Health Safety Environmental
HSE
PLAN

Revision 3.0 (3/29/18)

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1. Introduction

1.1. Document Control & Issue for HSE Plan:

1.1.1. Custodians

The SEISMIC STAFFING Safety Management Systems (SMS) Documents are held and controlled by the following custodians:

- Caton Higginbotham – V.P. International recruiting / sales
- Douglas Richmond – General Manager
- Project Party Chief

Details of custodian responsibility is contained in the SEISMIC STAFFING 'Health, Safety, & Environmental Manual'.

1.1.2. Issuing Authority

The SEISMIC STAFFING Manager of Support & Services is the person ashore who is responsible for both the review and issuance of subsequent revision of the SEISMIC STAFFING SMS Manuals.

1.1.3. Date and Revision Number

An issue/revision number is provided on each page to identify the process of revision and issue.

1.1.4. Update Procedures

All revisions to the SMS Manuals are subject to control by either the shore authority or shipboard authority. It is the SEISMIC STAFFING shore authority that will give final endorsement to a revision, either within the ship or shore SMS Manuals.

Seismic Staffing LLC.
Health, Safety & Environmental Manual - Revision 2 – October 2012

1.2. Project Overview & Main HSE Concerns:

This HSE Plan has been developed by SEISMIC STAFFING to define the strategy that will be used to safely execute the scope of work that SEISMIC STAFFING has been contracted to perform. This Safety Plan specifically identifies the means, the Client/Representatives, and other Subcontractor personnel. SEISMIC STAFFING will use this Safety Plan as a systematic approach to achieve our safety objectives.

The SEISMIC STAFFING SMS identifies all the main concerns regarding HSE for this, and all projects that SEISMIC STAFFING perform. The document details the concerns with maintaining and improving the Health and Safety of SEISMIC STAFFING personnel and those of its sub-contractors, as well as positive stewardship of any impact its operations may have on the Environment. Likewise, the company SMS is designed for safekeeping of its own equipment and that of third parties within the survey area.

The following were identified as the most significant Specific Risks or Hazards (ref Appendix O – Project Risk Assessment):

1. Back Deck Operations including launch/recovery of equipment
2. Medical Emergency Evacuation (medevac)
3. Small Boat Operations
4. Mobilization/Demobilization of crew and equipment to work site
5. Major Equipment failure and loss including any impact to Client facilities on Project

6. Chemical Spill
7. Hazardous Materials/Chemicals
8. Man Overboard
9. Manual Lifting and Handling
10. Helicopter Operations

1.3. Project Goals

The objective of this HSE Plan is to complete the project without incident or injury to personnel and equipment and without damage to the environment. All personnel will share in this responsibility by means of the company's pro-active approach to safety and systematic identification and subsequent reporting of all incidents

The following key HSE performance indicators will be captured during the Project:

Project Specific	Month 1	Month 2	Month 3	Month 4	Total
No. Safety Meetings					
No. Toolbox Meetings					
No. Safety Drills					
No. Internal Audits					
No. of Near-Miss Incidents					
No. Unsafe Acts/Conditions					
No. STOP Cards Completed					

2. HSE Policies & Standards

Seismic Staffing LLC. has instituted a set of Policy Statements, which are signed by the designated company officer. These policies establish the company's commitment to a Healthy and Safe working environment for all its personnel and those of its sub-contractors, as well the stewardship of the environment in which it works.

All SEISMIC STAFFING Policies are reviewed and amended if and when there is a change in legislative regulation or there is a need based on company requirements.

The Policies are as follows:

2.1. SAFETY POLICY STATEMENT

The welfare of all personnel working on Seismic Staffing LLC.(SEISMIC STAFFING) premises, including our employees as well as employees of our contractors and their subcontractors, is of strong interest to us. Accordingly, it is important that each individual recognize certain rules when doing his job. These rules are basic and general in nature and cannot cover every possible working condition. Therefore, the cooperation of each person is a necessity so that operating procedures and work methods do not expose you or your co-workers to injury. Remember, safety is a team effort in which each individual must share to eliminate or reduce the risk of loss or damage to personnel or property. Good judgment and common sense are required to supplement any rules. If you have any doubt at any time, consult your supervisor. Report all accidents, injuries and near misses as soon as possible to your supervisor.

Health, Safety and Environmental Policy and Commitment

In the management of our activities, SEISMIC STAFFING is committed to the following principles:

- Pursue the goal of no harm to people
- Protect the environment
- Manage HSE matters as any other critical business activity
- Promote a culture in which all SEISMIC STAFFING employees share this commitment
- Promote the well-being of employees as an essential part of business activities

SEISMIC STAFFING HSE policy requires everyone to stop any work, or prevent work from starting, where adequate controls of HSE risks are found not to be in place

Signed

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Date

2.2. ENVIRONMENTAL POLICY STATEMENT

Because our company has a strong regard for environmental protection, and safety concerns, we will conduct our activities in such a manner as to protect the physical environment, our employees, our customers and the general public. We will comply with environmental, stewardship, safety laws and regulations and will develop and implement programs to ensure compliance. We will be both responsible and responsive in our efforts related to environmental protection, and employee safety. When our company becomes aware of environmental and product safety risks not covered by existing laws or regulations, we will develop our own good faith standards and practices based on comprehensive and relevant scientific data. We will cooperate with the public, government, industry and employees in identifying environmental, and safety goals and in developing effective control programs. Each operating unit of the company are expected to be guided by this policy in forming plans, setting objectives and conducting their day-to-day activities:

Environmental Policy

Seismic Staffing LLC. pledges to comply with current environmental legislation, best practices, and to achieve a balance in economic, social, and environmental responsibilities. We are committed to avoiding damage to the environment by any of our actions and operations.

SEISMIC STAFFING is dedicated to continual improvement and efficient use of resources, which will be achieved by setting and ensuring successful implementation of environmental objectives.

Signed

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Date

2.3. SEISMIC STAFFING DRUG, ALCOHOL POLICY

SCOPE: All persons employed by SEISMIC STAFFING or affiliated companies are subject to the terms and conditions of this policy.

For the safety of our employees and our customers, SEISMIC STAFFING prohibits the use, possession, being under the influence or distribution of illegal drugs, alcohol, other intoxicants, firearms, or contraband, when reporting to work, while at work, while on company premises, in company vehicles or vessels, or on customer or third party property, vessels or vehicles. SEISMIC STAFFING and its customers have the right to test for the presence of drugs and/or alcohol in our employees.
This policy does not bar the moderate use of alcohol at company-sponsored functions approved by the president of SEISMIC STAFFING.

The laws of many foreign countries in which SEISMIC STAFFING operates have extremely severe drug laws, which include the death penalty for some drug violations. It is understood that if you and/or your family violate any of the foreign country's drug laws, SEISMIC STAFFING, your embassy, high commission or counsel are virtually powerless to come to your aid.

The primary purpose of this policy is to promote the safety and well being of all employees. It would be inconsistent to promote a strong safety effort while allowing the use of drugs and/or alcohol or the possession of firearms to undermine the safe and effective performance of employees on the job.
As a maritime and pipeline contractor, the company will comply with the United States Department of Transportation requirements of 46 CFR, Part 16 and 49 CFR, Part 40 for all vessel personnel (DOT). The provisions of Texas R.S., 49:100, Parts I through III, shall apply to non-maritime employees (non-DOT). All collections shall be conducted in accordance with 49 CFR, Part 40.

Note: The entire Drug and Alcohol program is available for review in the HR Department or Safety Department.

Signed

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Date

2.4. COMPANY MALARIA POLICY

It is the policy of the company to protect the employee against communicable diseases by creating a safe environment.

Malaria is a very serious health hazard that has resulted in prolonged illness or death. To prevent the infection of this disease, employees may be required to see the company medical doctor for immunization and follow all medical treatment necessary to ensure their health and health of their co-workers. This includes initial physician visits, follow-up visits and taking prolonged medication as required. Medication will be provided to employees at no cost.

The medic assigned to each vessel will keep a written record of each employee’s status in the anti-malaria medication regimen.

Signed

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Date

2.5. COMPANY POLICY on EEO / HARASSMENT

SEISMIC STAFFING, Inc., provides equal employment opportunity in employment to all employees and applicants for employment. No person will be discriminated against in employment because of race, religion, color, sex, age, national origin, disability, or military status.

It is also the policy of the company to provide employees a workplace free from any form of sexual harassment. Sexual harassment in any manner or form is expressly prohibited.

A separate policy on the above is located in the employee handbook sections 5.7-Harassment and 7.6 - Ethics and Behavior.

Signed

Date

2.6. VIOLENCE IN THE WORKPLACE

Seismic Staffing LLC. strongly believes that all employees should be treated with dignity and respect. Acts of violence will not be tolerated. Any instances of violence must be reported to the employee's supervisor and/or Human Resource Department. All complaints will be fully investigated.

The company will promptly respond to any incident or suggestion of violence. Violation of this policy will result in disciplinary action, up to and including immediate discharge

Signed

Date

2.7. SMOKING IN THE WORK PLACE

There is not a specific No Smoking Policy within SEISMIC STAFFING, however to accommodate both those personnel who don't smoke, and those that do, the company has set aside designated Smoking Areas, and is supported by some basic principals identified below.

Within the companies Land Operations, personnel are advised to be considerate to their fellow workers, and to be diligent in where they smoke as it relates to immediate work area. Also each smoker holds the responsibility of ensuring that a cigarette is completely extinguished before leaving it.

2.8. RESTRICTED WORK PROGRAM (LIGHT DUTY)

SEISMIC STAFFING has a system whereby if an employee suffers minor injury, he/she will be placed on light duties provided the injured persons agree and the company doctor issues a certificate allowing that person to perform light duties.

The definition of light duty is:
Any job, task, function or combination of same which are meaningful and productive, and can be performed by a worker who suffers from a diminished capacity, temporarily or permanently due to a work related accident, and without risk of re-injury to themselves or others.

The program is structured such that the injured / ill employee can either work in their original position on a modified schedule or an alternate position with the same restrictions to his/her hours of work, volume, and/or tasks. The allowable time for an injured / ill employee to participate in the Restricted Work Program will be 7 Days, however, the crew Party Chief can request an extension of 7 Days by contacting the HSE Manager and/or the Human Resource Manager. The program cannot be utilized longer than 28 Days in total.

Note: In an offshore situation it will be the decision of the Medic and Party Chief as to whether the injured person can perform a restricted (light duty) work. Their decision must also include consultation with the company doctor, and shall not put any further risk to the injured person and/or his/her fellow workers.

2.9. HSE STANDARDS

SEISMIC STAFFING has a well-defined Safety Management System (SMS) from which it develops Project Specific HSE Plans, such as this one. To aid in this process, SEISMIC STAFFING both follows and utilizes the following guidelines in their development, and to stay current with the various Regulatory Guidelines to which they must follow:

- International Association of Geophysical Contractors - Marine Safety Manual
- International Association of Geophysical Contractors – Environmental Manual

- E&P Forum Guidelines to Geophysical Operations – Land & Marine
- Occupational Health & Safety Administration – OSHA Compliance Guidelines:
  - HAZCOM – §1910.1200
  - HAZWOPER – §1910.120
  - Lock-Out / Tag-Out – §1910.147
  - Fire Safety - §1910.165 - Subpart L
  - PPE Standards - §1910.139 - Subpart I
  - Hearing Conservation – §1910.95
- American Bureau of Shipping – ABS
- United States Coast Guard – USCG
- Standard of Training Certification and Watchkeeping Convention - STCW-95 (IMO)
- International Convention for Safety of Life at Sea 1974, SOLAS, including 1978 Protocol.
- International Management Code for the Safe Operation of Ships and for Pollution Prevention (International Safety Management (ISM) Code).
- International Convention for the Prevention of Pollution from Ships 1973 MARPOL.73/78
- OGP HSE aspects in a contracting environment for geophysical operations. Report No 6.92/317 May 2001
- Convention on the International Regulations for Preventing Collision at Sea (COLREG)

The above references shall be taken to include any updates and/or amendments to these documents.

3. Management & Supervision

In order to expedite this project in both a professional and timely manner SEISMIC STAFFING has assembled a team of personnel who are very knowledgeable, and eager to perform their duties in a technically sound manner as well as placing their own safety, and that of the project as their highest priority.

The team consists of a well-structured Marine Crew who will be responsible for all facets of the running of the vessel, and a Technical Crew who will carry all responsibilities relating to Geophysical Operations.

A highly experienced management team in Port Harcourt, Nigeria and Houston, Texas will support the offshore operations.

