
United States Department of the Interior
Bureau of Safety and Environmental Enforcement

Contract Number: E12PC00041
BSEE Report Number: TA&R Project 709

November 2012, Final Report, For Public Use
About PMSS

PMSS is a global consulting firm, established in 1994 and working exclusively in renewable energy.

We are the trusted advisor to some of the world’s leading renewable energy businesses and institutions. We provide products, services and insights to private, public and independent sector organizations throughout the capital value chain, drawn from nearly two decades of front-line experience.

Our consultants are passionate about results, and bring together greater support, flexibility, knowledge and empathy to deliver the most impactful results and help ensure business success for our clients.

We work closely with our clients to understand the critical issues they face. We listen, gather and analyze the most relevant information, from which we develop innovative strategies to create real value. Key to our service is the combination of collaborative functional services, with deep industry knowledge and unparalleled practical experience.

We hire exceptional people at the top of their game, and help them develop their full potential. We assemble the right team of experts, to deliver customized solutions and make practical recommendations.

We offer a very different service to generalist consulting firms operating in this field; we work solely within renewable energy which allows us to deliver a specialist focus not found elsewhere and to address problems that no one else can.

United States Department of the Interior Bureau of Safety and Environmental Enforcement

November 2012, Final Report, For Public Use

Document Control

<table>
<thead>
<tr>
<th>Responsible for</th>
<th>Job Title</th>
<th>Name</th>
<th>Date</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content</td>
<td>EHS Consultant</td>
<td>Tanjia Maynard</td>
<td>2012-10-29</td>
<td></td>
</tr>
<tr>
<td>Checked</td>
<td>Director of QHSE</td>
<td>Nick Chivers</td>
<td>2012-10-31</td>
<td></td>
</tr>
<tr>
<td>Approval</td>
<td>Senior Vice President</td>
<td>Sebastian Chivers</td>
<td>2012-10-31</td>
<td></td>
</tr>
</tbody>
</table>

Signatures in this approval box have checked this document in line with the requirements of QP16

This report has been prepared by PMSS America, inc. with all reasonable skill and care, within the terms of the contract with the Client. The report contains information from sources and data which we believe to be reliable but we have not confirmed that reliability and make no representation as to their accuracy or completeness.
Preface

The U.S. Department of the Interior (“DOI”), Bureau of Safety and Environmental Enforcement (“BSEE”) Oil Spill Response Division manages the Technology Assessment and Research (“TA&R”) Program of Safety for Renewable Energy Operations on the U.S. Outer Continental Shelf (“OCS”). The purpose of this program is to promote new technology and safety through collective research with industry, academia, and other government agencies and the dissemination of findings through a variety of public forums such as workshops, conferences, publications and the internet.

PMSS America, Inc. (“PMSS”), a part of the TÜV SÜD Group, is a global consulting firm, established in 1994 and working exclusively in renewable energy. PMSS has been at the forefront of the offshore wind industry for over 15 years, and has provided services to the majority of European projects during development, construction and operations. PMSS has world leading knowledge of offshore wind environmental, health & safety (“EHS”) management.

In July 2012, PMSS was awarded a contract by BSEE (Contract No.: E12PC00041) with the main objective of the work required being:

- Develop an example Safety Management System (“SMS”) using guidance from the template established as part of TA&R project 633;
- Develop an assessment framework and principals that BSEE can use to assess the adequacy for managing safety systems contained in an SMS.

The SMS is based on a hypothetical business entity named “GoWind” that is developing a hypothetical offshore wind farm in federal waters on the U.S. OCS. This report presents the example SMS throughout the project lifecycle (i.e., from lease award through decommissioning) as the body of this document. The auditing framework will be utilized by BSEE internally when evaluating the SMS of a lease holder, and consequently, are provided under a separate cover.

Background Information

The purpose of a SMS is to describe how an entity manages its activities in EHS matters. The document describes the organization and risk control measures required to fulfill the Health and Safety (“H&S”) Policy and a systematic approach to EHS management in conformance with industry best practices for SMS and pertinent regulations.

Safety Management Systems are intended to be high-level documents that outline an entity’s health and safety policy and procedures at the corporate level. For individual projects, a much more detailed, project-specific Health and Safety Plan (“HASP”) is assembled that relates (but is not limited to) to foundation and turbine type, vessel and barge type, etc. The HASP, which is based upon the SMS, details the specific policies, procedures and best practices such as an Emergency Action Plan, auditing protocol, incident investigation procedures, job safety analysis (“JSA”), etc., that will be utilized by the company’s staff and contractors. Consequently, the HASP is a living document that evolves along with the project, continually being updated to reflect the status of EHS situation.

Under 30 CFR 585.810 § 585(627 (d), 614 (b) and 651, entities applying for a lease on the OCS are required to provide an SMS that outlines the safety measures that will be utilized with the Construction Operations Plan (“COP”), and where necessary, Site Assessment Plan (“SAP”) and/or General Activities Plan (“GAP”). According to 30 CFR 585.810 the SMS must describe:

a) How you will ensure the safety of personnel or anyone on or near your facilities;
b) Remote monitoring, control, and shut down capabilities;
c) Emergency response procedures;
d) Fire suppression equipment, if needed;

e) How and when you will test your Safety Management System; and

f) How you will ensure personnel who operate your facilities are properly trained.

A safety management system in itself is about describing the processes and procedures that, when successfully implemented, ensure the safety of personnel or anyone on or near the facilities. It is through the tenets of planning, doing, checking, acting and striving for continuous improvement that safety is ensured. Therefore, all sections of the SMS address a.) “How you will ensure the safety of personnel or anyone on or near your facilities.”

Specific sections of the SMS cover the other requirements of 30 CFR 585.810, for instance b.) “Remote monitoring, control and shut down capabilities” are covered in Section 7 of the SMS.

Section 8 covers c.) “Emergency response procedures” and d.) “fire suppression equipment.”

Auditing protocols address e.) “How and when you will test your Safety Management System,” and is outlined in Section 14. Section 4 covers f.) “How you will ensure personnel who operate your facilities are properly trained,” is covered in Section 4.

<table>
<thead>
<tr>
<th>30 CFR 585.810 Requirements of an SMS</th>
<th>Sections Covering Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) How you will ensure the safety of personnel or anyone on or near your facilities</td>
<td>All Sections</td>
</tr>
<tr>
<td>b) Remote monitoring, control, and shut down capabilities</td>
<td>Section 7</td>
</tr>
<tr>
<td>c) Emergency response procedures</td>
<td>Section 8</td>
</tr>
<tr>
<td>d) Fire suppression equipment, if needed</td>
<td>Section 8</td>
</tr>
<tr>
<td>e) How and when you will test your Safety Management System</td>
<td>Section 14</td>
</tr>
<tr>
<td>f) How you will ensure personnel who operate your facilities are properly trained</td>
<td>Section 4</td>
</tr>
</tbody>
</table>

Jurisdictional Framework for Offshore Wind in the US

For the purposes of developing this example SMS, it was necessary to make certain assumptions regarding the jurisdiction of the various agencies that are potentially involved with EHS for offshore wind in the US. The primary agencies involved are the Bureau of Ocean Energy Management (“BOEM”), the Bureau of Safety and Environmental Enforcement, the Occupational Safety and Health Administration (“OSHA”), the US Army Corps of Engineers (“USACE”), and the US Coast Guard (“USCG”).

Presently, these entities are working to determine the extent of their responsibilities with regards to offshore wind safety; however, no definitive guidance is currently available at the time of this writing. A diagram depicting the assumed jurisdictional boundaries of the various regulatory agencies is depicted in Figure 1.
Example Safety Management System and Audit Criteria
Bureau of Safety and Environmental Enforcement

BOEM
The Energy Policy Act established the Bureau of Ocean Energy Management, Regulation and Enforcement ("BOEMRE"), the precursor to BOEM and BSEE, as the lead authority to regulate offshore wind in federal waters. US federal waters begin at 3 nautical miles ("nm") from the coast for most states, except for Texas and the Gulf of Florida where state waters extend to 9nm. A Memorandum of Agreement between BOEM and the USCG (BOEMRE / USCG MOA OCS-06) gives both authorities over all Offshore Renewable Energy Installations ("OREIs") on the OCS and that jurisdiction begins upon the award of a lease to the developer. However, the SMS falls directly under BOEM’s jurisdiction. While the SMS is not required to be approved by BOEM at this time, it is BOEM’s responsibility (30 CFR 585.102) “to ensure that any activities authorized are carried out in a manner that provides for safety…”

BSEE
As of this writing, BSEE has authority over oil and gas installations not OREIs.

OSHA
OSHA has jurisdiction over safety standards and enforcement for the onshore elements of offshore wind projects, as well as the portions offshore that are within 3nm of the coast. This includes the port facilities, onshore maintenance facilities, and onshore electrical infrastructure. The hypothetical wind farm GoWind is developing is located 17nm offshore, and therefore, OSHA regulations would not apply. However, it is assumed that BOEM will adopt OSHA labor standards from 29 CFR 1910, safety and health regulations for construction from 29 CFR 1926 and have the expectation that portions of 29 CFR 1915, 33 CFR Subchapter N, (and other applicable standards) are utilized as best practices.

USCG
The Ports and Waterways Safety Act provides the USCG with the authority to implement measures to control or supervise vessel traffic, and to protect navigation and the marine environment. The Clean Water Act was amended by the Oil Pollution Act of 1990. This provides the USCG with authority for pollution prevention, contingency planning and response activities within the 200 mile Exclusive Economic Zone for oil and hazardous substances. The USCG also possesses the authority to respond to and investigate spills of hazardous substances and oil in the coastal zone including all US waters subject to the tide, the Great Lakes and
deepwater ports. In the case of offshore wind farms, the USCG is assumed to have jurisdiction over all vessels; this includes construction/installation vessels, crew transport vessels, and maintenance vessels.

**USACE**
From The River and Harbors Act of 1899, The Army Corps of Engineers has jurisdiction over the review and regulation of certain structures and work that are located in or can affect navigable waters. For offshore wind projects, their jurisdiction includes submarine cabling systems utilized by offshore wind facilities for electricity collection and export.

**Development of the SMS**

The example SMS was developed to the International Occupational Health and Safety management system specification, OHSAS 18001. The American Petroleum Institute safety management system guidance document, API RP 75 was used as a reference. The DOI TA&R 633 template was used to cross reference the topics contained in the SMS, as well as a check to ensure the topic areas achieved contextual expectations.

**Consultations & Acknowledgements**

Representatives from BOEM, USCG, and OSHA have participated as stakeholders to review and add comment to this document. Craig Hutchinson of DONG Energy provided comments from the private developer perspective. USACE was unable to participate in this project.
GoWind

Offshore Wind Safety Management System

Last Updated: November 2012

Jane Doe
Environmental, Health & Safety Director
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Abbreviations</strong></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>1.</td>
<td>Introduction</td>
<td>9</td>
</tr>
<tr>
<td>1.1.</td>
<td>Regulatory Framework</td>
<td>10</td>
</tr>
<tr>
<td>2.</td>
<td>Policy &amp; Strategic Objectives</td>
<td>12</td>
</tr>
<tr>
<td>2.1.</td>
<td>Environment, Health and Safety Policy Statement</td>
<td>12</td>
</tr>
<tr>
<td>2.2.</td>
<td>Strategic Objectives</td>
<td>13</td>
</tr>
<tr>
<td>2.3.</td>
<td>Culture</td>
<td>13</td>
</tr>
<tr>
<td>2.4.</td>
<td>Goals, Targets and Key Performance Indicators</td>
<td>13</td>
</tr>
<tr>
<td>2.5.</td>
<td>Drug, Weapons and Alcohol Policy</td>
<td>14</td>
</tr>
<tr>
<td>2.6.</td>
<td>Disciplinary Policy</td>
<td>15</td>
</tr>
<tr>
<td>3.</td>
<td>Organization, Roles and Responsibilities</td>
<td>16</td>
</tr>
<tr>
<td>3.1.</td>
<td>Organization</td>
<td>16</td>
</tr>
<tr>
<td>3.2.</td>
<td>Organization, Roles and Responsibilities</td>
<td>16</td>
</tr>
<tr>
<td>3.3.</td>
<td>GoWind Safety Committee</td>
<td>19</td>
</tr>
<tr>
<td>4.</td>
<td>Competence and Training</td>
<td>20</td>
</tr>
<tr>
<td>4.1.</td>
<td>Competence</td>
<td>20</td>
</tr>
<tr>
<td>4.1.1.</td>
<td>Medical Audits for Fitness for Duty</td>
<td>20</td>
</tr>
<tr>
<td>4.1.2.</td>
<td>Selection of GoWind and Contractor Personnel</td>
<td>20</td>
</tr>
<tr>
<td>4.1.3.</td>
<td>Competence Assessment and Records</td>
<td>21</td>
</tr>
<tr>
<td>4.2.</td>
<td>Training</td>
<td>22</td>
</tr>
<tr>
<td>4.2.1.</td>
<td>Orientation Program</td>
<td>23</td>
</tr>
<tr>
<td>4.2.2.</td>
<td>EHS Minimum Training Requirements</td>
<td>23</td>
</tr>
<tr>
<td>4.2.3.</td>
<td>Specialized and Task Specific Training</td>
<td>24</td>
</tr>
<tr>
<td>5.</td>
<td>Hazard Identification and Risk Management</td>
<td>26</td>
</tr>
<tr>
<td>5.1.</td>
<td>Introduction</td>
<td>26</td>
</tr>
<tr>
<td>5.2.</td>
<td>Risk Management Framework</td>
<td>26</td>
</tr>
<tr>
<td>5.3.</td>
<td>Risk Assessment</td>
<td>26</td>
</tr>
<tr>
<td>5.3.1.</td>
<td>Overview</td>
<td>26</td>
</tr>
<tr>
<td>5.3.2.</td>
<td>Undertaking a Risk Assessment</td>
<td>27</td>
</tr>
<tr>
<td>5.4.</td>
<td>Design Risk Management</td>
<td>27</td>
</tr>
<tr>
<td>6.</td>
<td>Management of Change</td>
<td>29</td>
</tr>
<tr>
<td>7.</td>
<td>Remote Monitoring, Control and Shut Down Capabilities</td>
<td>30</td>
</tr>
<tr>
<td>7.1.</td>
<td>SCADA System</td>
<td>30</td>
</tr>
<tr>
<td>7.2.</td>
<td>Fail Safe Systems</td>
<td>30</td>
</tr>
<tr>
<td>8.</td>
<td>Emergency Preparedness and Response Planning</td>
<td>31</td>
</tr>
<tr>
<td>8.1.</td>
<td>Emergency Response and Search &amp; Rescue</td>
<td>31</td>
</tr>
<tr>
<td>8.2.</td>
<td>Training and Drills</td>
<td>32</td>
</tr>
</tbody>
</table>

© PMSSA 2012
8.3. Fire Suppression
8.4. Crisis Management
8.5. Adverse Weather and Tropical Storms
8.6. Security and Procedures for Inspectors and Visitors
9. Standards and Procedures
9.1. Introduction
9.2. Permit to Work
9.2.1. Permit to Work Process Overview
9.2.2. Work Permits
9.3. Job Safety / Hazard Analysis
9.4. Lockout/Tagout (Equipment Isolation)
9.5. Short Service Employees
9.6. Personal Protective Equipment
9.6.1. General
9.6.2. Personal Protective Equipment Minimum Requirements
9.7. Confined Space Entry
9.8. Diving Safety
9.9. Noise and Vibration
9.10. Manual Handling
9.11. Working at Height
9.12. Fall Protection
9.12.1. Roles and Responsibilities
9.12.2. Fall Hazard Control Measures
9.12.3. Fall Arrest Systems
9.12.4. Fall Arrest Components
9.13.1. Guardrails
9.13.2. Covers/Toe Boards
9.13.3. Warning Line Systems
9.15. Ladders
9.15.1. Fixed Ladder
9.15.2. Portable Ladders
9.16. Personnel Platforms
9.16.1. Crane Suspended Work Platforms or Baskets
9.16.2. Work Practices
9.17. Aerial Lifts
9.18. Access / Egress
9.18.1. Turbine Access Method (Vessel to Turbine)
9.18.2. Vessel to Vessel
9.18.3. Shore to Vessel
9.18.4. Helicopter to Turbine
9.19. Compressed Air
9.20. Hand/Power Tools
9.21. Hot Work
9.22. Electrical Safety
9.22.1. Power Lines
9.22.2. Static Electricity
9.23. Operating Equipment
9.24. Mechanical Lifting Safety
9.24.2. Use of a Crane to Hoist Personnel
9.25. The Use of Cranes of Jack-up Barges for Construction Activity
9.25.1. Jack-up leg punch through failure
9.25.2. Tools and Equipment
9.26. Excavation and Trenching
9.27. Sandblasting and Painting
9.27.1. Sandblasting
9.27.2. Painting
9.28. Forklift / Backhoe Safety
9.29. EHS in the Office

10. Environmental Management System
10.1. Waste Management
10.2. Hazard Communication
10.2.1. Material Safety Data Sheet (MSDS)
10.3. Spill Plans
10.4. Fishing and Recreational Activities

11. Management of Contractors
11.1. Pre-qualification of Contractors
11.2. Contractors EHS Proposal:
11.3. Evaluation of EHS submissions of Bidders or pre-selected Contractors
11.4. Hiring of an EHS Contractor

12. Transportation and Logistics
12.1. Personnel Tracking
12.2. Vehicles
12.3. Vessels
12.3.1. Vessel Inspections
12.4. Life Saving Appliances
12.5. Notices to Mariners

13. Occupational Health / Safety Procedures
13.1. General Housekeeping
13.2. Provision of Potable water and Potable Water Testing
13.3. Hygiene Facilities
13.4. Working Time
## Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALARP</td>
<td>As Low as Reasonably Practicable</td>
</tr>
<tr>
<td>ANSI</td>
<td>American National Standards Institute</td>
</tr>
<tr>
<td>AWEA</td>
<td>American Wind Energy Association</td>
</tr>
<tr>
<td>BOEM</td>
<td>Bureau of Ocean Energy Management</td>
</tr>
<tr>
<td>BOEMRE</td>
<td>Bureau of Ocean Energy Management Regulation and Enforcement</td>
</tr>
<tr>
<td>BOP</td>
<td>Balance of Plant</td>
</tr>
<tr>
<td>BSEE</td>
<td>Bureau of Safety and Environmental Enforcement</td>
</tr>
<tr>
<td>BWEA</td>
<td>British Wind Energy Association</td>
</tr>
<tr>
<td>COSHH</td>
<td>Control of Substances Hazardous to Health</td>
</tr>
<tr>
<td>COC</td>
<td>Conditions of Contract</td>
</tr>
<tr>
<td>COP</td>
<td>Construction Operations Plan</td>
</tr>
<tr>
<td>CPP</td>
<td>Construction Phase Plan</td>
</tr>
<tr>
<td>CWA</td>
<td>Clean Water Act</td>
</tr>
<tr>
<td>DRA</td>
<td>Design Risk Analysis</td>
</tr>
<tr>
<td>DRM</td>
<td>Design Risk Matrix</td>
</tr>
<tr>
<td>EHS</td>
<td>Environmental, Health and Safety</td>
</tr>
<tr>
<td>EMS</td>
<td>Environmental Management System</td>
</tr>
<tr>
<td>EPA</td>
<td>Environmental Protection Agency</td>
</tr>
<tr>
<td>EPC</td>
<td>Engineer, Procure, Construct</td>
</tr>
<tr>
<td>ERP</td>
<td>Emergency Response Plan</td>
</tr>
<tr>
<td>FRC</td>
<td>Fast Recovery Craft</td>
</tr>
<tr>
<td>GAP</td>
<td>General Activities Plan</td>
</tr>
<tr>
<td>HASP</td>
<td>Health and Safety Plan</td>
</tr>
<tr>
<td>HAZID</td>
<td>Hazard Identification and Design Review</td>
</tr>
<tr>
<td>HAZOP</td>
<td>Hazard and Operability Analysis</td>
</tr>
<tr>
<td>H&amp;S</td>
<td>Health and Safety</td>
</tr>
<tr>
<td>HOW</td>
<td>Hypothetical Offshore Wind Farm</td>
</tr>
<tr>
<td>HV</td>
<td>High Voltage</td>
</tr>
<tr>
<td>IEE</td>
<td>Institute of Electrical Engineers</td>
</tr>
<tr>
<td>IRATA</td>
<td>Industrial Rope Access Trade Association</td>
</tr>
<tr>
<td>ISPS</td>
<td>International Shipping Port Security</td>
</tr>
<tr>
<td>JSA / JHA</td>
<td>Job Safety Analysis / Job Hazard Analysis</td>
</tr>
<tr>
<td>KPI</td>
<td>Key Performance Indicator</td>
</tr>
<tr>
<td>LOTO</td>
<td>Lock Out Tag Out</td>
</tr>
<tr>
<td>MOB</td>
<td>Man Over Board</td>
</tr>
<tr>
<td>MOC</td>
<td>Management of Change</td>
</tr>
<tr>
<td>MSDS</td>
<td>Material Safety Data Sheets</td>
</tr>
<tr>
<td>NGA</td>
<td>National Geospatial – Intelligence Agency</td>
</tr>
<tr>
<td>NOK</td>
<td>Next of Kin</td>
</tr>
<tr>
<td>NOS</td>
<td>National Ocean Service</td>
</tr>
<tr>
<td>NPDES</td>
<td>National Pollutant Discharge and Elimination System</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
</tr>
<tr>
<td>NRTL</td>
<td>Nationally Recognized Testing Laboratory</td>
</tr>
<tr>
<td>OPA 90</td>
<td>Oil Pollution Act 1990</td>
</tr>
<tr>
<td>OREI</td>
<td>Offshore Renewable Energy Installment</td>
</tr>
<tr>
<td>OSHA</td>
<td>Occupational Safety and Health Administration</td>
</tr>
<tr>
<td>PC</td>
<td>Principal Contractor</td>
</tr>
<tr>
<td>PCI</td>
<td>Pre-Construction Information</td>
</tr>
<tr>
<td>PFAS</td>
<td>Personal Fall Arrest Systems</td>
</tr>
<tr>
<td>PFD</td>
<td>Personal Flotation Device</td>
</tr>
<tr>
<td>PMSS</td>
<td>PMSS America, Inc.</td>
</tr>
<tr>
<td>POB</td>
<td>Persons On Board</td>
</tr>
<tr>
<td>PPE</td>
<td>Personal Protective Equipment</td>
</tr>
<tr>
<td>PTW</td>
<td>Permit To Work</td>
</tr>
<tr>
<td>QMS</td>
<td>Quality Management Plan</td>
</tr>
<tr>
<td>RAM</td>
<td>Risk Analysis Matrix</td>
</tr>
<tr>
<td>SAP</td>
<td>Site Assessment Plan</td>
</tr>
<tr>
<td>SAR</td>
<td>Search and Rescue</td>
</tr>
<tr>
<td>SCADA</td>
<td>Supervisory Control and Data Acquisition</td>
</tr>
<tr>
<td>SI</td>
<td>Site Investigation</td>
</tr>
<tr>
<td>SMS</td>
<td>Safety Management System</td>
</tr>
<tr>
<td>SPCC</td>
<td>Spill Prevention, Control and Countermeasure</td>
</tr>
<tr>
<td>SOLAS</td>
<td>Safety Of Life At Sea</td>
</tr>
<tr>
<td>SSE</td>
<td>Short Service Employee</td>
</tr>
<tr>
<td>SWA</td>
<td>Safe Welding Area</td>
</tr>
<tr>
<td>TROI</td>
<td>Total Recordable Occupational Illness</td>
</tr>
<tr>
<td>TWIC</td>
<td>Transportation Worker Identification Credential</td>
</tr>
<tr>
<td>USACE</td>
<td>United States Army Corps of Engineers</td>
</tr>
<tr>
<td>USCG</td>
<td>United States Coast Guard</td>
</tr>
<tr>
<td>USDOI</td>
<td>United States Department of Interior</td>
</tr>
<tr>
<td>WTG</td>
<td>Wind Turbine Generator</td>
</tr>
</tbody>
</table>
GoWind Hierarchy of Documents

