



Exploration & Production

GENERAL SPECIFICATION

Seismic Acquisition

GS EP GPA 201

Seismic HSE for Marine Activities

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Rev.	Date	Notes

Owner: EXPLO/TE

Managing entity: EXPLO/TE/MTG



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1. Scope

1.1 Purpose

The purpose of this General Specification is to define the main Company HSE standards to be adhered by the Contractors.

These standards, based on IAGC and OGP ones ([OGP Report N°432](#)), concern the HSE Minimum Expectations and the specific requirements for each operation aspect.

1.2 Applicability

The following document is part of the Company Referential. It lays down the Company HSE requirements for seismic acquisition operations.

It is a contractual document in seismic operations and specifies the general standards of HSE exhibit (Exhibit A).

Thus this specification is considered by Company as an applicable standard and shall be respected.

1.3 Safety Regulations

When working in, and/or around Oil and Gas Field Installations whether belonging to Company or not, Contractor(s) is required to fully comply with all the Safety and Environment Instructions given by the Oil Field Authority, the Standing Instruction Manuals for Marine Operations (if any) and all the related documents and procedures available with the Oil Field Authority Representative and/or with Company Representative.

In this particular situation, Contractor(s) shall observe the following requirements:

- Minimum Safety distances to all installations as defined in the Company's oil and gas safety manual and/or specific requirements such as in situ determination derived from particular methodology ("peak particle velocity").
- Safety inspection and briefing to be conducted before entering or approaching any oil and gas field installations.
- Permanent coordination with the Company's oil and gas field Logistics and/or Safety Departments regarding the operations in progress (e.g. with regard to diving operations, rig moves...).
- Special care and supervision when working close to oil and gas field constructions and pipes.
- The implementation of any equipment on oil or gas field installations shall be considered as an operation in hazardous areas and shall be ruled under the Permit To Work (PTW) system in force on site.
- Operations that involve cutting, welding or burning etc., within the perimeter of any field installations shall not be carried out without obtaining the necessary PTW.
- Personnel H₂S training, dedicated alarms (detectors), protective equipment (masks) and specific procedures when H₂S risk is identified.
- Any other specific training when required.

2. Reference documents

The reference documents listed below form an integral part of this General Specification. Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and supplements, is the latest revision published at the EFFECTIVE DATE of the Contract.

Standards

Reference	Title
ICAO Annex 14 vol I & II	Aerodrome design and operations - Heliports
UKCAA – CAP 437	Offshore helicopter landing areas – guidance on standards

Professional Documents

Reference	Title
OGP Report N°432	Managing HSE in a geophysical contract
OGP Report N°343	Managing Health for field operations in oil & gas activities
OGP Report N°398	Health aspects of work in extreme climates. A guide for oil and gas industry managers and supervisors, OGP, December 2008
JNCC Guidelines	Guidelines for Minimising the risk of Disturbance and Injury to Marine Mammals from seismic surveys

Regulations

Reference	Title
MARPOL	International Convention for the Prevention of Pollution from Ships
WCA 1981	Wildlife and Countryside Act, 1981
Bern Convention 1979	Convention on the Conservation of European Wildlife and Natural Habitats
Directive 92/43/EEC	Conservation of natural habitats and of wildlife and fauna

Codes

Reference	Title
ISPS Code	International Ship and Port Security



Other documents

Reference	Title
Not applicable	

Total General Specifications

Reference	Title
GS EP LSO 202	Personnel transfer between watercrafts and between watercrafts and Offshore structures
GS EP MED 060	Onsite medical structures
GS EP MED 061	Medical support for E&P sites
GS EP MED 062	Hygiene in bases and living quarters
GS EP MED 063	Specific risks: clinical and therapeutic elements
GS EP GPA 202	Seismic HSE for Land Activities

3. General

3.1 Vessel age minimum requirements

Vessel type	Maximum age	Remark
Vessel converted to seismic purpose but built originally for other task ----- Chase boat – Support boat – Supply boat	20 years	Maximum age cannot exceed 20 years Vessels OVPQ (Offshore Vessel Particular Questionnaire) input in the OVID (Offshore Vessel Information Database) of OCIMF (Oil Companies International Marine Forum)
Vessel built for seismic purpose (including source vessel)	None	Hull less than 20 years old since built : to be inspected by Total Logistic Department (or specialist approved by Total Logistic Department) less than 24 months before mobilization ----- Hull more than 20 years old since built : to be inspected by Total Logistic Department (or specialist approved by Total Logistic Department) less than 12 months before mobilization and full history of vessel to be attached to Contractor's tender



For all vessels engaged in seismic operations, acceptance from Company will depend on an OVID inspection further input in the OVID (Offshore Vessel Information Database) of OCIMF (Oil Companies International Marine Forum).