3.1. Management Organization & Structure

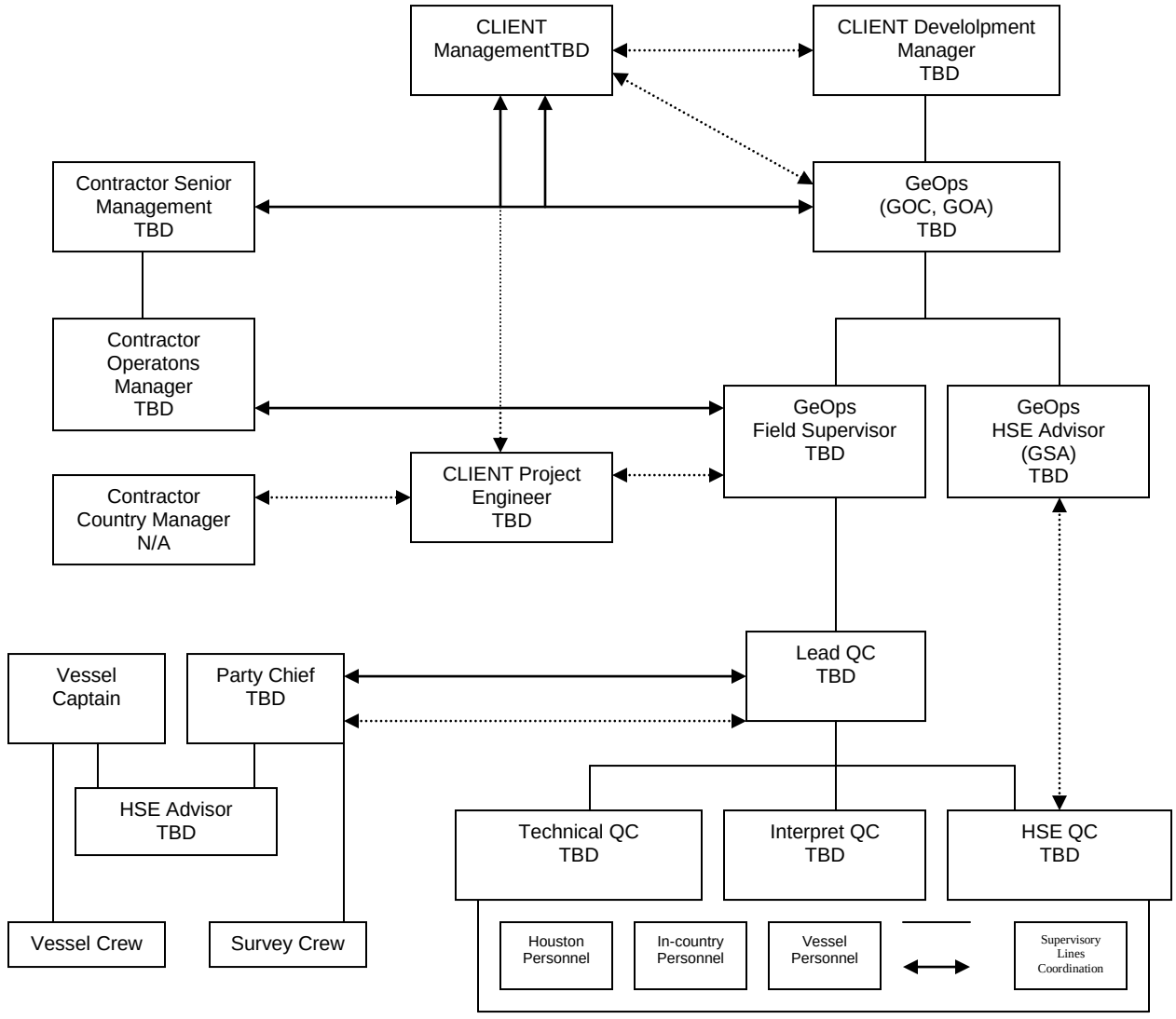
3.2. Key Personnel & Job Descriptions

This section defines the overall organization that will be utilized on the project during its execution phase and their roles and responsibilities. Detailed roles and responsibilities for control mechanisms and safety initiatives are included in later sections, when applicable.

3.2.1. The President shall be responsible for all business undertaken and entered into by SEISMIC STAFFING and for the formulation, promulgation, and enforcement of SEISMIC STAFFING Safety Policy.

3.2.2. The General Manager shall have oversight responsibility for all operations activities; including Project Management, Asset Management, Engineering, Procurement, Marketing/Sales, and Operations.

3.3. Interface Management Plan



Main Interfaces		Contacts
CLIENT GeOps Mgmt↔SEISMIC STAFFING Sr. Mgmt		TBD ↔ TBD
CLIENT GeOps (FS) ↔ SEISMIC STAFFING Operations Mgr		TBD↔ TBD
CLIENT GeOps (FS) ↔ CLIENT Lead QC		TBD ↔ TBD
CLIENT Lead QC ↔ SEISMIC STAFFING Party Chief		TBD ↔ TBD
CLIENT Lead QC ↔ CLIENT Technical QC		TBD ↔ TBD
SEISMIC STAFFING Party Chief ↔ Vessel Captain		↔ TBD

3.3.1. Interface Management Plan (Contacts)

3.3.2. SEISMIC STAFFING & Related Sub-contractors

3.3.3. CLIENT Personnel

4. HSE Communication & Awareness Programs

4.1. HSE Awareness (Safety Initiatives) Program

SEISMIC STAFFING Site Management will utilize the following control mechanisms and safety initiatives to specifically accomplish our key safety elements. A brief description of each initiative follows the matrix. The objectives, procedures, and expectations for each control mechanism and safety initiative will be communicated to the Project Site Team.

Safety Initiative Guidelines

Description	Management Commitment	Workforce Participation	Effective Communication	Positive Reinforcement	Performance Measurement	Caring About the Worker	Empowerment	Accountability	Competence	Pro-activity	Risk Management	Continuous Improvement
Safety Walk-Through and Inspections	X	X	X	X	X		X	X		X	X	X
Orientation, Training and Medical Fitness	X	X	X			X		X	X	X	X	
Short Service Employee Program	X					X			X	X	X	
Incident Investigation Process	X					X					X	X
Safety Meetings	X	X	X	X					X	X	X	
JSA's	X	X	X				X		X	X	X	
Safety Communications	X	X	X		X	X	X			X	X	X
Housekeeping	X	X			X	X		X		X	X	X

4.1.1. Safety Walk-Through & Inspections

Safety walk-through and inspections shall be performed at least on a weekly basis. All SEISMIC STAFFING First Line Supervisors and Vessel Captain are expected to participate in this initiative. All walk-through participants have the option of performing the walk-through on an individual or a group basis. Walk-through findings are to be given to the Project Manager for review and action. These walk-through's are intended to serve as a risk management function and all issues and concerns shall be addressed on the spot whenever feasible.

Client/Representatives should also be asked to participate in this effort whenever feasible.

4.1.2. Orientation, Training and Medical Fitness

SEISMIC STAFFING shall be responsible for ensuring the competence of their personnel and will

ensure that they have received appropriate "in-house" training before being mobilized to the project. Minimum training shall include, but not be limited to OSHA (Occupational Safety and Health Administration) Mandated Training:

- New Employee Orientation
- Personal Protective Equipment
- Fall Protection
- Accident Prevention Signs and Tags
- Accident/Incident Reporting
- Lockout/Tag out (assigned workers, as required)
- Rigging (assigned workers, as required)
- Crane Operation (assigned workers, as required)
- Lifting and Manual Handling
- Small Boat Operations
- Drug & Alcohol Awareness
- Medical fitness of employees (inline with American Disabilities Act)

The Vessel Captain shall be responsible for ensuring the competence of all vessel personnel and will ensure that they have received appropriate "in-house" training before being mobilized to the project.

SEISMIC STAFFING also conducts informal training during the execution phase of the project via safety meetings, mentoring, Job Safety Analysis (JSA), etc. All personnel are expected to continually evaluate their own training needs and communicate any needs to their immediate supervisor.

The Client/Representatives and all Third Parties shall be responsible for ensuring the competence of their personnel and will ensure that they have received appropriate "in-house" training before being mobilized to the project.

4.2. HSE Meeting Structure

Safety meetings onboard the vessel shall be conducted in accordance with SEISMIC STAFFING HSE Manual (HSE Done Right Program) and the following:

4.2.1. Weekly Safety Meeting

SEISMIC STAFFING Site Management will hold weekly safety meetings to serve as forums for information sharing, informal training, positive reinforcement, pre-job planning, and risk management. The Vessel Captain and Party Chief will attend the weekly safety meeting. Client/Representatives shall always be invited to attend and participate in these meetings. Meetings will review and close out (as appropriate) the ongoing action item list and ongoing vessel hazard register. Meetings will be staggered each week to capture the different shifts.

Attendees: All non-essential personnel will attend the Weekly HSE Meeting

Documentation: Minutes will be taken of the meeting and shall be posted on the Bulletin Board & sent to SEISMIC STAFFING Management for their review.

Toolbox Meetings (Pre-Shift)

Toolbox Meetings will be utilized to serve as forums for information sharing, informal training, positive reinforcement, pre-job planning, and risk management. All supervisors are expected to facilitate a brief Tool Box Meeting for their crews before each shift. These informal safety meetings will last approximately 10 - 15 minutes and should be documented.

Note: In the event there is an occurrence, (e.g.: Post Incident - Technical Reason – Specialized Work Task) then a Specific Toolbox Meeting will be held in order that all crewmembers involved discuss the details of what happened, or what is about to happen.

Attendees: All personnel involved in that specific work group.

Documentation: None (unless there is a change to procedure or JSA)

4.2.2. Daily Coordination Meetings

SEISMIC STAFFING Site Management, including the Vessel Captain and Subcontractor's Supervisors, shall participate in all daily coordination meetings, which act as forums for the execution of the daily plan of activities and any Permitting processes, or that are used to facilitate effective communication and pre-job planning the various Companies and crafts on board.

Attendees: All Department Heads and Client Representatives.

Documentation: Where applicable these meetings will be documented

4.3. Safety Awareness Programs

The following programs will be reviewed with the crew prior to survey operations commencing.

4.3.1. Job Safety Analysis

4.3.1.1. The Job Safety Analysis (JSA) process will be utilized on this Project to identify the tasks required to complete an activity, assess the hazards associated with each task, and offer a plan to eliminate or minimize the identified risks. JSA will be used to facilitate effective pre-job planning, hazard identification and mitigation, and maximize employee involvement. All relevant JSA will be carried onboard the vessel.

The operations which shall require a Job Safety Analysis (JSA) will be the:

- Launch and Recovery of equipment
- Installation of equipment other than computers
- Deck Winch Operation
- Coring
- Small Boat Operations
- Working at heights
- FRC Launching

Third Parties will utilize additional JSA and routine best practices as deemed necessary.

4.3.1.2. The development of JSA is intended to be a thoughtful planning process, rather than a mechanical event.

4.3.1.3. JSA shall also be developed for routine jobs to ensure that personnel coordinating or performing the work do not discount hazards associated with ordinary tasks. JSA shall cover all operations: Marine, and Third Party.

4.3.1.4. SEISMIC STAFFING personnel are expected to review and upgrade previously developed JSA for significant jobs that are repetitive in nature, to ensure that conditions have not changed and that the personnel on the job understand the job, the hazards, and the safety controls. The review and upgrading of JSA is especially important when a significant length of time occurs doing repetitious works.

4.3.1.5. JSA will specifically identify the location where the work will be performed, as this will have an impact on the potential hazards and how they are mitigated.

4.3.1.6. The JSA development process will be facilitated by the supervisor in charge of performing the work and include active participation from the personnel performing the work. JSA will be designed to cover the entire duration of a specified task unless certain considerations mentioned just below change.

4.3.1.7. JSA shall not expire at the end of a shift or at the end of the day. Supervisors, who turn over work that required a JSA, to a new shift, must review the JSA with the supervisor and personnel coming on shift. JSA will expire only when the scope of work is complete, the work scope changes, the work environment changes, or an accident or Near Miss occurs.

4.3.1.8. Client/Representatives shall be invited to participate in the development of JSA and in review sessions whenever possible.

4.3.2. Short Service Employee Program

4.3.2.1. SEISMIC STAFFING has a Short Service Employee (SSE) procedure that will be employed. When initiated, all SEISMIC STAFFING personnel and all personnel working for a subcontractor of SEISMIC STAFFING shall comply with the requirements of the procedure. A “red hard hat will identify all personnel who qualify as Short Service Employees.

4.3.2.2. SSE personnel will be given additional guidance, instruction, and training, as required, to ensure that they do not put themselves or others at risk due to their inexperience.

4.3.2.3. SEISMIC STAFFING SSE statistics will be administered by SEISMIC STAFFING and will be communicated to the Client/Representatives using the appropriate SSE forms.

4.3.3. Work Observation Program

SEISMIC STAFFING and Vessel have adopted “The No Fault” approach to Incident Reporting and both utilize the STOP Program, which all company and sub-contract employees are encouraged to participate in.

Likewise, Safety Communications (Near Miss/Hazard Reporting) are utilized to offer the project site team an opportunity to provide feedback on the safety process. This action will allow personnel to report a Near Miss, report an Unsafe Condition, offer a Safety Suggestion, or offer a Productivity Suggestion.

Project Site Team Supervisors, including the Vessel Captain and Subcontractor’s Supervisors, are expected to review these safety topics and whenever possible, disposition and close each finding as soon as is practical.

4.3.4. Unsafe Act/Condition Auditing

SEISMIC STAFFING utilizes the philosophy that all company and sub-contract employees are responsible in performing occasional Self Audits and are equally responsible in auditing their particular work area.

Where applicable Audit Action Items will be documented and specific Target Dates applied for completion. These actions will be addressed during the Weekly Safety Meetings and/or Daily Toolbox Meetings, where necessary.

4.3.5. Hazard Communication (HAZCOM) – OSHA - §1910.1200

SEISMIC STAFFING Operations will utilize a Hazard Communication Program to ensure that personnel on the Project understand the hazards and safe work practices associated with hazardous chemicals. A comprehensive inventory of Material Safety Data sheets (MSDS) will be kept on the Bridge and each department on board shall maintain their own MSDS records, which will be amended, as and when necessary. All hazardous materials that are shipped to the site must be accompanied with a MSDS. Any chemical arriving on site without a current MSDS shall not be received onboard and will be returned at shipper's expense.

4.3.6. Safety Performance Recognition/Incentive Program

There is a Notice Board in the vessel common area. All General Communications applicable to the overall crew are posted on the notice board. Likewise, the Safety Meeting & Toolbox Meeting media is also used to convey Safety Performance.

At present SEISMIC STAFFING does not have any form of Incentive Program.

5. Personnel Qualification & Training

5.1. Key Personnel

A copy of the combined Crewlist / Training Matrix can be found in the party chief manual on board all vessels.

SEISMIC STAFFING recognizes that the provision of training is an essential part of its SMS, and is therefore company policy that all employees are given HSE training as a part of their employment.

The Company provides:
- A system for the identification of training needs;
- Proper allocation of the responsibilities for training;
- Training to cover all levels of staff from senior management to new entrants;
- Analysis of special training needs;
- A continuous process of training development and review.

The responsibility for training needs rests with Department Managers, who are guided by the HSE Manager.