GoWind Offshore Safety Management System

Policy and Objectives
- Roles and Responsibilities
- Competence and Training
- Hazard Identification and Risk Management
- Management of Change
- Remote Monitoring Control and Shut Down Capabilities
- Emergency Planning
- Standards and Procedures
- Environmental Management
- Management of Contractors
- Transportation and Logistics
- Occupational Health
- Monitoring and Reporting
- Management Review

Project Specific Health and Safety Plan

GoWind Project Specific Safety Procedures
GoWind Contractor Minimum Requirements
GoWind Offshore Turbine Safety Rules
GoWind Emergency Response Plan
GoWind Offshore Training Requirements
GoWind Offshore High Voltage Network Safety Rules
GoWind Design Risk Analysis

© PMSSA 2012
1. **Introduction**

GoWind Corporation ("GoWind") is established to construct, develop and operate offshore wind interests. GoWind accepts its moral and legal duties to ensure the health, safety and welfare of all persons affected by their business activities.

The ultimate responsibility for health, safety and welfare lies with the GoWind Board of Directors, and as a sign of their commitment towards a safe working environment, the GoWind Board have endorsed a Policy and set aside resources that are incorporated into its Safety Management System ("SMS"). The aim of the SMS is to identify and mitigate hazards in relation to activities undertaken by GoWind.

The Board will ensure through active participation and by establishing effective means of two way communication, that the Safety Management System is monitored and reviewed.

The following diagram shows how the Safety Management System foundations, which together with its procedures, are instrumental in showing continuous improvement of standards with regards to Health and Safety. Figure 1 and the tenets of Plan, Do, Check, Act and continual improvement are developed from the International Occupational Health and Safety management system specification, OHSAS 18001 and the American Petroleum Institute safety management system guidance document, API RP 75.

![Figure 1. Health & Safety Management System Foundations](image)

The GoWind Safety Management System is intended to manage business activities in respect to:

- Identification of hazards;
- Risk management and control measures implemented to ensure prevention of personal injury and damage to property;
- Protection of employees, contractors and the public from foreseeable work hazards, in so far as they come into contact with operations and structures.
This system describes:

- H&S Management responsibilities of GoWind staff;
- Documented arrangements for health and safety implementation;
- The approach to management in a systematic way in accordance with regulations.

This system is applicable to the activities performed by GoWind:

- In and relating to all GoWind offices and projects;
- At any other offices as they are added;
- Travelling to or from project sites or offices;
- Other work locations (e.g., on vessels, ports or quay sides, construction sites, etc.).

1.1. Regulatory Framework

Under 30 CFR 585.810 § 585(627 (d), 614 (b) and 651), entities applying for a lease on the OCS are required to provide an SMS to BOEM that outlines the safety measures that will be utilized with Construction Operations Plan (COP), and where necessary, Site Assessment Plan (SAP) and/or General Activities Plan (GAP). According to 30 CFR 585.810 the SMS must describe:

a) How you will ensure the safety of personnel or anyone on or near your facilities;
b) Remote monitoring, control, and shut down capabilities;
c) Emergency response procedures;
d) Fire suppression equipment, if needed;
e) How and when you will test your Safety Management System; and
f) How you will ensure personnel who operate your facilities are properly trained.

A safety management system in itself is about describing the processes and procedures that when successfully implemented ensure the safety of personnel or anyone on or near the facilities. It is through the safety management foundation of planning, doing, checking, acting and striving for continuous improvement that safety is ensured. Therefore, all sections of the SMS address a.) “How you will ensure the safety of personnel or anyone on or near your facilities.”

Specific sections of the SMS cover the other requirements of 30 CFR 585.810 as depicted in Table 1. Requirement b.) “Remote monitoring, control and shut down capabilities” is covered in Section 7 of the SMS.

Section 8 covers c.) “Emergency response procedures and fire suppression equipment.”

Auditing protocols addresses e.) “How and when you will test your Safety Management System” and is outlined in Section 14. Section covers 4 f.) “How you will ensure personnel who operate your facilities are properly trained”.

© PMSSA 2012
### Table 1. 30 CFR 585.810 Requirements

<table>
<thead>
<tr>
<th>30 CFR 585.810 Requirements of an SMS</th>
<th>Sections Covering Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) How you will ensure the safety of personnel or anyone on or near your facilities</td>
<td>All Sections</td>
</tr>
<tr>
<td>b) Remote monitoring, control, and shut down capabilities</td>
<td>Section 7</td>
</tr>
<tr>
<td>c) Emergency response procedures</td>
<td>Section 8</td>
</tr>
<tr>
<td>d) Fire suppression equipment, if needed</td>
<td>Section 8</td>
</tr>
<tr>
<td>e) How and when you will test your Safety Management System</td>
<td>Section 14</td>
</tr>
<tr>
<td>f) How you will ensure personnel who operate your facilities are properly trained</td>
<td>Section 4</td>
</tr>
</tbody>
</table>
2. Policy & Strategic Objectives

2.1. Environment, Health and Safety Policy Statement

GoWind Corporation is committed to a safe workplace, the protection of the environment, and the health and safety of all GoWind employees and contractor. GoWind is also committed to safeguarding the general public from harm where they may be affected by our activities.

Every person who works for GoWind, including employees, contractors and suppliers are responsible for ensuring that environmental, health & safety (“EHS”) is managed throughout all aspects of developing an offshore wind project.

As stated in the introduction, the ultimate responsibility for EHS performance lies with the GoWind Board of Directors, and as a sign of their commitment towards a safe working environment, a culture of “Safety for All, Always” has been endorsed and will be incorporated across all areas of activity. Resources (supplies and funds) have been set aside to realize successful implementation of this policy.

To achieve our objectives, we will:

- Ensure a systematic approach to the management of EHS, and implement a safety management system designed to ensure compliance with regulations as a minimum and to achieve continuous performance improvement;
- Take responsibility and provide clear leadership;
- Set targets for EHS audits, improvement metrics and reporting of performance;
- Require all contractors to manage EHS in line with GoWind’s policy;
- Ensure that EHS compliance is the responsibility of all managers, teams and individuals;
- Require everyone to stop any work, or prevent work from starting, where adequate controls of EHS risks are not found to be in place;
- Include EHS performance in the appraisal of all staff.

GoWind believes that protecting the wellbeing of employees and contractors is a team effort and the responsibility of all – it will take everyone working together to reduce and eliminate EHS incidents.

The GoWind Board will ensure, through its active participation, and also by establishing effective means of two way communication, that this policy remains relevant and is periodically monitored and reviewed for effectiveness.

J. Q. Citizen
Janine Q. Citizen
President – GoWind Corporation
2.2. Strategic Objectives

The GoWind EHS Strategic Objectives are as follows:

- Take responsibility and give clear leadership;
- Pursue the goal of no harm to people – Zero Injuries;
- Protect the environment;
- Comply with all regulatory requirements;
- Use material and energy efficiently;
- Develop energy resources, products and services consistent with these aims;
- Be a leader in promoting best practice in the offshore wind energy industry;
- Manage EHS matters as any other critical business activity;
- Promote a culture in which all GoWind employees, contractors and suppliers share this commitment.

In support of the EHS Policy, GoWind from time to time endorses other strategic EHS objectives, which are interpreted and clarified as necessary prior to adoption.

2.3. Culture

GoWind believes EHS performance depends upon four key elements:

- Clear and visible leadership;
- Clearly defined and understandable rules;
- A SMS to support the implementation of the rules;
- Embed desired behaviors within the workforce to follow the rules and to look after their own safety and the safety of others.

It is this forth element, which makes the difference between mediocre, and world class EHS performance. Therefore, GoWind will endeavor to deliver safety leadership and training across all project sites and embed the fundamental learning points from this training into all work at the site. Measures will include:

- Inclusion of key messages in the site orientation;
- Adoption and use of behavioral auditing processes;
- Regularly refresh and reinforce learning by short safety discussion groups;
- Use the hazard spotting and ‘good ideas’ process to develop staff involvement.

2.4. Goals, Targets and Key Performance Indicators

This SMS is a living document and will be updated to reflect the management of health and safety during the entire lifecycle in all of GoWind’s business activities. Progress in realizing these goals can be measured on Table 2 below.

All GoWind activities are required, at a minimum, to comply with applicable regulations. Higher standards and expectations will be set where good industry practice and experience suggests improvements can be made.

As part of this SMS, GoWind has documented standards and procedures that are in place for all relevant activities to ensure these are performed with due regard to EHS considerations. All
GoWind EHS activities and installations are covered by a risk assessment, and where appropriate, emergency response and other EHS plans and procedures. Table 2 includes a matrix of stated goals, targets and Key Performance Indicators.

<table>
<thead>
<tr>
<th>Goal / Target</th>
<th>Implemented By</th>
<th>Measure</th>
<th>Target Achievement Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance of the SMS</td>
<td>Everyone</td>
<td>Achievement of OHSAS 18001</td>
<td></td>
</tr>
<tr>
<td>Zero reportable OSHA, USCG incidents</td>
<td>Everyone</td>
<td>Number of incidents</td>
<td></td>
</tr>
<tr>
<td>100% appropriate and current training for all employees</td>
<td>Site EHS Manager, EHS Director</td>
<td>Number of training initiatives per year</td>
<td></td>
</tr>
<tr>
<td>Promotion of H&amp;S initiatives</td>
<td>H&amp;S Team</td>
<td>Number of initiatives per year</td>
<td></td>
</tr>
<tr>
<td>Completion of Risk Assessments</td>
<td>Functional Managers supported by H&amp;S Team</td>
<td>Risk Assessments reviewed as activities change</td>
<td></td>
</tr>
<tr>
<td>100% attendance at tool box talks</td>
<td>Site EHS Manager</td>
<td>No one works without the pre-shift briefing</td>
<td></td>
</tr>
<tr>
<td>100% of all issues raised by H&amp;S committee addressed by management</td>
<td>EHS Director</td>
<td>All issues raised are addressed by management with action appropriate for the issue and communicated back to the H&amp;S committee</td>
<td></td>
</tr>
<tr>
<td>Audit inspections completed</td>
<td>Project Director</td>
<td>Number of audits completed</td>
<td></td>
</tr>
<tr>
<td>Regular Safety Suggestion / Hazard Observation communication</td>
<td>Site EHS Manager</td>
<td>Number of safety / hazard observations reported and communicated back to employees</td>
<td></td>
</tr>
<tr>
<td>100% of all near misses reported</td>
<td>Site EHS Manager</td>
<td>Number of near misses reported</td>
<td></td>
</tr>
<tr>
<td>All near miss investigations completed within 72 hours and lessons learned communicated back to employees</td>
<td>Site EHS Manager</td>
<td>Number of investigation reports completed in over 72 hours</td>
<td></td>
</tr>
<tr>
<td>All incident investigations completed within 48 hours and lesson learned communicated back to employees</td>
<td>Site EHS Manager, EHS Director</td>
<td>Number of investigation reports completed in over 48 hours</td>
<td></td>
</tr>
<tr>
<td>All accident investigations completed within 24 hours</td>
<td>Site EHS Manager, EHS Director</td>
<td>Number of investigation reports completed in over 24 hours</td>
<td></td>
</tr>
<tr>
<td>100% of all near miss, incident and accident root causes identified and corrected</td>
<td>EHS Director, Project Director</td>
<td>Number of near misses, incidents and accident root causes identified and corrected</td>
<td></td>
</tr>
</tbody>
</table>

Table 2  Key Performance Indicators

2.5. Drug, Weapons and Alcohol Policy

GoWind maintains the overriding principle that it will not accept any person working for, or on GoWind’s behalf that is under the influence of illegal or misused legal drugs or alcohol. GoWind reserves the right to challenge any person working for or on behalf of GoWind where there is reason to believe that they are under the influence of such substances and require them to be
removed from the location. GoWind accepts that individual companies may have processes for random or by cause testing for substances and fully supports this approach.

GoWind also maintains that no weapons (i.e., guns or explosives, or knives other than those necessary for job performance, etc.) shall be brought on site by any person working for or on behalf of GoWind. Each employing company is responsible for:

- Inducting its staff into the drug and alcohol policy;
- Dealing with any person having or suspected of having any drug or alcohol related issue under its own policy conditions.

The EHS Director is responsible for informing the person and their employing company if there are grounds to suspect that the drug and alcohol policy are being breached. GoWind maintains a zero tolerance stance with regard to this policy.

2.6. Disciplinary Policy

Employees are expected to use good judgment when undertaking their work and to follow established safety rules. GoWind has established a disciplinary policy to provide appropriate consequences for failure to follow safety rules.

An employee will be subject to immediate termination when a safety violation places the employee or co-workers at risk of permanent disability or death or the zero tolerance policy on drugs and alcohol is breached.

- Gross intentional breach – Termination of employment with no warning (Red Card).
- Unintentional breach – Written reprimand and instruction on proper actions (Yellow Card).
- 2nd breach – Termination of employment with no warning (Red Card).

This policy is designed not so much to punish as to bring unacceptable behavior to the employee’s attention in a way that the employee will be motivated to make corrections.
3. Organization, Roles and Responsibilities

3.1. Organization

The organizational chart shown in Figure 2 demonstrates the organization structure for EHS management within GoWind. All staff responsible for maintenance of the SMS report directly to the EHS Director, who has overall responsibility for the SMS and its implementation. The EHS Director also has a direct reporting line to the GoWind Board of Directors, and acts as liaison to the Board.

![GoWind EHS Organization Structure](image)

3.2. Organization, Roles and Responsibilities

The table below provides details of the roles and a non-exhaustive list of responsibilities of each role in respect of the EHS management within the GoWind organization, and the reporting lines for EHS resources.
<table>
<thead>
<tr>
<th>Role</th>
<th>Key Responsibilities and Primary Duties</th>
<th>Reporting to (Line Manager)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board of Directors</td>
<td>● Definition, endorsement and annual review of the EHS Policy;</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>● Appoint a competent EHS Director to oversee all aspects of EHS management within the organization and project;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Arrange for adequate funds and facilities to meet requirements of the EHS Policy;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Ensure that appropriate insurance coverage is in place and maintained;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Ensure that disciplinary procedures are adequate to act against those who breach EHS practices;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Set a personal example.</td>
<td></td>
</tr>
<tr>
<td>Project Director</td>
<td>● Provide overall leadership to the project team;</td>
<td>Board of Directors</td>
</tr>
<tr>
<td></td>
<td>● Responsibility for the safe management of all works associated with the project;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Ensure that the project is fully and competently staffed for managing EHS and that objectives are clearly defined;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Ensure that all levels of staff receive adequate and appropriate training;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Ensure that disciplinary procedures are adequate to act against those who breach safety, policy or safe practices;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Set a personal example.</td>
<td></td>
</tr>
<tr>
<td>EHS Director</td>
<td>● Define and implement the EHS Policy and SMS;</td>
<td>Project Director (with direct reporting to Board of Directors)</td>
</tr>
<tr>
<td></td>
<td>● Understand all applicable EHS regulatory requirements and ensure adherence on behalf of GoWind;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Recommend to the Board of Directors and Project Director any changes to improve EHS performance;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Ensure risk assessments are carried out to identify all hazardous activities, the risks associated with such activities and identified control measures;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Bring to the attention in writing of those concerned, the significant risks identified as a result of any such assessments;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Stipulate safe systems of work, so that all work both on or off the premises is carried out in accordance with requirements;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Ensure that employees and sub-contractors are effectively instructed in safe systems of work and that records of instruction are kept;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Ensure that risk assessments are undertaken on any new or proposed activities or processes and ensure that risk assessments are reviewed regularly;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Contractor competence assessment;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Ensure that contractor staff are adequately trained in proper and safe working methods and are aware of any hazards and verify the contractor SMS is in line with the GoWind SMS requirements;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Ensure that everyone, whether on the premises or elsewhere, avoid risks to the health and safety of themselves and any person not employed, but who may be affected by our operations;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Set a personal example.</td>
<td></td>
</tr>
<tr>
<td>Role</td>
<td>Responsibilities</td>
<td>Responsible Person</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------------</td>
</tr>
</tbody>
</table>
| Design Safety Coordinator    | • In conjunction with the EHS Director, review the competence and resources of designers, contractors and individuals working on the project;  
• Ensure safety is considered in the design of temporary structures;  
• Facilitate Design Risk Analysis ("DRA") workshops and liaison with Designers;  
• Document and communicate all design decisions in the Design Risk Register;  
• Control the assembly of the Health & Safety File;  
• Support the EHS Director in establishing and fulfilling project training needs;  
• Set a personal example.                                                                                                                                               | EHS Director        |
| Environment & Permit Manager | • Assist the EHS Director with implementation of the EHS Policy;  
• Development of the Project Environmental Management Plan (EMP) and supporting Environmental procedures;  
• Provide competent Environmental advice to the GoWind project team;  
• Responsible for ensuring compliance with all project permits, licenses and environmental requirements;  
• Regular Environmental Audits, Inspections and Reporting of all project locations (onshore/offshore) and of all contractors and Subcontractors and vessels, plant and equipment;  
• Liaison with all regulatory authorities, statutory consultants, permitting authorities and other stakeholders as required;  
• Set a personal example.                                                                                                                                               | EHS Director        |
| Licensed Electrical Professional Engineer | • Assist the EHS Director with implementation of the EHS Policy and SMS;  
• Provide the electrical expertise necessary to facilitate projects and co-ordinate a safe and effective program;  
• Ensure project plans and delivery are in accordance with industry policies and procedures;  
• Set a personal example.                                                                                                                                               | EHS Director        |
| Site EHS Manager             | • Assist the EHS Director with implementation of the EHS Policy and SMS;  
• Assist the EHS Director with ensuring risk assessments are carried out to identify all hazardous activities, the risks associated with such activities and identified control measures;  
• Day-to-day management, instruction and supervision of all EHS Reps working on behalf of GoWind on the project;  
• Regular EHS Audits, Inspections and Reporting of all project locations (onshore/offshore) and of all contractors and subcontractors and vessels, plant and equipment;  
• Ensure that employees and contractors staff are aware of the fire procedures and first aid facilities;  
• Ensure that all safety rules are observed and protective equipment is worn or used when appropriate;  
• Ensure that safety devices are fitted, properly adjusted and maintained;  
• Ensure that defects in the workplace are reported and subsequently rectified;  
• Institute appropriate reporting, investigation and costing of injury, damage and loss; promoting action to preclude recurrence and initiate analysis to discover accident trends;  
• Ensure that plant and equipment is operated by trained and authorized persons, and that it is maintained in accordance with the planned maintenance program. | EHS Director        |
Table 3. GoWind EHS Roles and Responsibilities

<table>
<thead>
<tr>
<th>Contractor EHS Representatives</th>
<th>Site EHS Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Day-to-day site EHS supervision (onshore/offshore) on behalf of GoWind;</td>
<td></td>
</tr>
<tr>
<td>• EHS monitoring, inspection and auditing of contractors and offshore staff;</td>
<td></td>
</tr>
<tr>
<td>• Support the EHS Director in establishing and fulfilling project training needs;</td>
<td></td>
</tr>
<tr>
<td>• Participate in planning and coordination of all marine operations relating to the project;</td>
<td></td>
</tr>
<tr>
<td>• Assist with preparation and maintenance of all EHS documentation;</td>
<td></td>
</tr>
<tr>
<td>• Management of PPE inventory, inspection and testing for GoWind staff;</td>
<td></td>
</tr>
<tr>
<td>• Participation in EHS meetings, risk reviews and workshops;</td>
<td></td>
</tr>
<tr>
<td>• Set a personal example.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Everyone</th>
<th>EHS Director</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is everyone’s duty to conform to the GoWind EHS policy and safe systems of work, and to accept and carry out their responsibilities; failure to do so will result in disciplinary action.</td>
<td></td>
</tr>
</tbody>
</table>

Any individual has the right declare a “Stop Work” if an unsafe situation is observed that could potentially result in an incident or would potentially cause harm to the environment or damage to equipment and/or property. Individuals have the following responsibilities:

• Adhere to all policies and procedures in the SMS and other H&S initiatives;
• Attend tool box talks and other safety update meetings regularly;
• Report areas of concern;
• Provide and document safety/hazard observations;
• Conduct work in a safe manner;
• Look out for individual wellbeing as well as the wellbeing of others;
• Set a personal example.