3.2 Emergency towing tests

As the risk of master vessel blackout has been identified as having a low occurrence probability but a high damage potential -with modern seismic vessels-, an emergency towing test is to be performed during the seismic vessel mobilization phase. This test does not request a real towing action (it can be initiated and then achieved till a messenger line is linking the two vessels) but has to ensure the following:

- Efficient communication test between the bridges
- Availability of the minimum towing equipment needed (equipment verified prior testing)
- Competency of the deck crew and bridge personnel engaged on both vessels
- Full understanding of the procedure
- Efficiency of recovery plan in case of incident and related escalation

Before the towing test a tool box meeting (supported by a consistent JRA) is to be held on both vessels to ensure the full understanding of the drill purpose and achievement. The presence of the Company RSES on the towed seismic vessel bridge is mandatory during the tool box meeting and the full test. After test completion, a debriefing meeting with all actors is to be performed on both bridges. Action points raised during these meetings are to be integrated in the master vessels remedial action plan. A written report of the drill is to be written and transmitted to the Company RSES.

Concerning the undershooting operations, as a source vessel is to be mobilized and involved in close passes operation, the towing test involving this vessel and a dedicated towing support vessel (available during the close passes) will be performed depending on the operation JRA conclusions. As the test is mainly a global control of the various means implemented on the fleet by the seismic Contractor, in case a support vessel supposedly assigned to emergency towing task (amongst others) is out of order during the operation, it is the responsibility of the seismic Contractor to replace the vessel by an equivalent one and perform a emergency towing test with the new support vessel.

Emergency towing tests do not need to be performed while seismic gears are deployed.

4. Personal Protective Equipment

Contractor shall provide all the necessary and appropriate Personal Protective Equipment (PPE) to all personnel (including Company's personnel and visitors) upon their arrival on the survey area.

In addition to a minimum of two (2) coveralls for each employee, one (1) for visitor a full complete set of PPE shall be provided. This includes but not limited to: helmet, goggles, ear protections, gloves and safety shoes.

Visitors' means: Company Representatives, Auditors, Company Personnel from affiliate, Company Personnel from Head Quarters and all Officials.

Positions like mechanics and any other dealing with hydrocarbons and/or water shall be provided with three coveralls. Bakers, cooks, waiters and all personnel working in the galley shall receive a minimum of two uniforms.



Hard hats shall be replaced as per expiry date or if any crack is observed on it.

Gloves shall be provided at need, as well as dust mask and ear plugs. Safety glasses shall be replaced when worn. Depending on weather and terrain condition, sunglasses and dust masks can be requested by Company Representatives.

A list of PPE and schedule of renovation shall be provided to the Company Supervisor within the first month of operations.

A sufficient stock of PPE(s) shall be present all time on site to avoid any shortage and kept up to date by the HSE Advisor. A log book, or a data base shall be available to ease the PPE(s) management. Once a month a physical inventory shall be done and figures provided to the Company Representative. All worn PPE(s) shall be replaced by the HODs (Head of Department). Contractor is eventually responsible of PPE(s) wearing by all workers regardless of damaged or lost equipment by the employee.

PPE(s) are mandatory where required during work hours, field trips and/or visits.

PPE(s) described as regular PPE(s) needed for specific tasks and worksites are mandatory (see Appendix 1). In some cases some PPE(s) could not be worn because of a specific situation this would be approved or not by the Company Representatives on site.

All specific crews or activities not initially planned or not mentioned in Contractor PPE(s) table, shall be subject to mandatory health and safety hazard analysis to establish list of mandatory PPE(s) together with relevant safe work procedure. Same analysis shall be needed for unusual work conditions or sudden condition changes. Company Representative has to agree on new PPE(s) assignment or change.

5. Small Boats Operations

5.1 Passengers

A safe successful boat trip requires the crew of a boat to work as a team. Consequently, any passenger should consider himself as part of the team and assist the crew by cooperating with any instructions given. An important part of operating a boat safely is to keep a good lookout; a passenger can assist by staying alert and reporting sightings of other boats, debris in the water or anything considered to be defective or unsafe. Do not move in the boat as it may affect the trim and balance of the boat and make it difficult to steer or unstable.