All new and contracted personnel receive induction training in accordance with the Company's Induction Procedure, which includes familiarization with the company SMS.

Personnel assigned to the marine survey vessels are trained and hold the equivalent certificates required for sea going personnel, as required by the International Maritime Organization STCW-95 Code.

5.2. General & Project Specific Training

All new employees are given basic induction training at the earliest opportunity. New employees are advised on medical requirements and asked to provide originals of any current safety certification. Induction training provides the employee with a basic practical understanding of accident and emergency procedures that are in force at their work location.

Those employees who are assigned to a vessel will receive further detailed training upon their arrival at the vessel. This will include evacuation alarms and procedures, first aid facilities and procedures, muster points, life saving appliances, fire drills and abandon ship drills.

Also included in the Induction Training will be a brief overview of the Project Specific Hazards that were established HSE in the Joint Risk Assessment.

6. Project Risk Assessment & Management

6.1. Risk Assessment

A Project Specific Risk Assessment has been generated by SEISMIC STAFFING, which is taken from a Generic List of potential hazards that the company maintains on file.

All potential Risks are evaluated and priorities given in order to identify those of higher risk. Control measures (mitigations) are identified as either existing, or when necessary new ones are implemented to move the Risk or at least minimize through control measures and procedures. All control methods and procedures are monitored to ensure their continued effectiveness. If they are not satisfactory, these hazards must be reassessed and/or controls and procedures revised. All revisions will be recorded in the Generic Hazard List.

For this project both SEISMIC STAFFING and Client performed a Joint Risk Assessment, where the participants from both companies reviewed their respective preliminary Risk Assessments and an end result being a Project Specific Risk Assessment for the Project. A copy of which can be found in the Appendices.

6.2. Key Personnel, Equipment and HSE Procedures

Key Personnel - Please see Party chief manual for details on Key Personnel and their roles on all projects.

6.3. Equipment:

6.3.1. HSE Procedures

SEISMIC STAFFING has utilized its JSA Process to address the unique operations involved with the Geophysical Survey Equipment. This process along with the experiences already gained have helped in the development of specific procedures for the following:

- Overall Operation
- Deployment & Retrieval
- Charging of Fuel Cell
- Chemical Handling & Recycling
- Small Boat Operations

All JSA and Procedures will be reviewed on a regular basis and amended as needed. The appropriate employee awareness and subsequent training will follow the review process.

6.3.2. PPE Requirements

SEISMIC STAFFING utilizes the OSHA Standard throughout the company. The company provides General PPE along with specialized PPE as required.

The following chart identifies work tasks and appropriate PPE for those particular work tasks.

PERSONAL PROTECTIVE EQUIPMENT MATRIX												
	Working Aloft	***Working on Back Deck***	***Chemical Handling***	***Working in Tanks***	***FRC Operations***	***Machinery/Equipment***	***Coring Operations***	***Galley Food Handling***	***Chipping/Scraping***	***Grinding/Drilling***	***Welding/Burning***	***Tow Fish Launch & Retrieval***
Coveralls	•	•	•	•		•	•		•	•	•	•
Catering Uniforms							•					
Waterproof Clothing					•							
Safety Boots/Shoes	•	•	•	•	•	•	•		•	•	•	•
Hard Hats	•	•	•	•	•	•	•		•	•	•	•
Eye Protection (General)	•	•	•	•	•	•	•		•	•	•	•
Eye Protection (Chemical)												•
Hearing Protection		•			•				•	•		
Work Gloves (General)		•					•		•	•	•	
Work Gloves (Chemical)			•									
Life Jackets / Work Vests		•			•							•
Immersion Suits												
Safety Harness	•											•
SCBA Equipment				•								

6.4. Permit-to-Work

Both SEISMIC STAFFING and the Vessel SMS Guidelines use the “Permit to Work’ system, which is the standard throughout the company, to which company and sub-contract personnel must adhere

On board Ships, certain Work Tasks have been identified as having a higher Risk than others. Therefore, the ‘Permit to Work’ is invoked in order that the Ships Watch Offices are fully aware as to what types of high-risk work tasks may be going on at any given time. Prior to starting such a work task, the senior person involved must fill out the ‘Permit to Work’. The Permits are traditionally found on the Bridge, but can also be in the possession of the Party Chief.

Once the Permit is filled out it must be held on the Bridge and must also be closed out on the Bridge. This process ensures that the Vessel Watch Officers are always aware of what is going on aboard, and when the project is completed. When the Permit is filled out, a ‘Toolbox Meeting’ will be held with all involved, in order that the specific Safety Gear and PPE can be assembled prior to the start of the task.

6.5. Following are the Specific Work Tasks that SEISMIC STAFFING have stipulated that a 'Permit to Work' will be required:

- Transfer of Chemical Tanks to & from vessel
- Welding, Burning, & Cutting
- Work on any Energized Equipment that is served by a system common to another system (e.g. hydraulics)
- Work with high-pressure air systems other than normal operations
- Work with high voltage electrical systems other than normal operations
- Work with high-pressure hydraulic systems other than normal operations
- Work aloft at a height greater than 2 meters
- Work in confined and/or airtight spaces

6.6. Hazardous Materials

SEISMIC STAFFING complies with all federal Hazardous Materials Regulations (HMR) as found in 49 CFR Parts 106 through 180, and in FMCSR Part 397, regarding the handling, storage and transportation of hazardous materials. We believe that compliance and safety begin with each employee as well as those of the sub-contract companies we use for the delivery of such Hazardous Materials. In order to maintain this philosophy, SEISMIC STAFFING ensure that all employees and those of our sub-contract companies have the required HAZCOM Training. Within this structure, SEISMIC STAFFING have and regularly maintain an Inventory of every Hazardous Material / Chemical that its uses in its operations.

Note: A copy of the Current List of MSDS's and Hazardous Material / Chemical Inventory can be found onboard the vessel.

6.7. Hazardous Waste Disposal

- Any other waste generated aboard the 'Vessel' that falls in the category of Hazardous Waste shall be handled, stored in accordance to the manufactures guidelines and MSDS and will be disposed of with only SEISMIC STAFFING approved Waste Disposal Company(s).

7. Management of Change

Any changes in the personnel, equipment, processes, and procedures of the company have the potential for adverse effects on health, safety, and the environment. To ensure this potential is kept to a minimum, the following MOC guidelines will be instituted. It should be noted that some changes might require client input or endorsement.

7.1. Change Control for the Scope of Operations

Often after undertaking an operation, the scope needs to be re-evaluated due to unforeseen events. However in order to facilitate change in an orderly manner SEISMIC STAFFING has a controlled process in place. Once a project has begun, any change in operations of the vessel, crew and work effort requires the following approval mechanisms. The Client Representative (authorized by management if required) or SEISMIC STAFFING Management, specifically the onsite Party Chief, Operations Manager or President, may initiate changes in operations.

7.2. Change Control for Standards & Procedures

Operational standards and procedures are continually undergoing evaluation and change to meet client, operational and management needs. However in order to facilitate change in an orderly manner SEISMIC STAFFING has a system in place, which utilizes the JSA Process to address the required change. Where practical changes in standards and procedures will take place aboard the vessel and performed by the Party Chief and/or HSE Advisor and documented accordingly. However, where necessary the proposed change will be submitted to the SEISMIC STAFFING office for further review and management involvement and final approval.

7.3. Personnel.

Personnel changes often occur on a regular basis during projects. Some personnel changes are pre-scheduled on a normal rotating basis while others may be due to human resource or HSE issues. The client will be notified with all personnel changes, including the reason. The Party Chief and Operations Manager approve normal rotating crew changes. Human resource issues and recommendations in personnel changes are normally under the control of the Operations Manager or Human Resource Officer, however, the Party Chief may also initiate a personnel change. Whenever new personnel join the project, they shall have the appropriate HSE Training before being sent to join the vessel, and shall be oriented to the program and relative procedures of the job, which will be the responsibility of the HSE Advisor and/or Party Chief.

7.4. Equipment Change Control Procedure

On occasion there is a need to either exchange of modifying equipment once a project is underway due to unforeseen events. For example, equipment may be lost while at sea or required modification after a project begins due to unique circumstances at project sites. In such cases the Party Chief will address the circumstances and apply the COM structure accordingly. The Party Chief will solicit the help of the HSE Advisor to revise JSA and Procedures as required. Likewise, SEISMIC STAFFING Management will play an active role in facilitating the required change in a timely manner. During the change process the Party Chief will ensure that the Client is kept up-to-date and solicit his help where necessary.

7.5. Management of the HSE Plan

As the HSE Plan is a “living” document, the HSE committee will oversee all aspects of change within it. All changes will be considered. These include not only equipment changes, but also organizational restructuring—such as those that result from acquisitions, mergers, new joint ventures and alliances. Plans relating to change need to address the HSE aspects arising at all stages of development, to ensure effective planning minimizes that risks or adverse environmental effects.

Note: The Appropriate Change Management Forms can be found in the Appendices.

7.6. Anticipated Project Changes

At present there are no anticipated changes for the program, however, in the event there is need for change. The SEISMIC STAFFING MOC Program will be invoked and the Party Chief will work closely with the onboard Representatives and their respective management.

8. Occupational Health

8.1. Health Information Program

SEISMIC STAFFING will ensure that their personnel meet certain minimum medical fitness requirements, which include a basic offshore physical, and DOT Drug Alcohol Screening. The SEISMIC STAFFING Human Resources Department have the responsibility of making all SEISMIC STAFFING and sub-contract employees aware of what Inoculations and other Medication, e.g.: Anti Malaria Prophylaxis is required for a specific country.

The Client/Representatives and all Third Parties shall ensure that their personnel are physically fit to perform their duties at sea.

Each individual crewmember is provided with their own anti-malaria prophylaxis and is responsible for taking their respective weekly/daily (Larium or Malarone) dosage. Likewise, as per the guidelines given with their particular medication, they are responsible in taking their dosage before, during, and after their return home.

The onboard Medic has the responsibility of ensuring that each individual takes their dosage and will maintain a record accordingly.

8.2. Medical Facilities, Staffing and Supplies

The 'Vessel' has a fully stocked hospital aboard. This includes all of the equipment to respond to most Injury/Illness situations that may occur onboard.

SEISMIC STAFFING will have a full time Emergency Medical Technician onboard, who has the responsibility of not only attending to medical emergency's but also to maintain an ongoing program of Health Awareness. Included in his Health Awareness are Personal Hygiene, Medication Usage, and Malaria and its effects.

8.3. Hygiene & Housekeeping

SEISMIC STAFFING holds each individual responsible to maintain a high standard of Personal Hygiene as well as levels of Housekeeping both in their cabin and work area.

To ensure these levels are maintained the Medic and Captain will do both spot and weekly inspection of the vessel to include, Galley, Mess, Accommodation, and common areas such a Toilet & Shower blocks.

9. Environmental Protection Program

Seismic Staffing LLC.and its Vessel Company have strong Environmental Policies to which they and all their employees are committed to and adhere to. In order to comply with current environmental legislation, best practices, and to achieve a balance beSeismic Staffingen economic, social, and environmental responsibilities, we are committed to avoiding damage to the environment by any of our actions and operations.

9.1. Waste Handling & Disposal

SEISMIC STAFFING has well defined procedures and guidelines for the handling and disposal of all waste generated in its projects. To help achieve good and positive stewardship of the waste generated onboard, the vessel has a well-defined waste separation system in place. This is structured such that cans, bottles and

other non-combustible items are deposited in dedicated waste receptacles. Combustible items are deposited in dedicated waste receptacles. Though the vessel doesn't have a macerator for food waste/slops the galley staff will be instructed to cut everything into as smaller pieces as possible and then it will be burnt in the ships incinerator.

All waste that cannot be burnt in the ships incinerator will be properly stowed until such times that it can be discharged in port and sent to a company approved waste disposal site. In the event this site cannot take certain waste, such as hazardous materials, then it will remain aboard until a suitable disposal company can be found.

9.2. Waste Disposal

- All waste generated aboard the Vessel shall be disposed of in accordance with the IMO MARPOL 73/78 Convention for the prevention of pollution from Ships 1973. These regulations shall apply for all waste generated and the disposal shall be entered into the vessel's waste log.
- Where practical all combustible waste shall be disposed of in the vessel's incinerator, with a record being maintained each day/week of the approximate amounts (cubic meters or kilograms) being burnt. Food waste will be cut into as small pieces as possible and be burnt in the incinerator.
- While in North America all Solid and/or Oily Wastes will be disposed of through an approved waste disposal operator.
- SEISMIC STAFFING will ensure that copies of all Waste Disposal Documentation are provided to the Client onboard representative. Where practical and possible this will be done during the project, otherwise, as soon as possible after the close of the project.

The Chief Engineer is responsible for all Marine Gas Oil Stowage/transfer and loading of Bunkers.

Note: A more detailed description of the SEISMIC STAFFING Waste Disposal Plan can be found as part of the Emergency Response Document

9.3. Spill Response

All spills and wastes will be handled in a manner to comply with the International Convention for the Prevention of Pollution from Ships, 1973 as amended by the Protocol of 1978 (MARPOL) while in African waters. Generally, no materials/wastes will be discharged from the ship unless it meets MARPOL standards.

9.4. Wildlife/Plant Protection

As this project is strictly offshore it is not anticipated that it will have any adverse effects or impact on any Flora.

9.5. Refueling Operations

There will be **NO Offshore Bunkering** during this project, and all Bunkering Operations while in port will follow standard Bunkering Procedures.

10. Regulatory Compliance

10.1. Applicable Legislation

Legislation requirements for the Project will be obtained and maintained by Client. All permissions and permits must be in place prior to commencement of operations.

Regulatory Compliance that the Vessel and/or SEISMIC STAFFING will comply with is as follows (in General Terms)

The Geophysical vessel will operate under the Norwegian Maritime Authority and is DNV Classified. All life saving appliances are installed and inspected under the SOLAS (Safety of Life at Sea 1974) convention. Standards of training meet the IMO International Convention on standards of training, Certification and Watchkeeping for Seafarers.