3.3. GoWind Safety Committee

A safety committee consisting of representatives that cross all functional lines will be formed. The purpose of the safety committee is to keep safety at the forefront of everyone’s mind. The committee will review all near misses, make recommendations to the EHS Director for best practice improvements or purchase of equipment, cultivate and advocate a culture of safety compliance. The safety committee will identify problems that impact employee safety, and review all safety/hazardous observation, accident, near miss and property damage forms and investigation results. Lastly, the committee will make recommendations to improve procedures and processes as necessary.
4. Competence and Training

4.1. Competence

4.1.1. Medical Audits for Fitness for Duty

GoWind may require employees to undergo medical audits to determine fitness for specific duties as well as require contractors to supply detailed evidence that they are complying with the medical requirements of applicable regulations as they relate to their activities on the project.

The GoWind EHS Director will be notified of any known medical condition suffered by any team member or prescription drugs prescribed that may constitute a risk to the health and safety of that staff member or others on the project (e.g., color blindness, epilepsy, etc.). GoWind reserves the right to determine whether such conditions can be safely accommodated and the employee permitted to remain on site.

4.1.2. Selection of GoWind and Contractor Personnel

The EHS Director will ensure that competent GoWind staff can support effective EHS management and implement the appropriate EHS Standards for all phases of the project, from development, through design to construction, operations and maintenance and into decommissioning. The EHS Director will ensure that records of EHS competence (experience and training) for the GoWind project team members are maintained.

All contractor safety management systems and other H&S policies and procedures must be reviewed by the EHS Director, and in line with the GoWind SMS.

The GoWind workforce will be carefully selected and trained, and their skills and competencies regularly assessed. All project team members and contractors selected for the project will be evaluated to ensure they have sufficient competence and experience to deliver the requirements of the role.

In addition to competence, each role will have training requirements identified to ensure safety and vocational characteristics are addressed. Specific training requirements relating to the EHS regime, environmental conditions, etc., will be defined. The training requirements of each job will be defined in the Training Matrix.

Our expectations are:

- All staff and contractors actively promote and reinforce excellence in environmental, health & safety performance at all times;
- Anyone working on our projects must have the required skills and training to competently perform their tasks in an EHS sound manner; training needs are continually evaluated;
- Robust Competence and Resource Assessment processes are required to ensure that personnel are qualified, competent, and physically fit for their assigned duties;
- EHS roles and responsibilities are developed, monitored and used to define individual key performance targets; these are documented and reviewed regularly;
- Short service employees (employee with less than 6 months on the job) and contractors and all other visiting personnel must undergo appropriate EHS orientation programs and be familiar with emergency procedures;
• All project locations have access to appropriate medical/first aid facilities and access to competence sources of EHS advice;
• A strict zero tolerance policy will be in place with regards to Drugs, Alcohol and Weapons on all project locations.

4.1.3. Competence Assessment and Records

The flow chart below (Figure 3) illustrates the competence assessment process that GoWind will use to assist developing and maintaining the competence of GoWind staff for its projects. GoWind will also utilize an EHS Training Matrix which will be managed and maintained by the EHS Director for the project. Contractors working for or on behalf of GoWind will meet GoWind’s requirements for training and record keeping.
4.2. Training

The GoWind EHS Director will ensure that staff can support effective EHS management and implement the appropriate EHS standards for all phases of the project. GoWind will provide pertinent training to its employees, and as best practice, all training certificates will be kept on file, observing protocols that meet or exceed the recordkeeping requirements in 29 CFR 1910.

 Contractors will submit proof of training and copies of certificates to the Site EHS Manager before the start of any work activity. The competencies and training records of all employees will be
requested and examined by the Site EHS Manager before they are allowed into a potentially hazardous environment.

The EHS Director will ensure that all contractors have a system in place to carry out an evaluation of their organization’s safety competence. Contractors will then audit that system from top to bottom against GoWind’s expectations, and implement a training program to manage any “gaps” that are identified.

Applicable safety information from relevant third parties (e.g., AWEA, OSHA, BSEE, etc.) will be obtained and incorporated into the site orientation and emergency procedures. GoWind and all contractors shall maintain safety awareness with regular toolbox talks to staff. These should also include relevant issues from the EHS planning process.

4.2.1. Orientation Program

Attendance at EHS orientations is mandatory when visiting and/or working on the GoWind project. GoWind shall ensure that all personnel working on site undergo an appropriate safety course prior to commencing work or entering the work site. The course shall be tailored to include all relevant information relating to the potential risks from both the offshore and onshore work environments (as appropriate) and the actions to be taken in the event of incidents.

Additionally for vessels, the Master of the vessel is responsible for ensuring that a safety briefing is carried out for all personnel on board. This must cover the use of lifesaving appliances, survival craft equipment, man overboard recovery methods, and the fire and the abandon ship procedures. The briefing must be given as soon as possible, but not more than 2 hours after joining the vessel or prior to sailing, whichever is first. A record must be kept of this briefing and individuals are to sign upon completion, confirming that they are fully conversant with the instructions.

GoWind does not intend to use helicopters on any phase of the project. If during future projects it is determined helicopters are necessary a separate Helicopter Safety Plan and Procedure will be provided.

All personnel will receive an EHS orientation before start work. During this introduction, the introduction booklet is handed out, and the PPE list and Next of Kin (“NOK”) forms are filled out. The safety orientation acknowledgement form located in Appendix 1, and the NOK form located in Appendix 2, will be completed and archived in the employees personnel file.

4.2.2. EHS Minimum Training Requirements

The minimum training & identification requirements to enter an offshore-based construction area, depending on the location for which access is sought, are:

- Appropriate Medical Clearance;
- Sea Survival & Transfer Training;
- Work at Height, Tower Climbing and Rescue Training (minimum of 2 days);
- Site Orientation (onshore/offshore and vessel specific);
- Valid Driver’s License and / or (Transportation Worker Identification Credential (“TWIC”) card
- Completed Next of Kin (“NOK”) Form and Project ID card.

Successful completion of the training courses and the medical clearance is required to indicate that the individual is fit to perform their duties. If access is required to the internal areas of the wind turbines (e.g., nacelle, hub, etc.), or similar areas of the offshore substation platform, then confined space training, electrical training and relevant rescue training will be required. The successful
completion of these courses must be proven with a certificate. Access will not be permitted to individuals who have either not done the required training, or whose certificates have lapsed, or who cannot produce certificates. Refresher courses will be provided as necessary.

The contractor(s) must maintain their own records of all pertinent orientation and training courses that their employees have completed. These records must be submitted to GoWind and will be periodically audited by the GoWind EHS Director.

4.2.3. Specialized and Task Specific Training

In addition to the EHS Minimum Training Requirements, certain tasks on the project will require contractors and/or GoWind staff to undertake specialized or task specific training. Examples of this task specific training may include:

- Use of specific plant, tools and equipment;
- Working at height and Rope Access (IRATA, etc.) training;
- Decent control equipment;
- Scaffolding/personnel platform equipment;
- Diving operations/confined spaces.

On-Site Supervisors or Foreman shall designate competent persons/proficient operators for fall protection systems, scaffolding, descent control equipment, and/or personnel platform equipment. The competent person/supervisor/attendant should receive additional instruction if necessary to enable them to perform the duties required of their designation.

Training should at a minimum consist of:

- Identification of fall hazards and ways to minimize the potential for injury;
- Safe work practices;
- Selection and use of equipment and fall protection systems;
- Inspection requirements;
- Emergency actions;
- The identity of competent persons and their role;
- The requirements of this program.

Certification of training or a document identifying their job skills and knowledge must be supplied to the GoWind EHS Director prior to any work activity commencing. A written record of training and competence should contain:

- The course name;
- Level of training (e.g., initial, refresher or competent person);
- Date and duration;
- Instructor’s name;
- Names of the participants;
- Method of verification of understanding;
- An outline of material content.

Where a new activity is to commence, a work briefing must be conducted and attended by all staff and field operatives involved in the activity. At the briefing, the EHS responsibilities and requirement relevant to the activity shall be explained in detail. Additional briefings may be required when a new field operator joins the team.
Onsite training is viewed as an ongoing activity and will take place as necessary. Toolbox talks will be carried out to pass on information relating to new or changed work procedures, safe work methods, emergency procedures, inspection and testing requirements, etc.
5. Hazard Identification and Risk Management

5.1. Introduction

Hazard Identification and risk assessments form the central strand of a self-regulated safety management system. Successful implementation of these practices keeps people safe, provides sound economic benefits to GoWind and satisfies legal requirements.

This activity is intended to reduce risks to the health and safety of employees and others who may be affected by the way in which we conduct our business.

Those involved in the risk assessment process will receive appropriate training. The person responsible for ensuring that risk assessments are undertaken is the EHS Director.

Trained and competent persons will undertake the risk assessments and ensure that these appraisals are reviewed when significant change occurs or when they otherwise may be considered invalid. All risk assessments will be reviewed at least annually if no other change occurs.

5.2. Risk Management Framework

GoWind will ensure that hazards related to project activities are identified and assessed, and that control and recovery systems are put in place. GoWind will pursue a Risk Assessment Framework that ensures the:

- Learning and dissemination of best practices in the management of common risks;
- Identification of hazards and their potential effects, leading to an inventory of the major hazards to assets, to the environment, to the health and safety of people and to GoWind’s reputation of all the activities, materials, products and services;
- Assessment of the related risks, as described in the Risk Assessment Matrix and recorded in a risk register, based on the potential effects of identified hazards;
- Implementation of controls to eliminate or reduce those risks to a level as low as reasonably practicable;
- Elimination of hazard with engineering and/or administrative controls and/or PPE;
- Implementation of recovery measures to minimize the consequences of an incident;
- Assess risks, controls, and recovery measures for any potentially serious or other elevated risks identified by the business during the management review process;
- Documentation of the decision making process.

5.3. Risk Assessment

5.3.1. Overview

A risk assessment is carried out to identify the significant hazards relating to an operation or task and to assess the likelihood that something may happen resulting in injury or damage. The purpose is to identify the potential areas or ways in which someone could be killed, injured, have their health affected or the company suffers significant material damage (and losses).

The objective is for GoWind employees and contractors to put into place control measures to ensure the potential damage never occurs. In carrying out the risk assessment, it is not only
employees that have to be considered, but any person, material, equipment or environmental aspects that could be affected by GoWind activities.

The assessment will include staff, contractors, self-employed people and members of the public who would come into contact with the project.

Risk assessments should demonstrate that the risks with controls are ‘As Low as Reasonably Practicable.’ Contractors also have a responsibility to carry out risk assessments in line with this process, please reference the guidance provided in the Contractor’s Minimum Requirements.

In practice the terms hazard and risk are used; they are defined as follows:

<table>
<thead>
<tr>
<th>Hazard</th>
<th>An event or occurrence that has the potential to cause harm to someone or to damage something</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk</td>
<td>The probability or likelihood that the situation will arise and that damage or injury will occur</td>
</tr>
</tbody>
</table>

5.3.2. Undertaking a Risk Assessment

Those undertaking a risk assessment must be deemed competent; the individual will have:

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Knowledge of the task and any relevant legislation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attributes</td>
<td>Must be able to analyze a situation or task methodically</td>
</tr>
<tr>
<td>Training</td>
<td>Have had risk assessment training</td>
</tr>
<tr>
<td>Experience</td>
<td>Has experience in the industry/process</td>
</tr>
<tr>
<td>Limitations</td>
<td>Knows one’s own boundaries/limitations</td>
</tr>
</tbody>
</table>

When undertaking a risk assessment it is best to follow these well practiced steps:

1. Choose a task or operation;
2. Consider the hazards associated with completing this work;
3. Decide who may be harmed and how and write them down;
4. Evaluate the risks from these hazards using the Risk Assessment Matrix (RAM) found in Table 4 below;
5. Prioritize the risks and decide on what precautions or control measures are necessary to control the risks;
6. Allocate responsibility for ensuring the control measures are in place and discuss the assessment with them;
7. Inform those carrying out the work (or train them if required) about the hazards and the precautions they have to take;
8. Periodically review the work and the assessment to ensure the work can be done safely.

The results of the risk assessment are recorded on the Risk Register included as Appendix 3.

5.4. Design Risk Management

Design Risk Management (“DRM”) and Design Risk Analysis (“DRA”) tools will be used to ensure potential EHS hazards and risks are identified across all elements of the project on a lifecycle basis. Hazard elimination and risk mitigation should be undertaken contemporaneously with the design. The principal targets for the Design Risk Management process are:

- Eliminate or minimize risks from site hazards;
- Design out or minimize risks from EHS hazards;
• Design in features to reduce risks (e.g., from working at height or enclosed spaces);
• Simplify construction and operations & maintenance work;
• Ensure the suitability and compatibility of separate but interacting or inter-relating designs;
• Consider pre-fabrication off site to minimize high-risk work on site;
• Identify any hazards applicable to future work, including cleaning, operations and maintenance, and decommissioning.

A series of DRA and HAZID/HAZOP workshops will be held, where project participants, such as the Site EHS Manager, Design Safety Coordinator and EHS Director, identify the significant risks in the current designs related to activity and work location or asset. All of the potential risks that are identified are recorded in the Design Risk Register, together with the related activity, operation, equipment or component and the aspect or subject where the hazard will occur. Scores for consequences and probability are provided by relevant technical experts using the definitions of the generic RAM as pictured below in Table 4. All decisions regarding the design of the component are logged into a design decision log. The relevant reasons why a design decision was made and what hazard it mitigates are recorded here.

<table>
<thead>
<tr>
<th>Risk Assessment Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
</tr>
<tr>
<td>0</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
</tbody>
</table>

Table 4. Risk Assessment Matrix

<table>
<thead>
<tr>
<th>Increasing Severity</th>
<th>Increasing Likelihood</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 No Injury or effect</td>
<td>0 Not possible</td>
</tr>
<tr>
<td>1 Minor Injury or localized effect (No lost time)</td>
<td>A Highly unlikely (1:10,000,000)</td>
</tr>
<tr>
<td>2 Minor injury / damage</td>
<td>B Unlikely (1:1,000,000)</td>
</tr>
<tr>
<td>3 Major injury or significant damage</td>
<td>C Occasional (1:100,000)</td>
</tr>
<tr>
<td>4 Fatality or severe permanent impairment</td>
<td>D Quite probable (1:1,000) recognized as an industry issue</td>
</tr>
<tr>
<td>5 Multiple Fatalities / Total loss</td>
<td>E Highly Probable (1:100) unless significant controls are present</td>
</tr>
</tbody>
</table>

Following identification of the hazards/risks, the DRA process can then move onto the allocating risks to the owners within the project and establish the mitigation measures to be implemented into the design.

An example DRA matrix is included as Appendix 4.
6. Management of Change

GoWind requires that a Management of Change ("MOC") process (in accordance with 30 CFR 250.1912) be used for all operations in which major changes are planned, both permanent and temporary, that can have a significant impact on operations. The purpose of the MOC process is to ensure that hazards and risks associated with these changes are identified and managed. The MOC process provides for appropriate review, approval, implementation and tracking. A GoWind employee shall review changes to contractor/subcontractor equipment, procedures, etc. to insure proper use of the MOC process and determine if any adverse affects to EHS could result from the change. Examples of change for the management of change include but are not limited to:

- Physical changes to equipment;
- Operating Procedures;
- Personnel, including contractors;
- Materials;
- Operating and weather conditions;
- Changes in design;
- Equipment and/or structural additions to a physical asset; and
- Changes in software.

All changes must be reviewed prior to implementation.

30 CFR 250.1912 also states that the following information be included in the GoWind Management of Change document:

- The technical basis for change;
- Impact of the change on safety, health, coastal and marine environments;
- Necessary time to implement the change;
- Management approval procedures for the change;
- Employees whose job tasks will be affected by a change must be informed of and trained in the change prior to startup of the process; and
- If the change results in a change to this SMS such changes must be documented and dated.
7. Remote Monitoring, Control and Shut Down Capabilities

7.1. SCADA System

The facility’s Supervisory Control and Data Acquisition (“SCADA”) system will provide the operator with the capability to remotely monitor and control the plant, including the ability to shut down the facility if necessary.

As is standard for modern wind turbines, the SCADA system will continuously assess the status of the turbines and its subsystems by monitoring the signals that are sent from embedded sensors and other instrumentation. Using this information the operator will observe how the plant is functioning, and can make modification remotely.

The SCADA computers at the project’s onshore O&M facility communicate with the wind turbines and substation facility via a network of fiber optic cables that are contained within the subsea cable assemblies. The SCADA system will be fully tested during the commissioning process.

7.2. Fail Safe Systems

In addition to the capabilities of the SCADA system, the turbines will utilize standard fail safe mechanisms (e.g., mechanical brakes, pitch systems to feather blades) and protocols. Should the turbines lose power or are unable to communicate with the operations facility; these systems will ensure that the turbines initiate a safe shutdown procedure. The turbines will remain in a shutdown mode until the connection is restored and system integrity is verified.
8. Emergency Preparedness and Response Planning

During active development of the wind farm, GoWind will develop an Emergency Response Plan ("ERP"), as well as a Search and Rescue Plan ("SAR") which will be developed with the USCG.

The Emergency Response Plan is a base document which sets the framework and the minimum arrangements for emergency response planning for all those undertaking work on the Project and any others who may be affected by it.

The purpose of the Emergency Response Plan is to outline and define the approach GoWind and contractors must take with respect to emergency response planning throughout the life of this project.

8.1. Emergency Response and Search & Rescue

GoWind employees and its contractors must be familiar with the GoWind ERP and GoWind SAR for the project, and any vessel/area specific ERPs or SAR Plans. All staff and contractor staff must participate in emergency drills.

The GoWind procedures in the ERP shall include but not be limited to the following scenarios:

- Contact Tree;
- Man Overboard Procedure;
- Fire Procedures;
- Medical Evacuation;
- Vessel Abandonment Procedure;
- Pollution Incident;
- Thunder and stranded by weather;
- Helicopter Rescue of staff and crews;
- Unexploded Ordinance; and
- Reporting Procedures.

GoWind shall liaise with the contractors to ensure that the procedures for each company, subcontractor and external emergency organizations interface effectively. The ERP will include project specific details of emergency response arrangements including:

- Onshore contact details for project parties (Client, Principal Contractor and Contractors);
- Vessel contact details;
- External emergency facility contact details;
- Emergency response initial actions flowchart; and
- Applicable diagrams, maps, turbine identifications, and any other locating features.

GoWind and contractor staff will follow all personnel attendance tracking procedures so that numbers can be satisfactorily accounted for in the event of fire or other emergency.

The SAR developed in conjunction with the USCG will include agreed upon procedures between the USCG Sector Operations Center and GoWind. These will include but not be limited to:

- Roles and responsibilities;
- Types of response equipment available;
- Communication plan;
• Search plan;
• Medical advice / assistance;
• Shore reception arrangements;
• Calling for assistance;
• Completing a Notice to Mariners;
• Notification of work activity, planned activity schedule and frequency of status reports;
• The specific channel and alarm raising procedures will be documented in accordance with USGC expectations;
• The specifications on navaids, foghorns, lighting will also be incorporated into the SAR;
• The emergency contact information for the USCG Sector Operations Center will contain at a minimum, the content shown in Table 5 below.
• The sector command center should have copies of all the activity plans.

