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HEALTH, SAFETY & ENVIRONMENTAL (HSE) PLAN

Rev	Date	Description	Prepared	Review	Approval
4	07/08/2014	New Address	M.Zakiran	R. Kumaran	Srinivasan
3	7/04/2014	Updated	Muhd Rosli	R. Kumaran	Srinivasan
2	1/04/2013	New Address	Muhd Rosli	R. Kumaran	Srinivasan
1	11/06/2012	Review	R. Logan	R. Kumaran	Srinivasan
0	30/11/2011	As Built	R. Logan	R. Kumaran	Srinivasan

1. WORKPLACE SAFETY & HEALTH POLICY & ORGANISATION

ROS Safety Policy will be communicated during each employee's induction training and will be posted at prominent and conspicuous locations throughout the work site in English and other major languages spoken on the job site. The Safety Policy will be reviewed periodically and amended as necessary. ROS shall also appoint an independent internal auditor to audit the Safety, Health and Environment Management System of the Yard at least once every twelve (12) months. During the Internal Audit the following basic procedure shall be adhered to:

- Introduction – Production Manager or his Representative to brief on the Company Profile and Nature of Work of the Fabrication Yard and to date progression of the Fabrication activity
- Physical inspection shall be made
- Documentation shall be reviewed
- Assessment of the overall safety standards shall be made
- Draft of the Findings and Executive summary shall be made

ROS shall periodically review and evaluate the efficiency of the Safety Management System in place. The audits and possible corrective actions shall be carried out in accordance with the documented procedures. The results of audit and corrective actions shall be submitted to the Safety Officer and to the attention of all staff and sub-contractors.

All personnel are responsible for safety. The Production Manager shall encourage and support safety with utmost thoughtfulness and importance. All personnel shall be made aware of their duties responsibilities towards safety, health and environment.

We shall work as a team to constantly maintain and continually improve our management quality – using guide lines of ISO 14001-2004 and OHSAS 18001-2007.

1.1 HSE Policy and Commitment

The senior management of ROS confirms their commitment to achieve HSE excellence in the execution of this Fabrication Yard. An important part of our activities will be to continuously improve our processes and ensure that HSE excellence becomes acknowledged by all those associated with the fabrication activities. It is our responsibility and the responsibility of every Fabrication Yard member to reflect this HSE commitment, which is a key element of the Fabrication Yard & we shall make it an integral part of all our fabrication activities.

We all have a part to play in realizing this goal therefore together we will actively share this commitment in the developmental and execution of our HSE program in pursuit of zero accident & zero environmental incidents.

1.2 Duties & Responsibilities

1.2.1 Operation Director

- Establish the company WSH Policy and review the policy at least once in 3 years.
- Overall in charge of the WSH Management in the Company.
- To indentify and allot resources for developing, implementing and maintaining the Company WSH Management.
- To fix the Company's Objectives for each year.
- Periodically review the Company WSH Management System to achieve continuous improvement.

1.2.2 Project Manager

- To lead and execute the overall WSH Programme.
- To chair the safety committee meetings and carry out any follow-up action on safety matters.
- To approve procedures on WSH requirements.
- To participate or lead meetings with clients on WSH matters.
- To review WSH goals and ensure contribution to their achievement.
- To devise promotional schemes to encourage employee involvement in WSH matters.
- To enforce in-house WSH rules and regulations.
- To lead team on risk assessment for any work activities.

1.2.3 Production Manager

- Providing leadership to the Fabrication Yard Team as it meets the overall objectives of the HSE Management System.
- Ensuring that a fabrication Yard Management System is established and implemented;
- Monitoring the completion of fabrication activities in accordance with the requirements of the fabrication yard HSE Management System.
- Demonstrating commitment to the provision of safe systems of work and non-hazardous to personnel or the environment.
- Ensuring that activities are carried out in compliance with legislation by reviewing the activities with reference to Legislation.
- Delivery of the fabrication yard objectives and expectations.
- Review reports prepared by the fabrication yard on Audits, Incident Reports and Performance Indicators.
- Ensure adequate resources are made available for the implementation of the HSE System.
- Communicates HSE fabrication yard Performance with Client.
- Maintain a high profile in HER by active participation in HSE audits, inspections, reviews.
- Maintain a dialogue with the WSHO / ECO to foster continuous HSE improvement.
- Promotes open communication, co-operation and trust between himself, the fabrication Yard Team and Subcontractor employees with regard to optimizing HSE performance.

1.2.4 QC Manager

- Communicates and demonstrates by personal action that the emphasis on cost and schedule does not override the important of HSE and quality.
- Ensure HSE Plans are effectively implemented;
- Review and monitor HSE performance for the areas under their control ;
- Maintain HSE communications with the Fabrication Yard Management Team and their workforce through regular meetings, site/facility inspections and discussions;
- Initiate and participate in the investigation of serious incidents;
- Demonstrate leadership through attendance at Safety Meetings.

- Promotes open communication, co-operation and trust between fabrication yard Team employees and Subcontractors with regard to optimizing HSE performance.
- Recognizes good HSE performance in order to reward and increase commitment and participation.
- Maintain a high profile in HSE by active participation HSE audits, inspections, and reviews.
- Provide HSE support to WSHO / ECO;
- Maintain current copies of applicable HSE regulations and standards and site-specific HSE action plans for this fabrication yard.

1.2.5 WSH Officer / Superintendent

- In-charge for all Safety, Health & Environment related matters.
- will be responsible for the day to day operations;
- Implementation of HSE Management System requirements;
- Application of Hazard Analysis Processes (Risk Assessment) to fabrication activities;
- Ensure the Fabrication Yard HSE requirements are communicated to all and verify compliance through follow-up meetings and audits;
- Coordination and scheduling of HSE review activities;
- Conduct monthly Safety Committee Meeting;
- Review the effectiveness of the HSE Performance and report as required;
- Assist in the investigation of incidents;
- Ensure site activities are in compliance by participating in audits, inspections, meetings etc;
- Review operational procedures and work methods to ensure that these methods address controls required to eliminate or manage the HSE impacts of the fabrication yard;
- Report HSE Performance to the Directors during MR meeting.
- Promotes a culture of no harm – no injury.
- Directs, manages and trains the health and safety of staff as necessary to attain HSE management standards set by the fabrication yard.

1.2.6 WSH Supervisor

- In-charge for all site Safety, Health & Environment related matters.
- Attend and conduct morning Toolbox Meeting.
- Keep a record of all Permit-To-Work systems.
- Maintains a daily working relationship with the health, safety, environment, and with line management and supervision and subcontractors relative to their compliance with the provisions of the HSE Management Plan and regulatory requirements;
- Carry out HSE weekly safety observation walkabout.
- Assist WSH Officer / Superintendent in incident/accident investigation report.
- Maintain a high profile in HSE by active participation HSE audits, inspections, and reviews;
- Report HSE Performance to the WSH Officer / Superintendent
- Promote safety awareness to production workers.
- Keep all records and documents compliance with OHSAS 18001 and regulatory requirements.
- Ensure workplace to maintain Zero accident.

1.2.7 Engineers and Supervisors

- Demonstrate HSE leadership and management skills;
- Know, understand and supervise their work with the expectations and standards of HSE policies and procedures and fully apply the HSE System;
- Demonstrate leaderships and performance, which promote individual responsibility and which endorses the Zero Accident Tolerance Philosophy.

- Be directly responsible and accountable for HSE performance and compliance with requirements applicable to their areas of supervision;
- Maintain a high profile in HSE by active participation HSE audits, inspections, and reviews;
- Take all reasonable action to optimize the HSE performance of each employee under their control;
- Initiates incident investigations and the preparation of required reports;

1.2.8 Lifting Supervisor

- To coordinate and supervise all lifting activities.
- To collate all documentation pertaining to lifting activities.
- To check competency of lifting crew, condition of lifting machines and gears, colour code and to maintain documentation of such checks.
- To check on loose lifting gears and colour code gears.
- To report to WSH Officer / WSH Coordinator on all lifting matters

1.2.9 Riggers & Signalmen

- Responsible for safe rigging and signaling during lifting operations.
- To ensure good and sound condition of lifting materials
- To ensure colour coding updated for all lifting materials for the month.
- Report any unsafe acts or conditions to immediate supervisors and/or to WSH Department.

1.2.10 First Aiders

- To ensure First Aid (FA) rendered to injured party.
- To ensure FA Box is kept as per requirement
- To report and record all FA rendered.