Navigation procedures are regulated by the International regulations for the prevention of Collision at sea (Collregs). Vessel certification is issued by Det Norske Veritas (Classification Society).

10.2. Compliance Procedures

The Contract is the main compliance document. Supplements and Exhibits and the Client Generic Specification also form part of the Procedure.

10.3. Reports / Documentation

All reports and documentation pertaining to the Project shall remain confidential to Client as detailed in the Contract. Requests for further reports by Client Representatives will need to comply with Contract. Every effort will be made to ensure all reports are accurate.

11. Community Awarness

11.1. Main Concerns

SEISMIC STAFFING is committed to work in close conjunction with all main Public Services and are fully aware that policy statements and the work practices reflect heavily on the Company image and that of the Client Company. SEISMIC STAFFING is primarily concerned with how it can promote a safe and sound environment and to assist all parties in contributing towards an incident free operation. SEISMIC STAFFING also works strongly in the promotion of a good working relationship within the local community.

Previous working experience has shown that the issuing of a ‘Notice to Mariners’ for US waters is not a requirement. However having a good liaison within the ongoing Exploration Operations of the field will ensure alertness to all adjacent shipping. If any formal notice of operation is issued, a copy will be supplied to the onboard Client Representative.

11.2. Local Contacts

SEISMIC STAFFING Representative – Houston, TX

SEISMIC STAFFING In-Country Representative

Tolunay-Wong Engineers, Inc.
10710 S. Sam Houston Pkwy W., Suite 100
Houston, TX 77031

Phone #: 713-722-7064

12. Emergency Response

The Emergency Response Plan is a stand-alone document, but can also be found within the final Appendices of this document.

13. Equipment Control & Maintenance

13.1. HSE Equipment

The Master is responsible for the safe and efficient operation of his Vessel and ensuring the safety of his crew. The Master shall assign the duties of maintaining the vessels Safety Equipment to his Officers.

13.2. Equipment Inspections & Preventative Maintenance

SEISMIC STAFFING holds the responsibility of ensuring that all equipment is fit for purpose and meets with statutory and client requirements, together with additional safe operating standards set forth in both the company and vessel SMS Manuals. Any known hazard or risk related deficiency would be reported as soon as practically possible to the Survey Manager and the client representative.

The following Inspections are carried out on the vessel:

- The Party Chief and HSE Advisor make regular checks of the back deck and associated work areas, and document the inspections accordingly.
- The Chief Officer performs weekly inspections of the life saving equipment, fire fighting and other shipboard safety equipment. These inspections are recorded in the ships log.
- The marine crew performs monthly formal inspections of the vessel. A report of the findings is forwarded to the owners.
- The Captain joined by the Medic will make regular inspections the Galley, Mess, Accommodation, and common Toilet/Shower facilities and on a regular basis.
- The engineers inspect lifting equipment visually. Formal inspections are performed by Class requirements.

The action list resulting from audits and inspections is reviewed at each Safety and/or Safety Committee Meeting and will be continually reviewed until action items are closed out.

13.3. Housekeeping and Hygiene

All personnel are responsible for vessel housekeeping, however the senior Technician and Chief Officer have ultimate responsibility. The Galley Mess and Food storage areas are the responsibility of the Cook and Stewards.

14. Incident Reporting & Investigation

14.1. Incident Reporting Procedures

SEISMIC STAFFING and the Vessel SMS Manuals detail the companies Incident Reporting criteria. However, following is a brief overview of those criteria.

All incidents are reported and documented accordingly; this also includes Near-Miss, Unsafe Act/Condition and STOP Card. All incidents are reported to the onboard Client Representative and where necessary to Client Office. The reporting requirement for a particular occurrence depends on its severity. The person in charge of the workplace will report incidents, accidents and near misses in accordance with the following matrix:

	A.S.A.P. Reporting	Incident Report Required	Near Miss Personal or Equipment	Daily Report (Field Ops.)
Major Incident	X	X		X
Lost Workday Case	X	X		X
Restricted Work Case		X		X
Medical Treatment Case		X		X
First Aid Case		X		X
Near Miss Incident (All)			X	X
Loss or Damage to equipment	X		X	X
Spills	X X	X		

NOTE: Where they are more stringent, Contractor Incident Reporting shall be utilized, especially when it relates to Environmental Incidents.

It is the responsibility of the Party Chief, to immediately report all serious incidents to the Project Manager who will in turn report to the senior company management. The HSE Manager is copied on all incident reports and will assess the reports with reference to companies Incident reporting Guidelines.

All serious incidents shall be reported verbally (by phone) as soon as possible after the incident, with a preliminary written report within 24 hours of an incident occurring. Likewise, all appropriate authorities shall be notified according to their specific criteria.

All original reports will be forwarded to the HSE Manager, with copies retained onboard ship. Where applicable, the responsible manager will ensure that the appropriate action is taken and documented and shall copy all reports and related materials to the HSE Manager, together with the total number of lost and/or restricted workdays relating to an incident.

All other and minor incidents will be reported to the onboard HSE Advisor on a daily basis that will maintain a database of such incidents, and keep the Party Chief aware of these reports. The Party Chief will ensure that the onboard Client Representative receives copies of all incident reports and statistics that are gathered.

In the case of the Vessel, the Captain shall ensure that any and all incidents that occur with the vessel or vessel crew are promptly reported and documented to the onboard HSE Advisor.

14.2. Investigation Procedures

SEISMIC STAFFING ensures that its operations are continuously monitored for HSE Incidents. Incidents are investigated and reported in accordance with those criteria. Where applicable a complete investigation is done of incidents utilizing the cause / Root Cause concept of investigation. All reported incidents are assessed by the HSE Manager for reporting requirements to statutory authorities, with reference to the OSHA Guidelines and maintains the OSHA Log accordingly. This is the system used for evaluating all incidents that occur within its operations and is also used for reporting to clients, internal management and safety meetings.

Feedback on Incident Reports is provided and the information they contain is used to review and amend HSE procedures and guidelines as required.

Recommendations from accident investigations and near-misses are acted upon and remain live until such times as the recommendations are carried out. Recommendations are normally acted upon immediately. The Party Chief and his subordinates have the responsibility for the implementation of recommendations and follow up action. Where applicable the HSE Manager carries out further investigation.

See the appendices for a copy of the companies formal Accident Investigation Report Form.

15. HSE Performance & Monitoring

SEISMIC STAFFING monitors HSE performance in accordance with current OSHA 300 reporting requirements. Near miss, equipment damages and losses, vehicle incidents and occupational illnesses are recorded and kept on file. These items are reviewed by the HSE Manager and submitted to the Safety Committee with recommended actions as deemed necessary. Subcontractors are required to participate as part and parcel of SEISMIC STAFFING's HSE program.

16. Audits & Reviews

16.1. HSE Management System Audit

SEISMIC STAFFING does audits of its overall operations within both its management and HSE systems, which comprises of reviewing both its current operations and those proposed in the future. In order to achieve this SEISMIC STAFFING has adopted the following hierarchy with regards to risk control: -

- Eliminate or reduce risks using prevention and mitigation measures.
- Combat risks at source by engineering controls and giving collective protective measures.
- Minimize risk by the design of suitable systems, and ensure all employees are properly trained.

Where both practical and possible, SEISMIC STAFFING strive to eliminate risks, by means of physical engineering controls and safeguards that can be more reliably maintained than those, which rely solely on people. However, there are situations where risk cannot be completely eliminated by engineering. In these cases SEISMIC STAFFING utilize the JSA and Procedural method, to minimize the risk. Once the procedures are developed they are archived and remain active until such times that amendments are required.

All operators will be trained in the procedures and are made aware of amendments accordingly. Likewise, all operators by means of their working experience with a particular procedure, are encouraged to identify any part of the procedure that should be amended, and pass that suggestion to their immediate supervisor. The supervisor then advises the HSE Manager and Engineers of the suggested changes.

Vessels:

SEISMIC STAFFING, Client Companies, external auditors, and joint Client/SEISMIC STAFFING conduct planned audits on the survey vessels. Copies of the final reports are made available to the vessels, SEISMIC STAFFING and the client company. To facilitate prompt action on deficiencies, draft recommendations are left on board the vessel. A list of action items from audits is held on board the vessel. Each audit item is given a unique number and priority. The vessel Captain, Party Chief, and Operations Manager will ensure that all follow-up action is addressed, and in a timely manner. The Action List will be reviewed at each safety meeting until items have been closed out.

16.2. Cross Department Audit

At present SEISMIC STAFFING doesn't have a system of Departmental Cross Audit. Therefore, the onboard HSE Advisor has been given the task of developing one during the project.

16.3. Unsafe Act/Condition Auditing

The process of Unsafe Act and Unsafe Condition auditing is the responsibility of everyone onboard, Marine, Technical & Client. To aid in this process the company has bought into the STOP program, but also encourages everyone to utilize any system that will record and capture the event, which will then become part of the subject matter in the next General safety Meeting. Conversely if the situation were of a serious nature, then it would be discussed with all departments by means of a 'Toolbox Meeting'.

Timing: Ongoing 24/7
Auditors: Everyone onboard
Scope: Each audit will comprise a short description of the Unsafe Act/Condition, the location and/or department, and closed with a suggestion as to what can be done to prevent a re-occurrence, or in the worst case and accident occurring.

APPENDICES
Appendix - A

16.4. Emergency Notification Flow Chart

If an incident occurs, please contact the following people immediately.

Note: Client is to be contacted only for major incidents.

Party Chief
or
Other Person

Client Contact Number

Primary
TBD
Office: +1
Cell: +1
Home: +1

Secondary
TBD
Office: +1
Cell: +1
Home: +1

Tertiary
TBD
Office: +1
Cell: +1
Home: +1

18. Appendix – B

18.1 Emergency Response Data Sheet

Date: _____ Dispatcher's Name: _____

Time: _____ AM/PM _____

Caller's Name _____

Caller's Supervisor: _____

Caller's Location: _____

Who is involved in the accident/incident?_____

_____

What Happened? _____

_____

_____

_____

What steps have been taken to help the person(s) involved in the accident/incident?:

_____

_____

_____

Other information relevant to the situation: _____

_____

_____

Time Project Manager/HSE Manager or backup was called: _____ AM/PM

Project Manager's instructions or comments: _____

_____

_____

_____

If Emergency Response Team needs to be activated note the time each member or backup member was called.

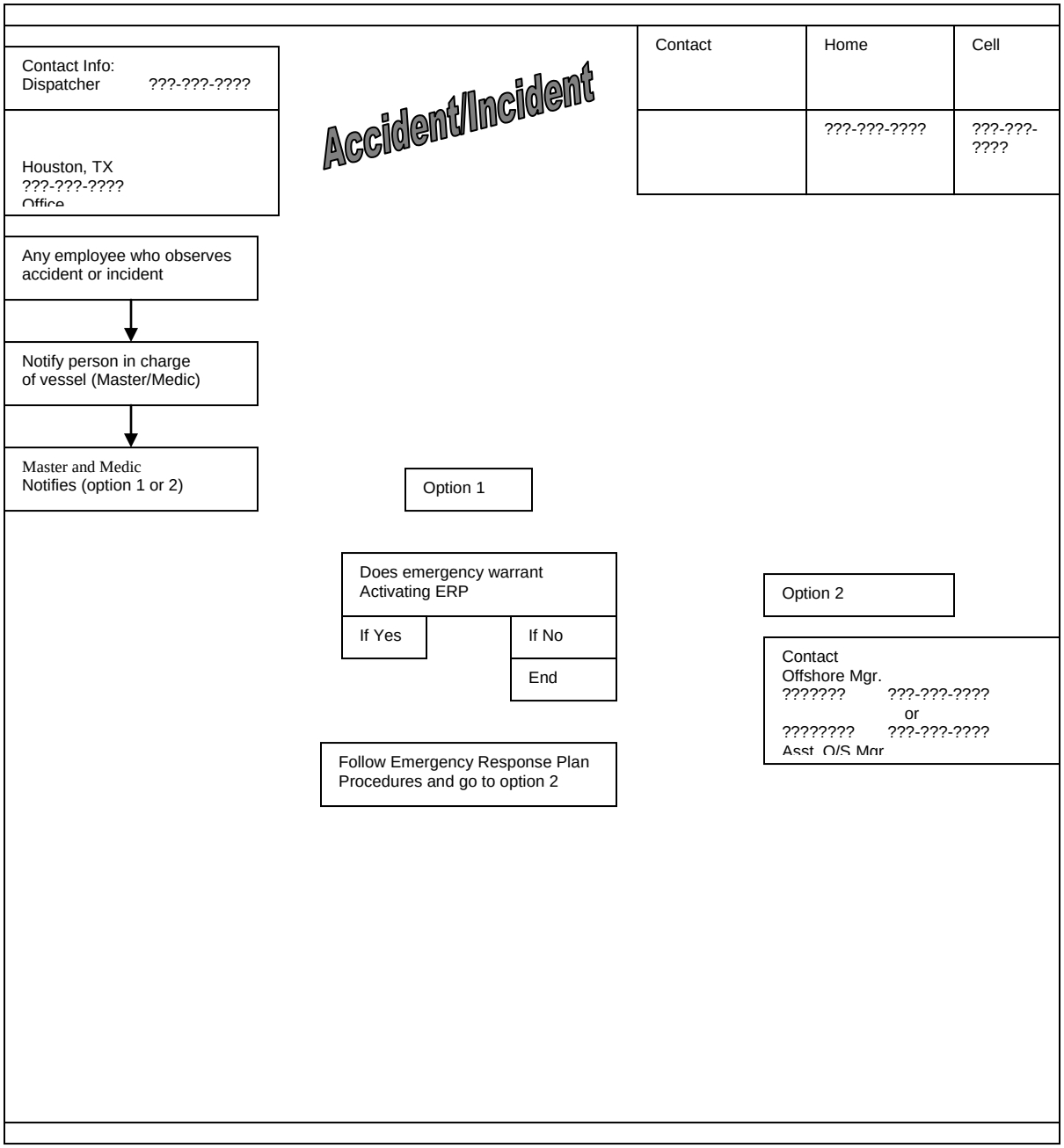
_____ _____ AM/PM

_____ _____ AM/PM

_____ _____ AM/PM

19. Appendix – C

19.1. Accident/Incident Notification Flow Chart



20. Appendix – D

20.1 Accident/Injury Report Form

TO BE COMPLETED BY EMPLOYEE				
Name:	Soc Sec. No	Age:	Accident Date:	Time:
Description of Accident: Describe work being done prior to accident and how the accident happened.				
Describe all injuries resulting from accident.				
Describe all acts, conditions, or other factors, which you think caused this accident.				
List all Personal Protective Equipment worn at time of accident.				
In your opinion what can you do to prevent this type of accident in the future?				
Signature:		Title:		Date:

TO BE COMPLETED BY SUPERVISOR			
Your Name		Date accident reported to you	Time:
Date safety dept. was notified:	Time safety dept. was notified:	Investigation: Did accident result in a lost time injury?	
Was job being done at time of accident normal part of duties?		Was employee working overtime? If so, how long on shift?	
What mechanical, physical or environmental conditions were present at the time of accident?			
List persons in or near area at the time of accident.			
What behavior by injured and/or others contributed to accident?			
How did the accident occur?			
List any damaged property.			
List action taken to prevent recurrence of similar accident.			
Employee's full name		Field location	
Length of company service:	Length of time in present job:	Number of previous injuries:	How many of the previous injuries resulted in: NO LOST TIME LOST TIME

Accident location:	Accident Date	Day of Week:	Time:
Your Signature			Date:

REVIEWED BY SEISMIC STAFFINGI

Signature:	Date:

TO BE COMPLETED BY SEISMIC STAFFINGI AND/OR SUPERVISOR

	☐ Regular ☐ Part-time ☐ Temporary/Contractor	☐ Occupational injury ☐ Occupational illness	**INJURY CLASS**	☐ First Aid ☐ First Aid, Medic ☐ Fatality ☐ Medical (REC) ☐ Loss Time	Est. or actual workdays lost Date returned to work

	☐ Struck against ☐ Struck by ☐ Caught in, on, under, or beSeismic Staffingen ☐ Fall on same level ☐ Fall to different level ☐ Sudden muscular movement ☐ Twist ☐ Overexertion ☐ Rubbed or abraded ☐ Inhalation of vapors, fumes, etc.	☐ Ingestion ☐ Contact with temperature extremes ☐ Contact with electrical current ☐ Contact with Insects, animals ☐ Contact with radiation, sun ☐ Contact with corrosives, toxic chemicals, noxious substances or plants ☐ Motor vehicle accident ☐ Other, specify	☐ Head ☐ Face ☐ Ear ☐ Eye ☐ Neck ☐ Shoulder ☐ Arm ☐ Elbow ☐ Wrist ☐ Hand ☐ Finger ☐ Back	☐ Chest (incl. ribs) ☐ Respiratory system ☐ Internal organs ☐ Abdomen ☐ Hip ☐ Groin ☐ Leg ☐ Knee ☐ Ankle ☐ Foot ☐ Toe ☐ Other, specify _____ _____

	☐ Bruise (confusion, crushing ☐ Cut (laceration, puncture) ☐ Scrape (abrasion, scratch) ☐ Sprain, strain, dislocation ☐ Fracture	☐ Amputation ☐ Concussion ☐ Bite/sting ☐ Frostbite ☐ Burn (heat, chemical or radiation)	☐ Shock ☐ Foreign matter in eye ☐ Heat exhaustion ☐ Irritation	☐ Dermatitis ☐ Poisoning ☐ Other, specify _____ _____

CONTRIBUTING ACT(S)	☐ Improper use of equipment/tool/vehicle ☐ Operating or working at unsafe speed ☐ Operating without authority ☐ Taking unsafe position ☐ Handling materials incorrectly ☐ Using makeshift equipment/tool ☐ Using defective equipment/tool ☐ Improper lifting/carrying/loading ☐ Employee attitude ☐ Lack of knowledge/skill	☐ Physical defect (eyesight, hearing, etc.) ☐ Not following rules/procedures ☐ Making safety devices inoperative ☐ Working on moving, electrically energized or pressurized equipment ☐ Not using proper PPE ☐ Wearing of jewelry/loose clothes ☐ Chemicals/flammables not used properly ☐ Under emotional stress ☐ Under influence of medication ☐ Under influence of alcohol or other drugs	☐ Fatigue/overtime ☐ Horseplay ☐ Not making secure ☐ Poor planning ☐ Driving error ☐ Not wearing seat/safety belt ☐ Other, specify _____ _____

CONTRIB	☐ Machine guarding ☐ Adjustment of machinery ☐ Safety device ☐ Tools or equipment ☐ Arrangement/installation of facility or equipment	☐ Maintenance ☐ Housekeeping ☐ Presence of toxic gas, vapors, fumes or dust ☐ Ventilation ☐ Lighting, visibility	☐ Weather ☐ Noise/vibration ☐ Walking surface ☐ PPE not used ☐ Other, specify _____ _____

21. Appendix – E

21.1 Minor Incident Report Form

‘_____’	**Minor Incident Report Form**	
☐ Near Miss	☐ Unsafe Act	☐ Unsafe Condition
☐ Health	☐ Safety	☐ Environment
Reported By: _____	**Date:** _____	
Location: _____	**Department:** _____	

This form can be completed by any crewmember aboard the ‘_____’. It will be used for HSE purpose only. ***No ones Job will be jeopardized as a result of submitting a Near-Miss/ Potential Hazard Report****. The purpose of this report is to inform the Tolunay-Wong Engineers, Inc HSE Deportment of an unsafe act or condition so it can be corrected before an accident occurs.*

Give a brief description of the near miss or hazardous situation:

_____
_____
_____

Give any suggestions that can improve the situation:

_____
_____
_____

If Action Required = Target Date: _____	**Completion Date:** _____

How was the incident communicated to the other crewmembers?

_____
_____
_____

22. Appendix – F

22.1 Change Request Form

Initiation

Date: _____ Request No. _____

Project: _____ Location: _____

Classification of Change

□ Permanent
□ Temporary
□ Emergency

Removal Date: _____
□ Urgent □ Minor

Nature of Change

□ Operations □ Equipment □ Haz. Material
□ Personnel □ Procedures □ Parameters
□ Regulatory/Permits □ Other

Description of change (Include current process):

	Name (Print)	Signature	Date
Originated By:			
Supervisor Endorsement:			

Justification of change:

Potential consequences of change (positive and negative:

Evaluation

Mitigation steps and special procedures:

Does change increase risk? □ Yes □ No (If Yes, attach copy of risk assessment)

Risk level after change? (check one) □ Low □ Medium □ High

Does change require? □ JSA Development/Review □ Document Changes □ Training

Comments:

Cost:

Approvals

	Name (Print)	Signature	Date	Title/Company
Proposed By:				
Reviewed By:				
Reviewed By:				
Approved By:				
Approved By:				

Change Request Form (continued)

Implementation

Change communicated to all parties involved:	Initial:		Date:	
Describe method of communication:				
Documentation changes completed:	Initial:		Date:	
List documents changed:				
Training requirements completed:	Initial:		Date:	
List training conducted				
Regulatory/Permit requirements completed:	Initial:		Date:	
Describe requirements:				
Temporary change completed:	Initial:		Date:	
Return to normal operations	Date:			
Change Implementations completed:	Initial:		Date:	

Close-Out

Summary of Lesson Learned Completed:	Initial:		Date:	
List lessons learned:				

Note: Share lessons learned with Contractor and Client as appropriate.
Update change Management Log.

Change Request Form Closed:	Signature		Date:	

23. Appendix – G

23.1. Marine Mammal Reporting Form

RECORD OF SIGHTING

<table>
<tr><td colspan="2">Date: (D/M/Y)</td><td colspan="2">Time: (Local 24 hour time in hh:mm)</td></tr>
<tr><td colspan="2">Name of Vessel:</td><td colspan="2">Observer:</td></tr>
<tr><td colspan="2" rowspan="2">Position of Vessel:
Latitude:
Longitude:</td><td colspan="2">Heading of Vessel:</td></tr>
<tr><td colspan="2">Depth of Water: (Meters)</td></tr>
<tr><td colspan="2" rowspan="2">Activity of Vessel:</td><td colspan="2">Airguns: Operating Yes/No</td></tr>
<tr><td colspan="2">Distance of Mammals for Airguns: (Meters)</td></tr>
<tr><td>Sea State:</td><td colspan="2">Wind Direction and Force:</td><td>Visibility:
Good / Moderate / Poor</td></tr>
<tr><td colspan="2">Species of Mammal(s):</td><td colspan="2">Certainty of Identification:
Definite / Probable / Possible</td></tr>
<tr><td colspan="2">Total Number of Mammals:</td><td colspan="2">Number of Adults:
Number of Juveniles:</td></tr>
<tr><td colspan="2" rowspan="2">Description: (Features such as size & color)</td><td colspan="2">Photograph or Video: Yes/No</td></tr>
<tr><td colspan="2">Direction of Mammals Travel:</td></tr>
<tr><td colspan="2">Mammal Behavior:
Swimming Steadily Stationary
Feeding Playing Courting
Other _____</td><td colspan="2">Other Comments:</td></tr>
<tr><td colspan="4">Draw Vessel and Mammals, showing directions of travel:</td></tr>
</table>

Return completed forms to:

24. Appendix – H

24.1. Project Specific Emergency Drill Schedule

‘_____’

(In Accordance with SOLAS 74/88 Requirements)

Frequency/Timing	Type of Drill/Inspection	Record Keeping
12 hrs prior to vessel sailing	- Emergency drill and responsibility Training - Emergency operating drill - Manual steering	Ship’s Logbook & Ships PreMaster Database
Twice Monthly and/or per Voyage	- Abandon ship drill & life saving appliance check	Ships Logbook & Ships PreMaster Database
Twice Monthly and/or per Voyage	- Damage & fire control drill (with 1 team member being suited up)	Ships & Engine Room Logbooks & Ships PreMaster Database
Monthly and/or per Voyage	- MOB drill (to include rescue of a mannequin or similar object)	Ships Logbook & Ships PreMaster Database
Monthly and/or per Voyage	- MOB drill (to include rescue of a mannequin or similar object) - Spill response drill	Ships & Engine Room Logbooks & Ships PreMaster Database
Monthly **(Per PreMaster Schedule)**	- Watertight doors – skylights – portholes – ventilator closing devices	Ships Logbook & Ships PreMaster Database
Daily **(Per PreMaster Schedule)**	- Control & communication equipment - 24 hr. standby VHF channels **16, 69 & 77** **GMDSS (all frequencies)**	Ships Logbook & Ships PreMaster Database
Project Specific		
Within 24 hrs of sailing **&** **At Monthly or Once per Voyage Intervals**	- Emergency response contacts & numbers test: - Call vessels home office; - Calls to client venture office; - Calls to client field supervisor	Ship’s Logbook Party Chief / HSE Advisor Report Client QC Report

25. Appendix – I

25.1. Work Permit (sample)

CONFINED SPACE ENTRY PERMIT

Location and Description of Confined Space	Date
Purpose of Entry	Start Time
Foreman/Supervisor Authorizing Work	Expiration Time

CHECKLIST					
	Yes	No		Yes	No
All lines blinded or disconnected			Lifelines required		
Space cleaned and purged			Respirator required		
Lockout/tagout complete			Type:		
Pre-job meeting conducted			Entry log required		
Emergency procedures established			Standby person(s)		
Properly ventilating			Name(s):		
Special procedures					

Atmosphere Tests to Be Taken							
	P.E.L.	Yes	No	Date	Date	Date	Date
% Oxygen	19.5% - 21%			M	M	M	M
% LEL	Less than 10%						
Carbon Monoxide	50 ppm						
Hydrogen Sulfide	10 ppm						
Aromatic Hydrocarbons	10 ppm						

Approved	
Foreman	Time
Onsite supervisor	Time
Standby person(s) - Read thoroughly and sign	

26. Appendix – J

26.1. Safety Meeting Minute Form

‘_____’

General HSE Meeting

No.	NAME	SIGNATURE	No	NAME	SIGNATURE
1.			13.		
2.			14.		
3.			15.		
4.			16.		
5.			17.		
6.			18.		
7.			19.		
8.			20.		
9.			21.		
10.			22.		
11.			23.		
12.			24.		