<table>
<thead>
<tr>
<th>Coastguard – Emergency Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>911 ask for Coastguard</td>
</tr>
<tr>
<td>VHF 16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Duty Tel No. for the responding sector (24/7):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fax:</td>
</tr>
<tr>
<td>Email:</td>
</tr>
<tr>
<td>Address:</td>
</tr>
</tbody>
</table>

156.8 MHz – call Coastguard

156.375 MHz – call Coastguard – this frequency is not normally monitored and will be used as a working channel.

002320009

Table 5. USCG Sector Operations Center Emergency Contact Information

8.2. Training and Drills

GoWind requires periodic safety drills to test emergency response procedures to deal with emergencies. Before implementing an emergency response plan, a sufficient number of employees must be trained to assist in a safe and orderly evacuation. A safety drill to test the response capability (for emergency evacuation and fire) shall be incorporated into both GoWind and contactor plans and procedures.

In addition to the specialized training for emergency response team members, all personnel will be trained in the following:

• Evacuation;
• Alarm System;
• Reporting procedures; and
• Types of potential emergencies.
Training programs will be developed as follows:

- When initial plan is developed;
- As part of the employee orientation;
- When new equipment, materials or processes are introduced;
- When procedures have been updated or revised;
- When employee performance must be improved; and
- Annually.

Drills will be both scheduled and unannounced and will occur with the frequency decided by GoWind after consultation with the USCG.

8.3. Fire Suppression

Any necessary fire detection and extinguishing equipment and other safety equipment shall be maintained to the approved standards. In addition, the Site EHS Manager shall keep up-to-date records of all such equipment including maintenance and inspection details.

Firefighting equipment shall not be altered or tampered with. All employees are expected to be familiar with the location of the portable fire extinguishers and emergency response plan, including fire alarms, and participate in fire drills. Persons shall have received appropriate training in firefighting if they are expected to use firefighting equipment.

Additionally, for vessels:

- A Safety Of Life At Sea (“SOLAS”) approved fire, smoke and heat detection system based on the self monitoring principle should be installed in accommodation, machinery spaces and other high risk areas. The fire detection system should be designed to rapidly detect the onset of fire in areas covered by the detectors, and should include both audible and visual alarms where appropriate.
- Appropriate fire extinguishing equipment shall be provided for the protection of all parts of the vessel. Fire extinguishers must be clearly labeled as to the type of fire that each is suitable for.
- Where combustion engines are utilized, the stowage of additional explosion proof outboard fuel tanks onboard the vessel shall only be permitted in a cradle where these additional tanks can be jettisoned from a remote location onboard. Sufficient fuel shall be carried in explosion proof outboard fuel tanks so that no decanting of additional fuel from containers is undertaken.
- All safety equipment must be strategically positioned around the vessel and be readily accessible by all personnel. Locations of such equipment must be clearly marked in accordance with SOLAS requirements. Persons required to use such equipment shall have been trained to operate the equipment and the procedures to be followed in the event of fire.

8.4. Crisis Management

Crisis management is the management of an emergency response. GoWind will develop a Crisis Management Procedure which specifies the requirements and guidelines for management of a crisis.
The main purposes of this procedure are as follows:

- Establish roles and responsibilities for GoWind staff to promptly and correctly manage a crisis;
- Assist GoWind to operate in both the short- and long-term as well as to protect its reputation;
- Identify contacts with other companies, such as partners or contracted services; and
- Allow everyone involved in a crisis to be familiar with mobilization and escalation procedures.

The possible scenarios that may require intervention/support of emergency services are numerous, and therefore, it is considered prudent to analyze the worse case scenarios. Scenarios that will be considered in the Crisis Management Procedure may include:

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Risk Scenarios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire</td>
<td>Fire – No personnel on WTG. Fire – Personnel on WTG. Switchroom Fire</td>
</tr>
<tr>
<td></td>
<td>Cable Fault. Transformer Fault</td>
</tr>
<tr>
<td>Explosion</td>
<td>Transformer Fault. Switchroom Fault</td>
</tr>
<tr>
<td>Accident</td>
<td>Injured Person. Walking Casualty. Stretcher Casualty Inc. unconscious.</td>
</tr>
<tr>
<td></td>
<td>Switchroom Accident. Electrical Fault. Cable Route</td>
</tr>
<tr>
<td>Stranded by Weather</td>
<td>Weather conditions turning rapidly severe.</td>
</tr>
<tr>
<td>Man in Water</td>
<td>Man Overboard.</td>
</tr>
<tr>
<td>Uncontrolled Fall</td>
<td>Unconscious / trapped person outside turbine structure.</td>
</tr>
<tr>
<td>Confined space in Monopile</td>
<td>Asphyxiation</td>
</tr>
<tr>
<td>Terrorist Activity</td>
<td>Bomb Threat</td>
</tr>
<tr>
<td>Stranded Vessel</td>
<td>Incapacitated Vessel</td>
</tr>
<tr>
<td>Vessel Collision</td>
<td>Man Overboard, incapacitated vessel</td>
</tr>
<tr>
<td>EOD Discovery</td>
<td>Explosion/Fire</td>
</tr>
</tbody>
</table>

Communications with US Coast Guard will take place via an agreed single point of contact from each Vessel (usually the Vessel Master), and if necessary, with support from the GoWind Works Vessel Coordinator.

All offshore emergency calls should be relayed immediately to the USCG in the first instance, who will coordinate the deployment of the necessary SAR Assets. For onshore incidents, personnel should dial 911.

For handling specific emergencies on the GoWind project, reference is made to the Emergency Response Plan and Search and Rescue Plan.

8.5. Adverse Weather and Tropical Storms

No work shall occur during periods of hurricane and tropical storms. Weather forecasts will be obtained and if there is the threat of a severe storm, all personnel will be evacuated proactively and no work shall commence until after the storm passes. Adverse weather consists of, but is not
limited to, waves greater than 1.5 m, winds at or above 20 mph, icing conditions and observed
thunder. Adverse weather will also be considered to be anything that exceeds the design
parameters of the structure or vessel.

Nor’easters bring with them cold temperatures, icing conditions high winds and snow. If a
Nor’easter is predicted no work will occur during the storm.

8.6. Security and Procedures for Inspectors and Visitors

All inspectors and visitors to the wind farm will be required to adhere to the safety precautions,
procedures and training described in this SMS.

Contractors shall be responsible for their own equipment and held accountable for controlling the
actions of their employees while under contract to GoWind. GoWind is not responsible for lost or
stolen articles. Cameras are not permitted on location without prior approval of the GoWind
representative. Contractors shall not bring unauthorized persons (e.g., friends, relatives or
observers) onto site. GoWind and contractor employees shall observe requirements for site
security (e.g., close/lock doors and gates, etc.).

For contractor’s vessels, this shall also include compliance with the requirements of International
Shipping and Port Security (“ISPS”) and USCG while offshore and in port. The responsibilities for
project security and arrangements offshore are described in the Project SAR including interfaces
with emergency services, BOEM and Coast Guard.
9. Standards and Procedures

9.1. Introduction

The standards and procedures in this section are to be used by GoWind and its contractors to either meet or exceed OSHA 29 CFR 1910 regulations for general industry as best practice. The full list of standards used is found in GoWind’s COP.

All risks associated with hazards identified on GoWind projects will be controlled at a level ALARP.

This section of the SMS describes the various safety standards and procedures for specific tasks and functions.

9.2. Permit to Work

9.2.1. Permit to Work Process Overview

GoWind requires a safe system of work incorporating a Permit-to-Work (“PTW”) process on routine and non-routine work activities to ensure hazards and risks associated with these activities are identified and safeguarded.

The PTW process is a comprehensive process for analyzing, planning, authorizing and executing work in a manner to prevent EHS incidents and is much more than simply issuing permission to conduct certain jobs. Activities which will require a written safe system of work controlled through Permit to Work will include:

- Access to and work within Confined Spaces;
- Access to and works on electrical systems;
- Vessel Permits;
- Work Vessel Control;
- Pressurized pipe systems;
- Hot works (such as welding activities);
- Radiological processes (e.g., NDT);
- Excavations;
- Significant Lifting Operations; and
- Works at Height.

9.2.2. Work Permits

One of the key tools utilized in the PTW process is the Work Permit, which is a written document that authorizes identified personnel to conduct certain work activities within designated boundary conditions such as time, place, and the specific work steps required to ensure the job is completed in a manner to prevent EHS incidents.

The Work Permit will generally be issued on a daily basis and re-issued at a shift/tour change or significant change in hazard classification of job assignment. The GoWind Site EHS Manager will be consulted for work activities that require a Work Permit, as well as those activities that may require a Work Permit depending on special situations such as simultaneous operations.
The Work Permit document will contain the following at a minimum:

- When the specified work will begin (date/time) and end and/or when a new permit will be required (date/time). A formal hand-over procedure must be in place for when Work Permits are issued for periods longer than one shift/tour and/or when Work Permit authorization changes;
- Who the permit is issued to (including company and individual’s name);
- Where the specified work will take place;
- Full description of what work will be performed including proposed tasks and objectives and description of equipment to be used;
- Special considerations for safeguarding short service employees;
- Description of all major hazards that could be encountered during the job, as well as, documentation of appropriate controls for each hazard identified;
- PPE necessary for specified work that will take place;
- Identify specific standards/procedures/guidelines that are applicable to work that will take place;
- Contingency plan if work does not proceed as planned;
- Actions to be taken in the event of an EHS incident including appropriate emergency response and notification phone numbers for GoWind and contractor;
- Reference to all other activities that may be impacted by work that will be performed (including other Work Permits) to ensure alignment and coordination;
- Signatures of all workers who have reviewed the Work Permit and agree to meet all the operational and EHS requirements;
- Final documentation and formal hand-over procedure declaring the work has been completed and the job site left with no EHS issues or problems and ready to return to service;
- Need to provide for the suitable display of Work Permits.

9.3. Job Safety / Hazard Analysis

Another key tool to the process, besides the Work Permit, is the Job Safety/Hazard Analysis (“JSA/JHA”).

The JSA/JHA also helps ensure appropriate precautions and procedures are employed to eliminate or minimize identified EHS hazards and risks for activities conducted. The JSA/JHA is a process for discussing and documenting each step of a job, identifying the existing or potential EHS hazards and then determining the best way to perform the job to reduce or eliminate the hazards.

JSA/JHA are effective tools to be used for jobs that will take place even when a Work Permit is not required.

9.4. Lockout/Tagout (Equipment Isolation)

Lockout/Tagout (“LOTO”) is a procedure required to isolate personnel from all potential energy sources when performing maintenance or service on equipment; especially when that maintenance or service requires the disabling or removal of normal guards and safety devices. Potential energy sources include electrical, mechanical, pneumatic, hydraulic, thermal, chemical, and all forms of potential stored energy. GoWind will have written LOTO program in effect. A logbook of LOTOs shall be maintained for each location.

The OSHA standard for The Control of Hazardous Energy (Lockout/Tagout) (29 CFR 1910.147) for general industry, outlines specific action and procedures for addressing and controlling hazardous
energy during servicing and maintenance of machines and equipment. The control of hazardous energy is also addressed in a number of other OSHA standards, including marine terminals (1917 Subpart C), longshoring (1918 Subpart G), construction (1926 Subparts K and Q), electrical (1910 Subpart S), and electric power generation, transmission and distribution (1910 Subpart R and 1926 Subpart V).

**LOTO Procedure:**

- GoWind and contractor employees shall share information prior to the start of the work requiring LOTO and agree to make all LOTO procedures uniform for the duration of the project;
- Repairs, service or alterations shall not be made on equipment in operation. All equipment shall be shut down and a LOTO device used in such a manner that the equipment cannot be accidentally started while being worked on. The power switch of the equipment to be worked on shall be locked out / tagged out;
- Keys for safety locks shall be stored in a secure location accessible only to those authorized;
- Once locked out/tagged out and proven to be deenergized, the equipment shall be released for work using a PTW issued by an appropriately authorized person and explained clearly to the recipient working party;
- The current status of work ongoing under a LOTO and PTW shall be recorded in a log and kept up to date with every shift change. The log shall be available to all in control of supervision of works at the site;
- To ensure the equipment has been properly locked out of service prior to starting any work, a qualified person shall attempt to turn on the power source to ensure the equipment does not become energized;
- Tower/Nacelle Specific – Before equipment is unplugged or plugged into any power system, the power source shall be locked out / tagged out. This includes all equipment that is unplugged or plugged into portable generators, transformers, controllers, control panels, etc.

Examples of equipment repairs or maintenance that require LOTO procedures include, but are not limited to the following:

- Nacelle hub entry;
- Repairs to electrical systems;
- Generator repairs; and
- Cabling inspection/repairs.

### 9.5. Short Service Employees

Contractors and subcontractors personnel with less than six (6) months in the same job type or with his/her present employer shall be considered a Short Service Employee (“SSE”).

**GoWind SSE Crew Percentage Requirements:**

| crews with four (4) persons or less | A one-person “crew” cannot be a SSE. Two- to four-person crews can only have one (1) SSE per crew. |
| crews with five (5) persons or more | If the crew exceeds 20% SSE employees, the GoWind representative shall approve the crew prior to beginning work. |

All SSE personnel shall be assigned a mentor (typically an experienced employee) to assist the employee during his/her “SSE” period. The mentor shall provide close supervision to the SSE personnel and not allow him/her to perform any task in which they have not been properly trained.
SSE personnel shall be distinguished by either a sticker placed on their hard hat that must include the letters “SSE” and be of contrasting color to the hard hat or by assigning them a different color hard hat that would distinguish them from experienced employees.

To remove an employee from the SSE status, the employee shall demonstrate behavior conducive to EHS (i.e., no injuries, participated in EHS programs, attended EHS meetings, etc.) for six (6) months and have a working knowledge of their employers (if a contractor) and GoWind’s EHS policies. Contractors are responsible for managing this transition and assessing EHS competence.

Documentation should be maintained for a period of one (1) year after a contractor employee has been removed from SSE status, with a copy of all records provided to the GoWind EHS Director.

9.6. Personal Protective Equipment

9.6.1. General

All employees working in any location or aspect of the GoWind project will wear appropriate personal protective equipment (“PPE”). PPE requirements specific to a task must be identified by a risk assessment. It is the responsibility of the contractor to ensure that their employees wear PPE as required by the specific task being performed, the potential hazards that person will be exposed to, and the specifics of the job site.

If a substance is handled that a Material Safety Data Sheet (“MSDS”) exists for, the recommended PPE designated on the MSDS will be strictly adhered to. In addition, all employees working on GoWind premises shall wear a shirt and long pants at all times. Tank tops, sleeveless shirts, and shorts are not permitted. Loose or floppy clothing is prohibited around rotating or moving equipment. Rings, neck chains or loose jewelry should be removed while engaging in manual labor.

In the event of failure by any person/company to provide or use necessary protective clothing or equipment, work will be stopped until corrective action has been taken.

Tampering or defacement of PPE will not be tolerated and treated as a disciplinary matter.

9.6.2. Personal Protective Equipment Minimum Requirements

<table>
<thead>
<tr>
<th>Item</th>
<th>Comments</th>
<th>Maintenance Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Protection</td>
<td>A plastic safety helmet with adjustable chinstrap manufactured to ANSI Z89.1 Class I type E</td>
<td>Helmets should be kept clean with warm tap water (known to not have adverse effects) and a soft cleaning cloth. Solvents or any other compound must not be used as these can cause surface softening and stress resulting in a loss of the helmets physical properties.</td>
</tr>
<tr>
<td></td>
<td>Helmets should display the following:</td>
<td>A visual check of the helmet should be carried out on a daily basis ensuring that all parts are operational and undamaged.</td>
</tr>
<tr>
<td></td>
<td>• Company Logo (front)</td>
<td>As a GoWind project standard the helmet has an “in-use” life of up to 3 years (i.e. 3 years after the date of issue). After that 3 year period; the helmet MUST be destroyed and replaced as necessary.</td>
</tr>
<tr>
<td></td>
<td>• Induction sticker (side)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Operative Name (front)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• If applicable First Aider “White Cross on green background” (side/back)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>All helmets used on site will be white, short service employees will wear green helmets, visitors will wear red helmets</td>
<td></td>
</tr>
</tbody>
</table>
Excessive wear and tear can considerably reduce the lifespan of the helmet. Within this 3 year lifespan, if the helmet is involved in an accident it should be discarded and replaced immediately. Even if you have only had a minor knock or it has deep scratches or cuts the helmet should still be discarded and replaced.

<table>
<thead>
<tr>
<th>Eye Protection</th>
<th>Metal frame (nickel free), wrap around style with anti-scratch and anti-fog lenses and conforming to ANSI Z87.1 Specifics to include:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Lens: Filters for UV</td>
</tr>
<tr>
<td></td>
<td>To be supplied with soft storage case to help protect / keep clean.</td>
</tr>
<tr>
<td></td>
<td>As per manufacturers recommendations but as a minimum GoWind stipulate:</td>
</tr>
<tr>
<td></td>
<td>Pitted, scratched or damaged lenses <strong>MUST</strong> be replaced.</td>
</tr>
<tr>
<td></td>
<td>Damage to the frame in anyway, glasses <strong>MUST</strong> also be replaced.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hand Protection (general purpose)</th>
<th>Gloves are to be worn when climbing ladders to improve grip on the rungs and also to protect the hands from injury/abrasion.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Suitable hand protection must also be worn where work could lead to:</td>
</tr>
<tr>
<td></td>
<td>• Burn or scald</td>
</tr>
<tr>
<td></td>
<td>• Irritation</td>
</tr>
<tr>
<td></td>
<td>• Cuts and abrasions</td>
</tr>
<tr>
<td></td>
<td>• Crush injury</td>
</tr>
<tr>
<td></td>
<td>• Lack of grip</td>
</tr>
<tr>
<td></td>
<td>• Skin disorder</td>
</tr>
<tr>
<td></td>
<td>• Puncture or splinter</td>
</tr>
<tr>
<td></td>
<td>• Absorption of hazardous substances</td>
</tr>
<tr>
<td></td>
<td>These general purpose gloves must meet the compliance of OSHA 29 CFR 1910.138</td>
</tr>
</tbody>
</table>

As per manufacturers recommendations.

<table>
<thead>
<tr>
<th>Safety Footwear</th>
<th>Safety footwear will be worn at all times. The minimum requirement for safety footwear is a <strong>boot</strong> with reinforced steel toe caps to with appropriate non-slip soles and offering appropriate support for climbing ladders etc (i.e., not rigger style boots). Footwear should comply with ANSI Z41</th>
</tr>
</thead>
</table>

As per manufacturers recommendations.

<table>
<thead>
<tr>
<th>Ear Protection</th>
<th>Appropriate ear protection is to be used for the task subject to requirements of the risk assessment. Ear protection should be used in situations where noise is over 80dBA</th>
</tr>
</thead>
</table>

As per manufacturers recommendations.

| Task Specific Activity: Marine Environment – PPE to Transfer to TP / Vessel |
|-----------------------------|--------------------------------------------------------------------------|
| Survival / Transfer Suit    | Survival (transfer) suits should conform to USCG – UL1197 and / or be SOLAS approved. |
|                             | Construction should be of nylon material and lining with foam insulation. Suit should have reflective tape for visibility and should have an integrated hood. |
|                             | Suits should be worn when water temperature is below 53.6 degrees Fahrenheit and a full risk |

As per manufacturers recommendations.
assessment should be done to consider air temperature, other PPE interactions, initial cold water shock, expected duration of exposure, reaction times of vessels and tidal strength.

Suits should be fully adjustable at both the sleeves and legs using a hook and loop system and should also have a drainage mesh at the sleeves and legs to allow water to escape.

Suit should also have an easily adjustable belt at the waist and integrated storage pockets on both the inside and out.

