMP



H&S Marine Operations and Testing – WPTO

- 4 years in OSW with Avangrid (Vineyard Wind 1, PCW, NEW, KTH)
- Director QHSE (Management Systems)
- Doctorate in Integrated Health Sciences
- BS Human Biology
- MBA in Project Management
- US Merchant Marine Academy
  - BS Marine Transportation and Technology
  - Licensed USCG Unlimited Tonnage Mate
  - USNR LCDR

In the pursuit of sustainable energy solutions

- Developers and contractors play integral roles in advancing marine renewable energy initiatives.
- Within this evolving landscape, prioritizing the safety and well-being of personnel alongside the preservation of the marine environment stands as a cornerstone for the WPTO program.
- Marine operation Best Practice Guidelines (BPGs) are being designed to delineate crucial best practices, risk mitigation approaches, and regulatory frameworks essential for developers, contractors, and associated stakeholders.
- The BPGs aim to underscore the significance of stringent health and safety protocols throughout the design, fabrication, deployment and testing phases of marine renewable energy operations, fostering a collective commitment to safety and environmental stewardship.

Best Practice Guidance in Marine Operations and Testing

- Intended to cover deployment phases of DOE Open Water FOAs released by the WPTO. The BPG's is complimentary and does not supersede H&S standard operating procedures (SOP's) or any H&S requirements at offshore test sites such as PacWave or WETS.
- High level best practice guidance is designed to support technology developers in development of more specific management systems.
- Applies to all phases of operations from IO&M to decommissioning, for Developers' understanding of management systems related to their technologies.
- Recommended for Developers to ensure subrecipients, contractors, and vendors will also utilize the BPG's.

Best Practice Guidance in Marine Operations and Testing

QHSE Minimum Recommendations for Marine Energy Operations and Testing

- In support of developing management systems.
- Guidance on qualification of sub recipients, contractors and vendors.
- Highlights the necessity of integration between management systems.

H&S Essential Controls for Marine Energy Operations and Testing

- Defines hierarchy of controls.
- Identifies highest risk operations.
- Provide best practices on methods of mitigation.

Basic Safety Training for Marine Energy Operations and Testing

- Defines qualified versus competent.
- Identifies need for training based on proximity to risk and duration of exposure to that risk.
- Outlines and describes most common training needed.

QHSE Minimum Recommendations

- Recommendations for consideration by Awardees and Developers to implement as practicable. It is recognized that maturity of ME and resource limitations prevent making requirement.
- Intended to provide the most current quality, health and safety, and environmental industry best practices.
- Sets forth the expectations, guidance, and best practices for review, evaluation, development, and implementation of QHSE managements systems and industry best practice procedures in maritime operations.
- Should be utilized as a minimum threshold when developing policies, procedures, and plans for testing and operations.
- Use this BPG as guidance to implement the highest level of controls possible to mitigate high marine operational risks.
- Everyone must exercise their Stop Work Authority without fear of reprisal.
- Best practices may be influenced by regulatory frameworks, as adherence to regulations is often considered a baseline, Awardees may choose to go beyond that to achieve excellence.

QHSE Minimum Recommendations

Best Practices

Best practices refer to a set of guidelines, methods, or techniques that are widely accepted as the minimum standard or most effective in a particular industry, field, or situation.

- **Nature:** These are not mandatory or legally enforced but are considered as recommendations based on experience, research, and proven success.
- **Purpose:** Best practices aim to improve efficiency, effectiveness, and outcomes. They often emerge from successful experiences and are adopted to achieve superior results.

Risk Mitigation Approaches

Risk mitigation approaches involve strategies and actions taken to minimize or control the impact and likelihood of risks in a project, process, or operation.

- **Nature:** These are proactive measures implemented to reduce the negative consequences of identified risks.
- **Purpose:** The primary goal is to enhance the likelihood of project success by identifying, assessing, and addressing potential risks. Risk mitigation approaches focus on minimizing the impact of adverse events.

QHSE Minimum Recommendations

Regulatory Frameworks

Regulatory frameworks are sets of laws, rules, and guidelines established by authorities or governing bodies to standardize and regulate specific activities or industries.

- **Nature:** These are legally binding and enforceable. Non-compliance may result in penalties or other legal consequences.
- **Purpose:** Regulatory frameworks are designed to ensure public safety, protect the environment, or maintain ethical standards within a specific domain. They often provide a baseline for minimum acceptable standards.

QHSE Minimum Recommendations

1. Organizational
2. Quality
3. **Health & Safety**
4. Environmental
5. Emergency Response
6. Marine Warranty

- Org Chart
- Training Matrix
- Subrecipient Evaluation

- Q Policy
- Project Quality Plan
- Project Testing Plan
- IO&M Plan
- Lesson Learned

- H&S Policy
- Project H&S Plan
- H&S Monitoring (Metrics)
- Safe Systems of Work
- Written Procedures
- ***High Risk Activities**

- Env Policy
- Project Env Plan
- Env Risk Register
- Aspects & Impacts
- Written Procedures

- ERP
- OSRP
- HAZMAT

- Marine Warranty
- Marine Assurance
- Inspection Documents

Common High Risk Activities

1. Confined Space
2. Diving Operations
3. Lifting with Cranes
4. Control of Hazardous Energy (LOTO)

Confined Space

Confined space means a space that:

- Is large enough and so configured that an employee can bodily enter and perform assigned work.
- Has limited or restricted means for entry or exit.
- Is not designed for continuous employee occupancy.

Considerations:

- Single person entry?
- Permit required?
- Ventilating, Testing, Monitoring?
- Rescue Training?

Diving Operations

Governed by 29 CFR 1910:

- Qualifications of dive team
- Pre-dive procedures
- Procedures during dive
- Post-dive procedures

Considerations:

- SCUBA?
- Surface-supplied air?
- Mixed gas?
- Substitute ROV?

Lifting with Cranes

Complex regulatory guidance:

- 29 CFR 1910.184: Slings
- 29 CFR 1915.115: Hoisting and Hauling Equipment
- 29 CFR 1917.43: Powered Industrial Trucks (PIT)
- 29 CFR 1917.45: Cranes and Derricks
- 29 CFR 1917.50: Certification of Marine Terminal Material Handling Devices
- 29 CFR 1919.1: Purpose and scope of Certification
- 29 CFR 1926.251: Rigging Equipment for Material Handling
- 29 CFR 1926.753: Hoisting and Rigging

Considerations:

- Hoisting Personnel?
- Lifting from Barges or Vessel?
- Critical lift definition and requirements?
- Rigging and Signaling training?

Control of Hazardous Energy (LOTO)

Hazardous energy includes:

- Electrical
- Mechanical
- Hydraulic
- Pneumatic
- Chemical

Considerations:

- Continual motion when deployed
- Confined spaces
- Onshore Coordination
- Third parties


The End