MINUTES

Date

Captain/Party Chief

27. Appendix – K

27.1. Toolbox Meeting

‘_____’ **Daily Tool-Box Meeting**
Reported By: _____ **Date:** _____ **Location:** **Department:**
Give a brief description of the topics discussed:
This form is used to document the points discussed at Daily Safety Meeting. In the space provided above please note the topic(s) of discussion. *Tips for filling out this form – Pick a topic relative to Day/Night’s job duties **or** Review the ‘Tolunay-Wong Engineers Inc.’ HSE Manual **or** Project HSE Plan **or** Review a Specific JSA, and discuss a subject from one of these documents.*

28. Appendix – L

28.1. CREWLIST / TRAINING MATRIX

Position	Last Name	First	Confined Space Entry	Alcohol & Drug Awareness	Sea Survival	HUET	FRC & Small Craft	Basic First Aid & CPR	Basic Fire Fighting & SCBA	Crane / Winch Operator	HAZCOM / WHMIS / COSHH	Lockout / Tagout	PPE Training	Hearing Conserva-tion	Stepping Handling & Lfting	H.L.O.	HSE Mgmt.	Medical Exam (most recent)	A&D Screening (most recent)

29. Appendix – M

29.1. TOLUNAY-WONG ENGINEERS INTERFACE DOCUMENT

The following document shall be considered as the official Interface beSeismic Staffingen Tolunay-Wong Engineers

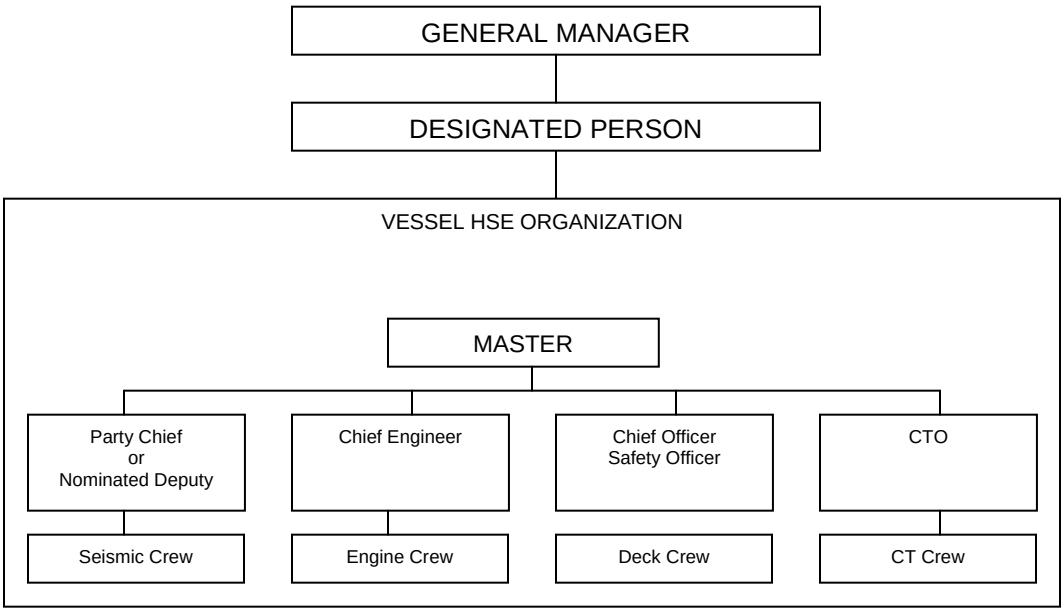
Document Title: Charter Interface - HSE		Approved By: General Manager
Revision: 01		Issue Date:
Document ID: 3D30 PR200	**Document Type: Procedure**	Effective Date:

1. Scope

This procedure describes how the interface beSeismic Staffingen the Company SMS system and the Charters requirements set forward in the Time Charter included the attachment HSE Appendix beSeismic Staffingen the Company and the Charter is complied with.

2. Responsibilities

The Master will nominate a deputy, normally the safety officer, to assist the Master in assuring compliance with Charter specific HSE requirements.



The Master is the responsible person for all safety-related matters on board. The reporting line for all HSE issues is outlined in the following diagram.

3.0 Details

3.1 Incident/Accident Reporting.

The Master will report to Charter through his onboard nominated person **(SAFETY OFFICER)** all accident and hazardous incident immediately. Charter will report to his management through the Master all accident and hazardous situations immediately. The Master will keep a record of all accident and incident in the Company non-conformity reporting system SAFIR system.

3.2 Monthly Incident/Accident Reporting.

The Master will supply the Charter through his on board nominated with monthly summary reports generated by the Company accident reporting system SAFIR. These reports will reflect HSE performance and statistical information about accident/incident occurrences. The Charter on board nominated person shall sign the monthly summary. Any statistical or performance discrepancy beSeismic Staffingen Charter and Companies reporting system shall immediately be highlighted and reported to the Company DPA.

3.3 Yearly Incident/Accident Reporting.

The Master will supply the Charter through his on board nominated person with yearly summary reports generated by the Company non-conformity reporting system SAFIR. These reports shall include but not be limited to vessel HSE performance and statistical information about accident/incident occurrences.

3.4 Monthly HSE Meetings.

The Master is responsible for arranging monthly HSE meetings. The agenda for these meetings shall be prepared in close cooperation with he Safety Officer and the Charter on board nominated person. The Master shall by all means try to encourage all crewmembers, both maritime and seismic, to actively participate in these meetings. It is the Masters responsibility to use these meetings to maintain and raise HSE awareness on board the vessel.

3.5 Weekly HSE Meetings.

The Master and the Charter nominated person together with the Safety Officer shall meet once every week to discuss HSE issues and to prepare a weekly poster with HSE statistics and accident free period.

3.6 Minutes of Meetings.

The master is responsible for assuring that adequate minutes of meetings are kept and that Charter nominated person on board signs these. The Master is responsible for distributing copies of these minutes to Charter nominated person on board.

3.7 HSE Audits.

The procedure for the Company audit scheme is outlined in procedure PR227.

The Master is responsible for assisting and encouraging Charter to do on board auditing with respect to HSE and Operational aspects. Audit results shall be studied and discussed and the Master is responsible for appropriate follow up through the Company DPA

3.8 Un-safe Act Auditing.

The Master will assure co-operation with Charter in implementation of an unsafe act system.

3.9 Onboard HSE Training.

The Master is responsible for onboard training of all crewmembers. The Familiarization Manual outlines in detail the procedure to follow when new crewmembers have arrived on board and what the introduction training should consist of. In addition all newcomers shall receive an introduction booklet for self-study, questionnaires and self-motivated HSE awareness.

3.10 HSE Procedures.

The Charter has highlighted a number of procedures for special attention in the Time Charter document included the HSE Appendix. For reference these procedures are listed together with link to the Company SMS system.

D1- Medivac, Contingency Planning, Emergency Preparedness
Accounted for in the Shorebased and Shipboard contingency manual and procedure manual PR227.

D2 – Shipboard Helicopter Operations
Accounted for in Checklist/Work Instruction Manual and procedure manual PR220

D3 - Emergency Procedures
Accounted for in the Procedure Manual PR209 and SOPEP

D4 – Evacuation or Abandonment Procedures
Accounted for in the Shipboard Contingency Manual and procedure manual PR227

D5 - Rescue Boat
Accounted for in procedure PR219 and Checklist Manual – MOB Daily, Pre-launch, underway and Recovery Checklist/Work Instruction

D6 - HSE Training requirements for special tasks
Accounted for in procedure manual PR226, procedure manual Appendix A, RRF manual and in the Contingency manual Section 4

D7 - Responsibilities of Individuals to act as HSE Advisor
Accounted for in Job description Manual.

D8 - HSE Precautions
Accounted for in procedure PR209, 212, 213, 215, annual HSE plan, SOP's, and Job descriptions.

D9 - Hazardous Warnings
Accounted for in procedure PR204

D10 - Handling, Storage and Emergency procedures for hazardous Materials, Radiation Sources and Chemicals.
Accounted for in procedure PR221

D11 - Operation procedures for Specialist Task (Safety Critical)
Accounted for in Shipboard Booklet Section 3-10 and procedure manual PR229.

D12- Transfer of Personnel at Sea
Accounted for in procedure PR218

D13 - Man over Board Procedure
Accounted for in Shipboard Contingency Manual Section 6 and procedure manual PR228

D14 - Welding Precautions
Accounted for in PTW- Permit to work checklist

D15 - Cranes and Lifting Operations
Accounted for in PR222

D16 - General Safety
Accounted for in: SAFETY MANAGEMENT SYSTEM

D17 - Back Deck Operations
Accounted for in: Shipboard Instruction BOOKLET section 7

4. Records/References

- Time Charter beSeismic Staffingen Company and Charter
- SAFIR Accident/Incident reporting system

30. Appendix – N

30.1. MSDS – Attachment #7

MSDS List and Proposed Waste Disposal Plan

Hazardous Material	Potential Personnel Exposure	MSDS Onsite	Handling & Storage Plans Additional Comments
Diesel Fuel Oil #2	Engineers	Yes	**CLIENT Input**
Paints & Thinners	Maritime Crew	Yes	
Pyrotechnics	Maritime Crew Yes		
Solvents	Engineers & Mechanics	Yes	
Lube/Hydraulic Oils	Engineers & Mechanics	Yes	
Battery Acid	Engineers & Mechanics	Yes	
Oxygen	Engineers & Mechanics	Yes	
Acetylene	Engineers & Mechanics	Yes	
480 M Armor Plate Oil Supplement	Technical Crew	Yes	
Chemtronics Label Adhesive Remover	Technical Crew	Yes	
Dow Corning 4 Elec Insulating Compound	Technical Crew	Yes	
Flux Off	Mech. & Tech. Crew	Yes	
Fresh Scent Vanish Toilet Bowl Cleaner	Technical Crew	Yes	
Glade Potpourri Spray	Technical Crew	Yes	
H.P. Ink Cartridge	Technical Crew	Yes	
Hydrogen Peroxide 20 & 60% by wt.	Technical Crew	Yes	
Lithium Battery	Technical Crew	Yes	
Never Seez	Technical Crew	Yes	
RTV Silicone Sealant	Technical Crew	Yes	
Rust Remover and Primer (900)	Mech. & Tech. Crew	Yes	
S D 20 All Purpose Degreaser	Mech. & Tech. Crew	Yes	
Scotchkote Electrical Coating	Mech. & Tech. Crew	Yes	
TUFF COAT M Cable Coating	Technical Crew	Yes	
WD 40	Technical Crew	Yes	
Caustic Potash-Liquid (Potassium Hydroxide)	Technical Crew	Yes	
Cajun Glass Cleaner	All Crew	Yes	
Lysol	All Crew Yes		
OFF! Insect Repellant II	Technical Crew	Yes	
Raid Ant & Roach Killer 16	All Crew	Yes	

Locations Of Material Safety Data HSEets (MSDS's): _____

Waste Name	Actual Disposal Plan (Transporter, Recycler / Reclaimer Name & Location)	Preferred Management Method
Lube Oil	By Approved Waste Disposal Company - Luanda	Recycle / Reclaim
Filters – Lube Oil	Onboard Waste Management	Incinerated
Filters - Fuel	Onboard Waste Management	Incinerated
Batteries - Lead Acid	By Approved Waste Disposal Company - Luanda	Recycle / Reclaim
Batteries - Nickel Cadmium	By Approved Waste Disposal Company - Luanda	Recycle / Reclaim
Batteries - Lithium	By Approved Waste Disposal Company - Luanda	Recycle / Reclaim
Electrical Cleaners (Aerosols)	By Approved Waste Disposal Company - Luanda	Recycle / Reclaim
Solvents	By Approved Waste Disposal Company - Luanda	Recycle / Reclaim
Paint	By Approved Waste Disposal Company - Luanda	Landfill (only if dry)
Drums - Metal	By Approved Waste Disposal Company - Luanda	Recycle / Reclaim
Drums - Plastic	Onboard Waste Management	Incinerated
Contaminated - Lube Oil	By Approved Waste Disposal Company - Luanda	Recycle / Reclaim
Contaminated - Diesel	By Approved Waste Disposal Company - Luanda	Recycle / Reclaim
Domestic Waste (Garbage)	Onboard Waste Management	Incinerated
Sanitary Wastes	By Vessel Sewage Treatment System	Onsite Treatment
Bio-Hazardous Waste	Onboard Waste Management	Incinerated
KOH 31%	Onboard Waste Management	Return to Manufacturer

Waste Management Coordinator: Vessel Captain & Ship's Agent

Location of Waste Management Plan: Onboard with Captain and/or 1st Officer, PC & HSE Advisor

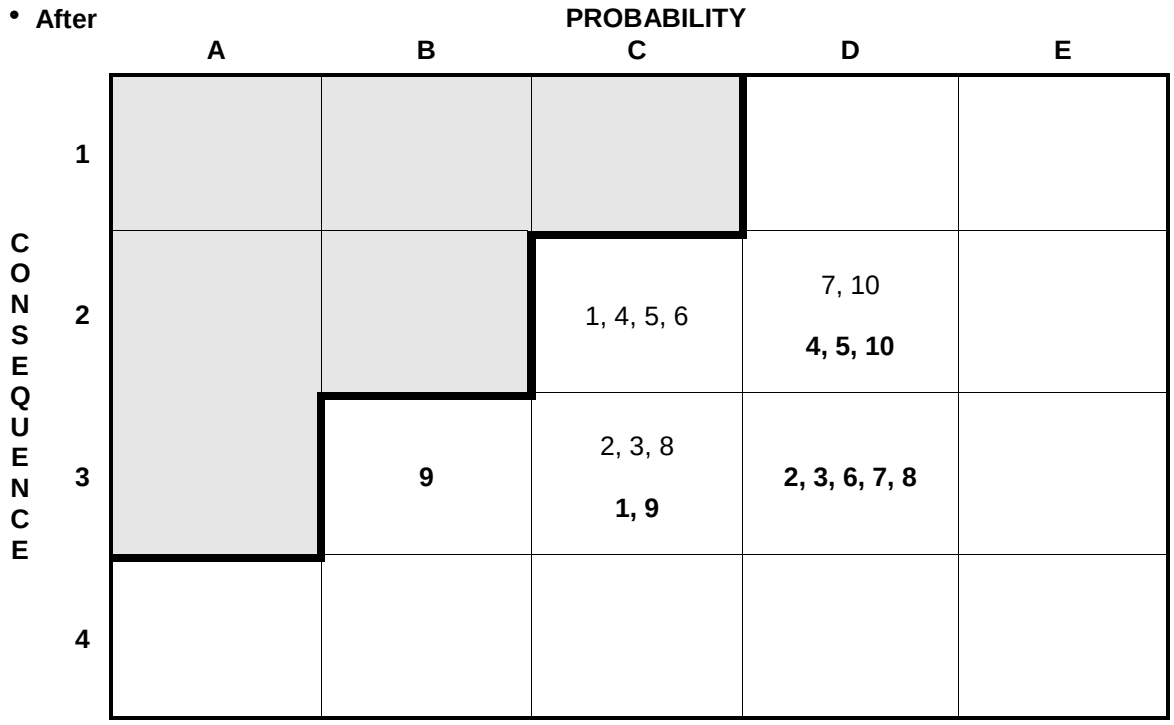
Contractor Will Provide Documentation (Manifests) to Support Proper Disposal of Wastes. Yes