Survival suits must be coupled with an industrial life jacket which has a buoyancy rating of 150kN. (see specification below)

<table>
<thead>
<tr>
<th>Lifejacket</th>
<th>Lifejackets should be designed for heavy industrial application and must be fitted with a non removable heavy duty cover preferably in high-visibility orange.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The lifejacket should have a buoyancy rating of at least 150kN and must have the Hammer Automatic (hydrostatic pressure) mechanism and NOT the Standard Automatic (salt pellet) mechanism.</td>
</tr>
<tr>
<td></td>
<td><strong>Lifejackets must be SOLAS approved and fitted with an integrated Personal Locator Beacon (&quot;PLB&quot;).</strong></td>
</tr>
<tr>
<td></td>
<td>A simple visual inspection of the Lifejacket should be made before every offshore application.</td>
</tr>
<tr>
<td></td>
<td>Although the lifejacket should be ready for use from new, the Hammar Automatic inflation device <strong>MUST</strong> be checked for the following before each usage:</td>
</tr>
<tr>
<td></td>
<td>1. Is the red pull handle attached?</td>
</tr>
<tr>
<td></td>
<td>2. Is the expiration date OK?</td>
</tr>
<tr>
<td></td>
<td>3. Is the window green on the firing head?</td>
</tr>
<tr>
<td></td>
<td>4. Feel through the material of the inflation chamber, grasp the CO2 cylinder and check that it is fully screwed into the base plate.</td>
</tr>
<tr>
<td></td>
<td>Also, check your lifejacket for signs of wear and abrasion every time you put it on. See that the belts are securely attached. Check the straps, webbing and stitching for any signs of damage.</td>
</tr>
<tr>
<td></td>
<td><strong>Lifejackets MUST be serviced at a professional and qualified service every 12 months.</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Task Specific Activity: PPE for Tower Climbing – Foundation / WTG</th>
<th>Safety helmets for tower and/or ladder climbing activity must have a polycarbonate shell in a color that signifies role, be resistant to both impacts and wear and tear and must also comply with ANSI standards (ANSI Z89.1-2009 Type I Class E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head protection</td>
<td>Helmet must have a chinstrap designed to reduce the risk of the helmet coming off as a result of an impact during a fall. This headband must be easily adjustable using a &quot;wheel&quot; mechanism.</td>
</tr>
<tr>
<td></td>
<td>Ventilation holes that can be closed with sliding shutters are preferable to allow optimum management of heat and comfort.</td>
</tr>
<tr>
<td></td>
<td>The cut of the helmet should contour around the ears allowing for incorporation of hearing protection. Helmet should have customizable side</td>
</tr>
<tr>
<td></td>
<td>As per manufacturers recommendations.</td>
</tr>
<tr>
<td><strong>Fall Arrest Harness Work Positioning Belt and Seat Harness</strong></td>
<td><strong>MGO Connectors (Scaff Hooks)</strong> Energy absorber with integrated Y-shaped lanyard and two MGO connectors.</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Work positioning and fall arrest harnesses can be adapted for all work at height situations and must meet ANSI Z359.3 standards.</td>
<td>The energy absorber with integrated lanyard is used as an integral component of a personal fall arrest system and must meet the requirements of ANSI Z359.13.</td>
</tr>
<tr>
<td>Harnesses should be full-body type and equipped with 4-6 terna and dorsal attachment points to help insure that a fallen worker is suspended in the correct position. The height of the dorsal attachment point should be adjustable.</td>
<td>It is commonly used to connect a safety harness to a fixed anchor and is designed to dissipate the energy developed in a fall of 2.30m maximum height and to therefore limit the force on the user’s body to a maximum of 6kN.</td>
</tr>
<tr>
<td>Waist belt and leg loops ideally will have a double layer of breathable foam for maximum user comfort in suspension.</td>
<td>The product should be designed for belaying on a rope or cable lifeline or on large diameter bars.</td>
</tr>
<tr>
<td>FAST automatic buckles on the leg loops are also preferable. Once adjusted, these buckles easily and quickly open and close – the harness can be put on without undoing all the buckles.</td>
<td>Automatic locking MGO connector should have a large opening and permanently stays in place on the termination of the lanyard.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Slots to allow for incorporation of hearing protection (defenders) and/or eye protection (face shield).</strong></th>
<th><strong>This product is PPE, a component of a Personal Fall Arrest system, and must be used in conjunction with anchors, locking karabiners and Fall Arrest Harnesses (ANSI Z359.12).</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Helmet should also have 4 or more clips to allow for a headlamp to be attached for night time work activities.</td>
<td><strong>No other stickers or markings of any kind are permitted by GoWind without authorization.</strong></td>
</tr>
<tr>
<td>Helmets should display the following:</td>
<td></td>
</tr>
</tbody>
</table>
9.7. Confined Space Entry

Confined space entry is defined as entry of personnel into a confined space such as a hub, vessel, foundation, earth pit, etc. As a best practice, the confined space entry requirements must be equal to or more stringent than 29 CFR 1910.146.

Entry in a confined space requires a written risk assessment and must be authorized by a PTW. The risk assessment must define the controls to abate the following hazards:

- Hazardous atmosphere such as toxic or flammable vapors;
- Oxygen-deficient atmosphere;
- Material, such as mud or sludge, that has the potential for engulfing an entrant;
- An internal configuration such that the entrant could be trapped or asphyxiated;
- Inwardly converging walls or floors, which slope downward and tapers to a small cross section; and
- Other recognized serious health or safety hazards.

Under no circumstances shall an employee be allowed to enter a confined space without a properly completed Work Permit by competent personnel. The Work Permit shall have a Sign-In/Sign-Out Sheet for entrants and the hazards shall be discussed with the entrant prior to that person entering the space.

All confined spaces that can be readily accessed and have the potential to contain hazards shall be barricaded or labeled “DANGER DO NOT ENTER - ENTRY PERMIT REQUIRED.”

The contractor must satisfy the requirements for exposure limits in line with the appropriate confined space regulations. A PTW and accompanying risk assessment must identify additional controls for entry into a confined space, e.g., the wearing of a lifeline, atmospheric monitoring for hub entry, etc.

9.8. Diving Safety

Any contractors who are engaged in diving operations, or whose actions could affect the health and safety of people involved in the work, must ensure that all reasonable measures are in place to comply with all local and national Diving Regulations in 46 CFR 197 Subpart B as best practice.

General duties of diving contractors on GoWind projects include:

- Ensure that the diving project is carried out safely;
- Ensure that the required particulars for each diving operation are maintained;
- Ensure that a risk assessment is carried out and a diving project plan prepared;
- Ensure that there are sufficient competent people to carry out work safely and take action in the event of an emergency;
- Appoint a competent, suitably qualified supervisor for each diving operation;

Table 6. PPE Requirements

<table>
<thead>
<tr>
<th>Karabiners</th>
<th>All karabiners should be D-shaped for maximum strength-to-weight ratio. They must be well adapted for attaching various devices to harnesses etc.</th>
</tr>
</thead>
</table>
| Asymmetrical locking| Karabiners should also use the “Screw lock” mechanism and must conform to ANSI Z359.12

As per manufacturers recommendations.
• Make a written record of the appointment of each supervisor and providing each supervisor with a written copy of appointment;
• Ensure that the supervisor(s) is supplied with a copy of relevant parts of the diving project plan;
• Utilize a full face mask and line fed breathing gasses only (i.e., no SCUBA);
• Have a recompression chamber ready and available for use.

Duties of the supervisor include:

• Ensure that diving operations do not, as far as it is reasonably practicable, pose risks to the health and safety of those carrying out work or those who could be affected;
• Give reasonable directions to persons taking part in, or able to affect the safety of operations.

Divers must have approved qualifications, valid for any activities they may be expected to undertake. They must maintain a daily log and have a valid certificate of medical fitness.

Copies of all records must be provided to the GoWind EHS Director prior to commencement of any diving operations.

9.9. Noise and Vibration

The effects of noise and vibration will be kept to the minimum consistent with efficient working at all times.

Personal radios may not be used on site.

If a person is likely to be exposed to a daily personal noise dose of 80 decibels of attenuation (“dB (A)”) or more during work, a competent person will make a proper noise assessment. Records of such assessments must be maintained. Where any person is likely to be exposed to a daily personal noise dose of more than 80dB (A), suitable and sufficient hearing protection must be provided. If any person is likely to be exposed to a daily personal noise dose of 80dB (A) or more, an ‘ear protection zone’ will be created and signs posted. Wearing of ear protection is mandatory and decimation of associated information is a prerequisite.

Construction equipment must be provided with proprietary noise abatement devices such as mufflers and enclosures, where mitigation is available. Noise abatement devices will be maintained in an efficient condition and operated in an efficient manner.

GoWind does not expect noise limits to be exceeded. Noise levels will be monitored during construction.

Specific notification to adjacent residents will be given for any unusual noisy construction activities.

The use of horns will be avoided when approaching or departing from the onshore construction areas.

The use of sirens is not permitted on the site, except in the event of an emergency or as required for health and safety matters.

Equipment emitting high noise levels will be situated to maximize the distance to the nearest residence.
9.10. Manual Handling

Manual handling covers a wide range of activities undertaken by personnel. Most tasks involve some form of manual handling, and in some cases there may be a risk of manual handling injuries and ergonomics issues.

As a significant number of workplace injuries are caused by manual handling, GoWind recognizes its obligation to ensure that the risks associated with tasks involving manual handling are eliminated and/or reduced to the lowest possible levels. Manual handling instructions are covered under a separate procedure and include ergonomics issues. Contractors are required to have their own manual handling procedure in place.

9.11. Working at Height

All work at height should be properly planned and appropriately supervised. This includes planning for an emergency rescue. A potential fall from ANY HEIGTH will have a risk assessment completed to determine the appropriate level of risk mitigation.

Those working at height should be competent to do so, or if being trained, they should be supervised by a competent person. The training/competence required would include use of safety equipment, e.g., harnesses, operating Mobile Elevated Working Platforms and safe working practices. Competence also includes involvement in the organization, planning, supervision, and the supply and maintenance of equipment.

Other measures to prevent injury will include instruction in safe working, information on the control measures in place and safe working practices, training in the required task and use of the safety equipment provided.

In addition, how other aspects of the work might determine the selection of equipment should be considered. Considerations should include:

- Working conditions: i.e. the conditions where the work is to be carried out or the equipment is to be erected;
- Access and egress: i.e., getting to and from the point of work;
- Distance and likely consequences of any fall:
  - How far might a person fall and what will they fall onto?
  - What are the likely consequences?
- The duration and frequency of the use of the equipment or the task:
  - How often does the task need to be performed and how long will the equipment be used for on each occasion?
- Ease of rescue or evacuation:
  - Given the equipment what arrangements are in place should a rescue or evacuation be required – could this be affected easily?
- The relative risks of installing, using and removing the work equipment that could be selected:
  - Given the task and the available equipment would the risks be reduced if one form of equipment was selected over another?
- Protection of any fragile surfaces

All work should be risk based, well organized and planned in advance. There is a requirement to complete a risk assessment for work at height. For many tasks a risk assessment might be simple and straightforward. For example, it is often enough to follow good practice for the task you are
doing, e.g., using a step stool. In other cases, where what you are doing is more complicated, a more detailed risk assessment might be needed.

The GoWind Fall Protection Program is intended to provide general procedures for protecting workers working from heights. Any GoWind worker or contractor, working in an area where there is the potential for a fall is included in this program. Activities that expose workers to any potential fall, regardless of height, shall employ suitable fall hazard control measures. Whenever possible, tasks should be planned so that elevated work will not occur.

When fall hazards cannot be eliminated or prevented, personal fall arrest systems shall be used. Personal fall arrest systems (“PFAS”) consist of an anchoring point capable of supporting at least 5,000 pounds, double latching snap hooks, a full-body harness with a shock absorbing lanyard and lifeline, or a suitable combination of these. PFAS shall conform to the ANSI Z359.2 Standard. PFAS components shall be configured so workers can neither free-fall more than six feet, nor contact any lower level. GoWind, contractor and subcontractor employees who are required to climb with a PFAS shall be trained to:

- Identify when fall protection is required;
- Use proper personal protective equipment;
- Visually inspect equipment prior to each use;
- Understand emergency rescue plans so that they can be implemented quickly if required;
- Report unusual conditions and/or defective equipment to their supervisor; and
- Stop operations if unsafe conditions cannot be remedied.

9.12. Fall Protection

9.12.1. Roles and Responsibilities

To effectively implement this program, it is essential that each person in the organization have a clear understanding of his/her responsibilities. This section defines and lists the individual responsibilities.

Worker / Authorized Person
It is the responsibility of each worker to follow established safe work practices and become familiar with the information provided in this program. Each worker is responsible for performing his/her duties as detailed below:

- Identify when fall protection is required;
- Use proper personal protective equipment;
- Visually inspect equipment prior to each use;
- Understand emergency rescue plans so that they can be implemented quickly if required;
- Attend fall protection training courses as required; and
- Report unusual conditions to your supervisor and stop operations if not safe.

Competent Person/Onsite Supervisor
It is the responsibility of the Onsite Supervisor to:

- Identify potential fall or tripping hazards within the facility;
- When performing specific tasks, conduct a “Job Safety Analysis” to determine the potential for a fall and, if applicable, determine the appropriate fall hazard control measures to be applied;
• Provide workers appropriate fall protection safety equipment;
• Provide for prompt rescue of workers in the event of a fall or ensure that workers are able to rescue themselves;
• Ensure a maintenance inspection of lift equipment (platforms and man-lifts) is performed prior to each use for occasional use equipment or as recommended by the manufacturer;
• Ensure documentation associated with the program is maintained;
• Ensure program provisions are followed;
• Apply engineering control strategies, when feasible, to eliminate or reduce fall potential;
• Ensure guardrails, covers, or warning line systems are provided for walking/working surfaces where a potential fall is likely to result in serious harm;
• Ensure workers are provided appropriate fall protection safety equipment;
• Ensure annual inspections of fall protection equipment and components are conducted;
• Select or identify who will serve as a fall protection competent person;
• Select or identify who will serve as a scaffolding competent person;
• Select or identify who will serve as a descent control equipment competent person;
• Select or identify who will serve as a personnel platform equipment proficient operator;
• Ensure employees are trained on the fall protection program;
• Ensure contractors are aware of the applicable requirements of the program; and
• Provide employees and contractors access to this program.

9.12.2. Fall Hazard Control Measures

Activities that will expose workers to a fall of ANY HEIGHT must be assessed for risk and shall employ suitable fall hazard control measures. Whenever possible, tasks should be planned so that elevated work will not occur. When this is not possible, fall hazards should be minimized by installing fixed platforms with railings, guarding openings, controlling access, or working from equipment designed for the job. Care should be taken so that workers are not required to climb on or stand on piping or other unstable footing in order to accomplish assigned duties. Wall openings from which a potential fall is likely to result in serious harm shall be guarded with a barrier or other equally effective system. Stairs having four or more risers shall be equipped with stair railings or handrails. Each job safety analysis shall review the intended work for the potential of falls and address appropriate fall protection measures.

9.12.3. Fall Arrest Systems

When fall hazards cannot be eliminated or prevented, personal fall arrest systems shall be used. A personal fall arrest system is a system to arrest a worker in a fall from a working level. It consists of an anchorage; connectors, a body harness and may include a lanyard, lifeline, or suitable combinations of these. Personal fall arrest systems should serve only to arrest a fall. No personal fall arrest system shall be used without first analyzing the task to be performed; the need for mobility in performing the task; and personnel recovery after fall arrest. This may be accomplished by completing a hazard analysis and JSA.

9.12.4. Fall Arrest Components

All personal fall arrest systems, subsystems, and components, should conform to ANSI Standards specific to each component as described in Table 5.

Personal fall arrest components shall be rigged so workers can neither free fall more than six feet, nor contact any lower level.
A full body harness is a design of straps secured about the worker in a manner to distribute the fall arrest forces over the thighs, pelvis, waist, chest and shoulders with a means for attaching it to other components of a personal fall arrest system. This attachment point on the body harness should be located in the center of the wearer’s back, near shoulder level, or above the wearer’s head. Body belts are not allowed as a fall arrest component.

Anchorage is a secure point of attachment for lifelines or lanyards, which is independent from any means of supporting or suspending a work platform. An anchorage point shall be designed to support 5000 lbs. for each personal fall arrest system attached. The anchorage should be located above shoulder height but not overhead where possible to eliminate the hazards of pendulum type swing falls.

A lanyard is a flexible line of rope, wire rope, or strap, which is used to secure the body harness to a lifeline or anchorage. The lanyard should be equipped with an energy (shock) absorber and a self-closing, self-locking snap hook on each end. It should be a maximum of six feet in length, including the connectors and energy (shock) absorber, and should be kept free of knots. A lanyard should never be wrapped around a structural member and hooked back onto itself as a means of tying off. In some situations, it is necessary to use a tie-off adapter to connect the lanyard to an anchorage. To facilitate fall protection while moving or re-rigging, two lanyards (Y-type) connected to a single shock absorber, should be used so that one lanyard is continuously connected to an anchorage or lifeline.

A self-retracting lanyard is a device that contains drum-wound line that may be slowly extracted from or retracted onto the drum under slight tension during normal movement of the user. The line has a means for attachment to the fall arrest attachment on the body harness. After onset of a fall, the device automatically locks the drum and arrests the fall. Lanyards or shock-absorbing devices shall not be connected to self-retracting lanyards.

A connector is used to couple parts of the system together. It may be an independent component of the system (e.g., karabiners), or an integral component of the system (e.g., buckle or D-ring sewn into body harness, a snap-hook spliced or sewn to a lanyard or self retracting lanyard).

A lifeline is a flexible line used for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to an anchorage at both ends to span horizontally (horizontal lifeline). The lifeline serves as a means for connecting other components of a personal fall arrest system to the anchorage. A vertical lifeline usually extends an anchorage point onto which a rope grab is attached. No more than one personal fall arrest system may be attached to a single vertical lifeline.

No horizontal lifeline shall be rigged without consideration to proper engineering design and an evaluation of the hazards encountered when a fall is arrested. The end anchorages of horizontal lifelines should have the same elevation and should be positioned above the waist (preferably above shoulder level) of an average size user. All lifelines should be protected from abrasion that may occur from suspension over or along a structural member.


9.13.1. Guardrails

Guardrails are barriers erected to prevent workers from falling to lower levels. Guardrails may be constructed with pipe, rails, wood, wire, rope, etc. and shall be capable of withstanding, without failure, a force of at least 200 pounds applied at any point, in any outward or downward direction. Guardrails shall have a top edge member 42 inches (plus or minus 3 inches) above the walking/working level and an intermediate rail approximately half way between the top rail and the

© PMSSA 2012
floor. Guardrails shall be secured when installed to prevent accidental displacement by wind, equipment, or workers, etc.

Examples of guardrail systems are:

- Pipe railings - assumed to meet the safety requirements if posts, top rails, and intermediate rails are at least 1 ½ " nominal diameter, i.e., Schedule 40 pipe or equivalent degree of strength, with posts no more than 8 feet apart on center.
- Structural steel railings - assumed to meet the requirements is posts, top rails, and intermediate rails are at least 2" x 2" x 3/8" angles or equivalent degree of strength, with posts no more than 8 feet apart on center.

Where there is a danger to personnel working below the floor or wall opening due to falling materials, control measures, such as adding toe plates to the guardrail system or creating a warning line system at the lower level, are required.

9.13.2. Covers/Toe Boards

Covers for floor openings or holes shall be capable of supporting, without failure, at least twice the weight of workers, equipment, and materials that may be imposed, and secured when installed to prevent accidental displacement by wind, equipment, or workers, etc.

To protect against the potential exposure to falling objects, walking and working surfaces above a work area shall be fitted with toe-boards, screens, or nets. If toe boards create a greater trip/fall hazard, employees will be instructed to keep objects away from the edge of the working surface and “Work Above” signs will be posted below the work area if possible. Additional protection can be obtained by installing a canopy or other protective structure over the work area. If falling objects are still a concern, the area shall be barricaded, work stopped or special work procedures implemented to prevent objects from falling from higher levels.

9.13.3. Warning Line Systems

A warning line system shall be erected to warn workers of the unprotected floor or wall opening. A warning line system shall consist of a rope, wire, chain, or plastic/vinyl tape or fencing, erected around all sides of the floor or wall opening, not less than 10 feet from the outer perimeter of the opening. If the warning line system consists of rope, wire, or chain, the system shall be flagged with high visibility material at not less than 6-foot intervals. Workers entering the area between the opening and the warning line shall be protected by personal fall arrest systems.


Use of scaffolding should be consistent with the following guidelines:

- No one shall erect, move, dismantle, or alter scaffolding except under the supervision of a competent person. A competent person may recommend changes or alterations of the scaffolding that are as stringent as or even stricter than regulations (29 CFR 1910.28) to protect workers.
- Scaffolds shall not be altered or moved horizontally while they are in use or occupied.
- Scaffolds shall not be loaded in excess of the working load they are designed to hold.
- Footing or anchorage for scaffolds shall be sound, rigid, and capable of carrying the maximum intended load without settling or displacement.
• Scaffolds and their components are to be maintained in a safe condition. Any broken, bent, excessively rusted, altered, or otherwise structurally damaged frames or accessories shall be taken out of service.
• Scaffolds should be tied to or securely braced against the structure horizontally and/or vertically as required for support.
• Scaffolds shall be constructed to support at least four times the maximum intended loads.
• Tools and materials on scaffold platforms must be placed in such a manner that they will not create a tripping hazard or become dislodged and fall.
• Tools, materials, and debris should not be allowed to accumulate in quantities to cause a tripping hazard.
• Slippery conditions on scaffolds should be eliminated as soon as possible after they occur.
• Work on scaffolds shall be suspended during storms or high winds.
• Scaffold platforms should be equipped with standard guardrails and mid-rails, be completely decked with safety planks or scaffold decking, and have rigidly secured toe-boards on sides and ends as determined by the scaffolding competent person.
• A ladder or stairway must be used for proper access to a scaffold platform.
• Personal fall arrest systems are required when erecting, dismantling, or working on scaffolding unless the worker is sufficiently guarded from falling by other fall control measures.