1.2.11 All Fabrication Yard Personnel / Employees

- Accepting individual responsibility for their own safe behavior as well as sharing responsibility with their fellow workers and line supervision to “look out for their own as well as their co-workers” safety.
- Complying with and constructively participating in the Fabrication Yard HSE Management System.
- Work in a safe manner at all times and contribute to the implementation of the zero accident tolerance and no blame philosophy;
- Complying with HSE requirements which apply to an individual’s work activities.
- Maintain a high profile in HSE by active participation HSE audits, inspections, and reviews;
- Keeping the work area in an orderly condition.
- Wear PPE provided to them and inspect it daily.
- To comply with work instructions and permits.
- Complying immediately with any lawful directive given by a Client / consultant representative.
- Reporting all incidents and hazards irrespective of their nature.
- To conduct work in an environmentally responsible manner.
- Maintain work areas in an orderly condition.

1.2.12 Contractor Responsibility

- Implementing and enforcing the requirements of the Fabrication Yard System and procedures, regulations and codes as they apply to the scope of work.
- Sub-contractors to ensure that they understand and demonstrate an active commitment to the Zero accident tolerance philosophy.
- Ensuring everyone works to and complies with the Fabrication Yard Rules.
- Co-operate fully with the Fabrication Yard Team.
- Ensure new employees attendance at new employee orientation, routine and specialised training sessions.
- Ensure employee attendance at all toolbox meetings
- Contractor to conduct audits according to schedule to monitor compliance with HSE standards.
- Conduct safety meetings for supervisors and employees according to fabrication Yard HSE System.
- Jointly conduct root-cause investigations of incidents with Fabrication Yard HSE staff.
- Comply with the Fabrication Yard Alcohol and Drug policy.

1.3 Organisation Chart

- The ROS Organisation Chart shall be displayed at the office and prominent locations of all key personnel to perform the work, or acting in violation of any provision of the Contract. (*See Appendix G*)

2 SAFE WORK PRACTICES

2.1 Objective

- To create a safe working environment by implementing safe work procedures for all activities and therefore creating safe work practices among all personnel.

- To identify, eliminate and reduce risks in order to prevent fatalities, injuries, property damage and environmental damage.

2.2 General Safe Work Practices

2.2.1 Working at Height

Production supervisors shall ensure that all work conducted at any height above 2 metres is carried out in a safe manner, from a stable and secure platform and with safe access. They shall ensure that:

- Where a stable platform cannot be provided, all above ground workers are properly briefed on the hazards associated with the job and that the wearing and use of safety harness complete with shock absorber and a single lanyard is compulsory.
- The standard of housekeeping is maintained at a very high level to prevent objects falling onto personnel below.
- Care I taken to prevent hot materials falling onto combustible items below.
- All holes, man ways etc. that provide a falling or tripping hazard are suitably covered or guarded. Spikes, protruding edges etc. are to be protected by a cover of dense cloth or carry a clear indication of danger.

2.2.2 Working in Confined Spaces

Definition of a Confined Space:

A space which:

- Has limited openings for entry and exit.
- Has limited ventilation and lighting.
- Contains potentially dangerous air contaminants.
- Is not suitable for continuous occupancy.
- Permits the accumulation of flammable or toxic vapours or oxygen deficiency atmosphere.

Examples of Confined Space:

- Storage Tanks.
- Process Drums and Vessels.
- Towers.
- Boilers and Heaters.
- Exchanger.
- Sewers, Tunnels, Pipelines.
- Trenches and Pits that are more than 1.25 metres deep.

Entry into any Confined Space requires a Permit To Work in addition to any other Work Permits. (*See Appendix E*)

Production supervisors will ensure that the following facilities are to be provided:

- Proper ventilation such as fans.
- Gas monitoring devices for the continuous gas monitoring of the confined space.
- Workers are trained in the use of air-lines and breathing apparatus.
- A safety standby is to be stationed outside the confined space at all times, whenever there is work in progress.

2.2.3 Hot Work

- Hot work is defined as any activity that introduces sparks, flames or generates heat that can cause ignition of any flammable liquids, gases or any other material.
- Any source of flammable liquid, gas or vapour within 15 metres of the work area should be made safe.
- Any uncovered oily sewers at hot work areas should be closed.
- Immediate areas around and beneath elevated hot work sites must be barricaded with warning signs.
- Falling sparks must be contained with flame resistant cloth.
- Fire Extinguishers should be available at all work locations to put out any flames that are present immediately.
- Proper ventilation should be provided, so that the welders do not inhale welding fumes.
- Check that the welding cables are in good and hazard free condition before carrying out work.
- The list of Hot Works includes:
  - Power Brushing
  - Chipping, Drilling
  - Gas Cutting
  - Grinding
  - Grit Blasting
  - Operation of Machines e.g. Welding Sets, Generators, Air Compressors
  - Removing Explosion Proof Closure / Cover for Electrical Boxes Containing Switching Devices e.g. relays
  - Connecting or Disconnecting Live Instrument Cables

2.2.4 Gas Cutting

- Check that the gas regulators are in good condition and flash back arrestors are fitted at the gas regulator outlet and at the cutting torch.
- Acetylene pressure must not be more than fifteen pounds per square inch.
- Acetylene and Oxygen cylinders must be kept on mobile trolleys, and be securely fastened.
- Each cylinder must not be moved without first removing the regulators, unless it is mounted and secured on the trolley. Caps must always be screwed on the cylinders as soon as regulators are removed.
- Cylinders must not be placed inside confined spaces or on tank roofs. When working inside confined spaces, oxygen-acetylene hoses and torches must be removed before leaving the job.
- Hoses must be placed to in such a manner minimise tripping hazards and protection from damage and must be inspected by user before work is commenced.
- Hoses must be inspected for leaks, burns, worn places, loose connections, or any other defects. Hoses burnt by a flash back or which are in poor condition must be replaced.
- When cutting in confined spaces, adequate ventilation such as exhaust fans must be provided. Ensure that cutting is screened or isolated to preclude exposure of adjacent workers.
- Ensure that sparks or molten metal will not fall on people or combustible materials before cutting. Proper fireproof non-asbestos canvas sheets should be placed to catch such falling sparks or molten metal.
- Oxygen and acetylene hoses are of different colour. Red is usually for acetylene hoses, and green is for oxygen hoses.
- During any work breaks and at the end of a shift, all gas and oxygen supplies, both mains and cylinders are to be disconnected.

2.2.5 Handling of Compressed Gas Cylinders (Argon, Oxygen and Acetylene)

- Compressed cylinders are clearly marked and colour coded for easy identification. Argon gas bottles are coloured blue to distinguish them from Oxygen bottles. Acetylene bottles are shorter, and have a larger diameter.
- Compressed gas cylinders must not be dropped as damage to the cylinder or its valve could result in disastrous jet propulsions of the cylinder.
- Protective caps must be screwed on compressed gas cylinders when they are not in use. Cylinders must be properly secured at all times, no matter whether they are in transit or storage.
- Compressed gas cylinders must not be stored or placed near hot equipment or lines. They must be protected against high temperatures and contact with electrical circuits. They must also be protected from damage caused by passing or falling objects.
- Cylinders must be properly secured so that they cannot fall or be knocked over when in use.
- Cylinder valves must be closed when not in use.
- Ensure free access to the cylinder valves so that they may be reached quickly. Valve keys must be available at the cylinders for use in an emergency.
- Stand away from the front of the regulator and pressure gauge when opening a cylinder valve. Open the valve slowly. Do not use a hammer to do so.
- Cylinders must not be moved without first removing regulator, unless they are mounted and secured on the trolley. Caps must be screwed on the cylinders when the regulators are removed.
- When working in a confined space, care should be taken to see that no compressed gas escapes into the space. Leakage of compressed gas may create a hazardous condition of fire, toxicity or asphyxiation.
- Cylinders shall be separated in storage and protected from direct sunlight.

2.2.6 Fabrication

Production supervisors will ensure that:

- Fabricators use the correct tool for the job and that portable tools are used correctly and maintained in a serviceable condition. In particular the use of damaged tools, tools with loose handles and makeshift tools are to be prevented from being used on the project.
- Grinders are fitted with compatible discs and guards are held securely to avoid injuries caused by grinding discs snagging.
- Fabricators tasked with heating, cutting, or tack welding, are briefed to ensure that they carry out the task safely and in accordance with the safety requirements of welding.
- Mechanical and hydraulic jacks are not overloaded and are not subjected to sideways movement while under load. Extensions shall not be used on jack handles.
- Mechanical devices such as chain blocks, lever hoists and tirfor are rated for the task and are properly used and not overloaded. Hooks on chain blocks etc. are not to be hooked over plate edges or direct into pad eyes.
- Fabrication supervisors shall ensure separate and adequate arrangements for the earthing of components that are partially or completely insulated from the ground by wooden or other insulating supports.
- Earthing cables are routed so as not to create tripping hazards. Flat bar / hard steel earthing that creates tripping hazards shall not be used.

