

Chapter 7: Safety, Security, Environment and other issues

7.1 Non adherence to procedures laid down in Marine Operations Manual by vessel operators leading to compromise of safety in Marine logistics operation

The safety zone of an installation extended to five hundred metres from the installation/ rig and the Operator (in this case, the Company) was responsible for safety within the zone. The Petroleum & Natural Gas Safety in Offshore Operation (PNG (SOO)) Rules, 2008, required that accidents/incidents within the zone should be reported to the competent authority namely Oil Industry Safety Directorate (OISD) periodically. The Company classified incidents/ accidents for the purpose of reporting and investigation into Fatal, Major, Minor and Near-Miss incident⁴². As per guidance note issued (2012) by OISD with respect to PNG (SOO) Rules, high potential near misses/accidents should be investigated and near misses, which were not high potential, should be studied, to identify trends and common critical factors (contributing to these near misses). The Marine Operations Manual of the Company stipulated that when an incident occurred within 500 meters of the zone of an installation, the vessel must provide verbal notification to Offshore Installation Manager (OIM)/ control room immediately.

Audit observed that, out of 22 near-miss incidents involving vessels, reported by Assets/ Drilling services in SAP system during 2012-13 to 2016-17, only three cases had been reported by the vessels to Nhava Supply Base (NSB). Eleven cases of collision and drifting of vessel were not reported by the vessel to NSB and consequently NSB had not entered them in SAP ERP system. Audit observed that since NSB was

Vessels were continuously kept at off-shore, without touching base where they would be surveyed. An incident was noticed wherein an AHTS was kept at offshore continuously for 57 days (May, June 2017) and it was called back after the vessel reported failure of both the engines.

not authorised to view the incidents reported in SAP by Assets/Services, the vessels continued to be deployed without getting their equipment rectified or enquiry conducted on the incident, thereby compromising the safety of offshore installations and the persons onboard.

Dynamic Positioning System⁴³ (DP System) was required for a vessel to hold its position especially while carrying out operations, like loading bulk cargo, which are of longer duration and required stability of the vessel during the operation. The Company had observed in its meeting with vessel operators that most of the incidents occurred due to improper handling on the part of vessel officers or failure of DP system or the main engines. The failure of DP system/ engines/thrusters, being critical equipment, qualified for measurement of down time of the vessel and hence charter day rates were not payable till the defect was repaired. Audit observed that in the absence of any software to monitor remotely the safety condition of the vessel from

⁴² Near Miss incident is defined as an incident which does not result in any injury or damage, but has the potential to result in an injury and/ or property damage. It may also mean an undesirable event, if not controlled in time would lead to a major/ minor incident.

⁴³ Dynamic positioning (DP) is a computer-controlled manoeuvring system to automatically maintain a vessel's position and heading by using its own propellers and thrusters. DP 1 system will have a single control computer and one operator station. In DP1 system, loss of positioning may occur due to a single fault. In DP 2 system, there are more modules providing greater redundancy through operation of three control computers and two operator stations.

remote location, the company was compelled to rely on the reports of the vessel operator. There was, therefore, a risk of incidence, such as failure of DP system/engines/thrusters, not being reported. This failure could result in non-reckoning of down time of the vessel and consequent non-realisation of charter day rate till the damage was rectified.

Audit also observed that the following essential safety requirements were not being complied with by the Company:

- Although the Marine Operations Manual had stipulated DP2 system which was of higher specification than DP1, the Bid Evaluation Criteria (BEC) for hiring of vessels during the period from 2012-13 to 2016-17 mentioned only DP1 as the requirement.
- The Operations Manual was revised (2016) to stipulate that vessels needed to adhere to DP1 system from earlier requirement (2008) of DP2 system.
- Although the Marine Operations Manual specified that vessels were expected to continue operations up to 20-25 knot⁴⁴ wind and upto three to four meter high swell, the conditions for hiring of vessels in the tender floated by the Company stipulated lower requirements of ten knot wind and one meter swell (i.e. sea state of three). This may adversely impact operations in Western Offshore where the monsoon season extends to four months.