9.15. Ladders

Use of ladders should be consistent with the following guidelines:

• All potential falls will have a risk analysis completed.
• Climbing ladders shall be done with the free use of both hands and feet, to allow three-point contact at all times.
• The worker shall face the ladder and stay centered between the ladder's side rails when climbing.
• Materials or tools shall not be carried in the hands while ascending or descending ladders.
• Climbing must be carefully evaluated when fixed ladders are not equipped with cages or ladder safety devices.
• The method of alternately connecting one of two lanyards to individual ladder rungs is acceptable. This method may provide adequate protection where the ladder support and rungs are capable of supporting twice the anticipated arrest forces. If this method is used lanyards must comply with ANSI Z359.13
• Caged ladders may be ascended or descended without additional fall protection.

9.15.1. Fixed Ladder

A fixed ladder is a ladder permanently attached to a structure, building, or equipment. Fixed ladders shall not be loaded beyond the maximum intended load for which they were built or beyond their manufacturer’s rated load capacity. All potential falls will have a risk analysis completed.

9.15.2. Portable Ladders

Use of portable ladders shall be limited to tasks requiring access to an elevated task that is performed infrequently, or when the pre-job safety analysis indicates that redesigning the job or providing work platforms is not feasible. Portable ladders shall not be loaded beyond the maximum intended load for which they were built or beyond their manufacturer’s rated load capacity.
Portable ladders use shall be in accordance with the following rules:

- Ladders shall be maintained free of oil, grease, and other slipping hazards.
- Ladders shall be maintained in good usable condition.
- Ladders shall be inspected before climbing or after the ladder is involved in a tip over. Defects should be marked and the ladder taken out of service until repairs can be made.
- The ladder base shall be placed with a secure footing to prevent slipping, or it shall be lashed, or held in position.
- Non-self supporting ladders shall be placed at an angle such that the base is located a distance from the vertical wall equal to one-fourth the working length of the ladder (i.e., the base of a 12 foot ladder should be placed 3 feet from the structure needing to be climbed).
- When portable ladders are used to access an upper landing surface, the ladder side rails shall extend at least 3 feet above the upper landing surface.
- The top of the ladder shall be placed with the two rails supported, unless equipped with a single support attachment and secured (tied off) as close to the top as possible.

9.16. Personnel Platforms

A personnel platform refers to any powered platform, man-lift, vehicle-mounted platform, and aerial lift or man basket used by workers during their work on site. A personnel platform must be capable of supporting its own weight and at least five times the maximum intended load. A competent operator shall be identified and documented as such by the foreman or on-site supervisor prior to operation of the equipment.

9.16.1. Crane Suspended Work Platforms or Baskets

Crane suspended work platforms or baskets should only be used when conventional means (e.g., ladders, scaffolds, etc.) for reaching the work area would be more dangerous or is not possible due to structural considerations. General items to be aware of or follow when using crane suspended work platforms or baskets are listed below:

- Hoisting of basket shall be slow, controlled and in a cautious manner with no sudden movements.
- Load lines shall be capable of supporting seven times the maximum intended load.
- Load and boom hoist brakes, swing brakes, and locking devices shall be engaged when the occupied basket is in a stationary position.
- Cranes shall be level with outriggers, fully deployed and following the manufacturer specifications.
- A positive acting device shall be used to prevent contact between the load-block and boom tip or a system that deactivates the hoisting action should be engaged before damage occurs.
- The load line hoist drum shall have a system or device on the power train, other than the load hoist brake, which regulates the lowering rate of speed of the hoist mechanism.
- Free fall shall be prohibited.
- Trial lifts should be performed with an unoccupied basket prior to the manned lift.

Work platforms or baskets shall be designed by a qualified engineer and be capable of holding 5 times the maximum intended load. The suspension system shall be designed to minimize tipping of the platform due to movement of workers. The platform shall have guardrails; grab rails, worker headroom and a posted load rating plate. Access gates when installed shall swing outward.
9.16.2. Work Practices

Safe work practices for working from baskets or personal platforms are:

- Workers shall keep all body parts inside the platform during raising, lowering or positioning.
- Workers being hoisted should remain in sight of and in direct communications with the operator or signal person.
- Tag lines should be used to control swinging unless they create an unsafe condition.
- The crane operator shall remain at the controls while the engine is running and the platform is manned.
- Work shall be discontinued upon indications of dangerous weather conditions or other impending danger (i.e., high winds exceeding 20 MPH).
- Fall protection including a full body harness with lanyard attached to an approved anchorage shall be used while in the basket or on the platform.

9.17. Aerial Lifts

An aerial device is any vehicle-mounted device, telescoping or articulating, which is used to position personnel. Aerial lifts include the following: extendible boom platforms; aerial ladders; articulating boom platforms; vertical towers; and a combination of the above. The following shall be considered when using aerial lifts:

- Lift controls shall be tested each day prior to use to verify they are in a safe working condition.
- Only proficient operators shall operate an aerial lift.
- Personal fall protection (e.g., harness and lanyard) shall be worn and attached to an appropriate anchorage while in the aerial lift basket.
- Workers shall always stand firmly on the floor of the basket.
- Boom and load limits specified by the manufacturer shall not be exceeded.
- Vehicle brakes, outriggers and wheel chocks should be used when required and/or available.

9.18. Access / Egress

All access to the offshore site is controlled by the EHS Site Manager or designated subordinate and will be performed to the procedure outlined in the access / egress document. All personnel require an offshore pass to board the work vessels to travel offshore. They obtain this pass from the EHS Site Manager. The EHS Site Manager checks their sea survival training, medical fitness certificate, specific training documents for the work they are to undertake, and that they have undertaken the site specific induction training. A NOK form is completed and a pass is then issued. No one can access the wind farm site without this pass. Passes can be withdrawn for non-compliance with health and safety requirements. The work vessel master keeps a log of all persons that board their vessel and of all the persons transferring onto the differing turbines. These log sheets are handed in at the end of each day to the EHS Site Manager and kept on file for audit purposes.

Access/Egress conditions and risks will be assessed prior to transfer activities via NOAA’s Operational Risk Assessment (Table 7) or a comparable plan designed by the transfer vessel operator.
<table>
<thead>
<tr>
<th>Risk Category</th>
<th>Items to be Considered</th>
<th>Consideration Definitions</th>
<th>Go or No Go</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resources</td>
<td>Boat and Equipment, Supervision, Communication, Support</td>
<td>Is the boat adequate and properly equipped?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is there adequate oversight for the mission?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Are communications operational?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is back up or rescue available?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environment</td>
<td>Surf Zone, Remoteness, Ice, Rocks, Traffic, Shallow or Uncharted Water</td>
<td>Is the mission in a surf zone, rocky or in uncharted waters?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is it remote or inaccessible to USCG or EMS?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Will boat traffic or debris impact operations?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Team Selection</td>
<td>Experience, Training and Familiarity</td>
<td>Have the crew been properly trained with this boat, the equipment and each other?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is the short service staff ratio acceptable?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fitness</td>
<td>Physical and Mental</td>
<td>Is the team well rested and ready to work?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Does everyone understand and capable for the mission?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Are there enough crew members to allow for adequate rest periods?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weather</td>
<td>Effects on mission and safety</td>
<td>Are current weather conditions acceptable?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is there a plan to mitigate hazards or mission failure if the weather is worse than expected?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mission Complexity</td>
<td>New or Experimental, Restricts Maneuverability</td>
<td>Is the mission or mission equipment complicated, difficult, new or experimental?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is it a multi-unit operation or dependent on other agencies?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Will mission equipment restrict the boat’s maneuverability, affect stability, or pose a hazard to other traffic?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Does the operation carry inherent risks (like towing divers or going into the surf)?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 7: NOAA Operational Risk Assessment
9.18.1. Turbine Access Method (Vessel to Turbine)

- Generally each turbine has two ladders, protected by boat fenders, to gain access. Access ladders present a vertical climb of approximately 8 up to 18 meters from mean sea level to the access platform. The vessel master shall choose to land personnel via the ladder with the most favorable conditions with regard to waves, current and wind.
- From the platform, the inside of the tower can be accessed. Access to the nacelle is by an internal vertical ladder and/or an internal mechanical lift. The vertical ladder climb in the tower is covered by a separate procedure. Personnel accessing the towers must be appropriately trained to do so.
- If a Turbine Access System is utilized to transfer personnel, staff will be trained to follow the access/egress procedure recommended by the manufacturer.

9.18.2. Vessel to Vessel

Vessel-to-vessel transfer of personnel is normally undertaken for vessel crew changes or when a vessel is not capable of accessing on to a turbine pile fender. The operatives transfer onto a vessel that is capable of accessing the turbine pile fenders. It is Go Wind’s intention that vessel to vessel transfer be kept to a minimum and only used when absolutely necessary. A separate procedure and training for transfer activities will be provided to employees and contractors.

9.18.3. Shore to Vessel

Shore-to-Vessel transfer of personnel is done routinely. The area should be clear of obstructions and hazards allowing personnel to transfer unimpeded. Whether access is done with a stairway, ladder, ramp or gangway, all means of access shall be properly secured, guarded, and maintained free of slipping and tripping hazards. Where required, a handrail will be used for personnel.

9.18.4. Helicopter to Turbine

GoWind will not use helicopter to turbine transfer as a standard means of access / egress. If GoWind determines that Helicopter use is necessary on another project a separate procedure and training will be provided to employees and contractors. Helicopter usage will be limited to emergency response and will be covered in the ERP.

9.19. Compressed Air

Compressed air used for drying or cleaning shall be limited to 30 psi (gauge) by a pressure regulator or pressure reducing nozzle (for U.S. based work, as specified in OSHA 29 CFR 1910.242).

Directing compressed air toward a person for any reason is prohibited. When using compressed air for cleaning in a dry and dusty situation, protective eye goggles, gloves, and a dust filter for respiratory protection shall be worn at a minimum.

9.20. Hand/Power Tools

Hand tools shall be inspected to ensure they are maintained in good condition and defective tools repaired to applicable Nationally Recognized Testing Laboratories (“NRTL”) by qualified personnel.
or replaced. Where potentially explosive atmospheres exist, explosion-proof and non-sparking tools and extension cords shall be used.

Hand tools shall always be used for their intended purpose. For example, wrenches shall not be used as a hammer; screwdrivers shall not be used as a chisel or pry bar; pipe wrenches shall not be used on hex nuts; grinder wheels shall be properly rated for the speed of the grinder; etc. Guards shall be in place and not modified. Power tools and extension cords shall have proper grounding.

Power tools / appliances will regularly be tested and ensure that electrical appliances are safe to prevent harm to workers.

9.21. Hot Work

Hot work is defined as welding, flame cutting, burning, grinding or using a torch. When possible, hot work should be performed in a shop, outside the facility, or in a Safe Welding Area ("SWA"). A SWA shall be established on all locations where substantial welding or flame cutting is anticipated.

All welding and flame cutting operations shall be conducted in the established SWA unless otherwise authorized. The location of the SWA will be based on a specific risk assessment.

If hot work needs to be performed outside of the SWA, especially inside a nacelle, all movable fire hazards in the vicinity shall be removed to a safe distance or guards used to confine the heat, sparks and slag, and to protect the immovable fire hazards. A Work Permit shall be issued for all hot work done outside of the SWA and approved by the contractor and supervisor. Hazards and recommended special precautions should be documented in the Work Permit.

The hot work equipment and work area shall be inspected prior to beginning any hot work operations to ensure safe working conditions. This includes checking for explosive atmospheric conditions in all vessels, piping and confined spaces and documenting the results on the Work Permit. Oxygen and acetylene cylinders shall be stored valve end up and properly secured. Only certified personnel/welders shall be permitted to perform hot work.

9.22. Electrical Safety

GoWind shall address and minimize personnel exposure to electrical hazards through effective equipment operation, design, specification, installation, and maintenance. All electrical work shall be done in accordance with the latest codes, standards, and regulations.

All electrical work will be reviewed with GoWind’s electrical engineer to determine if a Work Permit is required. A qualified person shall discharge all stored electrical energy and shall verify the equipment is de-energized and proper Lockout/Tagout procedures implemented prior to beginning electrical work.

9.22.1. Power Lines

Consultation with the Energy Company and a GoWind Competent Person must occur before any work in the vicinity of power lines. When work is performed near energized overhead power lines, with equipment such as boom, mast, crane, or its load, the task shall be undertaken after a site specific risk assessment as the minimum safety distances vary with the scope of work.
9.22.2. Static Electricity

Static electricity is generated any time liquid or solid substances are flowed, sprayed, agitated, rubbed or splashed. Static electricity can cause a spark hazard unless special precautions are taken.

The following are requirements to minimize the possibility of creating a spark and the hazard of a fire or explosion in the presence of hydrocarbons such as gearbox oils or other flammable/combustible liquids:

- Wherever there are floor openings or cracks that cannot be closed, precautions shall be taken so that no readily combustible materials below will be exposed to sparks;
- Containers - Only metal buckets (handles should also be metal) shall be used for collecting hydrocarbons or other flammable/combustible liquids. The metal bucket must have direct metal contact using a bonding cable to the nozzle or fill pipe from which the liquid is discharged. The nozzle and fill pipe shall also be metal. The liquid shall be discharged slowly into the bucket to maintain a low velocity and minimize amount of static electricity generated;
- Tanks - Metal storage tanks shall be grounded. All personnel shall ground their bodies by taking hold of a grounded metal surface (such as a steel walkway, etc.) before opening a gauge hatch on a tank;
- Tank/Vacuum Trucks - During the loading and unloading of hydrocarbons or other flammable/combustible liquids, tank/vacuum trucks shall be grounded using a bonding cable to the storage tank before the transfer line is connected. The transfer line shall be disconnected before the bonding cable is disconnected.

9.23. Operating Equipment

Operating equipment typically refers to rotating or reciprocating equipment such as generators, yaw drives, pitch systems, gearboxes, compressors, pumps, pumping units, etc.

The following are requirements to minimize the possibility of an EHS incident during the repair, service, start up, etc. of the operating equipment:

- Only trained operators shall start and stop operating equipment;
- Jewelry such as rings, watches, wrist chains, or key chains or loose clothing shall not be worn when working around operating equipment. Long hair shall be confined;
- Repairs, service or alterations shall not be made on equipment in operation. All equipment shall be shut down and a Lockout/Tag out device used in such a manner that the equipment cannot be accidentally started while being worked on;
- Guards and other safety devices shall be reinstalled before equipment is operated.

9.24. Mechanical Lifting Safety

Only trained and qualified personnel shall operate cranes and other such lifting equipment. The contractor shall provide to GoWind written certification for each employee who might operate a crane. All cranes shall be strictly maintained in accordance with the manufacturer’s recommendations and regulatory requirements.

The following are requirements to minimize the possibility of an EHS incident during crane and rigging operations:

- All personnel shall be clear of a load before it is picked up and shall remain clear at all times.
• Personnel should face the crane in full view of the crane operator and/or signalman.
• Personnel, including those holding the tag line, shall never be under suspended loads or go between the load and other objects where they may be trapped or crushed.
• The crane operator shall never leave the controls while a load is suspended. This excludes the possibility of leaving a tower-top section erected without a nacelle. Cranes shall not be left connected to towers sections, whether erected or not, without an operator at the crane controls.
• Non-conducting tag lines shall be used to control all suspended loads. Chains or steel cables are not acceptable. Tag lines shall be attached before a load is lifted.
• A signalman shall be used if the crane operator does not have full view of lifting operation. Where practical, the use of radios or other communication equipment is also recommended. The crane operator shall respond only to signals from the signalman, but shall obey a stop signal from anyone at any time.
• The crane operator shall inspect lift lines, rigging, slings and crane fittings/fasteners daily when in use or prior to each lift and replace if necessary. This equipment shall be properly rated for the intended load and certification tags attached to all slings. Wire rope shall not be secured with knots.
• The operator shall inspect all cranes and ground conditions prior to use. Cranes should be load marked. In addition, cranes shall have the most recent inspection records posted in the cab.
• A crane shall not be used to pull a load sideways along the ground.
• A crane boom shall not be used as a ladder for walking, except for necessary maintenance of the boom and its components.
• When not in use, the crane boom shall be kept in the cradle.
• For rigging, never use a chain when it is possible to use a wire rope.
• Determine the load weight before rigging it and do not exceed the safe working load of any equipment.
• Before being unhooked, all loads shall be safely landed and properly blocked.
• Wire rope slings and chain shall never be shortened by tying knots in them or by wrapping them around the crane hook. Protruding ends of strands in splices on slings shall be covered or blunted.
• Slings shall be protected from sharp edges by blocking or protective pads. Nylon slings shall be properly marked, inspected and maintained according to manufacturer’s specifications.
• When multi-leg slings are used, each leg of the sling should be loaded evenly.
• Kinked wire rope slings shall be removed from service. Wire rope shall be kept lubricated and free of corrosion.


If tag lines are impractical during final positioning of the load, caution should be taken to ensure that no part of the person’s body guiding the load will be between the load and other objects where they may be trapped or crushed.

• No attempt to guide a load shall be made with the tag line wrapped around a hand or waist.
• The tag line must be free of knots.
• A tag line shall be of sufficient length so that no part of the person guiding the load shall be under the load at any time.
9.24.2. Use of a Crane to Hoist Personnel

The use of a crane to hoist employees on a personnel platform to a nacelle or tower section is restricted to when tower fall protection is not complete (for example during construction). Cranes used to lift personnel should be equipped with an “anti-two-blocking” device. The personnel lift procedure shall be reviewed and approved by the GoWind competent person prior to any lifts.

9.25. The Use of Cranes of Jack-up Barges for Construction Activity

36 CFR Subpart L and API RP 2D, API Spec 2C must be complied with as best practice for all jack up operations.

The following recommendations have been made by the Inspectorate of Health & Safety, Offshore Division in the UK following recent offshore wind farm construction activity incidents. GoWind expects all staff and contractors to use these recommendations for all proposed activities. These matters will be specifically audited. They can be summarized as follows:

- Check and assure that qualified persons are used for the planning of the lifting operations and also that the lifts are executed under supervision of an experienced person with documented relevant background for the operation as well as use of experienced crane operators.
- Manage the job and ensure that the personnel are capable of the work at hand and promulgate all approved plans to the Installation Supervisor, Crane Operator and all others involved in the lifting operation.
- Prepare Method Statement and Risk Assessment including detailed Lifting Plans presenting the full geometry of the lift having reasonable tolerances regarding distances to foreign obstacles such as other vessels/jack-ups, other fixed structures such as turbine Foundations and towers etc. Use accurate lifting diagrams, include the right lift weights and apply the relevant Dynamic Amplification Factor and include a contingency on the weight of the lifted subject (to cater for unpredictable circumstances).
- Prepare fallback procedures focusing, for instance, on bad weather situation.
- Specify and use the right lifting equipment for the job and check that all maintenance certificates are available.
- Check the standard wind map for the area and ensure that the crane is constructed for said weather.
- Prepare procedures to cope for out-of-service crane loading, for instance, securing the boom, having a procedure for locking or unlocking the slewing ring, prepare evacuation procedure, having evacuation drills, etc.
- Have a good weather forecasting system available.
- Assure that the crane manufacturer’s documentation is available when preparing the Method Statement.
- Prepare proper Risk Assessment and check that the procedures are implemented and followed.

9.25.1. Jack-up leg punch through failure

Risk of jack up leg punch through failure must further be analyzed by the contractor prior settling in to place. The analysis shall at least comprise geotechnical calculations and consider the possibility of the presence of shallow gas. Calculations shall be submitted to GoWind.
9.25.2. Tools and Equipment

Cranes, A-Frames, derricks, davits, lifting beams, etc. shall be load tested every 5 years and inspected every year by an independent specialist. This requirement is irrespective of the safe working load:

- All Blocks swivels shackles and loose lifting equipment shall be certified. They shall be re-certified after any repair. They shall be inspected every 6 months by an independent specialist.
- Wire ropes, strops, chains, etc. shall be inspected before use and certified every 6 months by an independent specialist.

9.26. Excavation and Trenching

An excavation is any man-made pit, trench, hole or cut into the ground formed by the removal of earth. Potential hazards include, but are not limited to cave-ins, hazardous atmospheric conditions, and rupture or contact with a live gas flow-line or utility installation.

The following are requirements to minimize the possibility of an EHS incident during excavation and trenching operations:

- All excavation and trenching operations shall be performed under Permit to Work and the supervision of a “competent” person.
- A safe means for personnel to enter and exit shall be provided.
- Locations of cables, communication wires and other underground hazards such as pipelines shall be established & marked prior to beginning excavation or trenching operations.
- Adequate protection from cave-ins shall be provided through appropriate sloping, shoring or shielding as determined by the “competent” person supervising the operation.
- All unattended excavations and trenches shall have barricades and warning signs that are visible after dark.

9.27. Sandblasting and Painting

9.27.1. Sandblasting

The potential hazards during sandblasting operations include, but are not limited to inhalation of dusts (including lead from the paint or silica from the blasting medium), high noise levels, high operating pressure of equipment; etc.