31. Appendix – O

31.1. Project Specific Risk Assessment

RISK ASSESSMENT MATRIX

○ **Before**
• **After**



	HR #	Hazard		HR #	Hazard
1	4.3.1	Back-Deck Operations	**6**	TBD	Chemical Spill
2	TBD	Medical Emergency Evacuation	**7**	6.1.2	Hazardous Materials / Chemicals
3	TBD	Small Boat Operations	**8**	2.4.1	Man Overboard
4	4.4.1	Mobilization / Demobilization	**9**	TBD	Manual Lifting & Handling
5	2.1.6	Major Equipment Failure / Loss	**10**	4.3.5	Helicopter Operations

Note: ***HR#*** *- Refers to the applicable Client Hazard Register Number.*
TBD *= To Be Determined - This hazard is not yet identified in the Client Hazard Register.*

RISK ASSESSMENT MATRIX
GEOPHYSICAL PROJECT REVIEW

RISK MATRIX INDEX	APPROVAL REQUIRED
A1	Technical Vice President (TVP)
B1	Geoscience Resource Operations Mgr. (GOM)
AII, AIII, BII, CI	Geophysics Resources Manager (GRM)
ALL Others	Geophysical Operations Coordinator (GOC)

CONSEQUENCE CATEGORY	CONSIDERATIONS			
	HEALTH / SAFETY	PUBLIC DISRUPTION	ENVIRONMENTAL IMPACT	FINANCIAL IMPACT
1	Fatalities / Serious Impact on Public	Large Communiby	Major / Extended Duration / Full Scale Response	Corporate
2	Serious Injury to personnel / Limited Impact on Public	Small Community	Serious / Significant Resource Commitment	Region / Affiliate
3	Medical Treatment for Personnel / No Impact on Public	Minor	Moderate / Limited Response of Short duration	Division
4	Minor Impact on Personnel	Minimal to none	Minor / Little or No Response	Other

PROBABILITY CATEGORY	DEFINITION	GREAT WHITE PROJECT
A	Possibility of Repeated Incidents	1 incident in two (2) projects
B	Possibility of Isolated Incidents	1 incident in five (5) projects
C	Possibility of Occurring Sometime	1 incident in ten (10) projects
D	Not Likely to Occur	1 incident in fifty (50) projects
E	Practically Impossible	1 incident in a hundred (100) projects

SURVEY RISK ASSESSMENT
GEOPHYSICAL PROJECT REVIEW

	HAZARD	EVENT	CONSEQUENCE	Hazard Classification Before Prevention / Mitigation Measures		MITIGATION/PREVENTION MEASURES (List measures Planned for Project)	Hazard Classification After Prevention / Mitigation Measures	
				Consequence	Probability		Consequence	Probability
1	Back-deck operations (Deployment & retrieval of in sea equip.) HR – 4.3.1	• Moving Equipment - Booms - Winches - Tuggers - Wire cables - Cranes, etc. • Handling heavy equipment • Equipment failure • Wire cables under tension • Damaged/leaking hydraulic lines • Wet & slippery deck • Failure to use PPE • Crewmember falls overboard while deploying/ retrieving equipment • Inadequate communications • Failure of CCTV/Comm.'s equipment during deployment or recovery	• Rotating/moving machinery • Winch cable breaks • Personal injury/fatality • M.O.B. situation • Exposure of crew to elements • Potential impact on environment • Slipping & falling • Loss of equipment • Damage to property	**2**	**C**	• Establish go/no-go real-time guidelines • PPE guidelines & correct use • Identification of back-deck hazards at acceptance audit • Appropriate HSE training by contractor • Experienced technical & vessel crew - No SSE's • JSA's in place (where applicable) • Adequate/Scheduled rest periods beSeismic Staffingen shifts • Good comm.'s beSeismic Staffingen winch, lab & bridge using hand-held VHF radios • Good visibility from bridge & lab of back-deck area using CCTV camera • Daily shift change safety/toolbox meetings • Proper & scheduled equipment maintenance (documented) • Winch & wire cable has current stress test certification • Machine guards/shielding installed on winches • Non-skid material on metal decking & in good condition • M.O.B. procedures in place • Project Specific HSE Plan – crew sign-off list • Project ER Plan	**3**	**C**
2	Medical emergency evacuation HR – **TBD**	• Helicopter availability • Availability of other vessel / rig / platform support • Distance/time to adequate land based medical facility	• Injury/Illness progresses to a higher level	**3**	**C**	• Onboard medic with equipment • A well-defined ERP • Establish bridging document beSeismic Staffingen venture office & contractor vessel • A well-defined & structured line of communications (especially after hours) • Define helicopter availability & establish support criteria • Define other vessel availability & establish support criteria • Establish land-based medical support	**3**	**D**

	HAZARD	EVENT	CONSEQUENCE	Hazard Classification Before Prevention / Mitigation Measures		MITIGATION/PREVENTION MEASURES (List measures Planned for Project)	Hazard Classification After Prevention / Mitigation Measures	
				Consequence	Probability		Consequence	Probability
3	Work-boat operations	• Nose cone fails to deploy • Retrieval line gets tangled on AUV body	• Launch failure • Engine failure • Loss of propulsion/steering • Crewmember exposure (hypothermia) • Crewmember exposure (extreme heat/sun) • M.O.B. situation • Injury: - Minor • Equipment damage	**3**	**C**	• Monitor weather forecasts • Go/No-go decisions in relation to bad weather – established criteria • Maintenance schedules for HUGIN (particularly nose cone deployment mechanism) • JSA in place • Trained FRC helmsman will operate the work boat (marine crew only) • Properly trained crew for technical operations • Availability of & correct use of PPE • Good communication beSeismic Staffingen bridge/ship & rescue boat • Limit distance work-boat can travel from ship • Maintain & follow Project ERP to include contingency plan • Ample drinking water & sun blocker for crewmembers • Operations will be of limited duration	**3**	**D**
4	Mob/demob HR – 4.4.1	• Inadequate arrangements made for personnel movement • Using unsafe transportation • Exposure to hostile environment • Incident during mob/demob • Using local labor/support	• Mugging/Theft/Injury • Abduction • Air crash • Road accident	**2**	**C**	• Follow client & office travel guidelines • Use client & office approved carriers • Pre-trip security briefings • Minimize time onshore for crewmembers • Crewmembers are restricted to vessel/hotel • Use office/agent assigned drivers	**2**	**D**
5	Major equipment failure/loss HR – 2.1.6	• Loss of engines • Loss of steering • Loss of electrical • Loss of AUV system	• Collision • Running aground • No visibility • Fire risk • Other traffic & traffic density • Abandonment • Schedule/project delay • Financial impact	**2**	**C**	• Adequate & frequent maintenance schedules • Proper watch-keeping procedures • Emergency training & contingency plans • Valid certification of all equipment • Adequate problem reporting procedures • Adequate trained personnel	**2**	**D**

	HAZARD	EVENT	CONSEQUENCE	Hazard Classification Before Prevention / Mitigation Measures		MITIGATION/PREVENTION MEASURES (List measures Planned for Project)	Hazard Classification After Prevention / Mitigation Measures	
				Consequence	Probability		Consequence	Probability
6	Chemical spill	• Plumbing (piping) leak	• Damage and/or loss of equipment • Personal injury • Long term illness • Medivac situation • Environmental impact • Damage to third party equipment	**2**	**C**	• Well-defined work procedures • Regular equipment maintenance schedules • Secondary containment • Only qualified personnel • Hazard awareness training • Availability & correct use of specialized PPE • Regular reviews of procedures and/or JSA's • Emergence drills (spill) • Well-defined ERP	**2**	**D**
7	Hazardous materials/ chemicals HR – 6.1.2	• Explosion • Fire • Toxic fume release • Chemicals are: - Spilled - Absorbed - Inhaled - Ingested	• Loss of vessel or equipment • Air/sea pollution • Personal injury • Long term illness	**2**	**C**	• All chemicals properly identified & inventoried • All chemicals properly stored • All chemicals documented • Fire fighting equipment appropriate for specific chemicals • Crew to be trained in HAZCOM / HAZMAT • Proper use of chemicals • JSA's in place • Appropriate PPE available/used • Regular safety drills • Adequate & suitable waste handling & disposal program • Contingency plan in place • Applicable MSDS data sheets are available	**3**	**D**
8	Man overboard HR – 2.4.2	• Falling or dragged overboard during deployment/retrieval • Working outside ships rail • High seas/winds • Washed overboard during M.O.B. drill • Fatigue due to excessive work hours • Faulty equipment • Whiplash from broken winch or tugger cable while under tension	• Hypothermia • Injury/drowning	**3**	**C**	• Awareness through safety meetings, etc. • Frequency of drills to test readiness • Establish go/no-go for drills • Job specific training • Crew trained in Survival at Sea (SAS) techniques • Condition of & correct use of PPE • All life saving appliances are inspected & ready for use • Proper & scheduled equipment maintenance (documented) • Stop work based on sea/wind state • Life rings & life lines readily available & in good working condition • (Where applicable immersion suits readily available) • Strict enforcement of back-deck & over-side working procedures	**3**	**D**

	HAZARD	EVENT	CONSEQUENCE	Hazard Classification Before Prevention / Mitigation Measures		MITIGATION/PREVENTION MEASURES (List measures Planned for Project)	Hazard Classification After Prevention / Mitigation Measures	
				Consequence	Probability		Consequence	Probability
9	Manual lifting & handling HR – TBD	• Improper lifting • Improper handling	• Injury: - Minor muscle pull - Serious back injury • Long term disability • Medivac situation • Equipment damage • Financial impact	**3**	**B**	• Adequate training in stepping, handling & lifting techniques • Ensure near-miss reporting structure is in place • STOP • Availability of & correct use of PPE • Pre-planning & solicitation of help	**3**	**C**
10	Helicopter operations HR – 4.3.5	• Take-off and landing • Loading personnel and equipment • Ad-hoc flights	• Equipment damage • Fire • Injuries • Fatalities	**2**	**D**	• Use of approved contractor • 100% HUET trained personnel • Minimum 2 HLO's on vessel • Client aviation to audit vessel for helo ops • Vessel captain and pilot to agree on go/no-go prior to takeoff/landing • Uksnoy procedures for helo ops PR-220 • Client flight tracking procedure • No refueling on survey vessel	**2**	**D**
11	Medical HR – 3.1.8	• Poor medical capabilities • Poor medical facilities • Improper diagnosis • Inadequate drug security • Outdated and/or lack of medication	• Prolonged injury/illness • Lost time • Spread of illness/infections to others	**3**	**C**	• Routine employee medicals • Properly trained medic • Adequate supply of medication & equipment • Secure storage of medication & medical supplies • Suitable medical facilities (dedicated ship's hospital	**3**	**D**
12	Loss of AUV communica-tions	• Loss of communication from support vessel to AUV • Transducer failure	• No system communications • Ascent/emergency ascent of AUV • Damage and/or loss of equipment • Delay to schedule • Financial impact	**3**	**C**	• Alternate communications • Acoustic links from a tow-fish (attached to support vessel) with HIPAP data link • AUV will come to surface using positive buoyancy built-in (after pre-defined duration) • Weight release mechanism to speed up reaching surface • AUV ascent is monitored by HIPAP and functional data link • Commercial weather forecasting service/ close attention to weather forecasts • Knowledge of local offshore area • Up-to-date maps & charts • Knowledge of third party traffic • Automated satellite communications (ET phone home)	**3**	**C**

	HAZARD	EVENT	CONSEQUENCE	Hazard Classification Before Prevention / Mitigation Measures		MITIGATION/PREVENTION MEASURES (List measures Planned for Project)	Hazard Classification After Prevention / Mitigation Measures	
				Consequence	Probability		Consequence	Probability
13	Loss of AUV power	• Battery failure • Complete loss of power	• Ascent/Emergency ascent of AUV • Damage and/or loss of equipment • Delay to schedule • Financial impact	**3**	**D**	• Good battery management plan (regularity of changes) • AUV will come to surface using positive buoyancy built-in (after pre-defined duration) • Automated satellite communications (ET phone home) powered by backup batteries • Weight release mechanism to speed up reaching surface • AUV ascent is monitored by HIPAP and functional data link	**3**	**D**
14	Loss of AUV navigation	• Power loss • Navigation processor failure • Loss of position due to acoustic interferences • Erroneous navigation source to AUV	• Ascent/Emergency ascent of AUV • Damage and/or loss of equipment • Delay to schedule • Financial impact	**3**	**D**	• Support vessel can take control of AUV at any time • AUV heading can be modified real-time via ACL or HIPAP • AUV can be switched to standby mode for troubleshooting • Advise all FPSO's/drilling rigs/other operations of the AUV operating acoustic transmissions (interference) • Request acoustic transmissions data from FPSO's/drilling rigs/other operations working in project area	**3**	**D**
15	Loss of control of AUV	• Loss of ability to control AUV • AUV collides with underwater structures/debris • AUV sinks to bottom	• Outside assistance required (ROV) • Damage and/or loss of equipment • Damage to third party equipment • Delay to schedule • Financial impact	**3**	**C**	• AUV is equipped with positive buoyancy • Contingency plan in place • AUV is equipped with collision avoidance sonar • Command emergency ascent • Pre-establish communications/immediate notification: - FPSO/Platforms - Drilling operations - Other traffic • AUV is equipped with redundancy in acoustic communications (HIPAP and ACL) • The AUV surfaces if a loss of communications exceeds 30 minutes	**3**	**C**