2.2.7 Fitting of Abrasive Discs

- The fitting of abrasive discs to grinding and cutting machines shall be carried out only by trained personnel.
- The trained personnel must demonstrate competency and knowledge of the safety requirements to change an abrasive disc.

2.2.8 Load Out Procedures

- Once load out procedures are confirmed, the Project Manager, Production Manager, HSE Officer and Sub-contractor's Representative will conduct a review to determine any necessary alterations to procedures and control measures to ensure the safety of agreed load out procedures.
- The results of the load out safety survey, once agreed by the Customer's Representative, will be distributed in writing to key personnel involved in the procedures and the control measures will be monitored by the HSE Officer. A meeting will be conducted involving all key personnel from all parties involved in the operation prior to any Load Out Operations.

2.2.9 Diesel Arc Welding Machine

- Protective face shield and gloves must be used before starting to weld.
- Arc welding machine cables must not be laid on the floor or ground. If the cables are laid on the ground, they should be suitably protected so that they cannot be damaged or become a tripping hazard. Welding cables must be in good condition, without any cracks.
- Diesel welding machines must be connected to a proper earthing point.
- When welding work is stopped, the welding machine must be switched off immediately.
- Precautions must be taken to protect against electrical shocks when working in wet or damp places.
- Fire extinguishers shall be made available in the vicinity of the welding machines.

2.2.10 Guards, Barricades & Warning Signs

- No one should disobey Barricade Signs by crossing barricades unless prior approval has been obtained.

- Safety guards of tools, machinery and equipment must be operable and in position before such equipment is used.
- Suitable barriers and warning signs must be erected whenever work is being performed and need more attention.
- Warning signs and barricades must be installed and the area roped off when there is a potential or existing hazard. When the hazards ceases to exist, the signs and barricades must be promptly removed.

2.2.11 Handling of Chemicals and Materials

- Material Safety Data Sheet (MSDS) must be provided for all chemicals and held by the HSE Officer.
- The requirements specified in the MSDS must be fully complied with when using, handling and storing the chemicals.
- MSDS must also be provided for all new materials for review and approval before they can be purchased and used.
- Safety briefings to be done to those handling hazardous chemicals with reference to their properties, use and storage. Records of such briefings shall be maintained at site.
- A designated person, well versed in the properties of the chemicals, shall be responsible for the storage and issue of all hazardous chemicals.
- A register of all hazardous chemicals and their MSDS records shall be maintained by the HSE Officer.
- An inventory of all chemicals shall be maintained by the HSE Officer.

2.2.12 Lifting Operations

- A lifting plan shall be created and maintained on site for critical lifting operations. Special additional controls are required when lifting over live equipment and pipelines or near electrical power lines.
- The exact weight of the load, the operating radius and the boom angle of the lift must be determined and checked with the mobile crane Load Chart to ensure that the lifting operation is safe and within the capacity of the mobile crane.
- A Risk Assessment of the lifting operation must be carried out to identify the risks and hazards and take necessary control measures.
- Lifting supervisor shall conduct JSA for any lift or movement over 50 ton.
- The lifting operation must be performed by a trained crew as below:

  -Lifting Supervisor - White Helmet, red band, fluorescent yellow vest with "Lifting Supervisor" on back
  -Signalman - Red Helmet, fluorescent yellow vest with "Signalman" on the back
  -Riggers - Red Helmet
  -Crane Operator

- It is important to monitor the weather condition before and during the lifting operation. Lifting operations shall not be permitted on days with rainy weather with lightning and/or during strong wind conditions.
- Wire ropes, web slings and shackles used for lifting must be checked to be in good condition without any kinks, fraying or damages, and they are to have valid inspection tags. Also, ensure that the size of the lifting gears is adequate to lift the load.
- Lifting equipments and gears shall be inspected monthly and documented y the Lifting Supervisors. A quarterly color code shall be identified as a system of ensuring that the lifting gears and equipments have valid certificate, have been inspected are 'Safe for Use'.
- Tag lines must be used to control the movement of the load, to prevent it from swinging.
- The crane operator must be able to see the load as well as the signalman during the lifting operation.
- Where visibility is not practicable, radio communication should be maintained.
- All loose lifting gears shall be colour coded.

2.2.13 Electrical Safety

- Only authorised personnel are permitted to perform work of an electrical nature.
- All electrical circuits rated at 600 volts or more, except when being tested, must be de-energised and grounded before any work is done on them. Circuits of lower voltages need not be grounded but should be de-energised.
- Working with live circuits has its hazards, and should be performed by authorised personnel only. Unless properly and safely handled, all voltages used in the refinery can cause injury to the human body.
- It is especially important that employees realise this fact even while handling relatively low voltages such as 230 volts and 110 volts.
- All electrical circuits consisting of switching contacts housed in explosion-proof enclosures and located in hazardous areas must be de-energised before the explosion-proof enclosures are opened.
- If the circuits are not de-energised within an explosion-proof enclosure, necessary work permits shall be obtained before opening the enclosure.
- When required to work inside vessels / equipment containing electrodes or electrically driven agitators, paddles, or on powered conveyors, the electrical switches must be locked out and tagged out.
- For maintenance of lighting inside vessels, including furnaces and boiler fireboxes, only 24-volt and 110-volt centre tapped and grounded transformer lighting systems shall be used.
- All supply sources must be must be equipped with earth-leakage circuit breakers (ELCB) when using the following portable electrical equipment:

  -Grinders
  -Drills
  -Floodlights / Stringer Lights
  -Welding Sets
  -Step-Down Transformers

- All electrical tools should be in good, safe operable condition and with ‘Dead Man’ switch. It is the onus of the owner and user to ensure that their equipment and tools are safe for use.
- All underground electrical circuits shall be protected by a layer of red concrete slabs or red concrete duct-bank. Cable routes shall be marked with cable route markers.
- Monthly LEW inspections shall be carried out for electrical tools, cables and equipments.

2.2.14 Instruments

- Before removing any instruments from an explosion-proof enclosure containing switching contacts or terminal removal, the following safety precautions must be taken:
  (a) De-energise the electrical circuit within the enclosure whenever possible.
  (b) If the circuit within remains energised, a gas check should be performed to ensure no explosive gases exist.
  (c) When working on actuators, except when testing, all motive forces (e.g. pneumatic, hydraulic, electrical) must be turned off and rendered inoperable by the qualified worker, by depressurising air from the valve bonnets in the case of pneumatically operated valves.
- In the case of electrically operated actuators, the Electrical Lock Out, Tag Out Procedure shall apply.

2.2.15 High Pressure Hydrotesting

- All hydrotesting operations performed on the project will comply with the health, safety and environment requirement.
- Staff responsible for carrying out hydrotesting will be responsible for ensuring that all necessary safety precautions are taken.
- Barriers and warning signs shall be erected around areas where hydrotesting activities are being conducted and only essential personnel will be permitted inside these areas.
- A JSA shall be written for where test pressure exceeds 68 bars (1000 psig).
- Risk assessment shall be in place for all pressure testing.

2.2.16 Radiography

- All NDT utilizing radiography will be carried out during night shifts in accordance with the sub-contractor's Radiation Safety Procedure.
- The Production Manager, Engineers and Supervisors shall not permit any radiography whatsoever to take place in the day time unless the radiographer in charge is authorized by the HSE Officer.
- Only trained MOM approved radiography personnel shall be used for radiography operations.
- EAE shall submit a copy of the radiography sub-contractors Radiation Safety Procedure before commencement of any radiography work.

2.2.17 Blasting

- All blasting operations will comply with the health, safety and environment requirement.
- Staff carry out the blasting operation will be responsible for ensuring that all necessary safety precautions are taken place and can only be carried out in the blasting chamber.
- Appropriate PPE for blasting operation must be worn with additional of breathing apparatus.
- When blasting operation occur strict guidelines must be followed to ensure protection to the worker and environment.
- Permit To Work must be produced before commencing work.

2.2.18 Painting

- Manufacturer's Safety Data Sheet (MSDS) for all finishing and coating products used on the project shall be ready available with the HSE Officer in case of emergency.
- All painting works shall be carried out using brushes, rollers and appropriate PPE must be worn – cotton gloves.
- Paint will be stored in an area away from hot work and clearly indicated by barriers and signs.
- Fire extinguishers will be maintained at paint storage areas.

2.2.19 Scaffolding and Temporary Work Platforms

- All high level scaffolding, both external shall be erected, altered, moved and dismantled only by the trained scaffold erectors.
- Temporary work platforms, tower and mobile scaffolds, or support structures are to be approved by the supervisor responsible for the work to be carried out from the platforms.

All such scaffolds or work platform structures shall be constructed to a similar standard to that provided by the trained scaffold erectors.

- Whilst working at height above 2 metres scaffold erectors shall use safety harness complete with shock absorber and double lanyard during erecting and dismantling scaffolds.
- Scaffold erectors will employ standard safety signs for warning of incomplete or prohibited access to incomplete or otherwise unsafe scaffolds. The HSE Officer shall employ these signs whenever he is unsatisfied with any part of a scaffold. Use of these signs will be regarded as a temporary measure to be used only until the fault in the scaffold can be rectified and the whole structure brought up to the correct standard of safety.
- Welding and fabrication supervisors will ensure that all loose tools, wedges, scrap metal pieces, disc and welding rods etc are safely stored in an appropriate container provided and secured in a convenient and safe place. Welding and fabrication supervisors will ensure all workers keep their work platform area clean and to place loose items in containers.
- Scaffold shall be inspected and tagged by scaffold supervisors and record the result of inspections in a check list. This shall be done on a weekly basis. Unsafe scaffold shall display a scaffold tag 'NOT SAFE FOR USE' to ensure not used by workers. A project scaffold tag system will be implemented. All scaffolds shall be registered.

2.2.20 Ladders

- All ladders employed on the project shall be of sound construction, undamaged, of adequate length for the job and properly secured during use.
- At no time, other than during scaffold erection and dismantling, should anyone climb on scaffolding or product assembly if a ladder would make the climb easier and safer. Supervisors are to ensure that adequate ladders of the right length are available and used for their correct purpose.
- In addition to being secure, ladders are to be of sufficient length to protrude at least 80cm above the stepping off level to which the ladder is designed to give access.
- On no account will ladders be used for load bearing purposes.
- Personnel will keep both hands free and maintain 3 point contact on the ladder at all times.
- No more than one person will be on any ladder at one time.

2.2.21 Personal Protective Equipment

- All required PPE will be provided to company employees. Sub-contractors are required to provide PPE items to their own staff.
- As a risk control measure, the following PPE will be provided for use, as required on the project:
    - Safety hard hat
    - Safety goggles
    - Hand gloves
    - Safety boots
    - Ear plugs
    - Body harness
    - Face shields for grinders
    - Full protection equipment for welders
    - Any specialist items required by Risk Assessment

- For this project, the wearing of safety boots, eye protection and hard hats at all times is mandatory. All personnel shall comply with the PPE requirements.
- The Production Manager is responsible for ensuring that this requirement is met.
- The workforce will be trained and briefed on the correct usage and maintenance of their personal equipment.
- All personnel are required to request any individual not wearing the correct PPE to leave the work area.

2.2.22 Incompatible Work Activities

- Where different forms of work are to be carried out simultaneously in the same or adjacent areas, and where one work activity may present a health and safety hazard to other workers, such activities are to be centrally controlled by the Production Manager or his appointed representative.
- The purpose of such planning and control is to ensure the health and safety of all staff involved in these work activities are not compromised.
- The Production Manager will implement a Permit To Work system to ensure adequate control if necessary.

2.2.23 Competent Persons

- The HSE Officer will maintain a list of competent persons responsible for the implementation of suitable standards of safety for work within the scope of their expertise on the project.
- The competent persons list will include individuals to provide expertise in the following specialization:

  - Radiography - Provided by Sub-contractor
  - Air and gas analysis - HSE Officer
  - Permits to work - Production Manager / HSE Officer
  - Pressure testing - Production Manager / Engineers
  - First Aid treatments - First Aiders
  - Lifting equipment - Lifting Supervisor
  - Electrical installations - Electrician
  - Fire fighting - HSE Officer
  - Scaffolding - Provided by Sub-contractor
  - Permit for Chemical Cleaning - Production Manager /HSE Officer

2.2.24 Security

- It is ROS policy to maintain 24hrs security at the Company's premises.
- All visitors shall report at the reception area at level 2.

2.2.25 Housekeeping

- Production supervisors will ensure that work areas shall be kept reasonably clean and free of rubbish and debris which may create safety or fire hazards and all materials, equipment and apparatus shall be stored neatly in the designated area.
- Make your work area safe, efficient and pleasant by:
  - Don't leave rubbish lying about.
  - Keep all gangways, aisles and stairways clear.
  - Wipe up spill oil, grease or liquids.
  - Clean up turnings, chips of off-cuts.
  - Use metal containers for oily or greasy rags and waste.
  - Stack goods and materials clear of gangways.
  - Store your tools safely when not in use.
  - Keep benches and worktops uncluttered.
  - Hoses and cables are to roll up neatly after use.
  - Never choke a drain line, pit holes, etc
  - Make sure flammable solvents are kept in approved containers and are only used when needed.
  - Sufficient metal containers with self-closing lids are provided for each shop area for the safe disposal of flammable waste and rags.
  - Combustibles materials shall be piled with due regards of its stability and in no case higher than 2 metres.

- Portable fire extinguisher equipment suitable for the fire hazards involved shall be provided at convenient, conspicuously accessible locations in the site area.
- Internal combustion engine powered equipment shall be so located that the exhaust is well away from combustibles material.
- Return all lifting equipments to store after use.

2.2.26 Permit To Work`

- The need of a permit to work depends upon foreseeable hazards and is particularly useful in controlling the incompatible hazardous task and controlling the work of employees and sub-contractors by ensuring that information necessary for the guarantee of safe execution is exchanged. The following works are some that require a permit to work:-

  - Hot Work Permit
  - Confined Spaces Work Permit
  - Pressure testing activities
  - Radiography
  - Lock-out / Tag-out

- The Project Manager will designate who, from the line management team, is to implement the permit to work system and, on the advice of the Safety Supervisor, decide the safe system of work criteria to be stipulated on the permit(s). (*See attached Permit To Work Form*)

Note: Irrespective of who implements the system, the authorising Project Manager or Production Manager will always remain in control and responsible for the successful application of the safety measures involved. As such he will always be the final signatory on each permit.

3 FIRE PREVENTION

3.1 Smoking

- Smoking is not allowed at the workplace except at designated Smoking areas.

3.2 Fire Extinguishers

- Fire Extinguishers shall be made available at such areas where the use of fire is permitted at offices, buildings and hot work areas. Quantity, locations and type of fire extinguishers shall be approved by the ROS Safety Department.

- All personnel must be briefed on fire equipment use and reporting procedure during the new employee induction and at frequent “Tool Box” safety meetings. Emergency procedure and telephone numbers are posted at key locations.

- All Fire Fighting equipment (extinguishers, hoses, etc.) are inspected by ROS safety supervisor or designated individual on a monthly basis to identify conditions that may prevent emergency use of the appliance. All deficiencies must be corrected immediately.
- ROS safety representative keeps a consolidated record of the location of all extinguishers maintenance received and the conditions relative to the condition and maintenance of fire appliances.

- Access to all available fire-fighting equipment shall be maintained at all items.

- All fire extinguishers shall be recharged twelve months basis as required.

4 SAFETY TRAINING

4.1 Objective

- To identify the competent level of all personnel.
- To provide training for all activities affecting WSH objectives and policy.
- To establish WSH guidelines for all personnel before commencement of work.
- To provide new employees with the necessary orientation and Safety Induction Course on WSH rules and regulations before commencement of work.
- To comply with WSHA and site requirements with reference to qualified and competent personnel.

4.1.2 Procedure

- All workers and supervisors are required to be trained in the potential hazards that may exist on a fabrication activities and the procedure to be followed to perform all work safely and to eliminate the hazards.

- The ROS Safety Department is responsible for reviewing the safety qualification, training and certifications needs of the Fabrication Yard, prior to job-start and periodically thereafter, to determine training requirements and MOM requirements. These will be then implemented as required.

- Basic Training is intended to give initial knowledge to employees prior to working in the fabrication yard. The Basic Training shall include:
  - Safety Induction Program conducted by ROS

- All new personnel (ROS and subcontractors) shall receive a ROS Safety Induction Course lesson (*See Appendix H*). This course covers the basic safety requirements of the fabrication yard and significant features of the fabrication work relating to the safety when he or HSE arrives at site. Attendance is documented. (*See Appendix A*)

- Trade and Skill Training is given to ensure that a job holder, either supervisor or worker is competent to do his job safely. Trade and skill training that is required in the fabrication yard are,
  - Lifting Supervisor
  - Crane operator
  - Safety Supervisor
  - Scaffold Supervisors
  - Scaffold Erectors
  - Forklift Operator
  - Signalmen and Riggers
  - Licensed Electrical Workers
  - First Aid Training
  - Noise Monitoring Officer

5 GROUP MEETINGS & SAFETY COMMITTEE

Group meetings are an important method of ensuring successful Management – employee communications by making effective use of communication time by allowing employee participation and providing equal exposure to vital information.

5.1 Tool Box Meeting

The Engineer/supervisors shall be required to conduct "Tool Box Meetings" Daily in the morning about 10~20 minutes prior to start of work for their workers. A record of each meeting and of those attending the meeting will be submitted to the ROS Safety Department on a daily basis.

5.2 Safety Committee Meeting

ROS Safety Committee will be held twice a month for the first 6 months and once in a month from then on, and will be chaired by the Fabrication Yard Manager. All sub-contractors shall be represented together with Safety personnel, Site managers and appointed workers and representatives from the Authority.

All members are to assist the Chairman in the field of Safety Management and provide constant surveillance on all matters pertaining to Safety, Health, Environment and fire concerns of the fabrication yard.

5.2.1 Objective

Objective of the Safety Committee Meeting is to assemble all personnel which include Supervisors, foreman and workers to address and discuss safety, health & Environment issues and to take appropriate actions in relation to the achievement of the fabrication yard safety management objectives. ROS will organize a Safety Committee with the following main aims:

- Confirm if the management of safety and health is being properly carried out by all the parties concerned.
- Ensure that the fabrication work is being performed safely and smoothly by complying with safety rules and regulations.
- Conduct safety inspections of the entire fabrication yard prior to start Safety Committee Meeting.
- Coordinate and control congested or hazardous working conditions of the Sub-contractors.
- Resolve safety issues raised by any Subcontractors.
- Increase subcontractors' safety knowledge and safety awareness.
- Enforce Safety Training Program.
- Participate and organize Safety Promotional Activities.
- Promote and maintain housekeeping and waste disposal at the highest standards.

5.2.2 Component of the Safety Committee

The Safety Committee Chairman shall be presided over by the Fabrication Yard Manager or his Deputy. The secretary of the Safety Committee will be the Workplace Safety & Health Officer. Copy of all such meeting minutes will be forwarded to all members.

5.2.3 Duties and Responsibilities

⇨ Chairman
To summon and preside over the ROS Safety Committee and to attain the purposes planned here in. He has absolute authority over members for improvement on safety control.

⇨ Secretary – Safety Manager/ Workplace Safety & Health Officer
The Secretary shall organize the Safety Committee and prepare minutes of meeting. He shall present to the Committee the status of inspection reports and incident investigations. Also he shall prepare / coordinate the Industrial Safety Report. In the absence of the Chairman, preside over the meeting.

⇨ Members
To assist the Chairman in the field of Safety Management and provide constant Surveillance on all matters pertaining to safety, fire Environment and health concerns of the construction fabrication yard.

5.2.4 Agenda of Meeting

- Introduction of new members
- Site Walk (Physical Inspection)
- Review and Confirmation of Last Minutes of Meeting
- Matters Arising from the minutes of meeting
- Findings of Site Walk
- Incident Statistics
- Safety Talk by Committee Members
- Report from Authority / Client / Consultant
- Report from SO / SS
- Other Matters
- Next Meeting

5.2.5 Documentation

- All minutes of meeting shall be documented and kept in file for references.
- Copies of minutes of meeting shall be given to all members to close out any outstanding WSH issues.
- Records of Tool Box Meetings and STAs shall be filled up by supervisors and handed over to the WSH department for filing.

6. ACCIDENT & INCIDENT INVESTIGATION AND ANALYSIS

6.1 Objective

- To define a procedure for reporting, recording and investigating incidents involving fire, environmental damage, large-scale damage to property, marine, pollution, near miss incidents, unsafe acts and conditions. (*See Appendix B & C*)

6.2 Responsibility

- The Project Manager shall be responsible for implementing the incident / accident investigation procedure at the fabrication yard.
- The WSH Officer shall conduct the accident or incident investigations.
- The Engineers / Supervisors shall fill up the Incident Report.
- Reports of investigations shall be submitted to the Project Manager for verification and copied to BES Construction Manager then subsequently made ready for submission to the relevant authorities, if necessary.
- All copies of reports shall be maintained by the WSH department for reference.

6.3 Procedure

6.3.1 Definitions

Accident	-	Event giving rise to death, ill health, injury, property damage or other losses.
Accident Investigation	-	An enquiry into how and why the accident occurred. It is a planning progress to explore actions that should have been taken to prevent or minimise the recurrence of such accidents.
Incident	-	An unplanned, undesired event that has the potential to lead to accidents and/or environmental damage. All accidents are incidents. This includes near misses.
Unsafe Act	-	Behaviour or action of persons that can lead to incidents / accidents.
Unsafe Condition	-	An unsafe condition is inherently hazardous due to the configuration, characters, substances or environment.
First Aid Case (FAC)	-	Accidents / injuries are generally considered First Aid Cases (FAC) if they typically result in only one visit to the Medic / First Aider and the follow-up is observation only. The person is typically able to return to the normal duties in less than two hours.
Near Miss (NM) or Dangerous Occurrence	-	A Near Miss (NM) or Dangerous Occurrence is where an incident has taken place that had no direct effect on people or property but could, in slightly different circumstances have been far more serious. A Near Miss or Dangerous Occurrence does not affect the annual WSH performance statistics as such. However, they provide a means of highlighting potential problems that could have led to more serious incidents. The report should trigger preventive actions being taken in future.

6.3.2 Type Of Events To Be Investigated

- Loss of life / death.
- Serious injuries, i.e. amputation, major fracture, multiple injuries, fatal injuries.
- Loss / damage of property
- Dangerous occurrence / near miss that could have led to serious harm.
- All other reportable cases, including notifiable industrial diseases as defined under WSHA.
- All first aid cases.
- Any unsafe incidents / conditions to identify causes for WSH inadequacy / lapses.

6.3.3 Steps For Investigation

- Obtain accident information – Ask when, who, where?
- Collect facts – Visit the accident / incident scene, Identify witnesses, collect accident scene, i.e. draw sketches, take photos.
- Check the maintenance record, instruction and directive.
- Interview witnesses.
- Analyse the facts.
- Prepare the accident / incident report.

6.3.4 Steps To Follow During Interview With Witness

- Make intention of the interview clear to the witnesses.
- Maintain privacy.
- Confine each witness to observation; ask what he / HSE have seen.
- Show concern for the person's injury, no matter how minor the injury is.
- Prepare questions to ask after the witness has completed his / her story.
- Avoid leading questions.
- Let the witness tell the story in his / her own terms.
- Use models or sketches for illustration.
- Discuss ways to prevent recurrences.

6.3.5 Incident Investigation Report

Identify Root Causes
The Incident Investigation Report is formatted to facilitate carrying out a detailed investigation and identification of root causes. This report is to be completed within 10 working days of the incident by the WSH Officer / WSH Coordinator / WSH Supervisor.

Corrective Action Follow-Up
Where recommendations and corrective actions are made, personnel responsible for their completion and target date must be assigned. On a 3 monthly basis, the Project Manager shall review the status and practicality of these corrective actions.

6.3.6 Additional Reporting Requirements

When a serious incident occurs, the following notification / reporting must be made:

Reporting to Ministry of Manpower

(a) Any accident which:
  - Causes loss of life to a person.
  - Disables any person for more than 3 consecutive days from work.
  - Causes a person to be detained in a hospital for at least 24 hours for observation or treatment.

(b) Any serious dangerous occurrences, e.g. collapse or overturning of a crane, fire, explosion or chemical spillage.

(c) Any injury incidents (other than first aid cases) to Workman Compensation.

Reporting to National Environment Agency (NEA)

(a) Any Chemical Spillage

(b) Waste Effluent Incidents

Report to be prepared by WSH Officer.

A LTI shall be recorded if the injured party does not turn up for work the following shift as per site requirements.

6.3.7 Recommendations

- The recommendations of the investigation of incidents, near misses, unsafe acts and conditions should provide definitive corrective actions to prevent their recurrence and reinforce the lessons learnt.
- Special emphasis needs to be given to near miss incidents as these serve as learning aids to identify potential problem areas. Lessons learnt from near miss incidents and prompt action can prevent the development of hazards.
- The recommendations should also address the needs of injured workers who have recovered but may not be suitable to continue their current work because of disabilities resulting from the incidents. In such cases, other suitable positions or work in the Company should be recommended in consultation with Human Resources Department.

6.3.8 Additional Procedures

- Safe Work Procedures, Task Risk Assessments and Permit-to-Work Systems shall be reviewed upon any incident / accidents to verify adequacy of WSH measures and lapses in HSE implementation.
- All revisions, if any, shall be updated and the information shall be disseminated to all personnel to prevent recurrence.
- Causes for the incident / accident shall be identified and made known to all personnel via meetings and written notices.
- The WSH Officer shall compile the Accident Statistics to analyse WSH trends of the site.
- The analysis of these accident / incident statistics and trends are to be used for the planning of WSH promotion and training programmes.

6.4 Documentation

- All copies of incident / accident reports, including witness statements, submission to authorities etc shall be kept on site for reference.
- Any updates of Safe Work Procedures, Task Risk Assessments, and Work Permits shall be recorded and kept on site for reference.

7. IN-HOUSE SAFETY RULES AND REGULATIONS

In-house rules and regulations are provided to all personnel in the fabrication yard, with a common understanding of their obligations and responsibilities with respect to the achievement of the yard safety management objective.

7.1 HSE Performance Standards

ROS will aim to achieve the following HSE Performance Standards throughout the fabrication period.

- zero fatalities
- zero Lost Time Incidents (LTI)
- zero medical treatment cases
- zero vehicle accidents
- compliance with the HSE plans
- No nuisance due to noise or dust
- No pollution of land, air or water
- Use of fuel and energy as efficiently as current technology allows
- Removal or re-use all temporary facilities, equipment, and materials at the end of the contract

ROS has established and maintained a set of in-house Safety Rules and Regulations which give clear instruction to personnel during the in-house Safety Induction, in each of the following general areas:

- safe operation of plant, machinery and equipment
- maintenance of plant, machinery and equipment
- the handling of materials
- the reporting of hazards and incidents
- the use of personal protective equipment
- the reporting of incidents
- cleanliness of the work place
- storage of gas cylinders

7.2 Basic Safety Rules

All personnel engaged in ROS Fabrication Yard are required to familiarize themselves with the various rules and regulations related to the work being carried out. The Basic Safety rules contained will be issued to all and made known to all workers engaged. These rules are described in the First Day at Work Safety Instruction. These in-house rules and regulations will be reviewed as required to adopt or comply with the latest legislations. The First Day Form is required to be acknowledged and signed by individual persons attending during the Safety Induction Course.

8 SAFETY PROMOTIONS

The objective of safety promotion is to develop and maintain awareness among all personnel of the worksite's commitment to safety and of the individual's

8.1 Objective

- To develop and maintain WSH interest and awareness amongst the workforce and to instill a positive attitude and behaviour towards WSH amongst all personnel at the workplace and to help create a caring WSH culture in the work premises.

8.2 WSH Promotion Activities

- The Company WSH promotional activity (Safety Campaign) shall cover current and potential WSH problems at the site

- The Project Director / Project Manager / WSH Officer may form a committee to organise the Company WSH promotional activity which can include the following topics:

  - First Aid Refresher, especially on CPR (Cardio-Pulmonary Resuscitation).
  - Fire Safety Awareness, which teaches basic fire fighting skills using fire extinguishers and emergency evacuation procedures.
    First Aid Refresher and Fire Safety Awareness courses are conducted by the Civil Defence Force.
  - Potential health risks in the office and proper use of office PC equipment.
  - Environmental issues such as maintaining a healthy office environment, conservation of the environment by the segregation of scrap and waste that can be recycled such as paper, drink cans, metal scrap, etc.
  - Safety Issues and potential problems at site.
  - Annual review of WSH performance at site including WSH Awards from Customers.
  - Presentation of Safety Awards, Incentive Schemes, Best Worker / Best Sub-Contractor Awards, Near Miss Report Award, Unsafe Acts or Conditions Incentive Award, etc.
  - Accident free man-hours
  - Emergency Drills

- Records of all WSH Promotion Activities are to be maintained.

8.3 Additional Points To Improve Safety

(a) Display of Factory Safety Policy
The Company's Safety Policy should be displayed at various strategic locations in the site.

(b) Display of Industrial Accident / Incident Statistics
To be displayed at a prominent location at site.

(c) Display of Other Safety Material
This includes the display of:
- Safety posters
- Signs
- Safety bulletins
- Newspaper cuttings
- Other types of safety related materials

aimed at raising awareness or to emphasis a particular safety matter.

(d) Conduct Safety Talks, Lectures, and Screenings of Safety Related Videos
WSH Videos will be shown to workers during the Orientation conducted in Main office. WSH Talks will be conducted periodically and the subject will be selected based on the potential hazards spotted during inspection.

(e) Issuance of WSH Handbooks, Brochures or Guides to All Employees
HSE Rules and Regulation will be covered during the orientation.

(f) Organise Special in-House HSE Campaigns
WSH campaign will be organised to raise WSH awareness and consciousness of the workforce.

(g) WSH Bulletin / Notice Boards
WSH bulletin / notice boards shall be set up to effectively disseminate WSH information.

9 EVALUATIONS, SELECTION & CONTROL OF CONTRACTORS

Contractor safety compliance is a major loss prevention goal. ROS has a legal and moral responsibility to take reasonable care in selecting all trade contractors with acceptable records of safe performance and established capabilities and systems for safely managing the work.

ROS will make certain that contractors recognize and accept their responsibility to perform safely, by requiring the subcontractor to actively participate in a formal safety programme. The Production Manager in conjunction with the WSHO is responsible for determining the appropriate degree of company involvement and control necessary to promote safe subcontractor performance. The determination is based on the size and hazards of the subcontracted work and the potential impact of unsafe practices on employee safety and health, job costs, and schedule.

10 SAFETY INSPECTIONS

Safety Inspections are conducted to ensure that all safety requirements are identified and any unsafe acts/conditions are immediately corrected. The safety inspection includes:-

- ROS Safety Committee's Site Safety Inspection - Monthly
- Safety Patrol – by WSHO & EHSS - Daily

- Weekly Safety Audits shall be conducted every Friday at 09.00 by the ROS Safety Officer and BES Construction Manager. All findings shall be reported on a Weekly Safety Audits Report (*See Appendix F*) and discussed in the Weekly Progress Meetings. The Weekly Safety Audit Reports will be included in the ROS Weekly Progress Reports.

- Daily equipment inspection

11 MAINTENANCE REGIMES

All tools and equipment shall comply with all relevant HSE regulations, and be fit for purpose, and maintained in a safe working condition. Guards and electrical trip switches including dead man switches must work effectively and must not be removed or by-passed. The contractor shall provide suitable facilities for the storage of tools and equipment.

All electrical equipment (including leads) shall be inspected and tested in compliance with regulations. Equipment should be tested and tagged prior to shipment to work site. The contractor shall employ the service of a competent person to inspect, test and tag all electrical equipment. A test schedule shall be put in place, and portable site tools shall be inspected at intervals, not to exceed 1 month.

ROS shall keep on site, a register of all electrical tools and equipment in use. The register shall detail:

a) Individual identity number of the tool
b) Name and signature of the competent individual who performed the inspection/ test.
c) Date of inspection
d) Condition of the tool

The following minimum standards apply:

a) All electrical equipment will be tagged, as tested by a Licensed Electrical Worker (LEW)
b) All tools must be connected to a supply with the protection of an earth leakage circuit breaker (ELCB). The setting on the ELCB shall be 30mA or less.
c) All equipment will be earthed e.g. distribution panels, and generators.

All electrical leads shall be in good condition and shall be connected to the power source through standard industrial water proofed plugs and sockets that shall be in good condition.

12 HAZARD ANALYSES

12.1 Objective

- To define a procedure to provide a systematic and documented method for risk identification, evaluation and take precautionary actions to control and/or eliminate the hazards.
- Task Risk Assessment (RA) is vital because:

  (a) The level of risk determines the appropriate control measures.
  (b) The level of integrity of corrective / preventive measures will depend on the level of risk.

12.2 Scope

- TRA shall be conducted for all construction works.
- Contractors shall be required to submit TRA before commencement of their works.

12.3 Responsibility

- The TRA Team, comprising the Project Manager, Construction Manager, WSH Officer / Coordinator and Engineers, shall be responsible for carrying out risk identification and evaluation as part of the planning process prior to work execution. Work shall not commence without first identifying all the risks, evaluation of these risks and taking precautions to control the risks.

12.4 Procedure

12.4.1 RA Methodology

- Establish a TRA Team to undertake the identification and evaluation of HSE hazards and associated risks. The team composition shall include:
  - Project Manager (Team Leader)
  - Production Manager
  - WSH Officer / Coordinator
  - Engineers
- The team leader shall be trained on this procedure and the process shall involve brainstorming with all the members of the team.
- TRA shall be carried out for all work activities before commencement of work. A register of the TRA carried out shall be maintained by the WSH department.
- The process of risk identification shall involve the following steps:
  - The work activity shall be broken into a series of logical steps and listed in their normal order of occurrence. The task shall be divided and sub-divided until the step is large enough to be meaningful, and small enough to be sufficiently well understood.
  - Each logical step shall then be thoroughly reviewed and all potential hazards associated with the step identified. In doing so, the TRA team shall consider the WSH hazards based on their training and experience.
  - The potential consequences for each identified hazard shall be identified.
  - The existing control measures shall be identified.
- Similar activities can be grouped together as one category of activity and a corresponding risk inventory shall be established accordingly. Non-routine tasks like maintenance, start-up, shut down, emergency response, etc. shall be considered in the classification of work activities.
- Risk evaluation shall be carried out using the following criteria:
  - The potential severity of the CONSEQUENCES of occurrence / exposure to the hazard, e.g. Very high, High, Moderate, Low.
  - The LIKELIHOOD of occurrence / exposure, e.g. Very high, High, Moderate, Low.

12.4.2 Control Measures

The control measures based on risks evaluation shall be based on the following guidelines:

(a) Elimination
Wherever possible eliminate the hazards. If not possible, the following measures
shall be considered:

(b) Substitution
Where hazardous materials have been identified as a hazard, then the preferred option is to replace the material with a less hazardous one.

(c) Engineering
The removal of the potential hazards by re-engineering the job is a preferred option. This, for example, may involve such actions as re-designing pipe-work/equipment or configuring a crane.

(d) Administrative Control

The application of administrative control to hazards may include such actions as limiting the time of exposure, rotating of personnel, restricting unauthorised entry, warning signs etc.

(e) Personal Protective Equipment
The provision of appropriate PPE does not eliminate the hazards, but only shields those exposed to it. Such action will have to be coupled with training in the correct use of the relevant equipment.

- TRA findings shall be made known to all relevant personnel via available means such as tool box meetings, weekly project meetings etc.
- All TRA documents shall be reviewed whenever there is a:
  - Change in process / method of working
  - Change of equipment
  - Incidents / Accidents
- Revisions shall be recorded only if there are alterations to the original documents.
- TRA shall be based on the Safe Work Procedures of each works carried out.
- All TRA, revisions and briefings shall be kept in file

13 CONTROLS OF MOVEMENT AND USE OF HAZARDOUS SUBSTANCES

13.1 Objective

- To establish a system for the identification and management of all hazardous substances through the establishment of well defined procedures for the receipt, issuance, storage, handling and use of hazardous substances in the site as per MSDS and site requirements.

13.2 Responsibility

- The Project Manager shall have overall responsibility for the accuracy of the technical specifications, International Standards and WSH requirements for the hazardous substances purchased.
- The WSH Officer / WSH Coordinator shall be responsible for ensuring that the hazardous substances comply with SDS requirements and WSH regulations before they are released for use at the site.

13.3 Register of Hazardous Substances in Use

- The WSH Officer shall maintain a register of hazardous substances in use.
- The register shall include:

  - Product name
  - Hazards
  - Preventive / Counter Measures
  - Quantity
  - Person-In-Charge
  - Storage

- The register shall be updated and maintained for reference.

13.4 Procedures for Receipt, Storage, Issue, Distribution, Transportation, Handling and Use of the Hazardous Substances

13.4.1 Receipt of Hazardous Substances

- Hazardous substances shall be received on site by a designated personnel (DP).
- The DP shall ensure that MSDS is attached to the substances received.
- The DP shall submit the MSDS to the WSH Officer / WSH Coordinator for filing.
- The DP shall ensure that MSDS is available where the substances are used or stored.

13.4.2 Storage of Hazardous Substances

- Storage shall be in accordance to the requirements specified in the MSDS.
- The Project Manager shall allocate a storage area for the hazardous substances.
- Hazardous substances shall be segregated as required by MSDS.

13.4.3 Issue of Hazardous Substances

- Issuing of hazardous substances shall be recorded by the DP.

13.4.4 Distribution of Hazardous Substances

- Distribution of hazardous substances to other contractors shall be recorded by the DP.

13.4.5 Transportation of Hazardous Substances

- Transportation of hazardous substances shall be in accordance to relevant authority requirements.
- The Project Manager shall liaise with the relevant parties to ensure proper transportation is carried out.
- The WSH Officer / WSH Coordinator shall ensure that hazardous substances are being transported as arranged.

13.4.6 Handling of Hazardous Substances

- Handling of hazardous substances shall be carried out by DP and those who have been briefed on safe handling of such substances.
- Proper PPE as indicated in the SDS shall be used in the handling of the hazardous substances.
- Engineers, Supervisors and Foremen shall ensure that workers follow all safety requirements when handling hazardous substances.

13.4.7 Use of Hazardous Substances

- Workers shall be briefed on the use of hazardous substances.
- Records of briefings shall be kept in file.
- Briefings to include properties, PPE requirements and emergency action plans.

13.5 Procedures for the Use of Personal Protective Equipment for Handling and Use of Hazardous Substances

- The WSH Officer / WSH Coordinator shall identify the respective PPE required for the hazardous substances.
- Engineers and Supervisors shall be informed of the PPE requirements.
- Supervisors and Foremen shall ensure that workers use the required PPE when handling and using the hazardous substances.

13.6 Appointment of Personnel to Administer Control and Storage of the Hazardous Substances

- The Project Manager shall designate a competent personnel to administer control and storage of hazardous substances.
- The competent personnel shall be adequately well versed in his duties and of the properties of the hazardous substances.

13.7 Labelling of Containers

- All containers used for storing the hazardous substances must be labelled, tagged or marked with the following information:
  - Identification of the Hazardous Chemical(s)
  - Name used on MSDS and in Chemical List
  - Hazard Warning and Control

13.8 Designated Storage Area

- The Project Manager shall designate a storage area for the hazardous substances used.
- The WSH Officer / WSH Coordinator shall ensure that all hazardous substances are properly stored in the designated area as per MSDS requirements.
- The DP shall segregate the hazardous substances as per MSDS requirements.

13.9 Hazard Communication Training

- The WSH Officer / WSH Coordinator shall conduct a Hazard Communication Training for all personnel involved in the handling, storage and use of the hazardous substances.
- Training should cover:

  - Properties of Hazardous Substances
  - PPE
  - Hazards
  - Counter Measures

- Records of training shall be kept in file.

13.10 Procedures for the Prevention of Spills

- All hazardous substances shall be kept in containers to prevent spillages.
- Any spillage should be reported to the immediate superior.
- The WSH Officer / WSH Coordinator shall be informed of any spillage.
- Counter measures for spillages shall be as per MSDS instructions.
- All spillages shall be recorded kept in file for reference to prevent recurrence.

14 OCCUPATIONAL HEALTH PROGRAMMES

14.1 Objective

- To protect all personnel from the occupational diseases and illness through the identification, evaluation and control of health hazards present in the workplace.

14.2 Potential Occupational Health Hazards

- Noise induced deafness
- Asphyxiation
- Skin diseases due to exposure

14.3 Occupational Health Programmes

14.3.1 Noise Conservation Programme

- All workers to be sent for audiometric testing on a yearly basis.
- All workers to be issued hearing protection
- Issue of hearing protection to be recorded and filed.
- Noise level to be kept below 85 decibels.
- Noise levels to be monitored periodically and recorded.

14.3.2 Respiratory Protection Programme

- Respiratory apparatus to be kept on standby when working in confined spaces.
- Workers to be briefed on proper usage of breathing apparatus.
- Briefings to be recorded and filed.
- Permit-to-work system to be enforced when working in confined spaces.

14.3.3 Industrial Hygiene Programme

- Workers to be issued proper PPE when working with hazardous substances.
- Issue of PPE to be recorded and filed.
- Workers to be briefed on hazardous substances.
- Briefings to be recorded and filed.

14.4 Responsibilities

- The Project Manager shall be responsible for the purchase of all materials necessary in prevention and control of all occupational health hazards.
- The TRA Team shall be responsible in identifying health hazards while performing risk assessments for the various works concerned.
- The WSH Officer / WSH Coordinator shall be responsible to disseminate information regarding such hazards to all supervisors / foremen involved via briefings.
- The WSH Supervisors shall conduct regular inspections in identifying violations, hazards and unsafe conditions.
- The Supervisors / Foremen shall be responsible for workers in adhering to all WSH requirements.

14.5 Methods of Control

Where applicable, the following methods of control should be used in the order presented:

- Elimination or Substitution
- Engineering Controls, including modification of work process or equipment
- Administrative Controls
- Use of personnel protective equipment supplemented by appropriate medical examination, training and education.

14.6 Monitoring and Review

- The Foremen / Supervisors shall report to the WSH Supervisors for all occupational health hazards.
- The WSH Supervisors shall feedback to the WSH Officer / Coordinator regarding any reports on occupational health hazards.
- The WSH Officer / Coordinator shall report such findings to the Project Manager.
- The Project Manager, together with the TRA Team, shall verify such findings to determine methods of control.

- All reports, findings and methods of controls shall be recorded and kept in file.

15 ENVIRONMENTAL PROTECTIONS

ROS is committed to safeguard the local environment as stated in the ROS Environmental Protection Policy, and shall enhance the procedure on protection of the environment. (*See APPENDIX D*)

16 EMERGENCYPREPAREDNESS

- To define a procedure to provide all personnel with clear instructions on the action to be taken during an emergency to minimise the risk and protect:

  - Personnel from injury;
  - The assets, including those belonging to the Company and the Client;
  - The environment within and around the work site;
  - The reputation of the Company and its ability to continue to meet its WSH commitment.

- All employees are required to familiarise themselves with these response procedures, to be able to handle the situation to the best of their abilities when faced with an emergency.

16.2 Scope

- Types of incidents which are envisaged in preparing this manual includes:

  - Fire / Explosion
  - Structure Collapse / Loss of Stability
  - Gas Escape
  - Transport Emergency
  - Falls
  - Oil / Chemical Spills

16.3 Responsibility

- The Project Manager shall lead the Emergency Response Team. Members of the Emergency Response Team can be re-appointed or changed every year. They must be aware of their responsibilities.
- It is recommended to carry out at least one emergency drill every year to test the responsiveness and readiness of the System. All personnel in the Company are to participate, and an evaluation of the drill performance should be carried out. Any necessary improvements should then be added and made to the plan.
- The WSH Officer / WSH Coordinator shall ensure that emergency flow charts, key personnel lists, escape routes are displayed and communicated to all personnel.

16.4 Principles

This section lists the principles on which the Emergency Response is based.

- It is not practical to prescribe an exact procedure for every possible emergency. The procedures are therefore general; any specific incident must be handled in the light of the actual situation.
- Emergency Response is a combination of:
  - Physical action, such as fire fighting, rescue and recovery of the plant.
  - Local direction and support, including the provision of resources management support to deal with major decisions and with the outside world.

- Emergencies are likely to consist of several different incidents at the same time. For example, an explosion may cause a fire, serious injuries, perhaps fatalities, as well as people in the water, and failure to a part of the building structure or a crane.

- The Emergency Procedure, therefore, places information about the emergency in the hands of trained and responsible personnel who have the authority to make decisions, and lets them work out what to do.

- The Company's priorities are to:

  - Prevent incidents, by defining and implementing a Safety Management System;
  - Defining and eliminating, mitigating, or protecting against hazards.
  - Training people; and
  - Motivating them to behave safely.

- Detect a condition, which could develop into an incident, for example by sampling the atmosphere in a confined space before entry.

- Mitigate the effects of an incident if it should occur, for example by providing fire-fighting equipment and personnel trained in its use at the site of hot work.

- Restore operations as quickly as possible, so as to minimise the disruption to the client, the Company and the workers.

- The Company's emergency provisions include:

  - Overall emergency procedures, supported by separate departmental procedures (e.g. for figure finance, legal, engineering, personnel, public relations and other functions), to define how these should carry out their functions during an emergency.
  - A clear dedication of authority so that decisions can be made quickly and effectively.
  - Physical resources and people to operate them, such as fire-fighting equipment and medical facilities, in addition to regular plant resources diverted to help in the response, such as cranes and Company's vehicles, and to the external resources provided by the national authorities.

16.5 Procedure

16.5.1 Organisation and Responsibilities

The organisation, which would be mobilised in the event of an emergency, would be as follows:

Team	Led By	Action
On Scene Action	WSH Officer / WSH Coordinator / WSH Supervisors / Supervisors / Foremen / Workers	A team, which would be formed from personnel available and suitably equipped to deal with the emergency, such as rescue of injured personnel, fire fighting and first aid.
Support Team	Engineers / Supervisors / Workers	This team would take charge of the support activities, such as supplying vehicles, personnel, outside emergency services or other resources.

Management Team	Project Director / Project Manager / Construction Manager	Group Management may be called out to deal with external issues, such as: Dealing with the media (press, radio and television); and Relatives of personnel possibly involved in the emergency, client, other local companies, financial, legal, and insurance issues.

16.5.2 Alarm and Mobilization

- The contents of the Emergency Response Plan shall be made known to all employees to know their roles and responsibilities during an emergency.
- An observer who becomes aware of an emergency shall raise the alarm by informing his supervisor or anyone else in authority.
- The message should be passed to the WSH Supervisor / WSH Coordinator / WSH Officer, either by:

  - Radio
  - Telephone
  - A runner

- The WSH Supervisor / WSH Coordinator / WSH Officer should assess the nature and seriousness of the incident and ensure that on-scene action groups are assembled according to the nature of the emergency.
- The WSH Officer / WSH Coordinator should alert the management (the urgency with which the management group is mobilised depends on the nature and seriousness of the emergency).

16.6 Documentation

- All emergency drills and actual responses shall be documented and filed.
- Reports shall be used to identify improvements, evaluate practical solutions and act as preventive measures for recurrences.
- Reports and / findings of emergency drills and responses shall be highlighted to all personnel via meetings.

17. PERMIT TO WORK

17.1 Practice & Availability

- The need of a permit to work depends upon foreseeable hazards and is particularly useful in controlling the incompatible hazardous task and controlling the work of employees and sub-contractors by ensuring that information necessary for the guarantee of safe execution is exchanged. The following works are some that require a permit to work:-
  - Hot Work Permit
  - Confined Spaces Work Permit
  - Pressure testing activities
  - Radiography
  - Lock-out / Tag-out

17.2 Responsibility

- The Project Manager will designate who, from the line management team, is to implement the permit to work system and, on the advice of the HSE Officer, decide the safe system of work criteria to be stipulated on the permit(s). (See Appendix E)

  Note: Irrespective of whom implements the system, the authorising Project Manager or Production Manager will always remain in control and responsible for the successful application of the safety measures involved. As such he will always be the final signatory on each permit.

17.3 Operation

- When a permit to work, other than the Radiation Work Permit, is issued, the Project Manager and Production Manager should consult the HSE Officer for advice on operation, distribution and rule requirements. All radiation work shall be planned and submit in advance to the HSE Officer for approval. The issued radiography permit to work shall be communicated by the Project Manager to all Production Yard personnel.

18. DOCUMENT CONTROL & REVIEW

18.1 Objective

- To define a system for the control of document, issue and revisions.

18.2 Responsibility

- The WSH Officer / WSH Coordinator shall be responsible for the document update and maintenance.
- The Project Manager shall be responsible for document revisions.
- The WSH Supervisors shall be responsible for filing all relevant documentation.

18.3 Procedure

- All WSH Documents shall be:

  - Prepared by the WSH Supervisors / WSH Coordinator / WSH Officer
  - Reviewed by the Project Manager
  - Approved by the Project Director

- All documents shall be filed according to their contents in respective files.

- The WSH Officer / WSH Coordinator shall maintain a master file list to record the files in use.

- The WSH Officer / WSH Coordinator shall maintain a document revision for all WSH documents.

- Back-ups for files shall be into:

  - Floppy disks
  - thumb drives

18.4 Documentation

- All WSH documents shall be kept in file by the EAE WSH Officer.

19 APPENDIXES

A. Safety Induction Course Attendance
B. Incident Report
C. Accident Analysis
D. ROS Environmental Protection Policy (6 pages)
E. Permit to Work Format
F. Weekly Safety Audit Report
G. ROS Organization Chart
H. Safety Induction Course