The following are requirements to minimize the possibility of an EHS incident during sandblasting operations:

- Contractors performing sandblasting operations for GoWind shall have a medical surveillance program in place to monitor employee’s exposure to lead.
- Approved respiratory and hearing protection shall be worn.
- Appropriate eye protection shall be worn.
- The use of silica sand in the blasting medium is prohibited.
- Paint coatings being removed by sandblasting operations shall be considered as lead containing until proven otherwise.
- Check all hoses every day for leaks and signs of wear.
- Ventilation (either mechanical or natural) will be used to keep the work atmosphere at 0% of Lower Explosive Limit ("LEL") and the oxygen ("O2") content greater than 19.5% and less than 23.5%.
- Disconnect and lock out all electrical power before sandblasting.
- Blasting nozzles shall be equipped with a cut-off device (dead man’s switch).
- Secure and hobble all high-pressure air hose connections.
- All air hose connectors shall be pinned or wired to keep them from coming apart.
- Warning signs shall be posted identifying potential hazards.

9.27.2. Painting

The potential hazards during painting operations include, but are not limited to inhalation of toxic vapors or spray mist, fire hazard due to solvents in the paint, etc.

The following are requirements to minimize the possibility of an EHS incident during painting operations:

- Contractors performing painting operations for GoWind shall prepare the appropriate risk assessment for the task.
- Non-toxic paints should be used.
- Approved respiratory protection shall be worn.
- Appropriate eye protection shall be worn.
- Be aware of and eliminate ignition sources in the work area.
- Ventilation (either mechanical or natural) shall be adequate to keep the work atmosphere 0% Lower Explosive Limit and the oxygen content greater than 19.5% and less than 23.5%.
- Bleed or de-pressure all lines before disconnecting.
- Warning signs shall be posted identifying potential hazards.

9.28. Forklift / Backhoe Safety

- Only trained and qualified personnel shall operate forklifts.
- Forklifts will be used in compliance with 29 CFR 1910.178
- The contractor shall provide written certification to GoWind for each employee who might operate a forklift.
- All forklifts shall be strictly maintained in accordance with the manufacturer’s recommendations.
- Unauthorized personnel shall not ride on forklifts. Each forklift will be required to have a “NO RIDERS” sign in a visible area of the forklift.
- The forklift shall have an alarm signaling when vehicle is backing up.
- When a forklift is left unattended, the forks shall be fully lowered, controls put in “off” or “neutral” position, the power shut-off, and the brakes set. Wheels shall be chocked if the forklift is parked on an incline. Ignition keys shall be removed and stored in a secure place.
- The forklift operator shall ensure that the forklift’s wheels are properly chocked before unloading.
- Seat belts shall be worn when operating a forklift.
9.29. EHS in the Office

EHS management in the office is as important as EHS in the field. Each office shall have an emergency evacuation plan and shall conduct an evacuation drill annually. Both GoWind and contractor employees shall be familiar with emergency evacuation procedures, evacuation routes, and specific responsibilities.

Use handrails when ascending/descending stairs. Hallways, entrances, and exits shall be kept free of obstructions. Material shall be stored in an orderly fashion and work areas kept clean and free of tripping hazards such as cords, drawers, books, files, etc.
10. Environmental Management System

All work activities shall comply with the Clean Water Act (33 U.S.C. 1251) (“CWA”) and all rules, regulations, and guidelines whether regulatory driven or internally required by GoWind. The Environmental Protection Agency (“EPA”) regulates all waste streams generated from offshore activities by general permits (Section 403(c) of the CWA) through the National Pollution Discharge Elimination System (“NPDES”).

The Oil Pollution Act of 1990 (“OPA 90”) provides requirements for contingency planning and directs facility owners to submit plans to responding to a worse case discharge of oil. Therefore, a Spill Prevention Control and Countermeasure (“SPCC”) plan will be developed and submitted.

GoWind is committed to conducting operations in a safe and environmentally sound manner. As a minimum, GoWind will:

- Comply with all Environmental Law and any local requirements while performing operations;
- Adopt positive management practices to prevent pollution and other adverse environmental occurrences;
- Demonstrate ability to provide effective environmental management processes;
- Implement an effective project environmental management plan to control, monitor, audit, review and report on environmental performance in accordance with ISO14001 principles;
- Report all environmental incidents, including releases, oil spills, chemical spills, etc. as soon as possible to the Site EHS Manager.

An assessment should be completed to determine if adequate barriers are in place to prevent an environmental incident or permit violation. This assessment should be included in the Job Safety Analysis that will be completed for the activity.

The Environmental Risk Assessment should evaluate in accordance of regulations whether:

- Activities generate any new discharges to the air, water, or land;
- Activities require any new permits;
- Activities affect any existing discharges;
- Existing discharges exceed the permit limits; and
- Activities lessen the effectiveness of existing barriers to protect for an oil or chemical spill.

10.1. Waste Management

All waste materials shall be disposed of properly. GoWind and any contractor employees are responsible for taking the necessary steps to prevent pollution and minimize the generation of waste. The waste management program for the project will evolve as the project moves from design to construction and into operations and maintenance. The changes to the program will be communicated to contractors and employees in accordance to the management of change procedures and to BOEM and BSEE quarterly.

10.2. Hazard Communication

GoWind shall develop, implement, and maintain at each workplace, a written hazard communication program which at least describes how the criteria for labels and other forms of warning, safety data sheets, and employee information and training will be met, and which also includes the following:
A list of the hazardous chemicals known to be present using a product identifier that is referenced on the appropriate safety data sheet (the list may be compiled for the workplace as a whole or for individual work areas); and,

The methods GoWind will use to inform employees of the hazards of non-routine tasks (for example, the cleaning of reactor vessels), and the hazards associated with chemicals contained in unlabeled pipes in their work areas.

Further information can be obtained from the Hazard Communication Standard ("HSC") / HazCom 2012.

10.2.1. Material Safety Data Sheet (MSDS)

A register of hazardous substances will be maintained by each contractor. For each hazardous substance, a material safety data sheet will be obtained by the contractor and made available for easy reference. These will be accompanied by a Control of Substances Hazardous to Health ("COSHH") risk assessment. Copies of each contractor’s data and risk assessment will be maintained in the project safety plan and reviewed as necessary. Contractors shall be asked to provide a list of and risk assessments for hazardous substances. The contractor responsible shall communicate the results of any such assessment to any affected personnel. Diesel fuel, when stored on site, will be located in a secure compound, with an earthen berm that must have a capacity of not less than 110% of the container’s storage capacity or, if there is more than one container within the system, of not less than 110% of the largest container's storage capacity or 25% of their aggregate storage capacity, whichever is the greater. The berm will be constructed to allow safe entry and storage of a mobile tanker and the bund will be able to contain at least the maximum volume of the tank.

No fuel storage facilities (either mobile or stationary) may be installed at the Site without prior approval from the construction manager.

All hazardous substances brought onto the Site must be identified and recorded in a form for hazardous substances on the Site.

10.3. Spill Plans

If a spill or release of a substance (e.g., oils, chemicals, grout etc.) occurs during the work process, the spill or release shall be stopped and/or contained until the proper cleanup procedure can be conducted as described in the SPCC plan as required by 30 CFR 585.627 (c). If the spill or release poses a reasonable risk to the health and safety of employees, a safety risk to the completion of the process or an undue risk to the environment, the work process shall be stopped and the release shall be cleaned up or minimized until the risk is reduced to an acceptable level.

GoWind will ensure that the contractor installs a competent person, familiar with the process, to oversee the mitigation of the released substance and the affects posed to personnel and the process. This person shall be responsible for determining the risk associated with a spill or release. Spill preventive measures shall be followed while handling or transferring substances that poses a health, safety or environmental hazard.
10.4. Fishing and Recreational Activities

The GoWind project is located on grounds that are used for commercial fishing and recreation. GoWind does not intend to allow recreational or fishing activities during active construction of the wind farm. Once construction is complete the grounds will be open again for use.

During construction, activities the safety zone shall be defined in accordance with 33 CFR 147.15 Subpart N. GoWind will work together with the USCG to identify, define and establish safety zones. Signs will be posted prohibiting access to the area during active construction. The design of the turbine foundations will attempt to discourage boaters from tying off to them and signs will be posted stating the same. A Notice to Mariners will also be filed.
11. Management of Contractors

GoWind maintains that contractor management of EHS be in line with that of GoWind’s EHS management. All contractors must comply with relevant EHS legislation and GoWind’s Contractor Minimum EHS Requirements.

Examples of Contractors include the Balance of Plant (“BOP”) or Engineering, Procurement and Construction (“EPC”) contractors, who will construct all or part of the wind farm. Further examples include the wind turbine manufacturers who will supply/install and commission the turbines, and companies that may operate maintain all or part of the wind farms. Each of these activities will also likely involve several subcontractors; for example, transport companies, marine cable laying companies, diving companies, helicopter service and support vessel providers. While many of these activities will be outside the contractor’s range of competence, GoWind has an obligation to ensure that the management of EHS by these contractors is of a sufficiently high standard.

In order to achieve this there are a number of steps to be carried out:

1. Pre-qualification of Contractors;
2. EHS Specifications in the RFP Documents;
3. Evaluation of EHS Plans of the Contract Bidders;
4. Appointment of a Principal Contractor; and
5. Monitoring the implementation of the EHS Plan.

11.1. Pre-qualification of Contractors

Bids for contracted work will only be considered from contractors who have met the pre-qualification criteria for the work scope. The common procedure is for contractors to be invited to submit a self-assessment of their capabilities for consideration. A full assessment of contractors for their specific scope of work is completed by GoWind.

The intensity and rigor of the assessment is judged against the scale, complexity or risk of the EHS activities in the proposed work scope. Contractors that will perform low-risk, and perhaps some medium-risk activities, may not be subject to a full assessment if their activities can be managed to ALARP by the existing site SMS.

EHS Specifications in the Request For Proposal Document

The Request For Proposal (“RFP”) is the vehicle for making clear at the outset what is required of contractors EHS management. The contractor does not have to manage EHS in the same way as GoWind, but must have an equivalent or comparable system. In order for the contractor to better understand their EHS obligations, key documents must be provided to the bidders. The most important of these being:

- GoWind’s Safety Management System
- GoWind’s Contractor Minimum EHS Requirements
- GoWind’s Emergency Response and Search & Rescue Plans
- GoWind’s EHS Performance Monitoring and Reporting
- Incident Classification and Reporting

GoWind Standards and Guidance documentation is not regarded as confidential and copies of other documents may be provided at the request of the Contractor.
11.2. Contractors EHS Proposal:

As part of the proposal submission, the contractor is required to produce an outline EHS Plan for their scope of works. The plan will take into account any interface with other contractor’s scope and simultaneous work; it may later be integrated with other contractor’s plans as part of the overall site EHS plan. Typically this will consist of 3 main parts:

Part 1. The Contractor’s Safety Management System

GoWind should ensure the Contractor’s SMS meets the GoWind minimum requirements.

Part 2. The Application of Hazard Identification and Risk Assessment to their scope of the works

The contractor must demonstrate in the document that the project specific risks have been identified and evaluated, and that they have been eliminated or reduced where possible. Furthermore, control and mitigation measures should be identified to reduce the consequences of any incidents.

Part 3. An Activity Plan for the Project

This section will contain the details of:

- What is going to be done?
- Who will do it?
- What is the timeframe involved?
- How will assurance be obtained that the actions are being carried out?

The Activity Plan will include scheduling of EHS meetings (including those with the GoWind EHS Director), an audit program (including pre-mobilization) and the reporting of EHS KPIs.

11.3. Evaluation of EHS submissions of Bidders or pre-selected Contractors

Evaluation and interpretation of the plans against the specification and scope of work in the submission should identify any areas of concern for GoWind. GoWind will make a judgment as to the adequacy of the submission in the evaluation of the bid submission. Contracts will only be awarded to those contractors whose plans satisfy GoWind that EHS will be managed to the highest possible standard. GoWind may choose to modify the scope of work or contracting structure to address any concerns they have with the contractors’ ability to meet their requirements.

11.4. Hiring of an EHS Contractor

It is GoWind’s intention to hire an EHS contractor to take responsibility for the overall safety of the contractors and subcontractors under contract.

There is considerable potential for increasing the EHS risks on the project through lack of coordination and communication and conflicting systems and priorities. It is the role of the EHS contractor to coordinate and manage the safety across these interfaces and to create the appropriate bridging documents between contractors and simultaneous operations. In order to do this, they will need to appoint an individual who has overall accountability for this function. This person will be the counterpart of GoWind’s EHS Director.
12. **Transportation and Logistics**

12.1. **Personnel Tracking**

A system for tracking personnel will be derived and implemented across contractors as a bridge document. A movement plan will be derived for each person that indicates where and when a transfer at sea occurs and at what time. Personnel will sign in as they board a vessel in the port and sign out upon return.

A microchip system will be utilized to track personnel through a micro chip located in the boots of GoWind staff. This system will be used in conjunction with a personal locator beacon which operates on a 101.7 Hz as mandatory PPE when undertaking tasks on a turbine.

12.2. **Vehicles**

GoWind and contractor employees driving a vehicle in the course of their work will comply with GoWind’s driving standards. Typically drivers shall:

- Have a valid driver’s license;
- Use defensive-driving techniques at all times, and if required as part of their job, show evidence of defensive driver training;
- Obey all posted signs driving on GoWind project locations;
- Park in a safe area or designated parking area. When possible, park vehicles so the driver can exit by driving forward;
- Put the vehicle in park, set the emergency brake, turn the engine off, and close the doors when leaving a vehicle;
- Report any vehicle defects. Not leave the vehicle unattended with the engine running;
- Wear seat belts and ensure all passengers are doing the same;
- Not use mobile phones including ‘hands free’ sets;

12.3. **Vessels**

GoWind and contractor employees shall follow the instructions of the vessel captain on loading/unloading procedures, luggage storage, cargo, seating arrangements, and smoking restrictions.

The captain has the authority to refuse passage to anyone they consider to be an unsafe passenger.

All vessel passengers shall walk (not run) on the boat’s deck, keep one hand free for support, and wear a personal flotation device (“PFD”) when getting on or off the boat. All boats operating for GoWind shall meet applicable US Coast Guard regulations.

12.3.1. **Vessel Inspections**

All vessels working on GoWind projects will be inspected in two stages:

**Prior to mobilization**

Contractors will provide GoWind with copies of the Class and principal Flag State certification for any vessel used to carry out the work. Such certification shall have a minimum validity period.
extending beyond the duration of the works. Particular attention should be paid to certification relating to seaworthiness, statutory marine and safety equipment certification and crew certification.

In addition to the above, GoWind shall, at their discretion, have the right to undertake a vessel EHS audit prior to mobilization. This requirement will be established at the contract stage.

**During Works**

Inspections and audits will be conducted aboard vessels undertaking works on the project. The inspection will be carried out by GoWind EHS and Marine specialists.

GoWind will advise the contractor of any deficiency or irregularity arising from any audit that does not comply with the Employer’s procedures or statutory requirements. Such deficiencies shall be rectified prior to sailing to undertake the Contract works at the earliest opportunity thereafter by agreement with the Employer.

Notwithstanding the above, in the event that the vessel or any operational procedure or matter is found not to comply with the EHS requirements agreed for the Contract, GoWind shall have the right to reject the vessel for the work until the deficiencies are rectified. The cost of such rectification shall be for the contractor's account.

Special attention should be paid to the tides and a proposed activity when engaging tug boats.

12.4. Life Saving Appliances

Vessels shall be appropriately equipped for their class with life saving appliances and Personal Protective equipment in accordance with 46 CFR 199.

A comprehensive Persons On Board (“POB”) list shall be made available to GoWind on request.

Life rafts should be provided so that the aggregate capacity of the life raft(s) will accommodate at least 100 per cent of the total number of persons on board. Where possible, life rafts should be distributed equally on each side of the vessel. All rafts are to be fitted with hydrostatic releases.

Lifeboats, engines, life rafts, launching appliances (including hydrostatic releases) shall be regularly maintained and tested, and boat engines run. The contractor shall provide GoWind with a schedule of such maintenance and testing prior to Contract commencement.

12.5. Notices to Mariners

GoWind will prepare a Notice to Mariners informing of weekly construction activities and will submit the notice to the USCG. The notice will be filed in accordance with GoWind’s record keeping protocol.

The Coast Guard *Notice to Mariners* is made available weekly by the USCG NAVCEN http://www.navcen.uscg.gov. These notices are picked up by the National Geospatial-Intelligence Agency (NGA), and the National Ocean Service (“NOS”).
13. Occupational Health / Safety Procedures

13.1. General Housekeeping

Good housekeeping is essential so work may proceed in a safe and orderly manner. All walking areas, work areas, handrails, equipment, tools, fire-fighting and life-saving equipment, etc. shall be kept clean and free of obstructions. Tools should be placed appropriately so as to not cause a hazard to the job at hand while in use, and promptly put away after use. Hand and power tools shall be kept in good condition with guards in place without modification. Defective tools shall be repaired by qualified repairpersons or replaced. When cleaning grease from equipment and tools, detergents and water are preferable over solvents from an EHS standpoint. **Gasoline is not allowed for cleaning.** Additionally, keeping the office, kitchen space and refrigerators clean and free of potentially spoiled food is also part of housekeeping.

GoWind shall adhere to the 5S of excellence in housekeeping:

- Sort – eliminate the unnecessary and be efficient with what remains
- Set – everything in its place
- Shine – keep it clean (tidy and organized)
- Standardize – keep practices and procedures consistent
- Sustain – maintain and review the standards

13.2. Provision of Potable water and Potable Water Testing

All permanent water facilities (i.e., all water taps for sinks and toilets) must be supplied with potable water from a public water utility or well. Temporary facilities (i.e., port-a-johns during major projects or construction) must be supplied and refreshed by a vendor. Drinking water suppliers will be considered qualified vendors after inspections of bottled water for expiration dates and absence of illness causing bacteria. Vessels will also have testing for Legionnaires Disease completed.

Any non-potable water supply must be labeled as such to provide adequate warning to site employees.

13.3. Hygiene Facilities

GoWind will ensure the provisions relating to hygiene facilities are complied with. Suitable and sufficient toilet facilities, washing facilities (including showers, where necessary), and rest facilities will be provided on site. The rest facilities will be non-smoking areas. Suitable arrangements will be made for preparing and eating meals, and for boiling water. In addition, facilities for storing clothing not worn at work and the special offshore clothing will be provided. Changing facilities will be provided where it is necessary for a worker to wear special clothes for work, or where it is not possible to change elsewhere. An adequate and wholesome supply of drinking water will be provided or made available at readily accessible places. Site accommodation will be provided at the following locations:

- At the O&M Base;
- On board the offshore support vessel
13.4. Working Time

The normal working hours will be in accordance with any license restrictions and within the requirements of The United States Department of Labor (Maritime for vessel crews: land based for construction operative).

Fatigue is defined as an impaired physical and mental condition that arises from an individual's exposure to physical and mental exertion an inadequate or disturbed sleep. Priority must be given to allowing employees enough time to rest.
14. Implementation, Monitoring and Reporting

14.1. Implementation

The EHS Director ensures that the SMS is implemented and monitors its effectiveness using both proactive and reactive measures. Additionally, the EHS Director reports to the GoWind Board any key messages obtained from EHS statistics gathered about the project and any recommendations from the safety committee. Corrective and follow-up actions resulting from reviews are recorded in the EHS action plan.

Preparation of an SMS manual for GoWind is only the first step in the implementation of a safety management system. The minimum level of implementation requires the following:

**Leadership and Commitment**
Without the demonstrable commitment of the management at all levels there will be little progress in implementation since staff will feel that there are neither rewards for good EHS management, nor penalties for bad performance. Management must do more than react to failures; they must be proactive in encouraging excellence.

**Documentation**
The documentation, including the SMS manual, the policies and standards, the responsibilities, the risk assessment and consequent control, mitigation and recovery measure, must all be prepared and be readily accessible to all who need to use them.

**Communication**
All members of staff must know what the organization is trying to achieve and they must understand their roles and responsibilities for carrying it out.

**Implementation**
Not only must all staff know their roles and responsibilities, but they must also carry them out.

**Assurance**
Systems to check that responsibilities are discharged must be in place.

GoWind can judge the level of implementation of their SMS either by a structured self-assessment or by independent audit. While independent audit will be the most stringent test, in practice, self-assessment will be most commonly used.

14.2. Performance Monitoring

The project has established and maintains effective systems of monitoring EHS performance. Data is recorded and reported by the EHS Director and activities within the systems include:

- Providing input for the EHS targets and KPIs;
- Reporting and communicating the key messages obtained from EHS statistics gathered;
- Applying the process that collects EHS performance data;
- Reportable incidents;
- Exposure hours;
- Environmental data (waste generated/disposed, spills, releases, etc.);
- Fines and settlements; and
- EHS awards and certifications.
An annual management review of the SMS that assesses its suitability, effectiveness and where necessary, proposes amendments, will be reported to GoWind’s Board of Directors.

14.3. Incident Reporting and Investigation

GoWind expects all safety observations, near misses and accidents to be reported in the following timeframe:

<table>
<thead>
<tr>
<th>Type of Incident</th>
<th>Reporting Type and Timeframe</th>
<th>Required Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety Observation</td>
<td>Verbal and immediate if potential emergency/written and within 24 hours if corrective</td>
<td>Safety Observation form</td>
</tr>
<tr>
<td>Near Miss</td>
<td>Written and with 24 hours</td>
<td>Near Miss form</td>
</tr>
<tr>
<td>Accident Form</td>
<td>Verbal, written and immediate if resulted in injury</td>
<td>Accident Reporting form</td>
</tr>
</tbody>
</table>

14.3.1. Safety Observation Reporting

Safety observations should be either immediately corrected or reported so that an appropriate action can be completed. The safety observation should be recorded on the Safety Observation form (Appendix 5).