If passenger feels that something about the journey in the small boat is unsafe he can refuse to travel but shall discuss the reasons with the coxswain or Captain of the mother vessel.

When passengers are transferring from a small boat to another vessel they are not to be put under duress if they feel they cannot do the transfer safely or they are not confident. They have to discuss this with the crew – sometimes a different method can be tried that will make them feel more confident.

5.1.1 PPE's

- Hardhat

Head protection on the mother vessel is mandatory; the most common protection is canoeist type helmets that give some side protection. It is compulsory to wear head protection during hoisting and lowering down in the boat.



- Cold water and weather protection

When the air and the water are cold, passengers shall be provided with a SOLAS approved cold water immersion suit to wear. It is important to wear this properly with all zips and fasteners set up correctly.

Inspection, maintenance and certification register shall be in place.

- Lifejacket

Life Jackets are also called Personal Flotation Device (PFD). They have either automatic or manual activation. All life jackets are to be SOLAS approved with dual chambers.

All passengers shall be briefed on how to activate the PFD if it is a manual activation or if the automatic inflate fails on an automatic PFD.

Inspection, maintenance and certification register shall be in place.

- Emergency Position-Indicating Radio Beacon (EPIRB)

It is recommended to equip crews with lifejackets fitted with a personal EPIRB. It will send a signal so that a search vessel or aircraft can locate the beacon. They are usually set to activate automatically when a person falls overboard. In case the life jackets are not fitted with EPIRB, an independent one can be carried by each person on board small boats. Before embarking (during the tool box meeting) EPIRB tests are to be done, any deficient equipment is to be isolated.

Inspection, maintenance and certification register shall be in place.

- Footwear

In small ancillary boats (FRC, FRB, work boat) safety boots or shoes with anti slippery sole are mandatory.

- Gloves

Gloves are mandatory for all handling operations.

- Glasses

Sunglasses are recommended to reduce the effect of glare and will also shield the eyes from spray.

- Sun screen

Application of sun barrier cream is recommended for trips exceeding 30 minutes to prevent sunburn.

In addition to all PPEs, a sufficient amount of water is to be embarked on board and stock verified at each small boat launch.

5.1.2 The Crew

Normally there are two crew members on a small boat in addition to the coxswain. The crew assists the coxswain during vessel operation and shall assist passengers during transfers.

- Pilots

Pilots are masters on board and have authority on personnel.

Pilots shall be trained, qualified and experienced.



Pilots shall be trained for first aid and fire fighting.

Pilots shall be trained and aware of "Man Over Board (MOB)", "Medevac", "Fire", "Lost Vessel", "embarking and disembarking personnel and equipment" and "Refuelling" procedures.

Pilots wear life jacket, coverall, proper shoes and use kill-cord on light boats.

- Coxswain

The coxswain is in charge of the boat and is responsible for the safety of the crew and passengers and for the safe operation of the boat. Industry standards mean that the coxswain shall be trained, qualified and experienced.

- Captain of the mother vessel

The Captain has overriding authority over all operations conducted by and from the vessel including small boats operations.

5.2 Boats

The main types of boats used for passenger transfer are Fast Rescue Crafts (FRC) and work boats.

Boat shall be in good conditions with certificate, insurance and documentation on board.

Boat name / number shall be easily readable.

Boat shall be inspected / audited before assigned to operation through a specific check-list.

Boat fleet maintenance and follow up records shall be in place and communicated to Company.

Boat shall be clean, tidy and in good general conditions.

Minimum HSE equipment shall be provided:

- Approved flotation devices for each person and a life ring with 15m rope fixed to vessel
- Fire extinguisher
- Extra line or rope
- Paddles (x2)
- First aid kit (including seasickness tablets)
- Basic tool kit including shear pins and flashlight
- Ample fuel
- Kill-cord (dead-man's handle or switch)
- A waterproof VHF radio
- 2 ropes minimum (front and rear) to moor or attach to other vessel
- One anchor
- Passengers + pilot maximum number displayed in the boat
- Stickers "no smoking", "floatation life jacket mandatory"
- Emergency kit complying with boat category and containing at least: waterproof torch, distress flares, plastic bailer, signalisation mirror, compass.



- Horn or whistle

All boats shall be Diesel twin engine.

"Man Over Board", "Medevac", "Fire" and "Lost Vessel" procedures shall be available onboard.

Prospect and area maps shall be available onboard.