Audit also observed that in the following instances, the procedure stipulated in the company's operations manual for ensuring the safety of marine operations were not followed:

Three major incidents (TAG-8, SCI-Kundan and Tag-15) happened during January 2017 alone. Equipment failures (DP system/ Engines) and poor handling were main causes for such incidents

- OSV Manek -1, while pulling out, drifted towards the rig and made contact with Rig Sagar Lakshmi (24 April 2013). Though NSB was aware of the incident, the vessel was not called back but continued to be deployed. Within the next three days, while the vessel was providing supplies (27 April 2013), it could not hold itself and hit the platform.
- The vessel (TAG-9) involved in a collision incident with a platform (5 July 2016), was not withdrawn for inspection but continued to operate as standby to Neelam Process complex. The vessel was deployed at a gas processing complex (BLQ) with higher risk potential BLQ-1 even though the Head, Marine Safety advised the NSB radio room to call back the vessel to NSB at the first opportunity.
- OSV Garware -III lost control during supply duty and hit the rig Sagar Shakti (May 2012). It was attributed to non-availability of DP system in the OSV, though the Company had stipulated availability of DP System as a mandatory eligibility criterion in its tenders for supply/hire of vessel after BHN incident⁴⁵ in 2005 when 22 persons lost their life.

⁴⁴ Knot is a unit of speed equal to one nautical mile per hour or 1.852 kilometer per hour

⁴⁵ In 2005, a vessel hit the BHN platform causing a major accident where entire platform was burnt.

- Incident involving hit/contact with the rig/platform, which should be reported as a major accident, was being reported as a near miss in SAP.

Management stated (May 2017/ September 2017) as follows:

- Vessel masters were being blacklisted for not reporting the near miss/incidents and failure of machinery/equipment of late and that there was improvement in reporting by vessels. The gap in reporting of incidents by NSB and Assets would be bridged in near future.
- Inclusion of DP-2 criterion in the next tender for replacing nine PSVs had been decided upon. Suitable instructions had been issued to all operators to comply with the Marine Operations Manual.
- The company has addressed Director General of Shipping to introduce offshore specific training to improve the skills level of vessel staff.
- Reporting of Contact incidents as major with proper categorization will be ensured in future.

Audit recommended that Contractual conditions may be modified to meet the technical conditions to ensure stability of supply vessels.

Management accepted the audit observations and agreed to consider the recommendations for implementation. During the Exit Conference (October 2017), Management also informed that a committee had been constituted to study and suggest changes to be made in the bid documents for supply of vessels with safety aspects in mind. Ministry accepted the Audit recommendation and directed (December 2017) the Company to ensure all the statutory compliance of rules and regulations including safety and security of installations.

7.2 Compromising of safety in marine vessel operations due to selective adoption of guidelines

The Company adopted the guidelines⁴⁶ issued by United Kingdom Offshore Operators Association (UKOOA) on safety of vessels operations near offshore platforms/ installations after the Bombay High North field (BHN) incident in July 2005. The guidelines provided guidance on Emergency Response and Rescue Vessel (ERRV) operators and charterers in assessing the suitability of vessels on standby duty at offshore installations. As per the Guidance note issued by OISD with respect to PNG (SOO) Rules, the capability of standby vessels for emergency response preparedness should be decided on the basis of 'Escape, Evacuation and Rescue analysis' and while making the decision, the Emergency Response and Rescue Vessel Management and Survey guidelines of Oil and Gas UK should be followed.

The guidelines delineated ERRVs into various groups based on the installation it served as indicated in Table 7.1.

⁴⁶ The UKOOA guidelines are issued jointly by Oil and Gas UK and the Emergency Response and Rescue Vessel Association (ERRVA)

Table 7.1: UKOOA requirements

	Type of installation	Nature of requirement
Group A	Installation manned by large number of manpower (over 300)	Should meet additional requirements relating to quantitative stipulations with regard to survivor seating numbers, capacity of facilities, tankage capacity for water, size of recovery area, sanitary area, provision of food and water.
Group B	Standard ERRVs	Should meet all requirements. Most ERRVs
Group C	Installation manned by small number of manpower (up to 20)	Should meet all requirements as for Group B except for those exceptions specifically mentioned.

The technical specifications of contract for the vessels hired by the Company prescribed that the vessel should comply with requirement of UKOOA guidelines for “Standby duty” Offshore installations (Group C). Audit observed that installations (Platforms, own and chartered rigs) of the Company were manned by more than 20 persons at any given time and therefore it was expected that vessels doing standby duty near the installations needed to satisfy the requirements of Group B. However, the Company prescribed Group C requirements for its own new OSVs and for the chartered vessels which could cover only 20 persons.

Further, Clause 25 of the special conditions of the contract (on Search and Rescue), prescribed that the vessel should comply with requirement of Safety of Life at Sea (SOLAS) convention of 2001 for cargo ships and UKOOA guidelines for “Standby duty” Offshore installations (Group C). In contravention of OISD guidelines/ PNG Rules which mandated compliance of the above safety requirements fully, the Company sought only selective compliance⁴⁷ from the charter vessels hired by it.

Audit also observed that the fundamental requirements which an ERRV must satisfy as per UKOOA guidelines were that the vessel should be capable of rescuing from water or recovering persons and providing them with medical aid, act as a place of safety and provide on scene co-ordination in accordance with relevant Installations’ Emergency response plan. UKOOA guidelines provided for adequate emergency power, survivor assistance and two fast rescue crafts navigation equipment etc. Such requirements were however, not mandated in the vessel charter agreements entered into by the Company.

Independent certification of compliance with UKOOA was a method of ensuring compliance with safety requirements. In the technical specifications for construction of its own new OSVs, the Company had prescribed (October 2009) that the vessel should be equipped as per requirements of UKOOA, except for three specific exceptions in view of local conditions. Compliance with UKOOA ERRV survey guidelines by the OSVs had been examined by an independent surveyor and a certificate was obtained to that effect. However, in case of chartered vessels, Company accepted the contractor’s self-declaration in the tender document instead of obtaining fit for purpose status of the standby vessel surveyed and certified by an independent agency as in the case of own new vessels.

⁴⁷ like provision of armbands, waist coats etc. for identification of crew during emergency, provision for climbing the ship’s side from sea, temporary refuge for survivors, of lifebuoys, alarm and signaling lamps/ search lights, medical inventory etc. and provision of a fast rescue boat

Management replied (June 2017) as follows:

- UKOOA guidelines were broad guidelines and the Company had been following the UKOOA guidelines relevant to its conditions, without compromising on safety. Further, the vessels were not hired exclusively as ERRVs but were supply vessels with additional features like Fi-Fi, SOLAS/UKOOA compliance to meet standby emergency requirements. In case of extreme emergencies, MSVs were deployed by company to attend to them.
- As per the Audit observations, vessels attending to standby duties near installations must have sufficient capacity equal or more than the installation strength, which translates to 300 or so numbers. For such a number, only passenger vessels were needed to be hired, which was not the actual case. More than one vessel is deployed in case of emergencies and hence the Group C requirements seemed to serve the purpose.
- Chartered vessels were accepted after ensuring compliance through third party inspection.

Management reply needs to be seen in the light of the following:

In the absence of specific approval for deviation from such conditions for standby vessels, the Company was exposed to the risk of not adhering to the PNG (SOO) Rules by having selective compliance to the prescribed conditions. The fact remains that as compared to its own vessels, the conditions prescribed for compliance by chartered vessels were relaxed.

During the Exit Conference (October 2017), Management assured that the hired vessels would also be required to comply with the same standards followed by the Company for its own vessels and based on the in-house committee recommendations looking at safety aspects, appropriate provisions would be included in the bid documents.

Audit recommended that the Company may ensure full compliance with the rescue and emergency response standards developed by UKOOA Rules.

Ministry accepted the Audit recommendation and directed (December 2017) the Company to ensure all the statutory compliance of rules and regulations including safety and security of installations.

7.3 Adequacy of Safety and Security at NSB

NSB is surrounded by sea on three sides and by Nhava village on southern side. It is classified as category 'A' security sensitive location⁴⁸ and declared a prohibited area under Official Secrets Act, 1923. However, Audit observed (June 2017) the following security deficiencies at NSB.

⁴⁸ As per Official Secrets Act, 1923 (suggested model for categorization) the installations having more than 60 points in the parameters/yardstick can be categorized as A. It is used as a guide for industrial security planners in a bid to provide effective security and safety to vital installations.

Fire fighting measures:

- Out of four available fire water pumps, two pumps were in the process of being condemned since May 2011 and they were yet to be replaced.
- There was no dedicated water supply network for firefighting operation at NSB as required under safety guidelines and OISD regulations. The proposal (December 2015) to install a dedicated water network was at the initial stages (July 2017).
- The number of water hydrants in the jetty was inadequate and the water pressure in hydrant points was not as recommended by the OISD norms.

