

Compliance

Health, Safety, Security of Personnel and Environment in Offshore Hydrocarbon Industry

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Much importance would be given on OHSAS standard in an oil and gas and offshore industries, which will result in achieving sound Health, Safety and Security of personnel and to the Environment. HSE management system will not only comply with all current legislation and statutory requirements but also address the process of risk minimisation to achieve zero incident goals. This document will provide an overview of HSE expectation and work as food for thought.

The Occupational Health and Safety Assessment Series (OHSAS 18001:2007) and the OHSAS 18002 Guidelines for the Implementation of OHSAS 18001 are recognized in the Industry demand for Occupational Health and Safety Management System, with ISO 14001 (Environment) and

ISO:9001 (Quality) Management Systems standards. Following are the minimum requirements for achieving success of HSSE in the Oil and Gas and Offshore Industries:



Documentation: It is necessary to submit health, safety, security and environmental plan and procedures to company's construction HSE manager for approval before mobilization. Contractors must have HSSE plan, policies and procedure. Smoking, drug and alcohol and substance abuse policy are required for documentation. Company's road transport safety policy and plan are also required. Contractors must have disciplinary action and accident/incident reporting procedure in compliance with company's HSSE plan. Procedure documents such as environmental and waste management, spill response plan, health management,

safe work, permit to work, security management, sub contractor selection, emergency response plan and generic risk assessment and task specific risk assessment are required by contractors.

Staffing: Staffing plays an important role in the oil and gas industry. We require full time qualified, experienced and trained HSE personnel. Ratio of safety representative shall be minimum of 1 per 50 workers. To enable teams and individuals to work up to their full potential, it is mandatory to have dedicated environmental advisor and personnel at site. The employees should be qualified and competent first-aider, preferably in a ratio of 1 per 50 workers and their medical fit test records should be maintained.

Training: Training courses are taught by professionals from the oil and gas industry with current knowledge and years of field experience. All personnel at site need to attend HSE induction of ¾ hours followed by test upon initial arrival, and visitors shall get short induction. Also, manpower mobilization plan is required for HSE induction. Two copy passport size photograph, screening form, medical report and police verification report need to be submitted for each new employee along with the list of attendee in the training room. Personnel without mandatory PPE shall not be allowed in the HSE Induction. Contractor will issue safety handbook to the employees upon its completion. Contractor shall establish their own training facility and conduct job specific training as per site requirement. In addition to classroom training, toolbox talk (for 15 – 20 minutes) is required to be conducted every week for all employees.

Meeting: In the beginning of each shift or any new task, supervisors have to conduct documented Job Safety Assessment Meeting (JSA) with his working crew to identify and eliminate

potential hazards of 5 to 10 minutes. Contractor management will attend the HSE meeting at least once in a month, organized and chaired by Project Manger or Construction Manger.

Personnel Protective Equipment (PPE): Contractor shall provide minimum PPE required for all personnel at site i.e. hard hat, safety glass, safety boot (cover metatarsal), hand gloves, coverall, hearing protection. Special PPE of BIS or ANSI standards and certified by DGMS and approved by HSE Manager shall be provided according to risks for specific tasks, like full body harness with double lanyard and shock absorber, face shield, respiratory protection, welding hood, metatarsal guard, chemical goggles, chemical gloves etc. PPE's issue, maintenance and inspection shall be ensured and recorded.

Working at Height: About 90 percent of accidents caused by falling from height, the biggest cause of



occupational fatalities in the oil and gas industry, can be prevented by proper personnel training. Hundred percent fall protection is project requirement. All personnel exposed to the threat of falling from two-meter height and above shall be protected. As a project initiative, where ever practicable work on higher elevation is carried out, it should only be performed on safe working platform (permanent platform, scaffold, aerial platform etc). Full body harness with double lanyard and shock absorber shall be used as a secondary protection. Fall arrestors shall be used only for access to the higher elevation. Job made ladder shall not be allowed at site.

Scaffold: Whether onshore or off, oil rigs require workers to operate from various heights. In order to work at these heights, oil rigs need scaffolding and platforms built by scaffolders meeting all safety requirements. Their duties include designing and building of scaffolds for any number of oil related projects. Scaffolders are knowledgeable about BIS standard requirements, and materials used in the construction of scaffolds are of various offshore drilling regulations. Wooden/bamboo scaffold/ladder shall not be allowed at site. Scaffold board shall be fireproof type and standard scaffold tag (red, green and yellow) shall be used on them. Only qualified/trained scaffold workers shall be allowed to erect, dismantle and alter the scaffold. Contractor need to submit their proof of competency.

Electrical: Electrical Engineering part includes works of maintainance like power systems and Motor synchronization (in ships for stability). Front End Electrical design plays an importatn role in Rig Construction etc. All electrical fittings/appliances shall be of standard weatherproof industrial type with Earth Leakage Circuit Breaker (ELCB)/Ground Fault

Circuit Interrupter (GFCI) and over load protection. Only 3- core double insulated cable shall be used. All electrical installation and maintenance shall be certified/competent electrician only. Monthly inspection for ELCB/GFCI shall be conducted. Metal ladder shall not be allowed for working.

Excavation: The petroleum industry is very protective about the safety and integrity of underground infrastructure and pipelines facilities as they transport millions of dollars worth of pressurized gas or crude oil to their production and refining facilities through a complicated network of oil and gas pipelines. Many producers and contractors specify that Hydrovac must perform any excavations around buried infrastructures prior to machine excavation. Permit procedure shall be followed and any excavation more than 1.5m deep shall be sloped / shored or benched as per soil classification. Excavation more than 6m deep shall have protection system designed by professional / registered engineer. Safe means of access / regress and hard barricading should be provided on all excavations. Strobe light and warning sign shall be used when required.

Confined Space (if required): Confined Space shall be subjected to atmospheric monitoring. Excavation 1.2m or deeper, potential for hazardous atmosphere shall be evaluated and if so, atmospheric monitoring shall be done. Multi gas detector shall be used. Mechanical ventilation and Rescue arrangement of the confined space shall be evaluated and rescue gears shall be provided.

Rigging and Lifting: All rigging and lifting equipment shall have valid third party test certificate as per local / country regulation. Test certificate of crane and other lifting equipment shall be submitted to company for approval and inspection. Crane operators, rigging supervisor, Mobile work platform and



fork lift drivers etc shall be certified, competent and experienced. Rigging shall be done only by qualified/trained riggers. Risk study shall be conducted for all heavy and critical lift by Contractor design department. Quarterly check for all rigging and lifting equipment shall be conducted. All cranes need to be fitted with SLI and Anti two block cut-off device.

Welding, Cutting and Burning: Cutting implies the fragments of rock dislodged by the bit and brought to the surface in the drilling mud. Washed and dried cuttings samples are analysed by geologists to obtain information about the formations drilled. Improper use of any oxy-fuel equipment, used extensively in construction operations to aid in performing work, can be extremely dangerous and has the potential to cause personal injury and/or property damage. Welding can be done safely by following set procedures. Hundred percent spark containment is required. Hot slag/spark shall be contained within the hot-work area. Fire blanket and or other suitable means shall be used accordingly. Welders shall be issued with fire retardant coverall. Trained fire watch with 10 kg DCP fire extinguisher and fire blanket shall be provided at each hot-work location.

Adequate ventilation system needs to be provided for working on toxic metal. Compressed gas cylinders (Oxygen and Acetylene), while in use, shall be secured on cylinder trolley and fitted with flash back arrestor at cylinder end and check valve at torch end. Cylinders should be provided with cap and stored separately in designated gas cylinder storage when not in use. Monthly maintenance check shall be conducted.

Hand tools and Power tools: Hand tool and power tool are used which play an important role in the oil and gas industry. No job/handmade or damaged hand shall be allowed at site. All hand held power tools shall be fitted with dead-man switch. All moving parts shall have guard on it. Only trained personnel shall operate power tools and powder actuated tools. Monthly and quarterly maintenance check shall be conducted.

Shotblast, high pressure water jetting, coating, painting (If required): Area shall be controlled and only competent person shall conduct the activity. Appropriate PPE, including respirator, shall be provided to all the employees in the blasting and painting booth.

Vehicle and construction equipment: All vehicles and construction equipment shall be subjected to safety inspection on arrival, like the gate pass, valid driving license, registration paper, insurance paper, PUC clearance copy and TPI certificate, before being allowed to work on the site. Personnel transportation shall not be allowed on material carrier. Journey Management Plan need to be implemented for vehicle. All seat need to be fitted with seat belt and number of passenger shall not exceed the number of seat. Vehicle and equipment operators shall have required PPE. VTS shall be fitted with all passenger-carrying vehicles. Drivers shall be trained on defensive driving and tested with a minimum qualification standard. Contractor shall

develop the daily equipment checklist to keep a track of the system. Improperly secured load/over loaded vehicle shall not be allowed at site. Provision of banks man for transport vehicle, crane, earth moving equipment is required. Non-site vehicle shall not be permitted to be driven at worksite unless in an emergency. All compressed hoses should be connected with appropriate connector and provided with whip check.

Housekeeping and environment: Housekeeping shall be done on daily basis. Storing of fuel on bulk quantity shall not be allowed without appropriate license. Bund wall or drip tray needs to be provided for all stationary engines driven equipment.

Hazardous chemicals, flammables and oils need to be stored only on impermeable floor with berms to contain spillage. Work area need to be clearly barricaded and signs to be posted. At public place signs, delineators, physical barricade, traffic cones, flashlights, signalman, etc need to be provided. Material shall be stored only at material storage area. Chemicals shall be segregated while storing. Contractor is responsible for placing adequate number of waste bins (marked and cooler coded) at strategic locations. Clearing of excavated spoil and segregated scraps shall be done regularly.

All DG required acoustic barrier. Hazardous chemicals, flammables and oils need to be stored only on impermeable floor with berms to contain spillage. Work area need to be clearly barricaded and signs to be posted. At public place signs, delineators, physical barricade, traffic cones, flashlights, signalman, etc need to be provided. Material shall be stored only at material storage area. Chemicals shall be segregated while storing. Contractor is responsible for placing adequate number of waste bins (marked and cooler coded) at strategic locations. Clearing of excavated spoil and segregated scraps shall be done regularly. Protruding re-bars shall be capped. No vehicle and equipment maintenance shall be allowed at site. Daily checks on housekeeping shall be ensured.

Hazard Communication: The purpose of this section is to ensure that the hazards of all chemicals produced or imported are evaluated and that information concerning their hazards is transmitted to employers and employees. This transmittal of information is to be accomplished by means of comprehensive hazard communication programs, which are to include container labeling and other forms of warning, material safety data sheets and employee training. Copy of MSDS of all chemical shall be submitted to company's construction HSE Manager before bringing on site. All secondary containers shall be labeled with hazard symbol as per Local / Country standard. PPE shall be provided as per MSDS recommendation.

Disposal of chemicals shall be done as per MSDS recommendation and country's legislation. Eye wash and safety shower shall be provided at chemical store.

First-aid and welfare: Sufficient first aid facility should be made available at job site. Necessary supplementary first-aid arrangements need to be provided by Contractor. Common drinking water cup should not be allowed. Drinking water container shall be clearly marked, cleaned and maintained as per project standard. Employees shall not eat meals or drink beverage at job site other than in designated canteens. Provision of disinfectant hand wash shall be mandatory at canteen. Contractors shall provide rest place for workers after meal break. Food handler should be trained and must undergo medical check-up.

Toilet and washing facilities shall be maintained in hygienic condition with supply of disinfectant and cleaning agent. Work place shall be maintained to prevent the entrance or harboring of rodents, insects and other vermin. Before erecting any temporary building or fencing, Temporary Facilities Plan shall be submitted for company's review and approval that includes Camp facility. Also, monthly check of hygiene shall be conducted.

Explosive materials: All explosive material should be handled by authorised person in separate vehicle and kept at their designated place. Any unaccounted loss of material of explosive items must be immediately notified to HSE Manager and police for necessary investigation. Area shall be cordoned, controlled and only competent person shall conduct the activity. Warning notice, written in local and English indicating the prevalent danger, smoking prohibition and authorized entry etc, shall be posted in the storage area.

Working at Night: Night work shall be commenced only after the approval by the company. Appropriate lighting to be provided at each work location. Critical activities should be restricted in night shift and would require approved procedure. Submit illumination report at least once in a week.

Penalty clause: All employees shall comply with Company HSES procedures, guidelines and safe work practice.

Reporting and record keeping: Contractors need to maintain record of POB in a register. Man-hour, incident statistics and other HSSE records need to be submitted to CIL HSE on monthly basis in prescribed format by third of following month. Contractor shall maintain record of daily Job Safety Assessment Meeting (JSA) record at site.

Subcontractor Management: Only after HSE Manager's approval and the relevant information submitted, a sub-contractor is permitted at site. The principal contractor is responsible and liable for any HSES lapses found on the part of any or all of their subcontractors.

Other: Smoking shall not be permitted everywhere at job site. Consumption of alcohol and addicted personnel at site are restricted. General illumination at construction area shall be at least 100lux. Flame proof lighting shall be provided at explosive atmosphere. To promote HSE culture, safety incentive

program shall be initiated. Dust control program shall be used at construction site with water spray.

Monitoring survey is required. There should be 100 percent audibility. Fire protection, required at fabrication shop, and other plan for contractors noisy places need to be prepared. Where ever practicable, acoustic barrier shall be used for machineries. Contractor should develop and implement their own PTW system for all critical activity i.e. pressure testing, excavation, working with explosive, etc. Where ever possible manual handling shall be substituted by mechanical aid.

Contractor shall implement safety campaign designed to raise safety performance. ■



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GE Energy Signs MoU With TN Government



Tamil Nadu: Great Eastern Energy Corporation Limited (GEECL), the first company of India to commercially produce gas from Coal Bed Methane (CBM) blocks, has signed a memorandum of understanding (MoU) with the Tamil Nadu government for the development of Mannargudi block as a CBM production site.

In June 2010, GEECL was awarded the Mannargudi block located near Tiruchirapalli in Tamil Nadu in

the fourth round of CBM bidding conducted by Ministry of Petroleum and Natural Gas and signed Production Sharing Contracts (PSC) in July 2010. Under the MoU, the Tamil Nadu government will provide for issuance of Petroleum Exploration License and facilitate necessary environmental clearances for the project. Additionally, the state government will help the company in obtaining Right of Use for laying pipeline and other infrastructure facilities. On its part, GEECL will

make an initial investment of up to ₹ 100 crore during the exploration stage of Mannargudi block. Once the project viability is established, the company is expected to make substantial investments to the tune of ₹ 3,500 crore depending on the commercial viability of the project.

Y K Modi, Chairman & CEO, GEECL said that they are the first company to commercially produce CBM in India and Mannargudi block in Tamil Nadu.