Vessel tracking system shall be GPS based.

Pilot seat is to be fixed.

Fuel tank shall be labelled and free of leak.

Skid surface shall be avoided.

5.2.1 Supply Vessel (extra requirements)

Supply vessels are subject to the requirements detailed in section 3.1.

In addition to the scope of an OVID inspection, the equipment required to perform her work will be verified (e.g. bunkering equipment including pipes, hoses, valves etc.).

5.2.2 Workboat (extra requirements)

2 workboats are expected for a streamer length above 42 km.

The time of pre launch toolbox meeting shall be planned and communicated to the people involved including passengers. Attendance is mandatory for everybody involved in the operation. Briefing on the trip and distribution of PPE such as hard hat, Personal Flotation Device (PFD) and immersion suit if required will take place. Boarding the boat shall be performed either at the davit or through a dedicated door in the ship side. No one to board the boat until instructed to do so by the crew. Crew shall tell where to stand or sit. When the boat is ready to launch, the davit operator will swing it out from the ships side – the boat may start to swing at this stage and occasionally bounce off the ship side – it is very important to have a good handhold for all the passengers.

- Permit to work and toolbox meeting

If the boat is operated from a mother vessel there should be a toolbox meeting before the boat is launched, at the same time a permit to work form shall be filled out to ensure that it is safe to launch the boat and safe to transfer passengers. At the toolbox meeting, safety issues shall be discussed.

- Journey management

The time of departure shall be recorded and radio contact maintained with the work boat throughout the deployment. If radio contact with the boat is lost, there are procedures to immediately send another boat to investigate.

5.3 Hazards

- Movement of the boat

Small boats used in the industry can travel at speeds up to 30 knots; movement of a small boat can easily throw a person out of board it can be unpredictable and rapid. The most uncomfortable place to be is at the bow – the least movement at the stern.



- Pitch, roll and heave

Pitch is the movement of the boat that causes the front of the boat to go up and down; roll of course is the rolling movement from side to side, and heave is the vertical rise and fall of the entire boat.

All these movements can occur at the same time therefore, it is very important to hold a handhold especially when moving in the boat.

- Seasickness

Seasickness is also known as motion sickness. Acute and prolonged seasickness can be life threatening. Seasickness is debilitating and will affect your judgement, situational awareness and physical abilities. Medications are available to prevent seasickness. Most passengers should generally stay into a small boat for a short period.

- Crushing

When a small boat is alongside a ship or another boat, there is the hazard of getting body parts crushed between the boats. Do not let hands on the edges of the boat and follow the instructions for transferring to avoid having feet and legs crushed. When the boat is being lowered or raised it is advisable to stay on the outboard side for this reason. Support vessels usually have large tyres for fenders along their sides, that require being especially careful with.

- Falling

Such hazards are falling overboard from the boat while it is in the water and falling from the boat when it is on the davit or while being hoisted and lowered.

- Struck by

It is possible to be struck by the davit lifting wire arrangement and the hull or superstructure of other boats or ships while alongside.

- Slipping and tripping

All parts of a small boat can become slippery when wet or contaminated with cable oil or grease, even over non skid surfaces. Some support vessels have low freeboard and the decks can become extremely slippery.

- Working at heights

When boarding or disembarking from a small boat on the davit you may be at a considerable height above the water.

- Stinging biting marine animals

A hazard exists from sea snakes, jellyfish and sharks in some parts of the world, mainly in tropical seas. Avoid touching or disturbing marine animals even if they appear to be dead.

- Ropes

If the boat is alongside a wharf or jetty there will be ropes used to secure it alongside. A bight is a loop in a rope. Standing in the bight of a rope is dangerous because when the rope becomes tight you will be trapped in the loop and most probably injured. Synthetic ropes under tension will snap back if they break and can cause severe injuries, stay out of the line of recoil of a rope under tension.



- Noise

Engine noise in some small boats may be above the safe limit, in such case specific PPE(s) have to be worn.

- Cold

In areas where air temperature or water temperature are low, passengers you should be given an immersion suit. A combination of wind, spray and low temperatures can cause hypothermia that develops rapidly.

- High pressure hydraulic hoses and pipes in good conditions
- High pressure air hoses and pipes in good conditions
- Manometers operatives

5.4 Emergency

- Boat Emergency Equipment

Small boats should be equipped with emergency equipment as required by industry, flag states, and international maritime regulations. Refer to section 5.2 for details.

- Fire

Fire is a serious situation in a small boat as a fire that cannot be extinguished quickly will mean abandoning the boat. All boats are equipped with a fire extinguisher. Smoking is forbidden.

- Capsize

Activate PFD and EPIRB, stay with the boat, and follow the crew's instructions. FRC type boats and some workboats have self righting equipment that will right a capsized boat – usually an inflatable bag that is activated by the crew.

- Collision

If you see a collision is imminent brace yourself and hold on tight. Boats can collide with other vessels, structures or wharves and jetties.

- Engine failure

Engine failure can be a serious hazard if it occurs close to the side of the mother vessel where the boat can drift back into trailing equipment.

- Sinking

Passengers shall have done a mandatory sea survival course before going offshore. They will have to use the techniques learnt during this training and follow the instructions of the crew.

6. Transfer of Personnel

This Work Instruction shall be followed when transferring personnel directly between a Contractor vessel and a supply/support vessel. Transfer of personnel using basket shall be avoided as much as possible. Reference document: [GS EP LSO 202](#).



6.1 General

The main risks involved in direct vessel to vessel transfers are that the transferring personnel may fall overboard or are trapped between the vessels. During all transfers of personnel, crew not associated with the transfers are to keep clear of the transfer areas.

For all direct vessel to vessel transfers:

The Captains of both vessels shall be in command on their respective bridges. Clearance shall be obtained from the Captains of both vessels before any transfer commences.

Good radio communications between the Captain and the deck officer in charge at the transfer point on each vessel shall be established before any transfer commences. Transfers between vessels shall only take place at designated transfer stations.

The deck officer in charge at the transfer point shall ensure:

- That both points of transfer are cleared of all loose items and obstructions.
- That the deck surfaces to transfer areas are not slippery
- That the person(s) transferring and the assistants on both vessels are wearing mandatory lifejackets, suitable clothing and non-slip footwear. Immersion suits are required above latitudes of 32° North or South
- That all personnel transferring have been briefed and know and understand the transfer procedures before the transfer commences.
- That lifebuoys, boat hooks, and heaving lines are made ready for immediate use in case of emergencies.

The person(s) transferring shall do so in their own time and only if they themselves consider it safe. They shall never be coerced into making the transfer.

6.2 Personnel briefing

All direct vessel to vessel transfers run the risk of personnel falling overboard. However, by following a few basic safety precautions these risks are minimised and the transfer can be carried out in a safe manner.

Before any transfer the deck officer in charge of the transfer shall brief personnel on vessel to ensure that they know and understand the correct procedures.

6.2.1 Personnel Protective Equipment (PPE)

When transferring vessel to vessel the following PPE is mandatory:

- Lifejackets
- Non-slip footwear
- Immersion suits are required above the latitudes of 32° North or South

6.2.2 Precautions

Follow all the procedures.

Only transfer if you feel confident and fit enough to do so.



Only transfer if you consider it safe. You must never be coerced into transferring if you are in any doubt about the safety of the transfer.

Never carry luggage when transferring. It shall be transferred separately.

6.3 Procedures

6.3.1 Swing Rope transfer

Swing ropes will occasionally be encountered and may be used to transfer to and from a small boat to a larger vessel or a platform. Do not attempt to cross until instructed to do so.

- Firmly grasp the swing rope above the first knot above shoulder height and pull down hard to test that the rope is secure
- Keep both hands free. Grab the knotted rope close to your eye level.
- When the boat is at the top of a wave and before it starts to go down swing across by pushing off with your feet – correct timing is important, wait for a few cycles of the boats pitch and roll so you can judge the moment.
- After you are across, release the rope and get clear of the area so the next person can cross.
- Use the swing rope for balance as you step across rather than using it like a “Tarzan” swing.
- **Never get the rope between your legs.**

6.3.2 Pilot ladder to and from a support vessel or guard vessel

The persons transferring shall not attempt to transfer until they receive the go-ahead from the coxswain or the crew. It is recommended to have an experienced person performing first the transfer, if possible.

- Correct timing is important, wait for a few cycles of the boats pitch, roll and heave so they can judge the appropriate time.
- If using a boarding ladder, people should board the ladder when the boat is at the top of the swell or wave and climb clear of the small boat as quickly as they can do so safely. If transferring from a support vessel they should stay at a safe height on the ladder that will allow them to step into the small boat when it is at the top of the swell or wave.

7. Airguns and High pressure air systems

7.1 Integrity of HP air systems including compressors

System shall be certified.

Preventive maintenance plan shall be implemented.

Hydrostatic test shall be done.

Burst disks shall be operational, position/design and operations shall be checked.

Relief valves shall be tested and regularly checked as well as safety devices.

Emergency stops shall be operative.



Flexible hoses shall be well protected.

Manifold valves shall be in good conditions for bypass – leave drain valves open.

Fitters / repairers shall be competent.

7.2 Integrity / Design of array systems and airguns

Arrays shall be designed to minimise manual handling, entrapment and pinch points (ergonomics).

Arrays shall be designed to minimise shock / damage to guns during deployment / recovery.

Preventive maintenance plan shall be implemented.

Local modifications shall not occur.

Inspections routines shall be performed on a regular basis and documented.

7.3 Airgun operations / procedures

Safe system of work for maintenance – procedures shall be applied.

Awareness training on the risks of high air pressure air shall be performed.

Warning signs /signals shall be available when air pressure is active on deck.

Manual handling of guns / heavy parts shall be minimised.

Safe system of work shall be applied in case of firing test.

Aired guns on deck shall be minimised– bled down before recovery to deck.

Medical emergency procedures shall be in place in case of HP air injury.

Lockout / tag out shall be applied for electrical systems during maintenance.

Explosion risk of oil in HP air lines shall be known by the crew. Non-greasing philosophy shall be applied.

8. Back-Deck Marine Operations

8.1 Working environment

Back deck working areas shall be correctly designed, cleaned, kept free from obstructions and maintained.

Protection against adverse weather shall be implemented.

Adequate levels of lighting shall be provided.

High noise areas shall be identified, and PPE warning signs shall be displayed.

PPE, wet/cold weather clothes shall be available.

8.2 Fire prevention / detection / protection

Back deck fire prevention measures shall be implemented.

Smoking permitted areas shall be identified.

PTW for hot-work on back/deck shall be required.



Provision of smoke / heat detection systems shall be sufficient in high risk areas.

Appropriate fire fighting deluge systems shall be installed over high risk areas.

8.3 Edge protection / protection from falls

Fall arrestors shall be used when operating in open slip-ways.

Area shall appropriately be designed.

8.4 Protection from dynamics loads

Design of deck shall minimise exposure.

Dedicated areas shall have a restricted access.

Unnecessary personnel shall be avoided on deck.

Access-ways shall be clear, with adequate width.

Moving parts of equipment shall be guarded.

Wires and ropes shall be certified, and inspected and used by competent persons.

8.5 Protection from electrocution from active seismic electronics (streamers)

Electrical power shall be removed from streamer when (dis)connecting sections.

8.6 Emergency response / equipment / communications

Emergency life raft shall be available / launched from back deck.

Video monitoring of back deck by bridge shall be provided.

8.7 Portable equipment / Hand tools

Low voltage electrical tools shall be used.

Air powered tools shall preferably be used instead of electrical tools.

Preventive maintenance shall be implemented

Portable appliance shall be tested.

8.8 Certification / testing of load bearing equipment

Winches, booms, cranes, wires, chains, cables, tie down points, pad-eyes shall be tested and certified by a recognised body, and maintained during survey. They shall all be identified in a lifting and rigging register.

Any damaged item shall be quarantined.

8.9 Procedures for safety critical operations

Procedures for recovery and deployment of arrays / streamers shall be implemented.

Statement on how/when back deck operations stop or can be re-started shall be clearly expressed, understood and applied.



8.10 Housekeeping

Slip/trip hazards shall be minimized.

Proper stowage of equipment shall be done.

Equipment shall be stowed in adverse weather.

8.11 Environmental protection

MARPOL regulations and local laws shall be adhered.

Waste shall not be thrown overboard.

Streamer fluid drainage shall be performed in a tank, not over the side.

SOPEP procedure and SOPEP kits shall be available onboard the vessels.

Personnel shall be trained to use such equipment and conducted regular drills.

8.12 Handling / storage of batteries

All batteries shall be stored correctly in designated areas.

Procedures shall be established for handling lithium batteries.

Personnel shall be trained in handling batteries.

9. In-water repairs and maintenance

9.1 Specific training requirements

Workboat operations shall be permitted only when procedures have been specified and validated with training. Workboat crew shall be trained for operating with particular boats and specific in-water repairing. For training purposes, one trainee can be included in the workboat crew, provided this has been agreed between Company and Contractor.

9.1.1 Tool box meetings

Tool box meetings shall always be conducted prior to workboat launching for in-water repairing. A risk assessment for the specific operation shall be carried out.

9.2 Specific hazards associated with streamer

Hazards specific to workboat operations shall always be assessed as part of procedure development, pre-launch meetings and operations, to include:

- Dangers linked to streamer towing.
- Integrity of section changing hardware.
- Ergonomics of equipment handling along small boats.
- Insulation of streamer power.
- Tangling with streamers at water surface.
- Support / auxiliary vessel safety when towing equipment (tangling props etc.).
- Fire risks (e.g. lithium batteries).

- Quick release of equipment.
- Visibility and adverse weather.
- Dangers linked to in-water flora/fauna.
- Damaging effects of sun/salt/heat/cold on crew.

9.3 Prohibited tasks

A Manual of Permitted Operations (MOPO) shall be available for in-water maintenance tasks using workboats.

It is strictly forbidden that personnel disembark from the workboat onto tail buoys.

9.4 Management of change

If during intervention, it appears that there is a change in the scope of repair operations, the workboat shall return to the mother vessel where a risk assessment for the new operation shall be carried out.

9.5 Contingency planning for workboat usage

In the event that extensive in-water maintenance works is envisaged using work boats (e.g. 3D multi streamer operations), the following shall be required:

- A full time support vessel shall act as a rescue craft to be stationed in close proximity to the workboat while performing in-water maintenance tasks.
- The support vessel shall be equipped to recover personnel from the water.

10. Closed approach and multi-vessels operations

10.1 Hazards identification

The offshore installations can include:

- Fixed oil and /or gas production,
- Floating production, storage,
- Semi submersible or jack-up exploration drilling unit,
- Pipe lay barge,
- Well intervention vessel or any other vessel or installation that has a fixed umbilical,
- Connection from surface to the seabed,
- Any other permanent or temporary structure.
- Under water floating lines or constructions (export lines, tower risers...)

In addition to those installations, many other constraints and activities could exist around those areas: Field and rig support vessel activities, tanker loading, helicopter operations, diving operations...

Therefore navigating close to offshore installations requires special attention to ensure the safety of the vessel and installation during the operation. The main hazards of navigating close to those installations are:

- Collision with the installation due to loss of propulsion, strong current or weather change, obstructions in surfaces...
- Collision between sub sea floating lines, structures (Export lines, tower risers...) and ROV cable or basket cable.
- Interferences with helicopter landing operations.
- Interferences with tanker loading operations
- Uncontrolled release of hydrocarbons from production platforms
- Noise and high temperature at short distance (gas flare...)
- Close pass to installations with guns and streamer deployed

10.2 Zone definitions

A **restricted area** is defined by the field operator or National Authority requirements around offshore installations. Within the areas, field operator is empowered to put in force regulations and constraints in order to protect its interest without interfering with international and national rules and regulations: Area with a 10 Nautical miles radius around FPSO where navigation is not permitted without permit entry.

In addition, a 500 meters **safety zone** is created automatically by decree around all offshore oil and gas installations. Safety zone field regulations are laid down by the field operator and/or National authority requirements. The zone shall be defined as an area with 500m distance from the perimeter of the installation, not the centre of the installation. Offshore installations may be large or gathered in clusters (2 or 3 platforms linked by bridge). Any entry safety zone and operations within the 500 meter zone can only take place when allowed by the OIM (Offshore Installation Manager) or equivalent.

The seismic vessel operating in the restricted area is drawn to all governing laws and recommendations concerning navigation and marine operations at sea. These laws and recommendations are to be adhered to at all times whether they are international or local. It is the responsibility of each seismic vessel Master to take any action they may deem necessary to cope with their respective obligations. All marine operations shall be done in accordance with the seismic vessel owner HSE Policy and seismic vessel operating manual.

10.2.1 Close pass

A "close pass" is considered to be any occasion during survey work, including undershooting where vessel (node, source or streamer vessel) is required to sail within 500 meters of any oil or gas installation (manned or unmanned).

It is the responsibility of each OOW (Officer On Watch) to determine if the vessel is approaching the 500 meters zone and that all necessary confirmation/permission is required from OIM is in order. The functions/responsibilities between the 2 navigators on the bridge, Mate in command and Assisting mate, shall be agreed before entering of the 500 meter safety zone. The Mate in command shall plan the vessel's entering of the 500 meter safety zone and manoeuvre the vessel. The Assisting mate shall control the Mate in command's plans and manoeuvring performance.



The Mate in command can at any time abort the operation if he feels there is danger for the Vessel or installation. The Captain must be present on the bridge when entering/departing the 500 meter zone.

10.3 Conditions for entry in the Restricted Area

10.3.1 Entry permit

No vessel either chartered directly by or on behalf of the field operator is authorised to enter within the restricted area to carry out marine operations without prior approval of the Marine Technical Authority or his representative.

The Entry Permit is obtained once the vessel involved in operations has been inspected in accordance with the field operator rules. The Entry Permit could be valid for the duration of the seismic campaign contract.

The Entry permit does not allow the execution of any specific work within the limits of the safety zone (500m Area) of an installation. A specific authorisation or permit to work is delivered by the RSES of the installation.

10.3.2 Radio communications

Vessels working in the restricted areas of offshore installations have to be fitted with a radio installation complying with IMO GMDSS code. In addition all vessels shall be equipped with at least two multi-channel, dual watch VHF radio sets located on the bridge/control room areas. When within the controlled area, watch-keepers on vessels must maintain a continuous radio watch on VHF channel 16 and on the agreed radio frequency for that area. SSB watch has also to be kept on field operator working frequency during all the time the vessel is on charter to or on behalf of the field operator. For seismic vessel fitted with a heli-deck, a helicopter approved VHF is compulsory.

Communication between seismic vessels and Installations of all floating supports shall attempt to contact the appropriate radio operator (marine control) on VHF channel 16, one hour prior to entering the restricted area then again when reaching the restricted area.

Radio communication seismic vessels and installation or seismic vessels / floating support in the restricted area shall be in accordance with good marine practice and shall be limited to the strict necessary.

Vessels operating within the 500m zone of installations involved in oil and gas production are instructed not to use their "High" and "Medium" radio frequencies within 500m of installations. Where practical, VHF radio transmission has to be limited to 1 (one) watt output power in order to minimise interferences between channels.

List of radio channels (Contacts) used by the different installations, vessels working in the restricted area shall be posted in the bridge

10.3.3 Planning

Movements of vessels inside the restricted area shall be planned so that:

- A vessel under way does not enter the installation 500 meters zone if this is impracticable; prior clearance shall be received from the installation supervisor.
- During the approach, berthing, loading and un-berthing operations of export tankers, the navigation is strictly prohibited inside the loading buoy or tandem safety zone



- No interference with others vessels working in the area.
- No interference with helicopter operation (1000m safety perimeter from any other installation when helicopter landing on an installation).
- No interference with diving operation (1500m safety perimeter from divers when shooting)

10.4 Mitigation strategy

Communication before seismic operation to be properly established between different parties involved Officer On Watch responsible to make sure that all necessary permissions required to enter in the safety zone are in order.

Specific procedure for navigating inside the Safety Zone to be drawn up by the seismic Contractor and posted in the bridge. (Hot Permit To Work, smoking, radar...).

Offshore installations, vessels working in the field of operations to be listed before the beginning of operations

Obstructions (loading buoy, anchors chains, floating pipes...) and relative hazards proper to the field to be identified

Activities that should take place in the field during the seismic operations to be identified

All hazards related to operation in vicinity of offshore installation to be identified and included on the Hazard Register of the Contractor.

All risks related to hazards identified to be assessed and include in the risk assessment of the Contractor.

Restricted areas and rules that will apply inside to be properly defined by field operator and communicated to the seismic Contractor.

Vessel must comply with all international rules and regulations and field operator own rules

Entry in the 500m area of offshore installation only permitted by the Offshore Installation Manager or his delegate.

It is the responsibility of each OOW to ensure that in the Restricted Area or safety zone a MOPO is to be drawn up according to the rules and constraints given by the field operator

A toolbox meeting shall take place involving the OOW, HSEA, PC and Client Rep. to ensure that authorization, planning, communication and special rules have been set up.

Vessel shall be set up with manual steering and Officer On Watch shall have full control of the vessel. Indeed during shooting, vessel is in navigation auto steering mode. (The Officer On Watch just adjusts the crab angle)

If applicable, vessel with a retractable bow azimuth thruster should have it deployed for back up in case of problem with the two stern thrusters

Minimum distance from installation is taken from perimeter of the installation.

Adjustments shall be done according to the dimensions of the offshore installation and its headings

Movable installations can be asked to adjust their heading according to the heading line to limit the distance to the obstruction