	HAZARD	EVENT	CONSEQUENCE	Hazard Classification Before Prevention / Mitigation Measures		MITIGATION/PREVENTION MEASURES (List measures Planned for Project)	Hazard Classification After Prevention / Mitigation Measures	
				Consequence	Probability		Consequence	Probability
16	Uncontrolled ascent by AUV	• AUV has an uncontrolled ascent while below a: - FPSO - Drill rig - Support vessel (home) - Other facility	• Damage and/or loss of equipment • Delay to schedule • Financial impact	**2**	**C**	• AUV is equipped with a small fiber carbon propeller which is designed to easily break on contact • AUV propeller is driven by a 500 watt motor and at 160 rpm designed to shear • AUV design: AUV should not damage the structure/umbilical or other equipment due to its rounded shape • Survey planning and go/no-go criteria	**2**	**C**
17	AUV deployment & retrieval	• AUV gets hung up on launch/recovery sled	• Equipment failure • Damage and/or loss of equipment • Delay to schedule • Financial impact	**3**	**C**	• Well-defined deployment & retrieval procedures • Regular reviews of procedures and/or JSA • Go/No-go deployment/retrieval as it relates to weather/sea state • Use of only certified lifting gear • Regular equipment maintenance schedules • Work-boat/FRC availability • Only qualified personnel • Availability & correct use of appropriate PPE	**3**	**D**
18	Coring operations	• Pre-trigger: Uncontrolled descent of coring tool • Cable separation • Coring sheave/block fails • M.O.B.	• Damage and/or loss of equipment • Personal injury • Delay to schedule • Financial impact	**2**	**C**	• Ensure emergency response plan is up-to-date • Ensure all crewmembers are aware of emergency procedures • PPE • Certification of coring cable • JSA • Trained personnel • Redundant safeguards on hanging gear • Deployment/recovery system designed to minimize risk to personnel	**3**	**D**
19	Crane operations HR – 4.4.2	• Operating in bad weather/sea conditions • Equipment failure • Operator error due to lack of training • Poor communication	• Damage or loss of equipment • Personal injury	**3**	**C**	• Define go/no-go guidelines as it pertain to weather/sea state • Only trained & authorized personnel to operate the crane • Establish a proper set of hand signals beSeismic Staffingen operator & helpers • Tag lines • Maintenance schedules for cranes & lifting gear, e.g., slings, hawsers • Crane & wire cable has current certification	**3**	**D**

	HAZARD	EVENT	CONSEQUENCE	Hazard Classification Before Prevention / Mitigation Measures		MITIGATION/PREVENTION MEASURES (List measures Planned for Project)	Hazard Classification After Prevention / Mitigation Measures	
				Consequence	Probability		Consequence	Probability
20	General fire HR – 2.1.3	• Engine Room Fire • Accommodation fire • Deck fire • Incompetent personnel • Inadequate fire fighting equipment • Malfunctioning or poorly maintained fire fighting equipment	• Loss of control of vessel • Damage to equipment • Personal injury • Fire equipment failure • Loss of vessel	**2**	**C**	• Dedicated & adequately trained fire fighting crew • Utilize hot-work permit system prior to cutting/welding • Ensure oxy/acetylene system has flashback arrestors installed • Spot inspections to ensure good housekeeping standards are being maintained throughout vessel • Regular inspections & maintenance of fire fighting equipment • Location of portable fire fighting equipment • Smoke alarms in cabins & common areas • Designated smoking areas & requirements observed • If applicable, reassess smoking procedures/areas • Adequate ashtrays/waste containers for cigarettes, etc. • Regular checks of fire detection system – heat & smoke detectors • Regular review of housekeeping standards • Proper containers for oily rags/paper in engine room & workshops	**2**	**D**
21	Hostile third parties (on shore) HR – 10.2	• Proximity to - Guerillas - Warring factions - Bandits - Pirates - Terrorists	• Personnel: - Assault - Abduction - Robbery - Terrorist act - Civil disturbance - Hijack • Equipment - Loss - Takeover - Destruction • Ransom demands	**2**	**B**	• Pre-planning • Security profile/assessment - Supply companies & their personnel - Local agencies & their personnel • Liaison with authorities • Go/No-go areas & conditions • Crisis response & management • Well-defined ERP/Evacuation Plan	**3**	**C**

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22	M.O.B. operations (Rescue boat) HR – 2.4.2 & 3	• Weather/sea state • Inadequate launch procedures for rescue boat • Poorly maintained davit/launch system • Poorly maintained FRC engine • Recovery of rescue boat • M.O.B. rescue failure	• Launch failure • Engine failure • Loss of equipment • Exposure • Injury/fatality	**2**	**C**	• Go/No-go decisions in relation to bad weather and/or high seas • Frequent emergency drills • Adequate equipment maintenance • All crewmembers trained in offshore survival & hold current certificates • JSA in place (where applicable) • Good communication beSeismic Staffingen bridge/ship & rescue boat • Limit distance rescue boat can travel from ship • Maintain & follow project ERP to include contingency	**3**	**D**
23	General fatigue/ boredom HR – 1.3	• Impaired judgment • Impaired performance • Work reparation throughout shift	• Personal injury • Injury to others • Damage to or loss of equipment	**3**	**C**	• Basic exercise while sitting at work • Adequate rest beSeismic Staffingen work shifts • Adequate time off beSeismic Staffingen shift rotations	**3**	**D**
24	Inadequate communica-tion capability HR – 5.1	• Failure to communicate • Inability to communicate with local or ethnic personnel • Poor communication of potential hazards • Loss of communications • Inability to communicate with onshore facilities	• Unable to respond to an emergency situation • Serious injury • Damage to equipment • Potential hazard that becomes a real hazard • Loss of operational control	**3**	**C**	• Ensure all crewmembers are aware of ERP • Regular HSE meetings • Adequate near-miss/potential hazard reporting system • Verify company approved inmarsat is onboard & fully functional at start-up • Insure there is adequate redundancy during audit (e.g., VHF, UHF, cell, satellite) • Establish protocol for bridge/back-deck communications	**3**	**D**
25	Disease or illness HR – 1.1	• Food poisoning • Hepatitis • Dysentery • HIV • Malaria • Other	• Prolonged illness • Lost time • Spread of illness/infections to others • Financial liability • Fatality	**2**	**C**	• Contractor/company sponsored awareness program • Appropriate inoculations for expatriates • Employee medicals to meet minimum UKOOA standards • Medic/doctor aboard vessel • Company provided prophylaxis • Company provided prophylactics • First aid training • Pre-start audit of medical supplies • Health/hygiene monitoring • Galley/cabins & shower cleanliness • Provide bottled water (where practical) • Well-defined ERP	**3**	**D**

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				Consequence	Probability		Consequence	Probability
26	Maintenance HR – 2.1.6	• Inadequate supply of spares • Incorrect spare parts • Schedule not followed • Inadequately trained or incompetent personnel	• Equipment not functional • Frequent repairs necessary • Loss of vessel electrical power • Loss of control / propulsion / steering • Project delay • Financial loss	**3**	**D**	• Well structured vessel audit (pre-contract) • Verify preventative maintenance program (use engineer's logbook & other available records) • Properly trained maintenance personnel • Where vessel is sub-contracted ensure good communication beSeismic Staffingen technical contractor & vessel owners • Establish & maintain communications link • (Facilitate request for assistance)	**3**	**D**
27	Third party traffic or obstacles HR – 8.5	• Other maritime traffic in area • Local fishing/commercial fleet • Oilfield platforms/rigs • Marker buoys, etc.	• Loss of propulsion/steering • Equipment damage • Third party equipment damage • Collision • Environmental impact • Financial loss • Poor public relations • Injury	**2**	**C**	• Ensure "Notice to Mariners" is publicized • Good watch keeping practices • International communication systems • Liaise with local fishing groups & commercial traffic • Suitability of navigation equipment (with back-up) • Maintenance schedules for navigation & communication equipment • Properly trained crew • Define exclusion zones • Define go/no-go guidelines	**2**	**D**
28	Substance abuse (Drug, alcohol & medication) HR – 1.2	• Impaired performance • Irrational behavior • Impaired judgment • Fatigue	• Personal injury/illness • Damage to property • Injury to others • Fatality	**2**	**C**	• Well-defined D&A policy • Pre-access testing • Pre-start medical testing • Random drug/alcohol testing • Post accident/for cause • Job sensitive testing	**3**	**D**
29	Contaminated food supplies	• Old stock • Not cooked enough • Improper storage • Improper handling	• Food poisoning • Serious illness • Possible employee LTI • Financial loss	**3**	**B**	• Medic/medicines onboard • Rotate food stocks regularly • Quality control of food suppliers • Quality control of food preparation • Proper storage of cooked/uncooked foods • Correct refrigeration/freezer temperatures • Galley/storage cleanliness • Galley staff personal hygiene/health standards	**3**	**C**

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30	Hygiene HR – 3.1.5	• Contaminated water • Food contamination • Insect/vermin infestation • Poor personal hygiene • Overall vessel hygiene poor	• Illness • Lost time (personnel) • Lost time (production) • Spread of infectious diseases to others	**3**	**C**	• Regular cleaning routines • Inspection of food stocks • Inspection of food storage • Inspection of water tanks & water making systems • Bottled water (where practical) & maintain an adequate supply • Provide adequate laundry facilities • Basic hygiene awareness training for all crewmembers	**3**	**D**
31	Underwater hazards (in port) HR – 8.5	• Debris • Fishing nets • Other types of fishing gear	• Loss of propulsion/steering • Equipment damage • Running aground • Environmental impact • Exposure of crew to hazardous situations	**3**	**C**	• Use of current navigation charts & latest data of project area • Liaise with local fishing groups and/or community where practical • Utilize vessel echo sounder at all times	**3**	**D**
32	Galley fire HR – 3.1.9	• Faulty equipment • Hot ranges/ovens • Hot fats/liquids • Excessive grease buildup	• Spillage onto hot surfaces • Stove/hood ducting fire • Exhaust fan fire • Serious injury	**2**	**C**	• Ensure good housekeeping standards are maintained in galley • Heat/smoke detectors in place & functional • Adequate & regularly inspected extinguishing systems • Properly trained galley staff • First aid training for galley staff	**3**	**C**
33	High pressure systems (general) HR – 3.2.2	• Damage to storage bottles causing leak • Valves left open • Corroded valves • Damaged relief valve • Hoses/pipes in poor condition	• Inert gas leak into confined space • Hydraulic fluid spill • Explosion • Potential fire • Equipment damage • Serious Injury • Fatality • Loss of vessel	**2**	**C**	• All gas bottles to be properly stored/secured • All valves checked on a regular basis • All hoses/pipes checked on a regular basis • Properly functioning pressure relief valves • Adequate maintenance schedules • Adequate supply of spares • Properly trained crew • JSA in place (where applicable)	**3**	**D**

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34	Fuel/oil spills HR – 2.1.3	• Overflow during bunkering • Overflow while transferring lube oils • Broken lines/hoses • Bilge overflow	• Shipboard only spill • Over-side spill in port • Over-side spill at sea • Duration of spill & clean-up • Fuel/oil fire • Damaged equipment • Environmental impact • Damage to company reputation	**3**	**C**	• Contingency plan as per ERP in place & tested • Adequately trained crew in spill response to include (SOPEP / HAZCOM / HAZMAT) • Applicable COSHH (MSDS) data sheets are available • Regular safety drills • Appropriate PPE available & used • Hose/pipe fittings/flanges maintained & in good working order • Regular checks of bilge alarms, quick closing valve & bunker/lube oil transfer pumps • Regular checks of fire detection system, oils mist detectors – heat & smoke detectors • All chemical to be properly stored & documented • Adequate spill clean-up supplies (to SOPEP standard) • Adequate & suitable waste disposal program	**3**	**D**
35	Improper load/cargo storage HR – 2.1.5	• Equipment/cargo moves due to poor storage/securing techniques • Equipment/cargo moves due to bad weather • Equipment/cargo washed overboard	• Damage to equipment/cargo • Loss of equipment/cargo • Possible M.O.B. situation • Possible injury • Possible environmental impact	**2**	**C**	• All equipment/cargo to be adequately stowed • Crew trained in proper loading, storage & securing techniques • Only authorized crewmembers involved in these procedures • Contingency plan in place	**2**	**D**
36	Mooring operations HR – 2.4.2	• Equipment loss due to damaged/broken mooring line • Collision with other vessel • Struck by mooring line • Limbs being caught by mooring line	• Serious injury • Equipment damage • Possible collision • Financial loss • Bad public relations with port authorities	**2**	**B**	• Attention to visual and/or audible signals • Good communication with dockside linesmen • Following proper mooring procedures • Regular inspection of mooring lines/bits, etc. • All non-essential personnel clear of area	**3**	**D**
37	Working at heights HR – **TBD**	• Falls • Exposure to elements • Exposure to radioactive equipment	• Injury - Minor - Serious - Fatality • Long term illness • Hypothermia • Medivac situation	**2**	**C**	• Ensure permit-to-work system is in place & being used correctly • Ensure lock-out/tag-out system is in place & being used correctly • Availability of & correct use of PPE • Adequate training • Close attention to weather forecasts	**2**	**D**

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38	Weather/sea state HR – 8.3	• Strong winds • High seas • Strong currents • Reduced visibility	• Collision • Damage & subsequent pollution • Loss of equipment • Crew fatigue • M.O.B. situation • Hypothermia • Slipping & falling • Crewmember being struck by falling object	**2**	**C**	• Check marine crew for good watch keeping procedures • Use of radar • Secondary radar • Commercial forecasting service • Use of PPE, life vests & harnesses • Properly secure loose objects • Close attention to weather forecasts • Knowledge of local offshore area • Client/captain/party chief will determine go/no-go as necessary • Practice good seamanship	**2**	**D**
39	HiPaP transducer installation	• Leaking valve • Transducer damage • Catastrophic failure of gate valve	• Flooding • Loss of vessel stability • Loss of vessel - Multiple fatalities - Financial loss - Damage to reputation	**1**	**E**	• Bilge alarm sensors installed • Visual/audible alarms on bridge & in engine room • Bilge pump & fire pump able to remove water • Camera mounted so that unit can be observed from bridge & laboratory • Hourly walk through by AB during night & when engine room unmanned	**1**	**E**