Security issues:

- The boundary wall of NSB was in a damaged condition at several places and no wall existed at the extreme North eastern part of Jetty exposing the base to security threats from trespassers.
- Patrolling tracks are under construction. Of the initial eight watch towers of NSB, only four had been revamped.
- Two night cameras were installed at sea water front at NSB jetty as against the recommendation of five night cameras by the Maharashtra police (May 2017).
- Security at NSB was managed by Central Industrial Security force (CISF). Against sanctioned manpower of 166, only 138 CISF persons were actually deployed (May 2017).

Management/Ministry accepted (September/December 2017) the audit observation and intimated that necessary action would be initiated to improve the security and safety of NSB.

7.4 Manpower issues

Consultants (M/s i-maritime) appointed by the Company to study the relative benefits of owned vessels under O&M contracts vis-à-vis that of charter-hired vessels had recommended (March 2014) to develop a core team of marine professionals to develop vessels related competency in ONGC. This would ensure better monitoring of the quality of service provided by O&M contractor and also ensure adherence to standards defined by ONGC for chartered vessels. Audit observed that as of July 2017, there were only three marine cadre executives in Mumbai. Of this two were posted to Marine safety and one executive at Repairs and Maintenance section.

Management accepted (September 2017) the audit observation and agreed that their intervention was necessary in this regard.

Audit recommended that the Company may develop a cadre of marine professionals with vessel related competency to ensure effective supervision of quality of service provided by the O&M contractors and to ensure adherence to contractual provisions applicable for chartered vessels.

Ministry accepted the Audit recommendation and directed (December 2017) the Company to strengthen offshore operations by deploying adequate manpower including marine professionals for monitoring of quality of service provided by O&M contractors.

7.5 Environmental issues in Marine logistics operations

The Corporate Environment policy of the company envisaged that concrete steps would be taken to phase out the usage of hazardous substances in its operations and that Company would take utmost care to minimize waste generation, continue reduction of emissions and dispose of wastes in an environmentally safe manner abiding by the applicable regulations.

7.5.1 Environment management at shorebase

Audit observed that NSB did not have the relevant “consent to operate” permission from the Maharashtra Pollution Control Board (MPCB) for warehouse facilities from 2012 and for mud plant operations from 2010. Appropriate waste disposal procedures in accordance with statutory regulations were not followed at NSB. MPCB issued (April 2016) a show cause notice refusing consent for expansion of mud plant applied for by NSB. The Company had not initiated corrective action in this regard. Further, quality assurance standards and the ISO/OHSAS certificates⁴⁹ were valid only till April/ September 2014.

Management in its reply (October 2017) stated that MPCB wanted to amalgamate the separate licences given to three units within NSB and fees were paid in 2016 for all the licences. The ISO certificates were also being renewed.

Audit recommended that the Company may ensure that necessary environmental approvals are obtained for operations in line with the statutory provisions and the relevant Environmental Rules.

Ministry directed (December 2017) the Company to ensure compliance with statutes, rules and regulations governing the environment.

7.5.2. Backload of garbage/ waste from Offshore facilities

Garbage was not segregated at source by rigs/platforms into hazardous, non-hazardous bio-degradable and non-degradable categories, prior to their dispatch to NSB. This made it impractical to segregate the garbage at the shore base. The manifest produced to audit did not indicate that garbage had been segregated into above categories, by rigs deployed in Eastern offshore also, prior to dispatch to KSB for disposal.

The Company had issued (2009) detailed guidelines on waste management. An in-house Committee had also recommended (September 2013) that SOP for disposal of industrial garbage was to be developed. However, Audit could not verify compliance, as the guidelines were not traceable and the SOP was under preparation. The Company could also not produce

⁴⁹ Quality Management System, Environmental Management system (ISO) and Occupational Health and Safety Management system (OHSAS)

supporting documents to provide assurance on compliance with the Hazardous Waste (Management, Handling and Trans-Boundary Movement) Rules 2008 relating to disposal of offshore garbage.

Management in its reply (October 2017) stated that SOP was under preparation.

Audit recommended that the Company may ensure that the garbage is segregated at source at the Offshore and also develop an SOP for handling hazardous material.

Ministry accepted the Audit recommendation.

7.6 Management control through fixation of targets for key executives of Offshore Logistics Group (Marine)

Service Level Agreement (SLA) is a document that prescribed the minimum performance criteria a service provider committed to be made available to the user. The SLA incorporated activities and responsibilities of the respective users (Asset/Basin Managers) and Service Providers (Chief of Services) and formed part of the Performance Contract (PC).

7.6.1 Implementation of SLA between Assets/Basins/Plant and Offshore Logistics

In the case of offshore logistics group, SLA is entered into between the Asset/Basins/Plant managers with the Executive Director (Chief Offshore Logistics) three months prior to the PC. Both the users and service providers were required to jointly review the achievement of committed activities and submit joint review reports for each quarter to the Performance Managements Bench Marking Group (PMBG) and present it to the EC.

Review of the performance evaluation system in audit during the period from 2012-13 to 2016-17 revealed the following:

7.6.1.1 Western Offshore

- The target for vessel availability at 84 *per cent* for the years 2012-13, 2013-14 and 2014-15 was fixed at a level lower than the actual level of 92 *per cent* considered by the Consultants (September 2011). Compared to these targets, the actuals were invariably higher.
- The target for waiting time of rigs which had the maximum weightage (13-15 *per cent*) was not derived from the actual achievements of the preceding year. Assets/Basins had repetitively expressed concern over idling of rigs due to non-availability of vessels in time. Thus achievement of the target and award of 'excellent' rating under this Key Performance Indicator (KPI) with more vessels for operation indicated deficiency in fixation of target.
- The cargo delivered considered only deck utilization while excluding the bulk cargo which formed more than 90 *per cent* of the total cargo. The deck space utilisation was also not in line with the contractual terms and was lower than previous years' achievement.

- In fixing the KPI on cost of transport, the cost incurred on supply duty only was considered excluding standby duty, downtime and rig movement (which formed 70 *per cent* of total hours of the vessels).
- The KPI for ‘Out of Cycle’⁵⁰ had no linkage with previous years’ figures. Marine logistics services got ‘excellent’ rating under this KPI, although owned vessels were on substantial down time as compared to chartered vessels.

Management stated (June/September 2017) that considering the constraints/limitations the targets under each KPI were kept at optimistic levels. The availability target of vessels was kept at 84 *per cent* considering operation of old Samudrika series vessels, whose availability was low. In 2017-18, target for availability of vessels in Performance Contract (PC) was increased to 95 *per cent*. KPI target for rig waiting due to non-availability of vessels should be more challenging. It was not prudent to carry 100 *per cent* bulk cargo in all vessels due to technical reasons like stability of vessels and also the demand of bulk cargo at Offshore Installations. Management stated that no cost optimization study had been undertaken. Standby and rig movement cost would be proposed for inclusion in KPI of cost of transportation. On ‘Out of Cycle’ KPI, Management replied that targets were fixed based on annual surveys, preventive maintenance, statutory requirements etc. It was also assured that dry-dock and Preventive Maintenance schedule activities would be fine-tuned to reflect the suggestions of audit.

7.6.1.2 Eastern Offshore

PC of the Offshore Logistics Group, Mumbai did not evaluate the performance of marine logistic operations (except availability of vessels) at Eastern Offshore (EOA). It was also not included in the PC of EOA. Thus, the Marine Operations at Eastern Offshore was not being monitored through PC mechanism.

Management (July and September 2017) stated that EOA was coming up on its own and did not have ability to manage its own resources and expecting a Service Level Agreement (SLA) similar to the one for established Assets of Western Offshore was not justified; KSB was assigned with catering to the field operations of both rigs and vessels whereas Drilling Services, Mumbai and Offshore Logistics Group (OLG) conceptualized and planned rig deployment and Vessel allocation.

The reply is to be viewed in light of the increasing offshore activities and the scale of operations at EOA and the consequential need for service level agreement.

7.6.2. Absence of linkage between Performance Contracts (PC) and individual targets of key executives

The performance linked incentive should bear direct relationship with target fulfilment as per HR Manual of the Company. PMBG had proposed to the Executive Committee (EC) (November 2008) that achievement of PC should be considered for fixing incentive in due course. This was

⁵⁰ Time not available for owned vessels due to capital repair refurbishment, emergency dry dock, inspection etc.

duly approved by EC. In April 2009, EC desired that the KPIs needed to be linked to overall MoU targets with respect to PCs for 2009-10 and ultimately linked to the Performance Related Pay (PRP), after the PRP framework was ready.

Audit observed that, for calculation of PRP, acceptable KPIs proposed by the individuals were approved by the immediate controlling officer instead of those aligned with PCs and overall MOU targets.

Management stated (July/September 2017) that KPIs for PRP of key officials (GM and above in OLG) were being aligned with the PC of OLG for the financial year 2017-18.