14.3.2. Near Miss Reporting

All near misses must be formally reported by contractors and employees with a near miss reporting form (Appendix 6). Every near miss will be investigated by the Site EHS Manager who will take the appropriate action and fill out the investigation form (Appendix 7). Where appropriate, drills will be carried out to maintain a robust emergency process and competence to ensure measures adopted from near misses are appropriate.

14.3.3. Accident/Incident Investigation & Analysis

An accident form (Appendix 8) will be filled out for an accident involving an injury that requires first aid or more.

The Site EHS Manager and EHS Director will investigate all accidents, and a suitable accident report will be submitted to the Project Director (Appendix 9).

All incidents will be investigated and corrective action agreed and implemented. The EHS Director is responsible for managing incidents. This may involve the delegation of certain tasks and/or duties as part of the corrective action process.

Lessons learned sessions will be carried out against significant accidents or incidents.

30 CFR 585.831 requires incidents be reported to BOEM via oral communication, and provide a written follow-up within 15 business days after the incident.

14.3.4. Examples of Incidents to be Reported

The following is a list of example incident that warrant reporting:

1. Port State Control detention of the vessel (all Maritime Authorities).
2. Fire, explosion, grounding, contact, collision, heavy weather damage, ice damage, hull cracking or suspected hull defect, etc., resulting in:
   - Structural damage rendering the ship unseaworthy, such as penetration of the hull underwater, immobilization of main engines, extensive accommodation damage, etc., and/or;
   - Non-compliance with statutory, flag and/or class requirements.
3. Breakdown necessitating towage or shore assistance.
4. Pollution (regardless of quantity), damage to the environment brought about by the damage of the ship or being caused by, or in connection with, the operation of the ship.
5. The death of, or serious injury to, a person that is caused by, or in connection with, the operations of the ship. Personal injuries or illness affecting the required minimum safe manning.
6. Breach of security and other security incidents, including piracy, serious robbery, bomb alert, suspected packages, stowaways, etc.

14.3.5. BOEM Reporting Requirements for Incidents and Incident Investigation

GoWind will report to BOEM all incidents in the manner described in 30 CFR 585.832 and 30 CFR 585.833. This includes immediate verbal reporting and written notifications within 15 days for:

- Fatalities
- Incidents that require the evacuation of person(s) from the facility to shore or to another offshore facility
- Fires and explosions
- Collisions that result in property or equipment damage greater than $25,000
- Incidents involving structural damage to an OCS facility that is severe enough so that activities on the facility cannot continue until repairs are made
- Incidents involving crane or personnel / material handling activities, if they result in a fatality, injury, structural damage, or significant environmental damage
- Incidents that damage or disable safety systems or equipment (including firefighting systems)
- Other incidents resulting in property or equipment damage greater than $25,000
- Any other incidents involving significant environmental damage, or harm

A written report must be provided within 15 days for:

- Any injuries that result in the injured person not being able to return to work or to all of their normal duties the day after the injury occurred;
- All incidents that require personnel on the facility to muster for evacuation for reasons other than weather or drills.

14.4. Audit Criteria and Procedures

A schedule for audit completion will be put in place for the appropriate for phase of the project. The purpose of the EHS audit program is to provide a systematic assessment of the consistent and effective implementation of the SMS and to assist with continuous improvement of EHS performance. For instance, during construction activities, audit programs will be implemented to ensure all staff and contractors are performing procedures correctly and that records are being kept in accordance with the GoWind policy. During the operational phase of the project, asset audits will be completed at regular intervals described it the O&M plan.
This GoWind SMS will be independently audited yearly to ensure the audit programs fulfill the minimum expectations of the Group guidelines with respect to:

- The levels of risk in the operations;
- The frequency of independent audits; and
- The competence of the audit leaders.

### 14.5. Reporting

It is a GoWind requirement to report the following parameters:

- Business activity level – design, active construction or O&M.
- Total Recordable Cases ("TRC")
- Lost Time Incidents ("LTI")
- Total Recordable Occupational Illness ("TROI")
- Fatalities
- Exposure hours
- Fines and Settlements
- EHS awards and certifications

Performance data should include GoWind and contractor activities, recorded separately. Safety data is reported quarterly, while environmental data is reported annually. The EHS Director collects performance data initially at site level.
15. Management Review

As stated in Table 1, management review of the effectiveness of the SMS takes place every six months. The review is conducted in accordance with the following inputs and outputs:

**Review Input**
In order to evaluate company performance, information on the following should be provided:

- Results & effectiveness of audits relating to ISO 9001, ISO 14001 and OHSAS 18001 requirements. Including internal and external audits, evaluations of compliance with legislation and other requirements;
- Employee feedback/complaints and feedback from external interested parties;
- Process performance, including quality, EHS objectives and targets;
- Status of preventive and corrective actions, including incident investigations and their impact on health, safety, welfare & the environment;
- Follow up actions from previous management reviews;
- Potential changes that could affect the QMS, EMS or SMS;
- Recommendations for potential improvements/continuous improvement activities;
- Competence and future training needs; and
- Results of participation and consultations.

**Review Output**

- An overall statement of the effectiveness of the QMS, SMS and EMS:
- Improvements related to the effectiveness of the QMS, SMS and EMS;
- Review of resource needs; and
- The minutes from the Safety Committee meetings will be disseminated by departmental managers.
Appendix 1. Safety Orientation Acknowledgement
<table>
<thead>
<tr>
<th>Policy</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SMS</td>
<td></td>
</tr>
<tr>
<td>Drugs and Alcohol</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Employee Name:</th>
<th>Department:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position:</td>
<td>Hire Date:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Employee Signature:</th>
<th>Date:</th>
</tr>
</thead>
</table>
Appendix 2. Next of Kin Form
## Next of Kin Form

<table>
<thead>
<tr>
<th>ID Number</th>
<th>Next of Kin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surname</td>
<td>Relationship</td>
</tr>
<tr>
<td>Given names</td>
<td>Address</td>
</tr>
<tr>
<td>Profession</td>
<td>Postal code and city</td>
</tr>
<tr>
<td>Nationality</td>
<td>Country of residence</td>
</tr>
<tr>
<td>Employer</td>
<td>Home Phone</td>
</tr>
<tr>
<td>Passport No.:</td>
<td>Mobile phone</td>
</tr>
<tr>
<td>Date of birth</td>
<td>Safety Courses: <strong>DATES</strong></td>
</tr>
<tr>
<td>Place of birth</td>
<td>First aid course</td>
</tr>
<tr>
<td>Sex</td>
<td>Professional diver/seaman</td>
</tr>
<tr>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Address</td>
<td>Are you on any medication?</td>
</tr>
<tr>
<td>Postal Code and City</td>
<td>If yes, what medicine?</td>
</tr>
<tr>
<td>Country of residence</td>
<td>Any known allergies?</td>
</tr>
<tr>
<td>Home phone</td>
<td>One Day Visitor</td>
</tr>
<tr>
<td>Mobile phone</td>
<td>Office phone</td>
</tr>
<tr>
<td>Office phone</td>
<td>E-mail address</td>
</tr>
</tbody>
</table>

**NOTE:** Copies of Sea Safety- and First Aid course certificates must be submitted with the NOK form, in order to obtain an ID card. Seamen and professional divers may submit proof of professional status instead.
Appendix 3. Risk Register
<table>
<thead>
<tr>
<th>Task</th>
<th>Risk</th>
<th>Cause</th>
<th>Effect</th>
<th>Risk</th>
<th>Precautions</th>
<th>Initiatives and recommendations to minimize risk</th>
<th>Risk Code</th>
<th>Severity</th>
<th>Probability</th>
<th>Risk Code</th>
<th>Risk Remaining</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix 4. DRA Example
Design Risk Assessment Example

<table>
<thead>
<tr>
<th>Activity Heading</th>
<th>Activity Detail</th>
<th>Nature of Hazard</th>
<th>Persons at Risk</th>
<th>Typical Consequence or Possible Effects of Hazard</th>
<th>Design Methods to Eliminate or Reduce Risk</th>
<th>Has ALARP Reached in Design Yes or No</th>
<th>Residual risk remaining and measures to be taken</th>
<th>Open Or Closed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fabrication</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rolled Plate Fabrication</td>
<td>Forming sheet steel on rolling beds</td>
<td>Uncontrolled movement; proximity of persons</td>
<td>F</td>
<td>Crushing, trapping</td>
<td>Selection of competent fabricator</td>
<td>Yes</td>
<td>Competent fabricator with robust management systems, operational procedures</td>
<td>Closed</td>
</tr>
<tr>
<td>Hot Work</td>
<td>Plasma cutting, seam welding</td>
<td>Hot work and proximity of persons</td>
<td>F</td>
<td>Eye retina burns, skin burns</td>
<td>Selection of competent fabricator</td>
<td>Yes</td>
<td>Competent fabricator with robust management systems, operational procedures</td>
<td>Closed</td>
</tr>
<tr>
<td>Seafastening and Transportation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seafastening Stability</td>
<td>Unstable Load</td>
<td>Unstable load leading to movement of cargo at sea</td>
<td>DV</td>
<td>Injury or damage to cargo or loss of cargo overboard</td>
<td>Reduce</td>
<td>Yes</td>
<td>Sea fastenings to be properly designed and checked</td>
<td>Closed</td>
</tr>
<tr>
<td>Work at Height</td>
<td>During load out and seafastening activities</td>
<td>Working at height to access lifting or fastening points</td>
<td>DV</td>
<td>Falls from height to ground, sea or boat</td>
<td>Reduce</td>
<td>Yes</td>
<td>Communicate method for sea fastening minimizing access to and work at height</td>
<td>Closed</td>
</tr>
</tbody>
</table>
Appendix 5. Safety Observation Form
<table>
<thead>
<tr>
<th>Location of Hazard:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description of Hazard:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Action Required to Mitigate Hazard:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mitigation Completed?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Supervisor Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe follow up action:</td>
</tr>
<tr>
<td>---------------------------</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Supervisor Signature:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix 6. Near Miss Reporting Form
<table>
<thead>
<tr>
<th>NEAR MISS REPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOC DATE:</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>DATE &amp; TIME OF EVENT:</td>
</tr>
<tr>
<td>LOCATION OF EVENT:</td>
</tr>
<tr>
<td>DESCRIPTION OF THE NEAR MISS:</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>CAUSE OF NEAR MISS INCIDENT:</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>IMMEDIATE ACTIONS TAKEN IF ANY:</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
**PERSON REPORTING NEAR MISS:**

<table>
<thead>
<tr>
<th>NAME:</th>
<th>COMPANY:</th>
<th>SIGNATURE:</th>
<th>DATE:</th>
</tr>
</thead>
</table>

**MANAGEMENT REVIEW**

<table>
<thead>
<tr>
<th>NAME:</th>
<th>COMPANY:</th>
<th>SIGNATURE:</th>
<th>DATE:</th>
</tr>
</thead>
</table>

**DISTRIBUTION LIST**

<table>
<thead>
<tr>
<th>FUNCTIONAL TITLE</th>
<th>NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix 7. Near Miss Investigation Form
**NEAR MISS INVESTIGATION REPORT**

**Cause of Near Miss:**

**Recommendations / Comments:**

**PERSON INVESTIGATING NEAR MISS**

<table>
<thead>
<tr>
<th>NAME</th>
<th>COMPANY</th>
<th>SIGNATURE</th>
<th>DATE</th>
</tr>
</thead>
</table>

Risk potential of incident: Tick appropriate box below

<table>
<thead>
<tr>
<th>HIGH</th>
<th>MED</th>
<th>LOW</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**DEFINITION OF NEAR MISS:**

Personal Injury or Damage that nearly happened.

An unplanned event where Personal Injury or Damage was avoided by good luck. Nearly damaged property plant or environment.
Appendix 8. Accident Reporting Form
# Accident / Incident / Industrial Illness Report

## PART ONE - LOG OF EVENTS

<table>
<thead>
<tr>
<th>SITE:</th>
<th>LOCATION OF EVENT:</th>
<th>TIME:</th>
<th>DATE:</th>
</tr>
</thead>
</table>

**WEATHER CONDITIONS:**

**DESCRIPTION OF EVENT:**

**IMMEDIATE ACTIONS:**

**RECOMMENDATIONS AND COMMENTS**

## SIGNATURES:

- **Supervisor/Manager (Print Name):** ____________________________  Signature ____________________  Date ________
- **Injured Person (Print Name):** _______________________________  Signature ____________________  Date ________
### PART ONE (CONTINUED)

**OPERATION IN PROGRESS:**

1. Construction  
2. Material Handling  
3. Maintenance  
4. Radiography  

**TYPE OF ACCIDENT / INCIDENT / ILLNESS:**

1. Fall from height  
2. Fumes/gas  
3. Struck against  
4. Use of hand tools  
5. Structural failure  
6. Spill/pollution  
7. Industrial Illness (specify)  
8. Foreign bodies (eyes)  
9. Servicing equipment in operation  
10. Crushing  
11. Struck by falling object  
12. Electrical  
13. Machinery  
14. Other equipment failure  
15. Hot substances (scald/burn)  
16. Fire or explosion  
17. Eye flash  
18. Slip/fall on ground/from same level  
19. Transport  
20. Radioactive Substance  
21. Other (specify)

**IMMEDIATE CAUSES:**

1. Failure to make safe  
2. Operating without authority  
3. Removing a safety device  
4. Using defective equipment  
5. Failure to use PPE properly  
6. Using equipment improperly  
7. Improper loading  
8. Improper position for task  
9. Servicing equipment in operation  
10. Horseplay  
11. Drinking or drugs

**SUBSTANDARD CONDITIONS:**

1. Inadequate guards or barriers  
2. Defective tools, equipment, substances  
3. Inadequate tools, equipment, substances  
4. Poor access – egress  
5. Fire and explosion hazards  
6. Substandard housekeeping  
7. Hazardous gases, dusts, fumes, vapours  
8. Excessive noise  
9. Radiation exposure  
10. Inadequate ventilation  
11. High or low temperature exposure

**BASIC CAUSES:**

1. Capability  
2. Knowledge  
3. Skill  
4. Stress  
5. Motivation

**JOB FACTORS:**

1. Leadership  
2. Engineering Design  
3. Purchasing  
4. Maintenance  
5. Tools and Equipment  
6. Procedures or practices  
7. Wear and Tear  
8. Abuse or Misuse
### RISK EVALUATION:

**Potential for more serious outcome**

1. High   
2. Medium
3. Low

**Probable Recurrence if no action is taken**

1. High   
2. Medium
3. Low

### WAS WEATHER A FACTOR  Y/N:

### WORKING PRACTICES:

- **Was A Permit to Work in use?** Y/N
- **Was a rule or order disobeyed?** Y/N
- **Was safety equipment used?** Y/N
- **Were the permit conditions complied with?** Y/N
- **Were procedures adequate?** Y/N
- **Were procedures followed?** Y/N

### PART 2 – DETAILS OF PERSONAL INJURY / INDUSTRIAL ILLNESS

<table>
<thead>
<tr>
<th>NAME:</th>
<th>Date of Birth:</th>
</tr>
</thead>
<tbody>
<tr>
<td>HOME ADDRESS:</td>
<td>NAME AND ADDRESS OF EMPLOYER:</td>
</tr>
<tr>
<td>OCCUPATION:</td>
<td>EMPLOYING DEPARTMENT:</td>
</tr>
<tr>
<td>NAME/EMPLOYER OF SUPERVISOR:</td>
<td>FULL NAME, TITLE &amp; EMPLOYER OF WITNESS:</td>
</tr>
</tbody>
</table>

### HOW WAS PERSON INJURED?
## DETAILS OF INJURY:

**Part of Body Affected**

1. 
2. 
3. 

**Type of Injury**

1. 
2. 
3. 

## SEVERITY OF INJURY:

<table>
<thead>
<tr>
<th>Letter</th>
<th>Description</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>F.</td>
<td>Fatal</td>
<td>1. Returned to Work</td>
</tr>
<tr>
<td>L.</td>
<td>Lost Time</td>
<td>2. Treated by First Aider</td>
</tr>
<tr>
<td>M.</td>
<td>Minor Enter</td>
<td>3. Direct to Doctor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Direct to Hospital</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Refer to Doctor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6. Sent Home</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7. Fatality</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8. Other (Specify)</td>
</tr>
</tbody>
</table>

## MAN-DAYS LOST:

**Date employee was fit to return to work**

## ACTIVITY CAUSING INJURY:

1. Carrying/Handling
2. Climbing/Descending
3. Running/Walking
4. Lifting
5. Pulling/Pushing
6. Driving
7. Other (Specify)
Appendix 9. Accident Investigation Form
<table>
<thead>
<tr>
<th>Date of Investigation:</th>
<th>Name of Investigator:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injured Person:</td>
<td>Location:</td>
</tr>
<tr>
<td>Date of Hire:</td>
<td>Date of Accident:</td>
</tr>
<tr>
<td>Severity of Injury:</td>
<td>Outcome:</td>
</tr>
<tr>
<td>F. Fatal</td>
<td>1. Returned to Work</td>
</tr>
<tr>
<td>L. Lost Time</td>
<td>2 Treated by First Aider</td>
</tr>
<tr>
<td>M. Minor</td>
<td>3. Direct to Doctor</td>
</tr>
<tr>
<td></td>
<td>4. Direct to Hospital</td>
</tr>
<tr>
<td></td>
<td>5. Refer to Doctor</td>
</tr>
<tr>
<td></td>
<td>6. Sent Home</td>
</tr>
<tr>
<td></td>
<td>7. Fatality</td>
</tr>
<tr>
<td></td>
<td>8. Other (Specify)</td>
</tr>
<tr>
<td>Type of Injury / Body Part Affected:</td>
<td></td>
</tr>
<tr>
<td>Describe the Accident / Incident in detail:</td>
<td></td>
</tr>
<tr>
<td>IMMEDIATE CAUSES:</td>
<td>SUBSTANDARD CONDITIONS:</td>
</tr>
<tr>
<td>1. Failure to make safe</td>
<td>1. Inadequate guards or barriers</td>
</tr>
<tr>
<td>2. Operating without authority</td>
<td>2. Defective tools, equipment, substances</td>
</tr>
<tr>
<td>3. Removing a safety device</td>
<td>3. Inadequate tools, equipment, substances</td>
</tr>
<tr>
<td>4. Using defective equipment</td>
<td>4. Poor access - egress</td>
</tr>
<tr>
<td>5. Failure to use PPE properly</td>
<td>5. Fire and explosion hazards</td>
</tr>
<tr>
<td>7. Improper loading</td>
<td>7. Hazardous gases, dusts, fumes, vapours</td>
</tr>
<tr>
<td>8. Improper position for task</td>
<td>8. Excessive noise</td>
</tr>
<tr>
<td>10. Horseplay</td>
<td>10. Inadequate ventilation</td>
</tr>
<tr>
<td>11. Drinking or drugs</td>
<td>11. High or low temperature exposure</td>
</tr>
<tr>
<td>12. Other (specify)</td>
<td>12. Other (Specify)</td>
</tr>
<tr>
<td>BASIC CAUSES:</td>
<td>JOB FACTORS:</td>
</tr>
<tr>
<td>--------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Personal Factors</td>
<td>1. Leadership</td>
</tr>
<tr>
<td>1. Capability</td>
<td>6. Procedures or practices</td>
</tr>
<tr>
<td>2. Knowledge</td>
<td>2. Engineering Design</td>
</tr>
<tr>
<td>Enter Number</td>
<td>4. Maintenance</td>
</tr>
<tr>
<td></td>
<td>Enter Number</td>
</tr>
<tr>
<td></td>
<td>5. Tools and Equipment</td>
</tr>
</tbody>
</table>

Was the Employee properly instructed / trained?

Was there an infraction of policy / procedure?

Root Cause:

Immediate Actions:

Corrective Measures:

Investigator Signature: **Date:**
### Record of Changes

<table>
<thead>
<tr>
<th>Rev #</th>
<th>Date</th>
<th>Description</th>
<th>Approved</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2012-08-14</td>
<td>Draft of Rev A</td>
<td>Sebastian Chivers</td>
</tr>
<tr>
<td>B</td>
<td>2012-08-28</td>
<td>Draft of Rev B (stakeholder comments)</td>
<td>Sebastian Chivers</td>
</tr>
<tr>
<td>C</td>
<td>2012-10-02</td>
<td>Draft of Rev C</td>
<td>Sebastian Chivers</td>
</tr>
<tr>
<td>D</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>2012-11-01</td>
<td>Rev 0 – Final Draft</td>
<td>Sebastian Chivers</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Distribution List

<table>
<thead>
<tr>
<th>#</th>
<th>Function Title</th>
<th>Company</th>
<th>Name (optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Contracting Officer Representative</td>
<td>BSEE</td>
<td>Zachary Clement</td>
</tr>
<tr>
<td>2</td>
<td>Contracting Officer</td>
<td>BSEE</td>
<td>Frank Bennett</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: