



सत्यमेव जयते

# Report of the Comptroller and Auditor General of India

on

## Marine Logistics Operations in Oil and Natural Gas Corporation Limited



लोकहितार्थं सत्यनिष्ठा  
Dedicated to Truth and Public Interest



Union Government (Commercial)  
Ministry of Petroleum and Natural Gas  
No. 7 of 2019  
(Performance Audit)

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Comptroller and Auditor General of India  
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Corporation Limited**

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# Index

Particulars		Page
Preface		i
Executive Summary, audit conclusions and recommendations		v
Chapter 1	Background	1
Chapter 2	Mandate, Audit Scope and Methodology	3
Chapter 3	Planning for vessels	5
Chapter 4	Acquisition and hiring of vessels	11
Chapter 5	Deployment of vessels	17
Chapter 6	Supply Base Management	29
Chapter 7	Safety, Security, Environmental and other issues	41
Chapter 8	Audit Conclusions and Recommendations	51
Annexure I - IX		57
Glossary of terms		71



## Preface

The Performance Audit Report on Marine Logistics Operations in Oil and Natural Gas Corporation Limited (ONGC) has been prepared under the provisions of Section 19-A of the Comptroller and Auditor General's (Duties, Powers and Conditions of Service) Act, 1971. The Audit has been carried out in line with the Regulations on Audit and Accounts, 2007 and Performance Audit Guidelines, 2014 of the Comptroller and Auditor General of India.

The Audit covered the period from 2012-13 to 2016-17. The Report is based on the scrutiny of documents pertaining to the Oil and Natural Gas Corporation Limited and is a follow-up to Report No. 4 of 2002 and Report No. 6 of 2005 (Commercial) of the Comptroller and Auditor General of India, which covered the performance of Marine Logistics Operations of ONGC in Western Offshore. This Report examines the status of audit observations of earlier two reports as well as performance of additional areas of Marine Logistics Operations, including the shore base management during the period from 2012-13 to 2016-17.

ONGC, an integrated oil and gas exploration and production company, contributes 64 *per cent* of country's hydrocarbon output (2016-17). The Marine Logistic Services of the Company provides vital support to the offshore platforms and rigs by storing and supplying various types of materials/equipment. Besides, it also provides safety services to these offshore duty stations and towing services for shifting rig from one location to another location. The audit revealed short deployment of vessels due to deficient planning resulting in compromise in mandatory safety (standby) duty, delay in delivery of new vessels due to award of contract to inexperienced contractor, delays in tendering process, high turnaround time of vessels due to non-implementation of fixed scheduling, deficient inventory management system, non-adherence to the safety procedures etc.

Audit acknowledges the co-operation and assistance extended by the officers and staff of Ministry of Petroleum and Natural Gas, Government of India and ONGC during the Performance Audit.



# Executive Summary



An Offshore Supply Vessel (OSV)



# Executive Summary

## Background

Oil and Natural Gas Corporation Limited (ONGC) is an integrated Exploration and Production Company (hereinafter referred to as 'Company') which is presently carrying out production activities in the Western Offshore of the country and exploration activities in the Eastern Offshore, where it has discovered gas fields. Monetization of these discoveries is underway. During 2017-18, the Company had 17 offshore platforms and deployed 36 offshore drilling rigs in the Western Offshore area and three unmanned platforms and five drilling rigs in the Eastern Offshore area. The Marine Logistic Services of the Company provide vital support to these offshore platforms and rigs through vessels storing and supplying various types of materials/equipment required for smooth exploration and production operations. The performance of Marine Logistics Operations of the Company in the western offshore was reviewed by the Comptroller and Auditor General of India in Audit Report No. 4 of 2002 and the action taken on the Report were discussed in Report No.6 of 2005 (Commercial). This Report examines status of audit observations of earlier two reports as well as performance in additional areas including the shorebase management covering the period 2012-13 to 2016-17.

## Planning for vessels

In Western Offshore, the actual strength of vessels deployed for marine logistic operations was less than the approved strength during the period from 2012-13 to 2015-16. Shortage of vessels was noticed in Eastern Offshore also during the years 2015-16 and 2016-17.

The Company had not planned for adequate number of Offshore Supply Vessels (OSVs) resulting in compromise of mandatory safety (standby) duty. While planning the number of OSVs for deployment, the Company ignored the delay in delivery of new vessels by Pipavav Shipyard Limited (PSL).

**(Para 3.1)**

The Company planned to reduce two Platform Supply Vessels (PSVs) from its fleet to effect economy in operations. However, it reduced two OSVs in place of two PSVs. Considering the ineffective utilization of PSVs, the decision to reduce OSVs instead of costlier PSVs is likely to impact standby duties and increase the cost of operations by ₹25.99 crore.

**(Para 3.2)**

## Acquisition and hiring of vessels

The Company awarded construction of 12 new vessels to an inexperienced contractor, M/s. Pipavav Shipyard Limited (PSL) solely on the basis of experience of the foreign technical collaborator of the contractor. Against scheduled delivery of 12 vessels by December 2011, the contractor could deliver only seven vessels by March 2018. The company terminated the contract in July 2018.

**(Para 4.1)**

The Company decided to procure High Flash High Speed Diesel (HFHSD) on water front delivery basis to save on payment of value added tax and entry tax. This required hiring of oil tankers. Audit noticed inordinate delay in finalization of tender for hiring of tankers. Meanwhile, the Company hired oil tanker B.C. Chatterjee from Shipping Corporation of India on nomination

basis. However, the Company was forced to procure HFHSD from costlier alternative through land route due to frequent failure of the hired oil tanker, incurring additional cost of ₹163.44 crore. Further, as against a requirement of two barges for movement of oil from tanker to vessels, the Company hired only one barge and failed to deploy additional barge leading to an extra expenditure of ₹307.58 crore.

**(Para 4.2.2 and 4.2.3)**

### **Deployment of vessels**

The Company did not implement recommendations of the consultant to schedule vessels on a fixed basis than on an ad-hoc basis in order to reduce the turnaround time of vessels. The excess vessel trips to drilling rigs as compared to average trips made by vessels to similar type of rigs in European waters indicate an increased cost of ₹376.10 crore to the Company.

**(Para 5.1)**

Standby support was required to be provided by OSVs. However, PSV (with higher day rate) meant for supply duty, were being increasingly deployed for standby duty at Western Offshore which led to increase in cost of logistic operation of ₹181.72 crore.

**(Para 5.2)**

The utilization of deck space was below optimum levels and was also not properly verified. Use of containers and Cargo Carrying Units (CCUs) for loading on vessels leading to improved deck space utilization was not implemented. Substantial portion (52 *per cent*) of bulk cargo carried was returned undelivered as Return on Board. Loading of undelivered/excess cargo led to increase in turnaround time (TAT) at port and additional fuel consumption during voyage.

**(Para 5.4 and 5.5)**

The Company did not have an effective monitoring/control mechanism in place to check the HFHSD consumption by chartered vessels which was supplied free of cost. Failure to mobilize requisite vessels, high vessel down-time and lack of co-ordination resulted in high rig downtime in Eastern Offshore and consequent avoidable expenditure of ₹30.84 crore on rig day rate charges.

**(Para 5.7 and 5.8)**

### **Supply Base Management**

Failure to limit the Turnaround time (TAT) to global norm of 6 hours at the shorebase resulted in extra operational cost of ₹181.78 crore during the period from 2012-13 to 2016-17.

**(Para 6.1)**

Nhava Supply Base (NSB) is presently managing with fragile infrastructure and outdated system resulting in increased cost of operations and increase in vessel requirement. NSB up-gradation project, though initiated in 2003, is yet to be implemented. This delay led to operational constraints affecting the TAT. The Company (September 2013) assessed an annual saving of ₹20 crore if alternate supply base was set up at Pipavav. Though the Company approved the proposal in July 2015 and envisaged operation at the new supply base from February 2016,

no further progress was made till date (January 2018). Delay in setting up a supply base as an alternative to NSB led to foregoing of estimated benefits of ₹41.75 crore.

(Para 6.2)

Around 83 *per cent* of water supplied to NSB by MIDC through pipeline was tapped en-route. Water-Makers installed on owned rigs/platforms were either non-operational or production of water was below the desired levels. Insufficient supply of water at NSB adversely affected the offshore operations.

(Para 6.3)

Lack of internal control at NSB and inadequate physical verification of stores and spares led to the stock account remaining unreconciled and disparity in consumption of stores. Independent verification carried out in April 2017 pointed out that stock was being kept in open area without any segregation between scrap and usable material. Record of materials sent to agencies outside NSB for repairs was not maintained in the SAP system. Some of the items had not been received even after 2 years against the norm of 90 days.

(Para 6.4, 6.5 and 6.6)

### Safety, security and environment

Non adherence to procedures laid down in Marine Operations Manual by vessel operators and selective adoption of guidelines lead to compromise of safety in Marine logistics operations. There was lack of dedicated fire water network in NSB and security system was also inadequate.

(Para 7.1 and 7.3)

ONGC does not have a separate marine cadre to supervise quality of services provided by its Operation and Maintenance contractor and to ensure adherence to standards defined by the Company for chartered vessels.

(Para 7.4)

The Strategic Business Units (SBUs) of the Company proposed and adopted soft targets which were not optimized based on actual achievement. There was absence of targets of individual with that of SBU as a whole (SLA/PC). The performance contract of Eastern Offshore did not measure the marine operations at Eastern Offshore.

(Para 7.6)

The financial impact of the audit findings in this report is ₹2021.19 crore (consisting of ₹1716.57 crore on account of excess expenditure/cost of operations and ₹304.62 crore on account of revenue foregone/loss of interest).

### Overall conclusion

*The company did not plan effectively and hire vessels in time. The efficiency of logistics operations suffered from lack of vessel scheduling, monitoring of fuel consumption by vessels, optimum utilization of vessels for duties earmarked and due to substantial return on board cargo. The Turnaround time of the vessels at shorebase was higher than the international*

*benchmarks due to the fragile infrastructure at the base, and delays in shorebase up-gradation. Concerns regarding safe operations of the vessels remained to be addressed comprehensively.*

### **Recommendations**

**Audit recommended the following:**

- 1. Assessment of vessel requirement should be reviewed with reference to the Annual drilling plan.*
- 2. Introduce fixed scheduling of vessels and improve the planning for prompt delivery of the required cargo by coordinating with the duty stations/users thereby avoiding redundant vessel trips. Deploy Platform Supply Vessels for supply duty in place of Offshore Supply vessels.*
- 3. Use of Cargo Carrying Units (CCUs) for optimum deck space utilization may be considered. Ensure that loading of bulk cargo is restricted to field requirements and to meet consumption by the vessel.*
- 4. Include cost and consumption pattern of HFHSD by the vessels as a parameter in evaluation of the bids for hiring of vessels.*
- 5. Finalize and implement Standard Operating Procedures for Shorebase Operations. Take steps, within the framework of agreement with M/s. Kakinada Seaports Limited (KSPL), to reduce the Turnaround Time at Kakinada Supply Base (KSB) by optimising operations.*
- 6. Devise and implement an integrated up-gradation plan for Nhava Supply Base (NSB) in line with the international best practices, and operate NSB as an integrated Material Management warehouse. Evaluate alternative options to ensure timely and adequate supply of water for offshore operations.*
- 7. Ensure full compliance with the safety, rescue and emergency response standards adopted by the Company. Develop a cadre of marine professionals with vessel related competency.*

### **Response of the Ministry**

The Ministry of Petroleum and Natural Gas (MoPNG) accepted all the recommendations and issued (December 2017) specific directions to Company to ensure compliance with the recommendations in a time-bound manner.

The Ministry also directed Company to (i) prepare Standard Operating Procedures for supply of material for offshore operations, (ii) take necessary action for modernization of supply bases for offshore operations including NSB as per international standards and best practices including inventory management through relevant software, (iii) ensure compliance with statutes, rules and regulations governing environment, safety and security of installations, and (iv) strengthen the offshore operations by deploying adequate manpower including marine professionals for monitoring of quality of services provided by the O&M contractors.

Audit appreciates the positive response from the Ministry.

## Chapter 1: Background

Oil and Natural Gas Corporation Limited (ONGC), an integrated exploration and production company (hereinafter referred to as ‘Company’), contributes 64 per cent of India’s hydrocarbon output (2016-17). Around 75 per cent of its total production of crude oil and natural gas is from Western Offshore area. The Company is presently carrying out exploration activities in Eastern Offshore area of



A process platform

the country where it has discovered 23 gas fields from 2001-02 to 2017-18; monetization of 14 of these discoveries is underway. The Company operates 17 platforms<sup>1</sup> and has deployed 36 drilling rigs<sup>2</sup> in the Western Offshore area and three unmanned platforms and five drilling rigs in the Eastern Offshore area as on 31 March 2018.

The Marine Logistics Services of the Company provide vital support to the platforms and rigs (referred to as ‘duty stations/duty points’) by storing and supplying various types of materials/equipment required for smooth exploration and production activities. It also provides safety services to these duty stations (standby duty) and towing services for shifting rigs from one location to another (rig move).



A Drilling rig

The Comptroller and Auditor General of India in Audit Report No. 4 of 2002 reviewed the performance of Western Offshore vessels. This covered the assessment of requirement of offshore vessels, deployment, upkeep and maintenance of owned Offshore Supply Vessels (OSVs), operation and maintenance contracts of owned vessels for the period of five years ended 31 March 2000. Ministry’s response to the

findings in the report was included in Audit Report No. 6 of 2005 (Commercial) of CAG of India on Hydrocarbon sector. Further development on the audit findings mentioned in the above Report is given at **Annexure I**. Audit observed that most of the issues pointed out in the earlier review have not been addressed/fully addressed by the Company.

### 1.1 Types of vessels

The Company operates a fleet consisting of both owned and chartered vessels of various types and capabilities. OSVs are used primarily for standby duties and occasionally for supply duties.

<sup>1</sup> An offshore structure that is permanently fixed to the seabed

<sup>2</sup> A drilling unit that is not permanently fixed to the seabed, e.g. a drillship, a semi-submersible or a jack-up

**Anchor Handling Tug cum Supply (AHTS) vessels** equipped with winches are used primarily for rig movements. Whenever there is no rig move, AHTS are used for standby duty and to carry moderate amount of supplies. **Platform Supply Vessels (PSVs)** are specially designed to supply cargo to drilling rigs and offshore platforms.

## 1.2. Supply Base

The supply of materials to the rigs and platforms in Western Offshore and Eastern Offshore is managed from Nhava Supply Base (NSB) near Mumbai and Kakinada Supply Base (KSB) at Kakinada respectively.

## 1.3 Organizational Structure

The Marine Logistics Division of the Company functions under the overall control of Director (Offshore). In the western offshore it is headed by Executive Director (Chief Logistics services) who is assisted by General Managers – Marine construction, Marine supply base, Marine Planning, Material Management, Finance and by Deputy General Manager (Repairs and Maintenance). In the Eastern Offshore, the DGM In-charge Logistics heads the team comprising DGM/Chief Managers – Logistics, Port Operations, OSV Operations and Surface Logistics.

## 1.4 Financial Performance

Expenditure incurred by the Company on marine logistics operations during the period 2012-13 to 2016-17 is given in the following table:

**Table-1.1: Expenditure on marine logistic operations** (Figures in ₹ crore)

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17
Capital	95.14	39.67	28.77	48.99	21.76
Contractual	904.22	898.01	1175.55	1712.83	1345.66
Manpower	47.60	63.60	49.20	57.82	72.60
Spare	0.03	0.13	0.08	0.09	0
Store	525.76	1320.08	1472.12	1288.71	1369.22
Other	10.15	9.81	10.52	10.26	12.11
<b>Total</b>	<b>1582.90</b>	<b>2331.30</b>	<b>2736.24</b>	<b>3118.70</b>	<b>2821.35</b>

Source: Data provided by ONGC/Finance

The major expenditure of Marine Logistics operations was on chartering of vessels, procurement of High Flash High Speed Diesel<sup>3</sup> (HFHSD) and Operation and Management (O&M) costs of vessels owned by ONGC. Increase in expenditure on marine logistics operations from ₹.1582.90 crore (2012-13) to ₹.2821.35 crore (2016-17) was mainly due to increase in deployment of vessels, increased consumption of HFHSD in rigs and platforms, increased consumption of HFHSD by vessels, increase in cost of fuel, upward revision of foreign exchange rate of US dollar from ₹.54.45 (2012-13) to ₹.67.08 (2016-17). Vessel charter hire is payable in US dollar.

<sup>3</sup> HFHSD is high flash diesel generally meant for Naval applications and fishing vessels.

## Chapter 2 : Mandate, Audit Scope and Methodology

The Performance Audit Report on Marine Logistics Operations in ONGC has been prepared under the provisions of Section 19-A of the Comptroller and Auditor General's (Duties, Powers and Conditions of Service) Act, 1971. The Audit has been carried out in line with the Regulations on Audit and Accounts, 2007 and Performance Audit Guidelines, 2014 of the Comptroller and Auditor General of India.

### 2.1 Objectives and scope of Audit

The Performance Audit includes review of efficiency, effectiveness and economy in Marine Logistic Operations of the Company at its Western and Eastern Offshore for the period 2012-13 to 2016-17 with backward and forward linkages. The objectives of this audit were to:

- ascertain whether the requirement of vessels was properly assessed and planned to meet the demand of Assets and Services;
- assess whether requisite number of vessels were made available through timely hiring or acquisition in an effective and efficient manner;
- assess whether the vessels were optimally deployed and whether a system existed for proper upkeep of owned vessels;
- assess whether the operations of Nhava Supply Base (NSB) and Kakinada Supply Base (KSB) i.e. supply chain management, material planning, disposal of condemned/scrap items etc., were effective and efficient; and
- assess whether safety, security and environmental requirements relating to Marine Logistics Operations were complied with.

### 2.2 Audit criteria

The criteria for audit were drawn from the internal documents/norms/procedures of the Company relating to planning, deployment, supply based operations, service, key performance indicators and Consultants reports. Further, safety guidelines prescribed by the Oil Industry Safety Directorate (OISD) and Petroleum and Natural Gas (Safety in Offshore Operations) Rules, 2008 (PNG-(SOO) Rules) and Hazardous Waste (Management, Handling and Trans-Boundary Movement) Rules 2008 and Corporate Environment policy of the Company have been relied on.

### 2.3 Audit Methodology

An entry conference was held with Management on 13 January 2017 in which audit objectives, scope and methodology were discussed. Field audit was undertaken from January 2017 to June 2017. The field audit included collection and review of information/documents, discussions with Management and visits to supply bases onshore.



The draft report was issued to Management on 05 August 2017 and reply was received on 20 September 2017. Audit findings were discussed with Management at an Exit Conference held on 04 October 2017. The revised draft Report was issued to Ministry of Petroleum and Natural Gas (MoPNG) on 10 November 2017. Replies of Ministry were received on 21 and 28 December 2017.

An Exit Conference with MoPNG and Management of ONGC to discuss the audit findings and recommendations of the Report was held on 09 March 2018. The updated reply from the Company after Exit Conference was received on 14 May 2018. The response and views expressed by MoPNG and Management during Exit conference have been suitably incorporated in the Report.

#### **2.4 Audit Coverage**

Planning for assessment of vessel hiring and its approval, tendering activities for hiring required number of various types of vessels, Operation and Management contracts of owned vessels, new vessel acquisition, Vessel deployment, bulk cargo utilization, and KSB operations were covered fully. Issues involving detailed analysis of voyage reports were test checked (Deck space utilization, Supply of fuel and water, Turnaround time of vessels etc.) during the audit period.

#### **2.5 Acknowledgement**

We place on record the cooperation extended by MoPNG and Management and staff of ONGC in smooth conduct of the audit.

## Chapter 3: Planning for vessels

The Company assesses requirement of vessels for marine logistics operations on the basis of the drilling plan (development and exploratory drilling locations), estimated load of cargo to be carried, number of duty stations (rigs/platforms) to be served and number of planned rig movements during the year. The number of vessels approved by the Executive Committee (EC) and the actual strength of vessels during the period from 2012-13 to 2016-17 is tabulated below:

**Table 3.1: Table indicating approved versus actual strength of vessels**

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17
<b>Western Offshore</b>					
Approved strength	65	68	62	62	57
Actual strength	44	40	47	58	57
Shortfall	21	28	15	4	0
<b>Eastern Offshore</b>					
Approved strength	8	8	8	12	10
Actual strength	8	8	8	8	7
Shortfall	0	0	0	4	3

Source: Data compiled from Annual/Monthly Activity reports of Supply Base

As may be seen from the above table, in Western Offshore, the actual strength of vessels deployed was less than the approved strength during the period 2012-13 to 2015-16. In case of Eastern Offshore, there was shortfall during the years 2015-16 and 2016-17. The reasons for shortfall and their impact on operations were reviewed in audit. The findings are discussed in subsequent paragraphs.

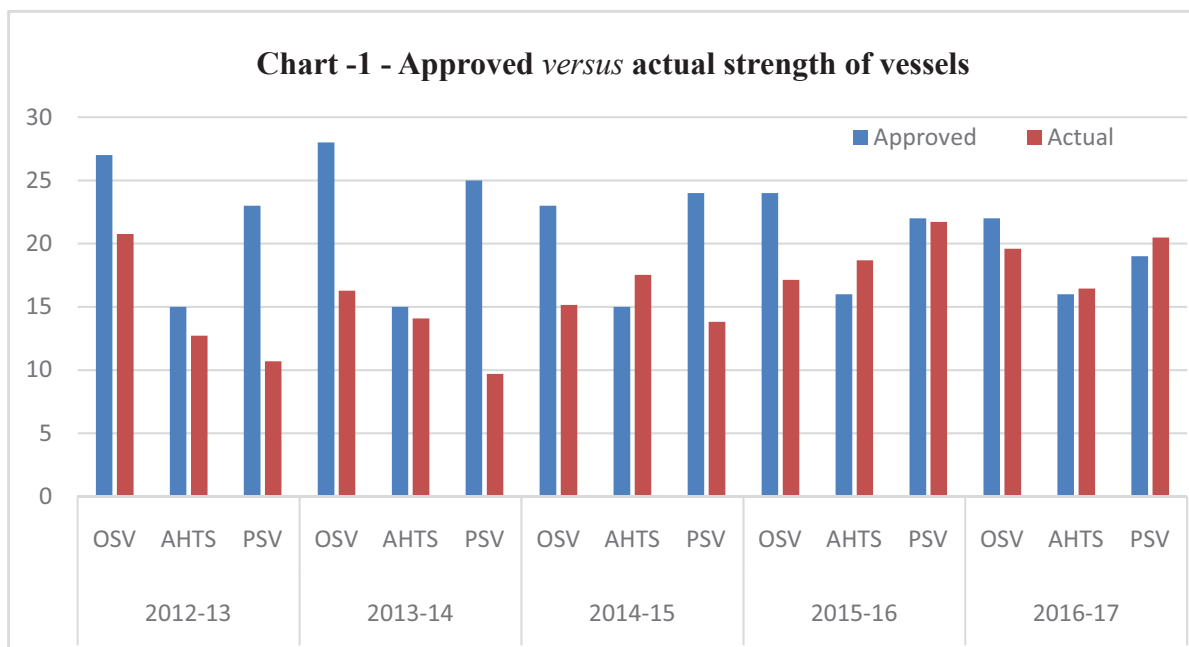
### 3.1 Defective assessment of requirement of OSVs resulted in availability of lesser vessels for mandatory standby duty

The Company is required to deploy standby vessel to each offshore installation, under the provisions of Petroleum and Natural Gas (Safety in Offshore Operations) Rules, 2008 and guidelines issued by Oil Industry Safety Directorate. The deployment of vessels was prescribed for meeting emergency response requirements such as warding off intruding vessels near the installations/rigs, providing fire fighting facilities, standby facilities during helicopter landing and take-off and for transferring materials from one rig to another deployed in nearby areas. Vessels are to be continuously deployed as per oil Industry practices, within 5 nautical miles<sup>4</sup> of each duty station. Accordingly, the Company has been adopting the following norms in line with Industry practice consistently:

<sup>4</sup> Nautical Mile (NM) is unit used in measuring distances at sea, 1 NM= 1.852 kilometers

Location	Norm
Exploratory location <sup>5</sup>	One vessel per rig
Development location <sup>6</sup>	Half vessel per rig (2 rigs in a radius of 5 nautical miles)
Process Complex <sup>7</sup>	One vessel per process complex

The Company calculated its requirement of vessels for standby duty on the basis of the above norms. The approved and actual strength of each type of vessel for Western Offshore for the period 2012-13 to 2016-17 is depicted in the chart below:



OSV: Offshore Support Vessel; AHTS: Anchor Handling Tug cum Supply Vessel; PSV: Platform Supply Vessel

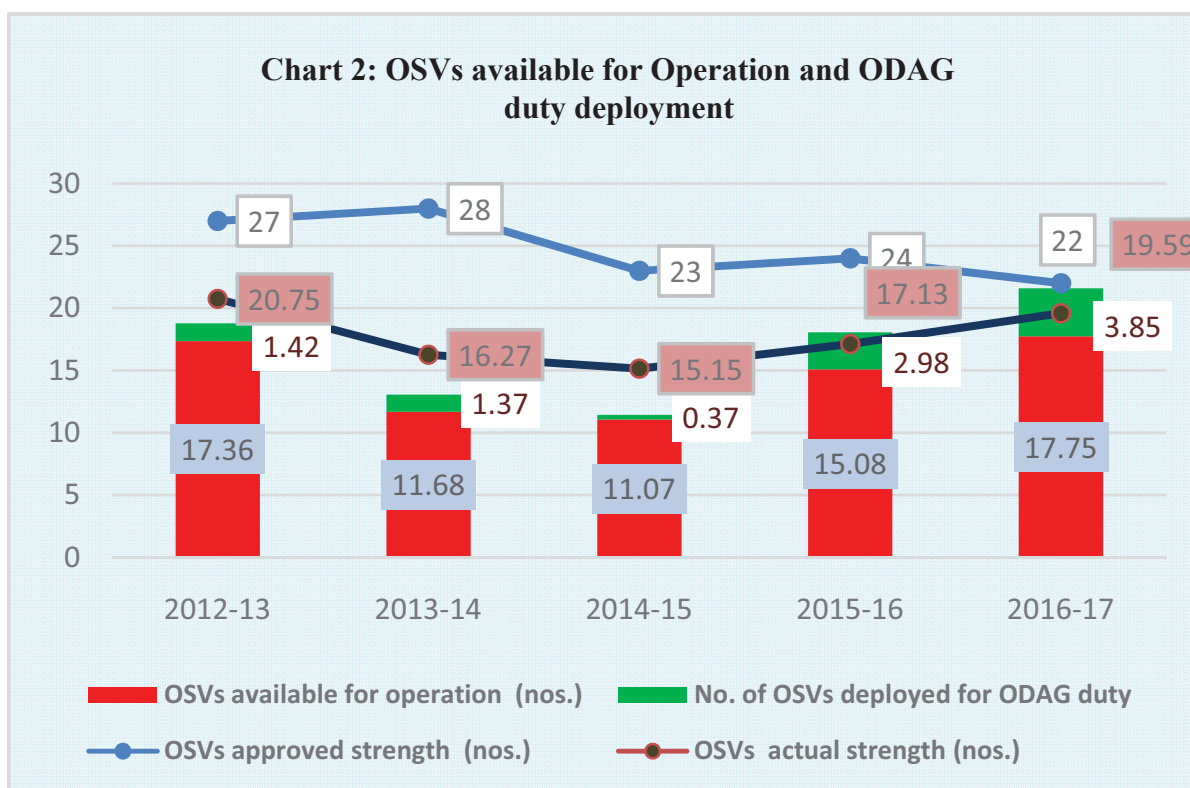
Audit observed that the actual strength of OSVs was lower than the approved strength during the entire period. The actual AHTS strength was higher from 2014-15 to 2016-17, while PSVs actual strength was higher in 2016-17. Audit observed that the shortfall in the strength of OSVs was due to the following factors:

- The Company did not consider extra downtime of owned Samudrika series OSVs (all vessels in this series have been disposed off) and the extension of time granted to Pipavav shipyard for delivery of new owned vessels while proposing the required number of OSVs for standby operations.

<sup>5</sup> Locations containing wells drilled to determine whether hydrocarbons are present in a particular area

<sup>6</sup> Locations where, drilling and related activities necessary to begin production of oil or natural gas are carried out, after discovery of hydrocarbons

<sup>7</sup> Manned offshore platforms where oil and gas from the wells are semi processed before dispatch to onland terminals



- OSVs were provided to Offshore Defence Advisory Group (ODAG<sup>8</sup>) since 2006-07 for patrolling offshore installations. The Company did not consider OSVs provided to ODAG, while calculating the number of OSVs required for standby duty, during the period from 2012-13 to 2015-16. This resulted in lesser availability of OSVs leading to shortfall of mandatory standby duty of vessels for offshore operations as indicated in **Chart 2**. In the absence of sufficient number of OSVs, the Company diverted costlier PSVs for standby duty. This has been discussed in the subsequent paragraph 3.2 and 5.2.

Management stated (September 2017) that shortfall in number of OSVs was due to uncertainty in delivery of new OSVs. It added that the OSVs were provided for ODAG not on regular basis but only during monsoon period when patrol boats/immediate support vessels (ISV) could not be operated. Ministry endorsed reply of Management.

Audit holds that the Company did not consider the higher downtime of old Samudrika series OSVs, revised delivery schedule of shipyard and requirement of OSVs by ODAG. The OSVs were being deployed for ODAG duty even outside the monsoon period. The Company also did not hire OSVs on nomination basis for short-term period to make good the shortage. During the Exit Conference with Ministry (October 2017), Management/Ministry accepted that requirements of vessels for ODAG duty would henceforth be accounted for, at the planning stage itself.

<sup>8</sup> Government constituted ODAG on 31st December 1983 to plan and advise GoI (MoPNG) and ONGC on threat perception and required security arrangement in the offshore regions

### 3.2 Increased cost of operations due to reduction in OSVs in place of PSVs

The Company decided (February 2016) to reduce the approved strength of vessels from the existing (June 2014) 75 to 70 based on the recommendation of an in-house committee constituted to review the requirement of vessels. In the proposal to further optimise resources, the vessel strength was further reduced by two PSVs for the period 2016-17 to 2020-21. Executive Committee (EC) however, approved (March 2016) reduction of two OSVs instead of two PSVs as the EC was of the view that the demand for offshore supplies had increased immediately after rig moves.

**Table 3.2: Vessel strength approved by Executive Committee**

Types of vessels	Vessels strength approved by EC in its 448 <sup>th</sup> meeting held in June 2014	Vessels strength proposed in 481 <sup>th</sup> EC meeting held in February 2016	Vessel strength approved by EC in 482 <sup>nd</sup> meeting held in March 2016
AHTS	26	26	25
OSV	25	24	22
PSV	24	20	20
<b>Total</b>	75	70	67

Audit observed that the decision to reduce OSVs in place of PSVs lacked justification as PSVs were costlier to hire than OSVs. Although the number of PSVs almost doubled from 10.69<sup>9</sup> (2012-13) to 20.48 (2016-17), the cargo carried by PSVs per voyage dropped significantly from 1210 MT (2012-13) to 790 MT (2016-17). The number of voyages per PSV per annum also showed decreasing trend from 62.64 voyages in 2013-14 to 39.21 during 2016-17. This was due to increase in the Turnaround Time (TAT) of PSVs both at the port and offshore. Further, Audit observed that there had been considerable increase in deployment of PSVs for standby duty i.e. from 3.33 (2012-13) to 7.74 PSVs (2016-17). The percentage of PSVs deployed for standby duty increased from 17.41 *per cent* in 2013-14 to 37.78 in 2016-17. This is likely to increase the cost of operation by ₹ 25.99 crore during the period 2016-17 to 2020-21 considering the difference in the charter hire rates of PSV with OSV.

Management stated (September 2017) that the proposal to assign two PSVs in place of two OSVs was based on operational requirements and not on the basis of economics.

Audit had observed deployment of more number of PSVs for standby duty (Para 5.2), increasing trend of TAT at offshore (Para 5.3), absence of vessel scheduling for supply of cargo (Para 5.1) and substantial quantum of undelivered bulk cargo (Para 5.5). Therefore, the decision to reduce OSV instead of PSV lacked justification on grounds of both economy and operational requirement.

<sup>9</sup> The decimal figure is due to availability of vessel for a partial period of the year

Ministry stated (December 2017) that Management would address the mismatch between PSV/OSV strength in future.

### **3.3 Non-consideration of annual drilling plan to review vessels requirement**

The Company assessed the long term requirement of vessels after obtaining inputs from various user groups<sup>10</sup>. Based on the inputs received, EC approved the fleet strength for a period of three years. Audit observed that though the annual drilling plan<sup>11</sup> of the Company was prepared before the commencement of the relevant financial year, the number of rigs planned to be deployed as per the drilling plan was not considered while determining the requirement of vessels. This resulted in deployment of disproportionate number of vessels as compared to the requirements as per annual drilling plan.

Management accepted (September 2017) the audit observation and stated that the annual drilling plan shall be considered while planning for deployment of vessels in future.

**Audit recommended that the vessel requirement be assessed based on the function to be carried out and the related cost, which needed to be reviewed linking the annual drilling plan to ensure its continued relevance.**

Ministry accepted the Audit recommendation.

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<sup>10</sup> *Assets for Offshore platforms and other installations and Drilling Services for Drilling Rigs requirement*

<sup>11</sup> *Annual Drilling Plan includes the name and number of rigs to be deployed at planned locations*

An OSV on standby duty



## Chapter 4: Acquisition and Hiring of Vessels

### 4.1 Acquisition of Vessels

The Company has adopted a business strategy of deploying mix fleet of owned and chartered vessels so as to avoid total dependency in charter vessels. It planned to acquire new OSVs to replace its own aged vessels. Considering the availability of vessels and the assessment of expected work load, the Company hired vessels from market, whenever required.

#### 4.1.1 Delay in acquisition of vessels

Out of 31 OSVs owned by the Company, 28 OSVs had completed<sup>12</sup> 20 years of economic life (determined by the Executive Committee) during the period from 2004 to 2007. Since total dependence on chartered vessels for supply and safety was not advisable from a strategic perspective, the Company proposed (August 2006) acquisition of 12 OSVs for replacement of old vessels in a phased manner. The Board of Directors approved (July 2007) the proposal at an estimated cost of ₹ 736.65 crore with a supply period of 42 months from the date of approval. Thus the building and supply of 12 OSVs was required to be completed by December 2010.

Audit observed that there was a delay of one year in inviting tenders and a further delay of 19 months in award of the contract. The Company awarded the contract (June 2009) for building of 12 OSVs to M/s Pipavav Shipyard Ltd (PSL) with scheduled delivery of all vessels by December 2011. Review of the contract indicated the following:

- As per tender requirement, the bidder was required to have at least five years' experience in building self-propelled ocean going vessels. M/s PSL did not possess the requisite minimum experience of five years. However, they were qualified at the bid opening on the basis of their technical collaboration with M/s Jurong Shipyard, Singapore, which had the requisite experience. The awarding of contract to an inexperienced contractor on sole basis of its technical collaboration with M/s Jurong led to abnormal delay in acquisition of the vessels.
- M/s PSL submitted the Memorandum of Understanding (MOU) with M/s Jurong, along with the bid. The MOU stated that it was valid for the period provided for in the Company's tender document and that if the tender was awarded to M/s PSL, a Definitive Agreement would be submitted within 30 days from the date thereof or as parties mutually agreed. As stated by the Company, the notarized agreement was submitted to the Company only on 01 February 2017.
- Delivery of the **12 OSVs** was to be completed within 30 months of the date of award of contract i.e. by December 2011 as per the agreement. Two vessels were first delivered

<sup>12</sup> Sindhu series vessels were acquired by the Company during the period 1984-87 and Samudrika series vessels during 1986 to 1993. Thus economic life of the Sindhu series vessels was completed during 2004-07 and Samudrika series during 2006 to 2013. EC gave approval for phasing out of all these old vessels in a phased manner and gave in principle approval for building of 12 OSVs in the first phase.



during February/March 2013, two during September 2013/March 2014 and another two vessels were delivered during August 2014/April 2015. M/s PSL sought (November 2015) extension of time upto October 2016, for delivery of the remaining six vessels. However, by December 2016, PSL could deliver only one vessel and on expiry of last extension (till 31 May 2018) for delivery of vessels, the Company terminated the contract in July 2018. Though the Company has invoked the bank guarantees (April/May 2018) amounting to USD 74.68 million (₹500.05 crore @ ₹66.95 per USD), the contractor has gone in for arbitration (March 2019) and the outcome is awaited. Audit noticed that the non-delivery of five vessels and delayed delivery of seven vessels adversely impacted operations since the Company had to utilise costlier Platform Supply Vessels (PSVs) for mandatory standby duty (Performed by OSVs) resulting in extra cost of logistic operation. This has been dealt with in Para 3.2 and Para 5.2.

Management stated (September 2017) that as per decision of the Board of Directors, the supply should have been completed by December 2010 and there was delay in execution of the contract by more than 6 years. Ministry did not offer any specific remarks on this issue.

During the Exit Conference (October 2017), Management stated that the Company has now strengthened the Bid Evaluation Criteria (BEC) relating to financial strength/ consortium to avoid recurrence of such events in future.

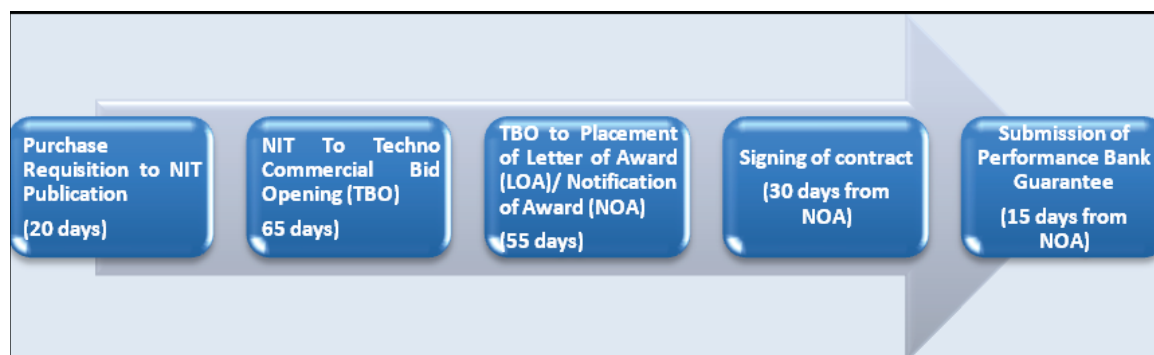
## 4.2 Hiring of vessels

Hiring of vessels was one of the methods adopted by the Company to address the shortage of vessels. The vessels were hired generally through International Competitive Bidding (ICB) on a long-term basis for a period of three to five years. During the period from 2012-13 to 2016-17, the Company awarded 134 contracts for chartering vessels through 26 different tenders. Review of the hiring process of vessels indicated the following:

### 4.2.1 Delay in finalization of tenders for hiring of vessels

The Integrated Materials Management (MM) Manual of ONGC prescribed a period of 165 days for processing of tenders as shown in the diagram below:

**Fig. 4.1 Time limits prescribed in MM Manual for processing of tenders**



The period from publication of Notice Inviting Tenders (NIT) to Notification of Award of Contract (NOA) was 120 days. Further, 20 days each were assigned for maximum two rounds of clarifications and five days for seeking approval of the concerned Director, wherever necessary.

Audit compared the actual time taken by the Company to complete the various stages of processing of the 134 contracts awarded under various tenders issued during the period from 2012-13 to 2016-17, with the normative period prescribed in the MM Manual. Delays were observed in the processing of these tenders as indicated in the table below:

**Table 4.1: Delay in finalization of tender**

Process	No. of contracts in which delay was observed	Prescribed Period as per MM Manual	Median delay (days)
Award of Contract	62	120 days from publication of NIT	39
Signing of Contract	97	30 days from date of issue of NOA	38
Submission of Performance Bank Guarantee (PBG)	15	15 days of placement of NOA	9

Of the above, in 13 contracts the delay in award of contract was more than 90 days and in eight contracts the delay in signing contracts was more than 90 days.

Management stated (September 2017) that all efforts would be made to finalise the tenders on time and that delay in submission of Performance Bank Guarantee (PBG) led to delay in signing of the contract. The delay in submission of PBG was not entirely within the control of the Company. Management also stated that it was difficult to cancel a contract on account of delayed submission of PBG when there was requirement for the vessel. Management, however, assured (May 2018) that all efforts would be made to ensure timely submission of PBG and timely signing of contracts. Ministry endorsed the reply of the Management.

#### **4.2.2 Sub-optimal performance of tanker hired on nomination basis leading to purchase of costlier High Flash High Speed Diesel (HFHSD)**

Company decided (July 2015) to procure HFHSD for supply to vessels/rigs in the Western Offshore, on waterfront delivery<sup>13</sup> basis for its twin tax advantages viz., payment of lesser tax of Central Sales Tax as compared to Value Added Tax and non-applicability of entry tax, as sale was transacted on waterfront without use of shorebase facilities.

It was necessary for the Company to hire a tanker and barge for this arrangement. But the

<sup>13</sup> Sale/purchase of HFHSD on the edge of a body of water, especially an ocean; wharf or dock section without use of shore base facilities.

Company took more than two years in finalizing the tender and as a result, the Company had to hire an oil tanker, B.C.Chatterjee, from Shipping Corporation of India (SCI) on nomination basis during the period November 2015 to December 2016. The hired oil tanker had defects in its engine, generator and boiler leading to frequent downtime. Jawaharlal Nehru Port Trust (JNPT) also intimated the Company that the tanker was not safe to be anchored in JNPT due to intermittent non-operation of its main engine and generator. Frequent failure of the tanker denied the Company the benefits of lower prices of HFHSD on water front basis as the Company had to procure HFHSD from Oil Marketing Companies (OMCs) at higher rates at an additional cost of ` 163.44 crore (incurring VAT and entry tax). The Company also incurred standby cost of ` 1.54 crore to chartered barge during the downtime of oil tanker (**Annexure II**).

Management stated (June/September 2017) that the oil tanker was not a routine vessel being hired by the Company and there were very few responses to the Expression of Interest (EOI). In the absence of other alternatives, the tanker from SCI was hired on nomination basis to save procurement cost of HFHSD from OMCs at higher costs. Ministry did not offer any specific response in this regard.

Audit holds that the Company had regularly hired oil tankers for storage and transportation of crude oil from Mumbai offshore fields during the period from 2007 to 2016. Besides, the EOI floated in September 2015 indicated that oil tankers of various capacities were available in the market. Had the company finalized the tender within the prescribed period, the need to hire the tanker on nomination basis would not have arisen.

#### **4.2.3 Non-deployment of two barges for supply of HFHSD**

The Company hired one barge to cater to the requirement of HFHSD sourced from Mangalore Refinery and Petrochemicals Limited (MRPL). However, a single barge alone was inadequate considering the barge loading time at Nhava Supply Base (NSB) and the voyage time between NSB and MRPL and back. At times, JNPT also instructed the Company to vacate the anchorage to accommodate other vessels on emergency. During this period, costlier HFHSD sourced from other OMCs, after payment of VAT and entry tax, was being supplied to vessels as single barge was not sufficient to meet the requirement.

In order to avoid sourcing of costly HFHSD from OMCs, the Company considered (August 2016) hiring of an additional barge for a period of two years. The Company assessed the savings from hiring additional barge at ` 11.83 crore per month. The proposal was approved by the Virtual Corporate Committee (VCC)<sup>14</sup> in December 2016.

Audit observed that the Company had sourced HFHSD from MRPL during the period 2006 to 2011 and deployed two barges for the transportation of HFHSD. In the present arrangement also, NSB had assessed the requirement of two barges. However, the indent was placed for engagement of only one barge. Non deployment of two barges, from initial stage itself resulted

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<sup>14</sup> VCC is constituted at work center level for taking decision for operational requirements

in foregoing potential savings of ` 307.58<sup>15</sup> crore from November 2015 to December 2017.

Management stated (June/September 2017) that transportation of HFHSD from MRPL through oil tanker and barge was done after a long gap. In the earlier arrangement also, two barges of combined capacity of 2500 KL were used and the system was working perfectly. Thus, it was considered prudent to hire a single barge of 2500 KL. However, during operations with more downtime of oil tanker B.C. Chatterjee, the need for a second barge was felt. Ministry did not offer any specific remarks on this issue.

Audit holds that even assuming that the performance of the SCI tanker was as per contractual requirement, deployment of one barge was not sufficient for efficient and economical operations.

In the updated reply after the exit conference, Management stated (May 2018) that the issue of deployment of two barges was rectified and second barge was also deployed with effect from January 2018.

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<sup>15</sup> ` 11.83 crore per month x 26 months (Contract Period November 2015 to December 2017)

A Platform Supply Vessel (PSV)



## Chapter 5: Deployment of Vessels

Optimum deployment of vessels (hired/owned) for earmarked duties is necessary for economic, efficient and effective operation of marine logistics. Audit analysed the deployment of vessels by the Company to assess whether the deployment was optimum. The audit findings are given in the succeeding paragraphs.

### 5.1 Non-implementation of recommendation on scheduling of vessels led to increase in the cost of logistic operation

The Company appointed (April 2011) M/s Peterson SBS Ltd, UK as Consultant to suggest the best method of scheduling the vessels to achieve optimum utilisation and economic operation. The Consultant observed that the existing system was not based on a fixed schedule, but was a reactive response to the demands from various duty stations. The Consultant concluded that in the absence of fixed schedule, the installations were not aware of the schedule of arrival of vessels and therefore, they were not in a position to discharge or backload<sup>16</sup> the cargo upon arrival of vessels. The Consultant recommended (September 2011) implementation of a fixed sailing schedule and division of offshore regions into smaller and more manageable regions (clusters). This recommendation was expected to reduce the turnaround time per voyage through reduction in number of visits and more centralised routings.

The Company assessed the requirement of vessels for the period after April 2012, based on the recommendations of the Consultant<sup>17</sup>. However, Audit observed that the Company had not implemented the fixed scheduling of vessels and continued with the practice of dispatching materials on the basis of daily requirements. Another Consultant, M/s McKinsey appointed by the Company<sup>18</sup> had also recommended (April 2016) fixed scheduling of vessels for delivery of materials to the rigs and platforms and suggested setting up a seven days 'look ahead' plan for optimizing the usage of vessels.

During each trip, PSVs visited multiple duty stations (installations/ rigs) to deliver cargo/ take backload. Average trips undertaken by the supply vessels were 1400 per year. Audit test checked the voyage report details to assess the number of times vessels visited the rigs during 2016-17, which is presented in Chart 3 below:

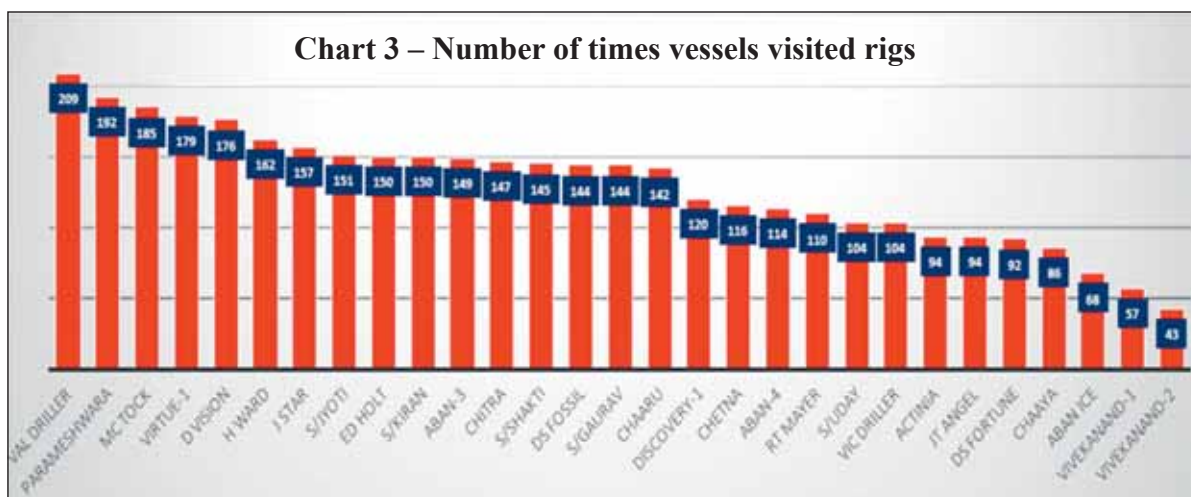
The number of visits of vessels per offshore rig per week ranged from 1.56 to 4.01 for 29 rigs with an average of 2.66. As compared to this, in the European waters where similar types of rigs are engaged, the average visit of vessels per rig per week<sup>19</sup> was 2 to 2.50. The trips operated by ONGC in excess of the standard prescribed for rigs in European waters were 523 as given

<sup>16</sup> Backload means undelivered cargo, scrap brought back by vessels from offshore duty stations to shorebase

<sup>17</sup> The Consultant had worked out a requirement for 2011-12 at 66 vessels for 47 duty points (34 Rigs and 13 Platforms) in Western Offshore

<sup>18</sup> The Consultant was engaged for improving 'Operational Efficiency and Cost Optimization for ONGC' in April 2016

<sup>19</sup> M/s. Peterson SBS Consultant report



in **Annexure-III**. The indicative cost to the Company of these trips for the year 2016-17, considering the day rates of PSVs and the cost of HFHSD supplied by the Company for these additional trips was ` 376.10 crore as given in **Annexure- IV**.

The rigs have an inbuilt capacity for storing fuel and water. The storage capacity should have been considered while fixing the quantity of fuel and water to be supplied by each vessel. Audit assessed the requirement of vessel visits considering the fuel quantity that could be stored by rigs. Audit observed that against 301 visits required, the actual number of visits to deliver fuel was 2,875 in the year 2016-17. The details are at **Annexure- V**.

Management stated (June/September 2017) that cluster-wise clubbing of cargo was already in place<sup>20</sup> and that the Non-Productive Time (NPT) had reduced significantly. The vessels were also assigned duties for inter-field transfer of tools, delivery of potable water, drill water, cement, barite<sup>21</sup> and HFHSD. These transfers and deliveries, which were not one-time jobs, increased the visits of vessels to the rigs/platforms.

Audit further observed that the scope of clusters mentioned by the Company consisted of fields<sup>22</sup> whereas the ‘cluster’ as per the Consultant’s report comprised process platforms and drilling rigs. Management’s reply was silent on non-implementation of fixed scheduling of vessels as recommended by the Consultant. There was increase in duration of non-productive time of rigs from 39 days in 2015-16 to 224 days in 2016-17. Further, test check of voyage reports for the quarter April-June 2015 indicated that instances of transfer of bulk cargo from one rig to another were rare.

**Audit recommended that Management may introduce fixed scheduling of vessels and improve the planning for prompt delivery of required cargo in coordination with the duty stations/users, thereby avoiding redundant vessel trips.**

<sup>20</sup> like MH North Cluster, MH South Cluster and D1 cluster, Tapti Cluster, B& S Cluster involving BLQ I and II and B 193, Neelam and Heera Cluster and D1 cluster, Porbander Cluster

<sup>21</sup> Barite is a mineral commonly used as a weighing agent for drilling fluids

<sup>22</sup> Geographical area having a number of producing oil/gas wells and offshore installations

During exit conference (March 2018) with Ministry/Company, Management stated that Offshore Logistics Management (OLM) software was being implemented as part of the SAP system. A Committee was formed to examine the vessel scheduling software and its implementation which would take care of vessel scheduling requirements.

## 5.2 Deployment of Platform Supply Vessels (PSVs) for standby duty

PSVs are specifically designed to supply cargo to drilling rigs and offshore platforms. OSVs are primarily used for standby duty and occasionally for supply duties. PSVs are costlier to hire as compared to OSVs. The details of deployment of PSVs for various operations during the period 2012-13 to 2016-17 are given below.

**Table 5.1: Table showing the PSV deployment hours for various operations**

Year	Standby duty		Supply duty		Duty with Modular Rigs <sup>23</sup>		Downtime		Total	
	No. of PSVs <sup>^</sup>	Percentage of deployment	No. of PSVs	Percentage of deployment	No. of PSVs	Percentage of deployment	No. of PSVs	Percentage of deployment	No. of PSVs	Percentage of deployment
2012-13	3.33	31.17	6.45	60.26	0.31	2.94	0.60	5.62	10.69	100
2013-14	1.69	17.41	6.01	62.04	1.67	17.26	0.36	3.30	9.73	100
2014-15	3.52	25.51	8.32	60.21	1.00	7.24	0.97	7.04	13.81	100
2015-16	7.99	36.80	12.16	56.02	0.63	2.91	0.93	4.27	21.71	100
2016-17	7.74	37.78	11.28	55.06	0.00	0.00	1.47	7.16	20.48	100

Source: Annual report of Nhava Supply Base;

<sup>^</sup>Number of vessels is in fractions due to their partial availability in a particular year.

PSVs are specially designed to supply cargo to offshore installations/rigs. The Consultant, M/s Peterson SBS, had recommended (September 2011) that all standby support should be provided by OSV vessels thus making the PSVs available for supply duty. It was observed that though the availability of PSVs increased from 10.69 (2012-13) to 21.71 (2015-16), the supply duty hours declined from 62.04 *per cent* (2013-14) to 55.06 *per cent* (2016-17). The cargo loaded remained stagnant during 2012-13 to 2015-16 with less than 10 *per cent* variance.

Audit observed that the standby duty hours of PSVs increased from 17.14 *per cent* in 2013-14 to 37.78 *per cent* in 2016-17. However, as observed from the Annual report of NSB, the utilisation of other type of vessels (OSV/AHTS) for standby duty varied from 87.05 *per cent* of total available hours of vessels in 2012-13 to 74.15 *per cent* in 2016-17. Considering the difference in charter hire day rates of PSVs and OSVs, Audit observed that the extra cost of logistic operations to the Company due to deployment of PSVs for standby duty during 2012-13 to 2016-17 was ₹181.72 crore (**Annexure VI**). Audit also observed that the Company incurred idle rig cost of ₹395.28<sup>24</sup> crore during 2012-13 to 2016-17 for want of logistic and materials even while it deployed PSVs for standby duty.

<sup>23</sup> Compact and light weight rigs mainly used for work over operations for offshore area

<sup>24</sup> Details of idle rig cost (for want of logistics support) charged to Profit and Loss account – data furnished by the Company



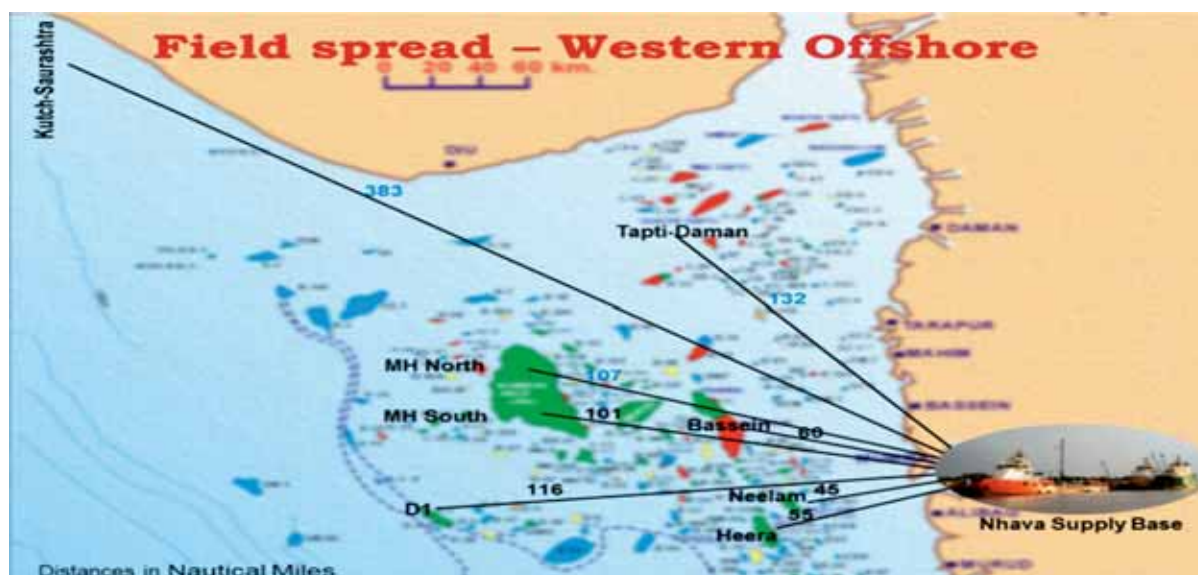
Management stated (September 2017) that standby function was an important one and availability of a vessel at all times was more important than the kind of vessel deployed. Management, however, assured that remedial steps would be taken by assigning OSVs for standby duty.

**Audit recommended deploying PSVs for supply duty in place of OSVs as the latter are better suited for standby duty.**

Ministry accepted the Audit recommendation and stated (December 2017) that the mismatch between PSVs and OSVs would be addressed in future.

### 5.3 Higher Turnaround Time of vessels at Western Offshore

Turnaround Time (TAT) of vessels at offshore is the time taken by the vessel for one trip commencing from sailing of vessel from port after loading of cargo to the return of vessel at port after delivery of cargo to the installations. The field spread of western offshore which is served by vessels from Nhava Supply Base is as below:



The required TAT at various hydrocarbon fields as assessed by the Company is as under:

**Table 5.2: TAT norm of vessels at offshore of the year 2016-17**

Area/field	Distance from NSB (in nautical miles)	Turnaround time for one trip based on Company's assessment (in hours)	Average TAT at Port (in hours)	TAT at offshore (derived) (in hours)	TAT at offshore (in days)
A	B	C	D	E=C-D	E/24
Tapti	132	83.78	15.58	68.2	2.84
Kutch	383	150.71	15.58	135.13	5.63
Bombay High North (BHN)	107	77.11	15.58	61.53	2.56
BHS, Neelam & Heera, Bassein & Satellite , D-1	80	61.43	15.58	45.85	1.91

Source: Extract of ONGC Executive Committee Agenda

The actual TAT taken by PSVs as against the required TAT at offshore assessed by the Company during the period 2012-13 to 2016-17 is tabulated below:

**Table 5.3: Actual TAT of Platform Supply Vessels at offshore**

Particulars	Required TAT based on Company's assessment	Actual TAT				
		2012-13	2013-14	2014-15	2015-16	2016-17
Average TAT in days	1.91 to 5.63	7.68	5.08	6.08	8.04	8.23

Source: Monthly Reports of NSB

The actual TAT of PSVs at offshore was higher than the required TAT assessed by the Company and showed an increasing trend. Audit observed that the main reason for the higher TAT was utilization of PSVs for standby duties and excess trips of PSVs due to non-implementation of the system of fixed scheduling of vessels as already pointed out in paragraphs 5.2 and 5.1 respectively. The standby duty as percentage of total PSV deployment hours is indicated below:

**Table 5.4: PSV standby duty as percentage of PSV deployment hours**

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17
PSV standby duty as a percentage of total PSV deployment hours	31.17	17.41	25.51	36.80	37.78

Source: Annual Report of NSB

Ministry stated (December 2017) that ONGC had assured that the mismatch between PSV/OSV would be addressed in future tenders. During Exit Conference with Ministry (March 2018) Management stated that Offshore Logistics Management (OLM) software was being implemented as part of SAP system. A committee was formed to examine vessel scheduling software and its implementation which would take care of the vessel scheduling requirements.

#### 5.4 Sub-optimum utilization of deck cargo space of Platform Supply Vessels

The Company hired PSVs exclusively for cargo supply duty. The tenders for PSVs prescribed a minimum clear deck space area of 500 square meters for carrying deck cargo. The operator was required to mention in their bid, the actual clear deck space area of their contracted vessel as against the minimum requirements in the tender. Review of deck cargo utilization indicated the following:

##### 5.4.1 Western Offshore

The utilization of deck space is entered in the voyage reports by NSB. Audit reviewed the voyage reports on test check basis for the month of May 2015. It was observed that, as against the deck space mentioned in the contract document, NSB adopted a lesser clear deck space area in ten out of 22 PSVs deployed during that month. Out of these ten vessels, in four cases, the deck space was lesser than the eligibility criteria of 500 sq.mt.

This resulted in the voyage reports indicating a higher utilisation of deck space than the actual. Audit observed that if deck space specified in the bid by the bidder had been considered, the actual utilization of deck space would have been lower than the utilisation reported by NSB in their voyage reports and adopted for evaluation of performance of Offshore Logistics Group (OLG). NSB invariably showed 100 *per cent* utilization of deck cargo space. The Company informed that the deck space planning was done by Tally clerk (under stevedoring contract) with Master of the vessels and was dependant on the requirements on that particular day.

Audit also observed that the Consultants, M/s. Asian Supply Base (June 2006) and Peterson SBS (September 2011), had suggested containerization and utilization of Cargo Carrying Units (CCUs) for improved deck space utilization, quicker vessel loading/ unloading and for safe operations. In a meeting chaired by the Chairman & Managing Director (CMD) of the Company (January 2015), Director (Offshore) had opined that CCUs had to be utilized for sending material from NSB, as was being used by private contractors like Schlumberger, Sundowner who were also sending their material from NSB. However, the Company was not utilising CCUs.

Management did not offer (June/September 2017) any comment on the audit observations on reckoning of lower deck space area than specified by the operator in the contract. It stated that while loading plan was finalised by scheduling personnel of logistics group of the Company, the deck-map for loading of cargo was given by master of the vessel to Tally clerk who supervised the loading of vessels.

The reply is not acceptable since deck map prepared by the Master of the vessel and adhered to by the Tally clerk did not result in optimum utilisation of deck space.

#### **5.4.2 Eastern Offshore**

The utilization of deck space in KSB was measured in terms of weight of cargo i.e. tonnage. Audit observed that the average deck cargo loaded per voyage as against the deck capacity (MT) on two chartered PSVs in Eastern Offshore viz. SCI Nalanda (February 2014 to January 2016) and Lewek Altair (March 2015 to March 2017) was only 9.81 and 7.98 *per cent* respectively.

Management (July and September 2017) stated that when a vessel is loaded with bulk cargo, it could not avail maximum deck capacity in terms of weight. The parameter for optimum utilization of deck is space and not weight, since deck cargo is generally of lesser weight but occupied more space. Information on deck space utilization was available in the Daily Progress Report (DPR) of vessel and most often the deck space utilization was 90 to 100 *per cent*.

Management's contention about deck space utilisation of 90 to 100 *per cent* based on vessel DPR would have been acceptable had the DPR recorded the deck space utilisation at the end of each loading. But, it is done at a particular point of time and not necessarily at the end of loading.

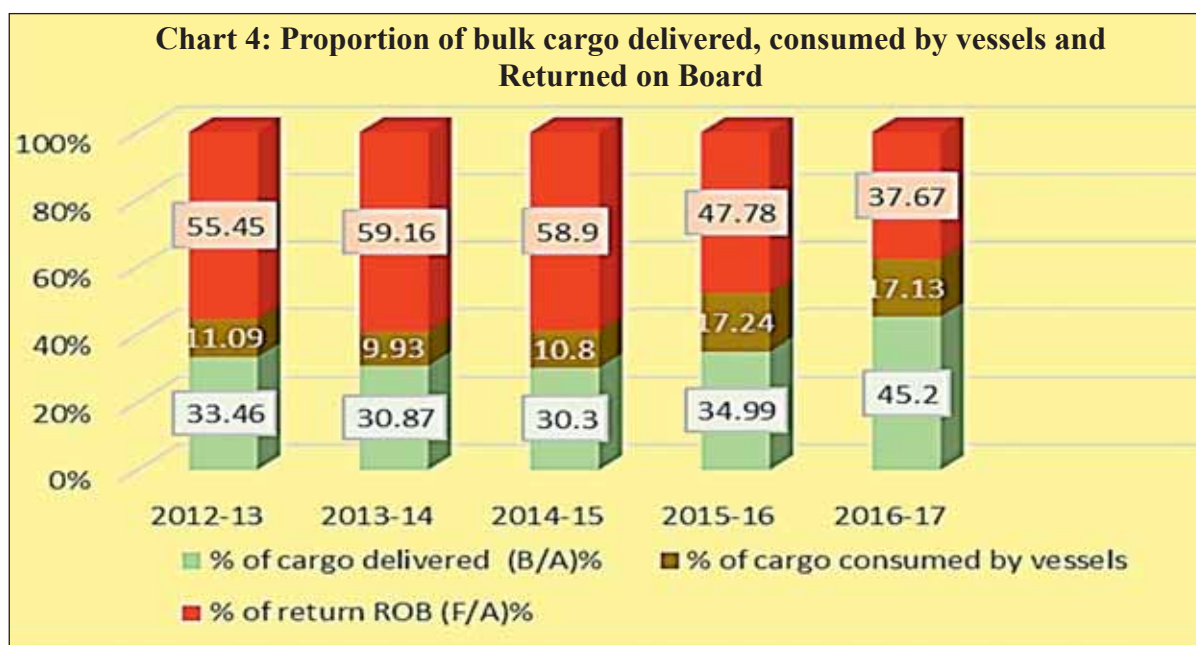
With regard to Para 5.4.1 and 5.4.2 Audit recommended:

- **Use of CCUs for optimum deck space utilization may be considered. Deck space to be provided as per conditions of the contract should be reckoned for certification of deck space utilization and the certification should be done by the officials of the Company to make it more effective.**
- **To implement systems to ensure that both tonnage and deck space are taken into consideration while measuring the utilisation of the vessels and use of deck cargo planning software.**

Ministry accepted the Audit recommendations.

### 5.5 Undelivered bulk cargo

Apart from deck cargo, the vessels also carry bulk cargo which comprises HFHSD, potable water, drill water, cement and barites, Synthetic Oil Base Mud (SOBM) and base oil. Undelivered cargo is returned as ‘Remained on Board’ (ROB). The existence of substantial ROB cargo was commented in Para 4.1.7.4 of CAG report No. 4 of 2002 and Para 2.3.2 (viii) of CAG report No. 6 of 2005. It was pointed out in these Reports that 36 to 58 *per cent* of bulk cargo loaded into the vessels were returned to NSB. In response, Ministry had stated (December 2003) that barites and cement were not regular consumables like fuel and water and hence it was not possible to ascertain the average monthly or daily requirement at a particular installation. Further, Ministry stated (December 2004) that as per industry practice the stability of vessel was maintained by cargo and hence the entire cargo could not be delivered.



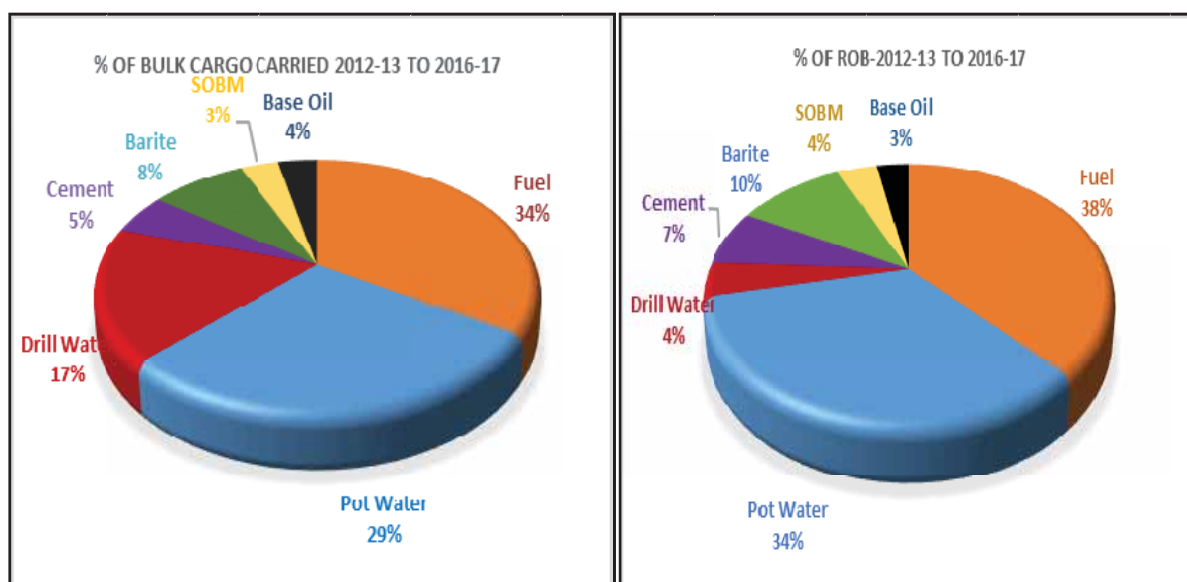
Analysis of undelivered quantity of bulk cargo (2012-13 to 2016-17) in audit revealed that out of every 100 tons of bulk cargo sent from NSB, an average of 35 *per cent* was delivered to installations, 13 *per cent* of total bulk cargo carried comprising of water and fuel was consumed

by the vessels and the remaining 52 *per cent* of bulk cargo carried was brought back to NSB as ROB as indicated in **Chart 4**.

Audit observed that bulk cargo was loaded onto the vessels irrespective of its requirement at the installations which the vessel was slated to visit during a particular voyage. This resulted in non-delivery of substantial bulk cargo. M/s Peterson, UK, the Consultants, engaged (April 2011) by the Company to study the ‘Optimization of OSV fleet strength and Supply Chain Management’ confirmed (September 2011) that all vessels were being loaded with bulk cargo up to 90 *per cent* where possible and that substantial part of the bulk cargo carried by supply vessels comprised of back and forth movement of bulk ROB. Thus, the excess loading of bulk cargo on vessels led to longer TAT at port and higher fuel consumption during voyage.

During 2012-13 to 2016-17, more than 60 *per cent* of fuel and potable water carried by vessels was ROB after adjustment for consumption by vessels. The undelivered cargo of cement and barite was to the extent of 70 *per cent* and 64 *per cent* respectively.

**Chart 5: Percentage of Bulk cargo carried and ROB from 2012-13 to 2016-17**



The value of stock of fuel in the vessels as on 31 March 2017 was ₹ 64.49 crore. Audit also observed that bulk cargo remaining in the vessels was not considered while planning the procurement of materials.

Management stated (June/September 2017) that bulk cargo was loaded as per the capacity of the vessel, loading berth available at jetty, stability and requirements of the field for which next voyage of the vessel had been planned. The vessels also carried some un-pumpable quantity that remained in the vessel always. The vessels also consumed water and HFHSD for remaining operations and the cargo continued to remain in the vessels on returning to the base. It further stated that efforts were being made to dispatch the bulk quantity nearer to actual requirement and minimize the ROB. As a result, ROB had reduced to 38 *per cent* in 2016-17 from 56 *per cent* in 2012-13 and hoped that it would be reduced further.

Audit noted that the substantial ROB of bulk material, particularly fuel and water, indicated that loading of bulk cargo in the vessels was in excess of the requirement at the installations. There was also wide variation in the quantity of undelivered cargo (ROB) of same vessel and also between vessels of similar capacities. The justification on the basis of the need for stability of vessels as stated by Ministry was not correct since vessels were designed to maintain stability even without any cargo on board. Ballast water in general is used to maintain stability in the absence of cargo. The reduction in percentage of ROB during the period from 2015-16 to 2016-17 was mainly due to reduction in bulk cargo carried by the vessels and increased consumption of fuel and water by vessels.

**Audit recommended that loading of bulk cargo be restricted to field requirements and to meet consumption by the vessel so as to avoid unproductive carriage of ROB, reduce TAT of vessels at port and reduce fuel consumption.**

Ministry accepted the Audit recommendation and advised (December 2017) the Company to prepare Standard Operating Procedure (SOP) for supply of material for offshore operations and ensure implementation thereof.

#### **5.6 Higher downtime of new vessels operated on nomination basis through SCI**

The Company did not have a separate marine cadre and therefore, the Company operated its own vessels through O&M contract. Pending finalization of a long-term contract, the Company awarded O&M contract to SCI on a short-term nomination basis. Seven of the own vessels delivered during 2013-14 to 2016-17 were under O&M contract with SCI.

Audit observed from the Annual reports of NSB, that the downtime of these seven new vessels was higher than that of the old chartered vessels, mainly due to operational breakdowns. Further, the cost plus contract entered into with SCI on nomination basis did not provide for performance linked penalties. In the absence of such penalty clause in the contract, it was not possible to enforce the O&M contractor to ensure availability of vessels. SCI deployed their own employees as crew for their fleet on charter with the Company while the temporary/contractor's crew were deployed for the ONGC's vessels under SCI's O&M contract leading to lower availability of vessels. The Consultant (i-maritime) appointed by the Company had also recommended (March 2014) that the Company may develop a core team of marine professionals to develop vessel related competency and to supervise the quality of service provided by the O&M contractors.

Delay in arranging spares in advance by SCI also resulted in more time taken for vessel repairs. As per regulatory requirements, even when the vessels are in anchorage for repairs, etc. they are required to be manned and all the running equipment were to be maintained for operation. The excess downtime of new vessels as compared to chartered AHTS, OSV and PSV resulted in extra expenditure on 'standing cost of vessels' by ₹7.36 crore during 2013-14 to 2016-17.

Management attributed (June/September 2017) this to the teething problems of new vessels during 2013 to 2016 and SCI's inability to employ permanent crew due to the limited contract period. It assured that induction of new people to strengthen Repairs and Maintenance section was in progress and the performance was likely to improve progressively.

Management reply needs to be viewed in the light of the fact that the downtime of new vessels (16 per cent<sup>25</sup>) was higher than that of the chartered vessels (11 per cent) even after lapse of more than three to four years after induction. A technical audit<sup>26</sup> of new vessels pointed out failure to monitor equipment conditions as per schedule and non-adherence to preventive maintenance schedule by the O&M operator. The Company was unable to finalize a long-term contract for O&M of owned vessels even after ten years of operations of such vessels.

### **5.7 Non-monitoring of HFHSD consumption by vessels**

The Company supplied HFHSD free of cost to hired vessels without imposing any ceiling for their consumption. The indicative cost of HFHSD consumed by both the owned and chartered vessels during one year (2016-17) amounted to ₹642 crore. In case of hired PSVs, the fuel consumption amounted to 53 per cent of the hiring cost.

Audit observed wide variation in consumption of HFHSD by similar type of hired and owned vessels deployed for similar types of duties. The consumption of hired OSVs at 6.69 KL per day was higher than that of owned OSVs at 1.91 KL to 4.47 KL per day. While the variance could be attributed to difference in engine power and brake horse power capacities (BHP), Audit observed that no analysis of consumption of HFHSD by the vessels was carried out while evaluating the bids for hiring of vessels. Further, the Company did not record actual consumption of HFHSD, but arrived at the consumption figures by deducting from fuel loaded on the vessel at the time of commencement of voyage, the fuel delivered to installations plus fuel remaining on Board. This system of accounting prevented proper assessment of the fuel efficiency of vessels.

Further, the Company provided HFHSD free of cost to the vessels even during compensable<sup>27</sup> downtime. Audit observed that during the audit period (2012-13 to 2016-17) there was wide variation in fuel consumption ranging from 0.54 KL/day to 7.18 KL/day<sup>28</sup> during the compensable downtime.

In the past (2006/2009), external Consultants/Auditors<sup>29</sup> had suggested fuel consumption norms for different types of operation and maintenance of vessels. They further suggested carrying out periodic monitoring of fuel consumption, identifying reasons for abnormal consumption pattern and formulating remedial action plan.

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<sup>25</sup> As per Annual report of Nhava Supply Base

<sup>26</sup> Technical audit carried out by Company once in two years to assess the status of health of equipments and systems of the vessels

<sup>27</sup> According to the contract provisions, one day in a month is allowed as compensable down time during which the vessel is eligible for payment of charter day rates.

<sup>28</sup> Observed during test check at Eastern Offshore

<sup>29</sup> M/s. PCRA and M/s E&Y

Management stated (July/September 2017) that owned vessels were engaged predominantly on standby duties for longer spells and also for duties with Offshore Defence Advisory Group (ODAG). Ministry stated (December 2017) that the Company had agreed to do away with supply of HSHFD during downtime of the vessels.

**Audit recommended that cost and consumption pattern of HFHSD by the vessels be included as a parameter in evaluation of the bids for hiring of vessels to protect Company's financial interest.**

During the exit conference (March 2018), Ministry/Management accepted the Audit recommendation and stated the same would be implemented on pilot basis and based on the outcome, would be extended to all vessels.

### 5.8 Idling of rigs due to lack of Offshore Logistics Support

Audit observed that the Company could not mobilize requisite number of vessels in the Eastern Offshore during the period from 2012-13 to 2014-15. The ratio of number of vessels engaged to number of rigs was low at 1.24, 1.01 and 1.15 during the years 2012-13, 2014-15 and 2016-17, respectively vis-à-vis the norm of 1.4 vessels per duty station. The downtime of vessels during the years 2012-13, 2014-15 and 2016-17 at 7.82 per cent, 7.80 per cent and 8.33 per cent respectively was higher than the normal period of 5.11 per cent allowed under the Charter Party<sup>30</sup>. Further, the owned and chartered rigs operating in Eastern Offshore waited for vessels for a period of 2053.01 hours during the five years from 2012 to 2017 (the owned rigs waited for 496.67 hours and chartered rigs for 1556.34 hours). This resulted in idle hire-charges of chartered rigs amounting to ₹30.84 crore.

Management stated (July and September 2017) that requisite vessels could not be hired in initial years due to absence of age criteria for vessels and situation had improved with introduction of 21 years as age criteria in 2014-15. Further, the Company proposed to enter into a Service Level Agreement (SLA) with the Asset<sup>31</sup> as marine operations at Eastern offshore area was poised to increase. During the Exit Conference (October 2017), the Company stated that it would enter into SLAs with all users.

<sup>30</sup> One day per month which can be accumulated upto 6 days in a half year and 20 days dry-dock period in span of three years.

<sup>31</sup> Business unit that is involved in production of oil & natural gas from the existing wells and transportation of oil and gas for processing and supply to consumer.



**An Anchor Handling Tug cum Supply Vessel (AHTS)**



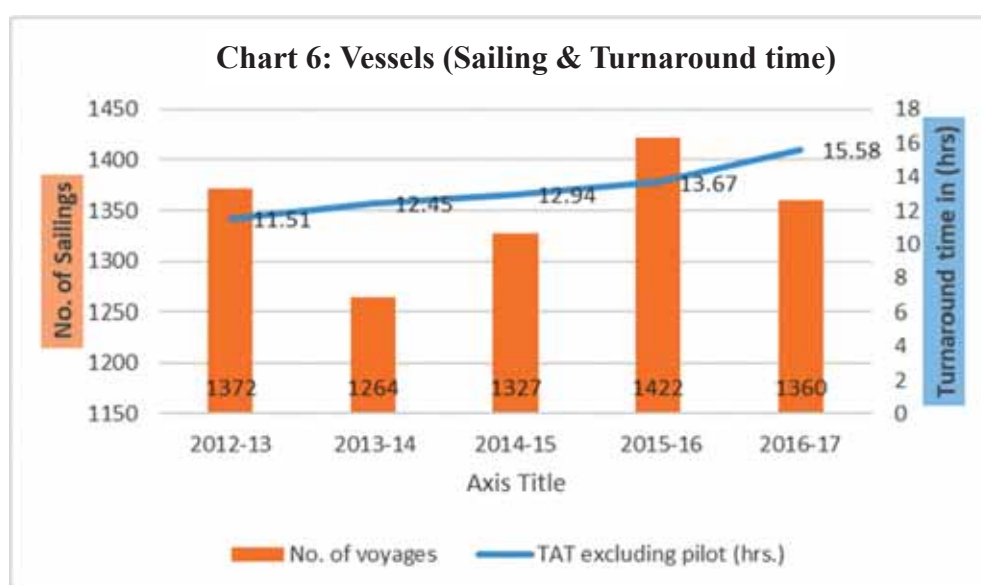
## Chapter 6: Supply Base Management

The supply base of the Company functions both as central warehouse and forward base for supplying cargo to offshore installations (rigs, platforms). Efficient operation of the supply base is necessary for effective and timely supplies to support production/drilling operations, optimum utilization of vessels and optimum inventory management. Audit analysis of the operations of Nhava Supply Base (NSB) and Kakinada Supply Base (KSB) indicated the following:

### 6.1 Turnaround Time (TAT) of vessels at base

#### 6.1.1 Extra expenditure on excess Turnaround Time of vessels at NSB

The global benchmark for TAT<sup>32</sup> at a base was four to six hours<sup>33</sup>. The TAT of vessel (owned/hired) being operated at NSB during the period 2012-13 to 2016-17 is presented in the Chart given below:



It may be seen from the chart that the TAT of vessels at NSB increased from 11.51 hours in 2012-13 to 15.58 hours in 2016-17. The number of voyages, however, varied during the period with the number peaking at 1,422 in 2015-16.

The extra operational cost incurred by the Company during the period from 2012-13 to 2016-17 due to failure in achieving global benchmark of six hours for TAT was assessed in audit at ₹154.63 crore. The details are at **Annexure VIIA**.

During 2012-13 to 2016-17, out of total five jetties, only 3-4 jetties were actually used for loading the cargo and of these, only two jetties were effectively used for loading cement and barite. The jetties were choked by backload and scrap materials affecting the vessel loading/

<sup>32</sup> Turnaround time (TAT) of vessels is the time taken by a vessel at a supply base/port to unload material and load and move out including pilotage requirement, if any

<sup>33</sup> Source: EC agenda (June 2015)

unloading process. NSB was also facing various constraints like shortage of space for material storage, shortage of material handling equipment and of skilled manpower.

### NSB Jetty



Management stated (May/September 2017) that steps were being taken to upgrade the infrastructure for better coordination and supervision and better results. Fair wage policy was being implemented to motivate workers and to reduce the TAT. Ministry stated (December 2017) that the Company has agreed to take measures to improve the turnaround time.

Management/ Ministry response needs to be seen in conjunction with the upgradation of NSB which is discussed in detail in subsequent Para 6.2.

### 6.1.2 Turnaround Time at KSB

Audit observed that TAT of vessels at KSB was higher than the global benchmark of four to six hours which resulted in an extra expenditure of ₹ 27.15 crore. The details are at Annexure VIIB.

Management attributed (July/September/October 2017) the reasons for high TAT at KSB to lack of automation in Kakinada Deep Water port in line with foreign ports/yards, supply of material by service contractor directly from their premises situated outside the port, longer time taken in loading vessels with maximum possible Potable and Drill water, loading and unloading of Synthetic Oil Based Mud (SOBM)



and Barites being done at a separate jetty and the need to give vessels call per rig priority over TAT as company hired vessels on time charter.

The reply has to be seen in the context of the fact that bulk handling plant was operated and maintained by a private contractor and agreement with the contractor provided for a minimum of eight hours shift to load 100 MT while the global benchmark for TAT was six hours.

**Audit recommended that the Company may take steps, within the framework of agreement with M/s. Kakinada Seaports Limited (KSPL) to reduce the Turnaround Time at KSB by optimising operations.**

Ministry accepted the Audit recommendation and stated (December 2017) that Company has agreed to take measures to improve the TAT at KSB for optimum utilization of vessels.

## 6.2 Delay in Upgradation of NSB as well as in setting up alternate supply base



NSB was established as a shorebase facility and was operational from 1983. With increasing supply requirements in western offshore over the years, the space at NSB became insufficient. The Company had carried out various studies for upgradation and modernisation of NSB through international Consultants during 2005 and 2011 and an in-house committee in June 2010. The Consultants as well as in-house committee recommended

refurbishment of NSB to address the increasing supply requirements. In addition, the in-house committee also identified requirement of an alternate supply base to supplement the services from NSB.

The Company had also explored (February 2012) the possibilities of upgradation and operation of NSB through a PPP<sup>34</sup> project on 'Build and Operate' (BO) model, for a concession period of 15 years. The Company estimated a cost benefit of `262.87 crore from this proposal in manpower cost alone as compared to the cost of existing operational contracts. This proposal was approved (February 2012) by the Company. Drilling Services of the Company recommended (September 2013) setting up of an alternate supply base in the proximity of Gujarat coast to effect reduction in voyage duration, fuel consumption and vessel requirement, thereby leading to annual saving of `20 crore as compared to supply from NSB.

<sup>34</sup> Public Private Partnership

In this regard, Audit observed the following:

- Though the Company approved (February 2012) upgradation of NSB, no steps were initiated to upgrade NSB through a PPP project on BO model. Instead, NSB was executing upgradation works on an ad-hoc basis. These works consisted primarily of civil works like renovation/replacement of existing old structures based on perceived user requirement.
- The Company approved the proposal (July 2015) for hiring of alternate supply base and envisaged commencement of activities at the new supply base from February 2016. The Company floated NIT in March 2016 and pre-bid conference was held in April 2016. However, no further progress had been made till date (May 2018) in this regard. Thus, delay in setting up additional supply base resulted in foregoing potential savings of ₹ 41.75<sup>35</sup> crore (till May 2018) in logistics operation.

Management while accepting the facts, stated (May 2018) as follows:

- The upgradation was to be carried out in a phased manner and renovation of warehouses and upgradation of tubular storage were in progress. However, commensurate manpower was needed to accelerate the piecemeal upgradation.
- The present plan was to finalize additional base and move as much as 30 per cent operations to that base. Pre-bid minutes had been firmed up and the project was being monitored constantly to make up for past delays.

During the Exit Conference, Management accepted (October 2017) the delays and stated that once the alternative supply base was in place, the upgradation would be taken up in integrated manner.

Audit holds that fragile infrastructure and outdated systems at NSB resulted in higher cost of operations in NSB. Ad-hoc and piecemeal upgradation work without adopting an integrated approach as envisaged by the Consultants may not result in improvement in the efficiency of NSB/vessel operations. Moreover, delay in approving the pre-bid meeting minutes after a lapse of two years for a project requiring seven months for setting up, lacked justification as the Company continues to forego the savings it envisaged.

**Audit recommended that the Company may devise and implement an integrated upgradation plan for NSB in line with the international best practices and operate NSB as an integrated Material Management warehouse for all stakeholders, with single point responsibility for inventory management, and with a disposal policy in place to deal with backloads. The Company may also establish a Non-Destructive Testing facility to check material to be sent to offshore so that after receipt of backload, segregation and tagging of materials may be carried out for easy identification of stores.**

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<sup>35</sup> Savings of ₹ 20 crore per Annum worked out by company; 20 crore/12 (months)= ₹ 1.67 crore per month. Delay in hiring of alternate supply base (March 2016 to May 2018= 25 months); 1.67 X 25 = ₹ 41.75 crore

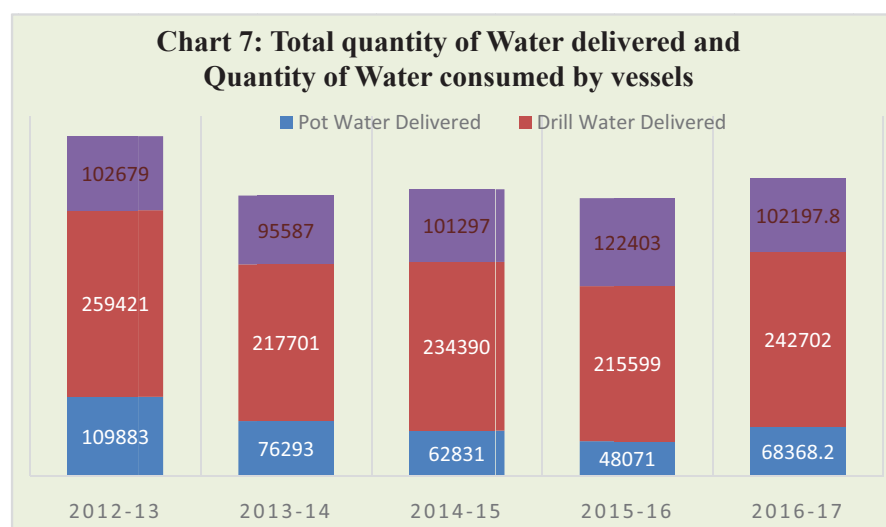
Ministry accepted the Audit recommendations and directed (December 2017) the Company to take necessary action in a time bound manner for modernization of NSB as per international standard and best practices including inventory management through relevant software.

### 6.3 Insufficient sourcing of water to NSB

Offshore operations of the Company require potable water for drinking purpose and drill water<sup>36</sup> for drilling operations. The proportion of water is around 42 *per cent* of the overall cargo carried in a vessel.

#### 6.3.1 Requirement of drilling and potable water

The Drill Water (DW) requirement was based on the drilling activity undertaken. The requirement of potable water (PW) depended on the number of Rigs/platforms and did not vary substantially from voyage to voyage. The details of water supplied to offshore installations are at **Annexure VIII**.



#### 6.3.2 Sourcing of drill and potable water at base

Maharashtra Industrial Development Corporation (MIDC) was supplying water to NSB through an 11 Km long pipeline laid by City Industrial Development Corporation (CIDCO) from Dastan Phata which was passing through villages of Gavan, Kopar and Nhava. The volume of water pumped from the source at Dastan Phata and the volume received at the NSB during the period from 2012-13 to 2016-17 is as given below:

<sup>36</sup> Drill Water is required for preparation of drilling fluid, or “mud”, is pumped down inside of the drill pipe and exits at the drill bit.

**Table 6.1: Details of water pumped from Dastan Phata and receipt at Nhava**  
(in cubic meter per annum)

Year	Volume pumped at Dastan Phata	Volume received at Nhava	Volume Sanctioned by MIDC for supply to NSB
2012-13	1775780	490206	920000
2013-14	1817131	494180	915000
2014-15	1855482	494010	915000
2015-16	1746876	353390	915000
2016-17	1862813	325230#	915000

Source: Data furnished by NSB

It may be seen from above table that the volume of water received at NSB is significantly lower than that pumped at Dastan Phata. This volume of water pumped from Dastan Phata reduced from 28 per cent in 2012-13 to 17 per cent in 2016-17. This was due to unauthorised tapping of the pipeline en-route by the villagers. Since MIDC levied charges on the quantity of water pumped at Dastan Phata with additional charges on water exceeding the average sanctioned quantity of 75,000 cubic meter per month, the Company had to pay ₹7.99 crore during 2012-2017 for water it could not utilise.

The Company observed (January 2017) that underground and overhead tanks constructed by Raigad Zila Parishad were also fed from this pipeline and that the matter was also brought to the notice of CIDCO, who were responsible for maintenance of the pipeline. However, no action was taken by CIDCO.

### 6.3.3 Availability of storage of water in tanks on land and in rigs

The storage capacity of tanks at NSB was sufficient to meet only a day's requirement. Stoppage of supply by MIDC/CIDCO beyond a day would critically impact the demand of water at NSB and would necessitate augmented supply through barges at higher cost. The Consultants, M/s Peterson SBS (2011) and M/s Royal Haskoning (2012), had recommended increasing the storage capacity from 3,600 MT to 5,000 MT. Audit observed that action in this regard was yet to be initiated by the Company (December 2017).

The tender conditions for hiring of rigs stipulated that minimum storage capacity of water for 15 days requirement should be available in all rigs. Compliance with this requirement would have necessitated supply of water to hired rigs through vessels, only once in 15 days. However, the frequency of vessel visits to supply water was observed to be twice in a week. Normally water was delivered by the vessels along with other bulk material. It was further observed that due to shortage in supply, voyages were undertaken multiple times a week exclusively to deliver water to the rigs/platforms. Audit test checked the voyage reports of vessels during one year (2015-16) and assessed the cost of the trips undertaken to deliver only water to the installations/rigs for the year 2015-16 at ₹ 22.34 crore<sup>37</sup>.

<sup>37</sup> Vessel day rate for loading at Nhava and cost of HFHSD for 1,857 excess trips at the rate of ₹ 1,20,311 per day

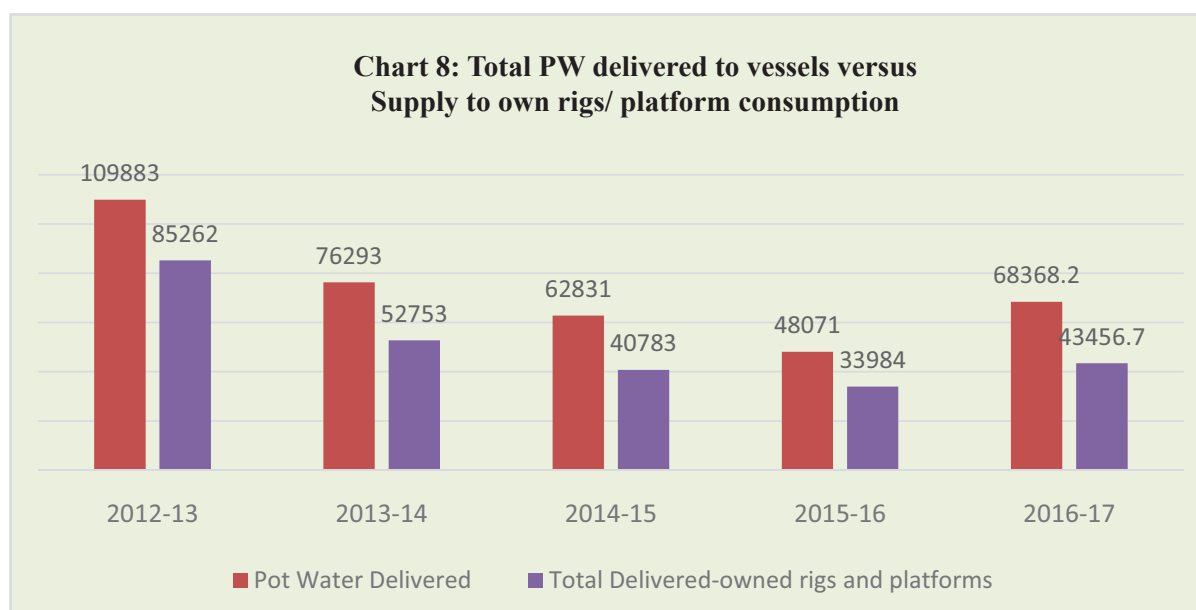
Management explained (October 2017) that such additional voyages were due to non-availability of sufficient quantity of water at NSB. However, Audit noted that optimum quantity which could be practically stored at the installations, were not delivered to them, thereby increasing the number of avoidable trips.

### 6.3.4 Impact of shortage of water on operations of the Company

The shortage of water was acute during the pre-monsoon summer months. The water requirement communicated by the rigs/platforms could not be met fully during this period and water supply was rationed based on availability. Consequently, preparation of mud required for drilling was affected and drilling work was disrupted. Audit observed that the idling time of the rigs, due to wait for supply of water increased from 137 hours in 2012-13 to 797 hours in 2016-17. It is pertinent to note that during the short period from 01 October 2015 to 08 November 2015 there were instances of idling of rigs for want of DW for a period of 173 hours (7.2 days). Considering the above, Audit observed that the rig waiting time cost the Company approximately ` 10.83 crore during 2015-16 calculated on the basis of rig hire cost without including the consequential delay/impact on operations.

### 6.3.5 Consumption of Pot water by rigs and platforms owned by ONGC

All the rigs/ platforms had provision for ‘water-makers’ onboard, which could produce PW. The chartered/hired rigs met almost their entire requirement of PW from the water-makers as PW supplied to them was chargeable. Audit observed that 64 to 78 per cent of PW supplied during the period from 2012-13 to 2016-17, was delivered to owned rigs deployed/platforms situated in Western Offshore. This was due to the fact that the water-makers were either not available onboard the owned rigs or their operational efficiency was low.





Non-functioning/ inadequacy of water-makers in own rigs/platforms of the Company had been highlighted in CAG Audit Report 4 of 2002 (Para 4.1.7.8), Report 6 of 2005 (Para 2.3.2 (vi)) and in the report on Performance and Utilization of Rigs in ONGC (Audit Report 39 of 2015 Para 6.3 A, B). It was brought out in these Reports that replacement of water-makers was overdue in six out of eight owned rigs, while it was insufficient in the other two rigs. The Company in its reply had stated (April 2015) that the water-makers were being procured. However, Audit observed (June 2017) that only two out of five owned rigs could produce sufficient water to meet their daily requirements. The Drill Ship 'Sagar Vijay' deployed on the Eastern Offshore did not have a water-maker on board. Non-availability of water-maker resulted in avoidable procurement of 88,942 MT of PW from Kakinada Seaports Limited (KSPL) resulting in additional expenditure of ₹2.28 crore.

#### **6.3.6 Return on Board of water by vessels**

Audit pointed out (Para 5.5) that 52 *per cent* of bulk cargo carried was brought back to NSB as undelivered cargo ROB. Audit further observed that, on an average, the ROB of PW was more than 90 MT per voyage even while the supply of water from NSB was insufficient to meet daily offshore requirement.

With regard to issues brought out in Paras 6.3.1 to 6.3.6, Management stated (June/ September 2017) that storage tank of 5000 MT as recommended by the Consultants would be provided through upgradation of existing old tanks and planning of optimum quantity of water to be delivered to each rig would be carried out in consultation with drilling services. With regard to water brought back as ROB, it was stated that vessel movement was prioritized on the basis of deck cargo. The proposal for laying new pipeline along the existing line with a single connection for each village was being finalised with CIDCO.

**Audit recommended that the Company may evaluate alternative options to ensure timely and adequate supply of water for offshore operations and operationalize the same at the earliest. Usage of water-makers onboard the own/chartered rigs may be ensured.**

Ministry accepted the Audit recommendation.

#### **6.4 Deficiencies in internal control procedures governing inventory management at shorebase**

The shorebase was responsible for receiving the goods procured by the Purchase department, storage and their issue to the user departments upon requests raised by them through Stock Transfer Orders (STO). The Information Consolidation for Efficiency (ICE) Department of the Company has laid down the procedure to be followed in SAP system for recording of material movement. This stipulated that goods (materials, parts etc) requirement is raised by the Offshore Platform/Rig in the SAP system and are delivered from the shorebase.

Audit observed the following deficiencies in internal control procedures relating to inventory management in operation at shorebase:

## 6.4.1 Western Offshore

### 6.4.1.1 Management of supply of bulk cargo

Bulk cargo supplied by NSB included cement, barite<sup>38</sup> and HFHSD. For sending material to offshore, the first step is the creation of Stock Transfer Order (STO) followed by authentication of delivery by the stock holder. Audit observed that during the period from April 2016 to January 2017, bulk cargo was delivered to installations/rigs without raising the STO through the SAP system in 730 cases.

As per the accounting system of the Company, consumption of material was to be booked against the particular rig/ platform only when it was utilized. Audit observed that upto November 2015, the quantity delivered to/acknowledged by the vessels carrying the material was considered as Goods Issued (GI) for accounting of consumption in SAP. There were significant mismatches between the quantity acknowledged by the vessels (transporters) as receipt and the quantity acknowledged by the rigs/platforms (users) as receipt. Test check conducted by Audit revealed that during the period from 2012-13 to 2015-16 (till November 2015), the discrepancy noticed in the quantity of fuel (HFHSD) handed over to the transporters and delivered to the users were to the tune of 274.082 KL valued at ₹1.5 crore. In December 2015, the Company modified the accounting procedure and GI was prepared only when the quantity acknowledged by the users matched with the quantity handed over to the transporters. Pending resolution of the despatch and receipt quantity, 8,138 KL of fuel valuing ₹ 42.39 crore (period 2014-16) was lying in Material in Transit (MIT) in the books of the Company.

Audit also observed that GI for 253 items of HFHSD, 115 items of cement and 362 items of barite were not generated during the period December 2015 to January 2017, pending dispute on the quantity delivered by vessel and quantity acknowledged by the rig/platform. Audit further observed (March 2017) that fuel valued at ₹ 8.69 crore continued to be accounted as MIT/ Material at Site (MAS) with the Tanker B.C. Chatterjee in the SAP system although the vessel was de-hired in January 2016. The reason for discrepancy was absence of STO or issue of wrong STO. Despite the fact that some of the rigs had been de-hired subsequently and some of the Work Breakdown Structure<sup>39</sup> (WBS) elements had been closed, consumption by these rigs/ WBS were yet to be accounted in the SAP system. This resulted in under-reporting of capital work in progress and consequent under capitalization of the assets and lower depreciation being charged to the Profit and Loss Account.

### 6.4.1.2 Deficiency in material management procedures relating to casing pipes, tubulars, drill stores, well head, Xmas tree<sup>40</sup> spares etc.

No material should be lying under MIT for more than the reasonable duration of transit and its accounting. Audit observed that material supplied to vessels in January 2005 continued to appear as MIT as on March 2017.

<sup>38</sup> Barite is a mineral commonly used as a weighing agent for drilling fluids

<sup>39</sup> Work Breakdown Structure is the process of subdividing project deliverables and project work into smaller, more manageable components as defined in the SAP ERP system.

<sup>40</sup> Xmas tree is a set of valves, spools and fittings connected to the top of a well to direct and control the flow of formation fluids from the well.

Although a validation procedure was introduced (July 2006) in the system to reduce the quantity of MIT by restricting the creation of fresh STO by the user, if the same material was in transit for more than 60 days and the MAS was more than the requirement of three months consumption. Audit observed that there was no marked improvement (March 2017) in the number of items appearing under MIT.

In Western Offshore area, as on 31 January 2017, 9 *per cent* of the total material of value ₹2,164.64 crore was accounted as MIT. Although NSB has been in operation since 1983, there was no SOP laid down for receipt, issue and accounting of stores/ inventory. In the absence of an SOP and uniform set of procedures, the shorebase management at NSB was dependent on efficiency of individual practices. Audit also observed that casing pipes valued at ₹57.87 crore continued to be accounted under MIT for more than 1800 days as on 23 February 2017. The Company constituted a multi-disciplinary team in January 2017 to study and offer recommendations to address issues involved in reconciliation of cement and diesel issued by NSB and for resolving the dispute of goods issue at NSB. The report of the team was submitted in August 2017.

With regard to Para 6.4.1.1 and 6.4.1.2, Management stated (May 2017), that the booking of consumption of material was carried out by the user department. Inbound MIT of NSB was due to the material logistics section not handing over the material to stores for preparation of GR and that this was being actively followed up. The indenters had been advised (February 2017) to refrain from indenting more than the extra casings required since these ended up as inbound MIT and the utilization of SAP system for the issue and tracking of material would be discussed internally for implementation. However, Audit observed that the compliance with the recommendations of the multi-disciplinary team was incomplete (May 2018).

**Audit recommended that the Company may finalise and implement an SOP for shorebase operations. Utilization of SAP system may be ensured for accounting of MIT and MAS. Standardized documentation may be developed for material/ equipment movements, accounting and reporting of inventory management across all units.**

Ministry accepted the Audit recommendation and directed (December 2017) the Company to prepare SOPs for supply of materials for offshore operations and ensure implementation thereof.

## **6.4.2 Eastern Offshore**

### **6.4.2.1 Non-Utilization of Offshore Logistics Management (OLM) Module of SAP System**

The rigs raised indent for the material requirement to the stores either at Kakinada, Narsapur or NSB. In case of drilling materials stored at Narsapur and NSB, these stores issued Goods Issue Voucher (Delivery Note/MTN out) in SAP directly to respective rig location, though these material pass from stores to rigs through a chain of intermediaries like the Company's Logistic Department, stevedoring contractor and vessel contractor before actual delivery to the rigs.

Such material movements were not fully mapped as OLM Cycle of SAP is not utilised. This led to lack of effective monitoring of material movement in Eastern Offshore Asset.

Management replied (September 2017) that OLM module of SAP was not implemented at KSB due to lack of human resources and that they would expedite implementation after resolving the man-power issues.

### 6.5 Deficiencies in internal control procedure for stores/spares/equipment sent to outside agencies for repairs

NSB received material from offshore users after the use of store/equipment etc. This included items which were repairable and reusable, and those to be condemned. The repairable items were sent to outside agencies for repair and on return after repair, they were sent back to rigs/platform for their use.

Audit observed that records of the material sent for repairs outside NSB were not maintained in the SAP system. Audit observed that as per contract, materials sent for repairs to agencies outside NSB were to be returned within 90 days. During verification of manual register maintained by Drilling Services, it was noticed that out of 272 items sent for repairs during the period from 2012-13 to 2015-16, 56 items were yet to be returned to NSB as on 31 March 2017. This included 46 items not received for more than two years and 66 items received 93 days to 756 days after the time limit. The above deficiency pointed to lack of adequate procedures in place to monitor the non-receipt/delay in receipt of repairable materials.

Management and the Ministry assured (September 2017) that SAP system would be used and a system put in place to track outgoing/incoming of the materials sent out for repairs.

### 6.6 Deficiencies in internal control system at NSB governing physical verification of stores/spares

Proper storage and accounting of stores is part of sound inventory management. Examination of the practices adopted at NSB indicated that there was no SOP developed for storing and handling the material. This resulted in overstocking and the casing pipes, which formed the bulk of the inventory at NSB, being piled up without any demarcation.



Audit also observed that the Material Management group functioned only during office hours while the despatch of casing pipes and receipt of backload items were being carried out round the clock which can lead to non-accounting or delay in accounting of stores. The sheds/yards were operated by different stock holders. Backload materials were kept as a heap in the garden area, without any SAP MAT code, and irrespective of their condition, they were accounted as scrap.

The Company carried out physical verification of inventory through an independent agency in October 2016. The independent verification could, however, be done only for items with MAT <sup>41</sup>code and the report also highlighted gaps in internal control and stores maintenance procedure. The Consultant also observed that there was no system in place for proper handing over/ taking over of goods at the time of transfer. There was no closed-circuit camera installed in any of the sheds. Many items were seen to be lying for long period and kept in boxes which were not opened for many years.

*Many times stock verifier observed that the trucks loaded with scrap items were moving out, and expressed doubt whether the same contains good items or scrap items. There was no proper check or control on such movement of goods.*



Items marked for storage in covered sheds lying in open



Unused casings lying in the open

Management while attributing the deficiencies to shortage of manpower stated (September 2017) that attempts were made to improve the storage practices. Segregation of casing pipes had been carried out and good pipes were taken in to custody of Material Management Department. During 2016-17 though physical verification of 'A' category items were carried out, no discrepancies were reported. Management admitted that receipt of casing pipes/drill pipes by Drilling Tool Yard Store (DTYS) had been discontinued for a year and since the assets are not geared for the new system, materials were kept in heaps at premises. Further, due to limitation/ shortage of sheds, materials of more than one stock holder were stored under one shed leading to lack of control. Construction of new sheds, pipe rack and installation of CCTV camera in store section were to be initiated.

The reply has to be seen in the light of the fact that items returned from offshore neither had any MAT code nor were accounted for in SAP. They were also not subject to independent verification. There was steady backload of material from offshore, which included such unused casing pipes/ tubings. NSB did not have a Non Destructive Testing (NDT) facility to identify good/usable material from unusable material to be scrapped. The Company has to implement sound storage practices to ensure proper inventory control and accounting.

**Audit recommended that the Company may improve the system of physical verification of the inventory and reconciliation, considering the nature of storage at NSB.**

Ministry accepted the Audit recommendation and issued specific directions to the Company (December 2017) to take necessary action for modernization of NSB and that the best practices including inventory management through relevant software be implemented in NSB.

<sup>41</sup> Material code in SAP

## 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 incident<sup>42</sup>. 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 System<sup>43</sup> (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

<sup>42</sup> 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.

<sup>43</sup> 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 knot<sup>44</sup> 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 incident<sup>45</sup> in 2005 when 22 persons lost their life.

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

<sup>45</sup> 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 guidelines<sup>46</sup> 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.

<sup>46</sup> 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
<b>Group A</b>	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.
<b>Group B</b>	Standard ERRVs	Should meet all requirements. Most ERRVs
<b>Group C</b>	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 compliance<sup>47</sup> 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.

<sup>47</sup> 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 location<sup>48</sup> and declared a prohibited area under Official Secrets Act, 1923. However, Audit observed (June 2017) the following security deficiencies at NSB.

<sup>48</sup> 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 certificates<sup>49</sup> 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

<sup>49</sup> 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’<sup>50</sup> 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

<sup>50</sup> 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.

## Chapter 8: Audit Conclusion and Recommendations

### Audit Conclusion

‘Marine Logistic operations’ is a vital support service for the offshore operations of the Company through deployment of vessels. It included storing, supplying various material/equipment, performance of standby duties near rigs/platforms and towing of rigs from one location to another. The Company had its own shorebase at Nhava (near Mumbai) while it operated on a hired shorebase at Kakinada.

While acquiring its own OSVs, the Company awarded contract to M/s. Pipavav Shipyard which was selected solely on the basis of the experience of their foreign technical collaborator. The contractor delivered only seven of the 12 OSVs with a delay of more than six years. This led to continued dependence on hired vessels. The contract was terminated by ONGC in June 2018.

The Offshore Logistics Group of Company proposed the vessel strength for a three year period which did not consider the updated Annual Drilling Plans resulting in disproportionate estimate of vessel requirement. The shortage of OSVs during the period 2012-13 to 2015-16 was also due to non-inclusion of the requirement of Offshore Defence Advisory Group while estimating requirement of OSVs.

Consultant’s recommendations on fixed scheduling of vessels to achieve optimum utilisation and economic operation of vessels and efficient supply chain management at NSB were not implemented. This resulted in redundant trips to offshore duty points.

Audit observed that costlier PSVs meant for supply duty were increasingly deployed for standby duty resulting in higher cost of operation. Further, substantial portion of bulk cargo carried from the shorebase returned undelivered as Returned on Board (ROB). Failure to provide requisite logistic support resulted in idling of rigs.

The downtime of the new OSVs owned by the Company was higher than that of older chartered vessels. Audit observed that the Company did not have a cadre of marine professionals for monitoring of Vessels. The owned vessels were operated and maintained through short term contract with Shipping Corporation of India. There was no performance linked penalty in these contracts. The Company did not have a system of monitoring the fuel consumption which was provided free to all chartered vessels.

With old and fragile infrastructure, inadequate warehousing facilities and space constraints, Nhava Supply Base (NSB) could not meet the increasing requirements of the offshore installations, resulting in increased cost of shorebase operations and vessel requirements. The Company envisaged an additional supply base to which some of its operations could be shifted and an integrated upgradation of NSB at par with international standards could be taken up,



which did not materialize. Instead of the integrated approach, civil works were being carried out by the Company on an adhoc basis.

As against the global benchmark Turnaround Time (TAT) of six hours at shorebase, the average TAT at NSB was in the range of 11.51 hours to 15.58 hours and the TAT showed an increasing trend. In Kakinada supply base, the TAT was higher than the global bench mark, as the Company failed to ensure that requisite facilities were in place.

The Company provided water for vessel consumption and drill water for rigs free of cost. NSB could not meet the offshore requirements of water due to shortage of supply. There were unauthorised tappings in the pipeline laid, the single source of water for NSB, as a result of which NSB received only 18 *per cent* of the water pumped. The Company was, however, required to pay for the entire quantity of water pumped at source at commercial rate. The water-makers in owned rigs of the Company were not operational. Audit noticed instances where the requirements of water for the rigs were not met while the vessels arrived at port with substantial backload of water.

The internal control procedures relating to warehouse management at NSB was not effective. Failure to monitor through the SAP system, items sent to external agencies for repair, resulted in these items remaining unreturned for a period of 2 years against a norm of 90 days. Quantity delivered to vessels from shorebase was considered as supplied irrespective of the acknowledgement by the rigs resulting in significant discrepancies as seen in the case of HFHSD.

The physical verification of materials at shorebase was not carried out in an effective manner. Significant lapses in the storage of materials, their accounting and reconciliation were noticed during an independent physical verification. Backload of material brought from offshore was not segregated and was stored in a haphazard manner and was treated as scrap irrespective of their condition.

The operation of the owned and chartered vessels is governed by provisions of United Kingdom Offshore Operators Association (UKOOA) guidelines and Petroleum & Natural Gas (Safety in Offshore Operations) Rules with regard to safety and emergency response. Reporting of vessel related incidents (near miss) were not in line with statutory requirements or provisions of Marine Operating Manual of the Company. Vessels were allowed to continue operations even after failure of critical equipments like Dynamic Positioning System compromising safety. The provisions of Manual were diluted to match the lower safety requirements of DP1 system as against erstwhile DP2 system where redundancy of vessel stability system was ensured. The standby vessels deployed were not in conformity with the UKOOA guidelines considering the manpower and size of the installations.

The financial impact of the Audit findings in this report is ₹2,021.19 crore (consisting of ₹1,716.57 crore on account of excess expenditure/cost of operations and ₹304.62 crore on account of revenue foregone/loss of interest) and are summarised in the Annexure IX.

## Recommendations

*Audit recommended the following:*

- 1. Assessment of vessel requirement should be reviewed with reference to the Annual drilling plan.*
- 2. Introduce fixed scheduling of vessels and improve the planning for prompt delivery of the required cargo by coordinating with the duty stations/users thereby avoiding redundant vessel trips. Deploy Platform Supply Vessels for supply duty in place of Offshore Supply vessels.*
- 3. Use of Cargo Carrying Units (CCUs) for optimum deck space utilization may be considered. Ensure that loading of bulk cargo is restricted to field requirements and to meet consumption by the vessel.*
- 4. Include cost and consumption pattern of HFHSD by the vessels as a parameter in evaluation of the bids for hiring of vessels.*
- 5. Standard Operating Procedures for Shorebase Operations need to be finalized and implemented. To take steps, within the framework of agreement with M/s. Kakinada Seaports Limited (KSPL) to reduce the Turnaround Time at Kakinada Supply Base (KSB) by optimising operations.*
- 6. Devise and implement an integrated up-gradation plan for Nhava Supply Base (NSB) in line with the international best practices, and operate NSB as an integrated Material Management warehouse. Evaluate alternative options to ensure timely and adequate supply of water for offshore operations.*
- 7. Ensure full compliance with the safety, rescue and emergency response standards adopted by the Company. Develop a cadre of marine professionals with vessel related competency.*


## Response of the Ministry

The Ministry of Petroleum and Natural Gas (MoPNG) accepted all the recommendations and issued (December 2017) specific directions to Company to ensure compliance with the recommendations in a time-bound manner.

The Ministry also directed ONGC to (i) prepare Standard Operating Procedures for supply of material for offshore operations, (ii) take necessary action for modernisation of supply bases for offshore operations including NSB as per international standards and best practices including inventory management through relevant software, (iii) ensure compliance with statutes, rules and regulations governing environment, safety and security of installations, and (iv) strengthen the offshore operations by deploying adequate manpower including marine professionals for monitoring of quality of services provided by the O&M contractors.

Audit appreciates the positive response from the Ministry.

**New Delhi**  
**Dated: 24 June, 2019**

  
**(VENKATESH MOHAN)**  
**Deputy Comptroller and Auditor General**  
**(Commercial)**

**Countersigned**

**New Delhi**  
**Dated: 24 June, 2019**

  
**(RAJIV MEHRISHI)**  
**Comptroller and Auditor General of India**

# Annexures



## Annexure I (Referred to in Chapter 1)

## Present status of audit findings in CAG report No. 4 of 2002 “Marine Logistic Support in ONGC” and indicated in Follow up Report No. 6 of 2005

C&AG Report No. 6 of 2005 (Follow up of report no. 4 of 2002)-Para no. 2.3.2	Present status as of May 2018
<p><b>(i) Norms for deployment of OSVs not fixed</b> In spite of in-house efforts as well as reports of external Consultants no norms for deployment of OSVs was fixed.</p>	<p>Norm of 1.4 vessels per duty station was fixed based on past experience. Though norm was further optimized as 1.35 vessels for rig and 1.2 for platforms, there is further scope for optimization of deployment of vessels. Related issues have been discussed in Paras 3.2 and 5.1 of the current report.</p>
<p><b>(ii) Rates for long-term charter hire of INSA vessels</b> Ministry had given protection to INSA members for vessels hired by ONGC for charter hire rates which slowly metamorphosed into a cost-based formula with complete protection for operators against market volatility.</p>	<p>Presently, the Company is hiring the vessels through open competitive bidding and rates are discovered through the bidding process.</p>
<p><b>(iii) Force majeure clause not included in the contract</b> Contrary to the model contract between ship owners and ONGC prepared by Director General (Shipping) wherein a vessel could be de-hired in the inverse order of their hire dates in the eventuality of vessels being rendered surplus due to substantial reduction in the requirement, no such provision was incorporated in the actual contract signed by ONGC with ship owners. This deprived ONGC of the opportunity to reduce the fleet size in its offshore operations.</p>	<p>Provisions of present contracts allowed the Company to terminate the contract after completion of twelve months without assigning any reasons.</p>
<p><b>(iv) Excess deployment of vessels on standby duty</b> Actual deployment of vessels for standby duty exceeded the norms adopted by the Company.</p>	<p>There is shortfall in deployment of vessels for standby duty. Costlier PSVs meant for supply duty are being deployed for standby duty. Issue has been discussed in at Paras 3.1, 3.2 and 5.2 of the report.</p>
<p><b>(v) Higher deployment of vessels on supply duty</b> The quantity of cargo delivered by a vessel trip was below the storage capacity of duty stations and well below the deliverable capacity of vessels. Vessels thus, made more number of trips and resultantly more number of vessels was required.</p>	<p>The situation still persists. Further, in the absence of fixed scheduling, vessels continue to make more number of trips than required. Issue has been discussed in detail in Paras 5.1, 5.4 and 5.5 of the report.</p>

C&AG Report No. 6 of 2005 (Follow up of report no. 4 of 2002)-Para no. 2.3.2	Present status as of May 2018
<p><b>(vi) Non-utilisation of water maker</b> In most of the platforms and owned rigs, water makers were either not operational or water generation was insufficient. As a result, the shortage of costlier potable water was made good through supplies delivered by OSVs.</p>	<p>The situation still persists. Around 70 <i>per cent</i> of Potable Water (PW) supplied from NSB is supplied to owned rigs and platforms. Issue has been discussed in detail at Para 6.3.5 of the report.</p>
<p><b>(vii) Discrepancy in delivery of fuel</b> Discrepancies noticed in the quantity of fuel delivered by vessels and that acknowledged by the installations/rigs.</p>	<p>Discrepancies were noticed during the period under present audit also and discussed in Para 6.4.1.1</p>
<p><b>(viii) Handling of bulk cargo</b> Bulk cargo consisting of barites and cement was being loaded without regard to specific requirement or requisitions from the offshore rigs resulting in substantial cargo remaining on board (ROB).</p>	<p>The situation still persists. Para 5.5 of the report discusses the present status of undelivered bulk cargo issue.</p>
<p><b>ix) Consumption of fuel</b> Fuel consumption by owned OSVs was more than that of hired OSVs. Even when the OSVs were berthed at the jetty/port there were wide variations in fuel consumption by owned and hired OSVs.</p>	<p>Fuel consumption by vessels is recorded by balancing the figure arrived at after the vessel has returned from its voyage (i.e. fuel consumption by vessel = fuel loaded on vessels (-) fuel delivered to installations (-) ROB). There is absence of mechanism to monitor fuel consumption by vessels. Para 5.7 brings out the current position.</p>
<p><b>(x) Loss due to non-utilisation of Global Positioning System-Assisted Improved Navigation System</b> Global Positioning System-Assisted Improved Navigation System (GAINS) installed (1998) at NSB to improve navigation, reporting position of cargo and traffic management had not been put to effective use.</p>	<p>SAP system or software is still not used for cargo planning &amp; loading and deployment of vessels and monitoring of functioning of vessels equipment. This is discussed at Paras 5.1 and 7.1 of the report.</p>
<p><b>(xi) Non- availability of Offshore Supply Vessels</b> The downtime of owned OSVs was substantially higher than that of hired OSVs.</p>	<p>The downtime of owned (old and new) vessels was much higher compared to that of charter hire vessels. This is discussed at Paras 5.6 of the report.</p>

C&AG Report No. 6 of 2005 (Follow up of report no. 4 of 2002)-Para no. 2.3.2	Present status as of May 2018
<p><b>(xii) Poor maintenance of Offshore Supply Vessels by the Operators</b> The owned vessels were poorly maintained.</p>	<p>Company continues to hand over all its own vessels for Operation and Maintenance to SCI on short term contracts (without performance linked penalty clauses) leading to profligacy. Paras 5.6 and 5.7 elaborates the present situation of Operation &amp; Maintenance of owned vessels.</p>
<p><b>(xiii) Avoidable expenditure incurred on repairs of six vessels</b> Due to delay in finalisation of new contracts, ONGC was compelled to extend existing contract though it had noted the unsatisfactory maintenance of vessels on the part of the contractor. ONGC repaired the vessels at its own cost though the contract mandates the operator to repair the vessels at its own cost.</p>	<p>All ONGC's owned vessels are presently under O&amp;M contract with SCI on nomination basis.</p>
<p><b>(xiv) Introduction of 'Offshore Logistics Module' in SAP system</b> Ministry stated that after introduction of Offshore Logistics Module in SAP system there would be effective control over deployment of OSVs on supply duty, number of trips to various duty stations, fuel consumption, discrepancies in delivery of fuel and the handling of bulk cargo. However, the efficacy of the 'Offshore Logistics Module' in SAP system remained to be tested in Audit.</p>	<p>SAP system or software is still not used for cargo planning and loading and deployment of vessel and monitoring of functioning of vessels equipment. This is discussed at Para 5.1 of the report.</p>



Annexure-II (referred to in Para 4.2.2)

Statement indicating extra expenditure on procurement of costlier HF-HSD from OMCs due to non-availability of tanker B.C.Chatterjee

Sr. No.	Particular	Quantity in KL	Amount In ₹
1	Actual quantity of HFHSD procured from OMCs during November 2015 to December 2016	150810	
2	Quantity of HFHSD required to supplied to offshore from NSB (OCMs) HFHSD supplied through Nhava tanks (OMCs) during voyage of tanker (to & fro) to MRPL -6 days per month* 8( actual number of voyage made during contract period)* 750 KL per day supplied to offshore through vessels	36000	
3	Time taken for unloading of HFHSD from tanker to chartered barge -10 days in month *300 KL * total month from November 2015 to December 2016=14 months*3000	42000	
	Sub total	(-)78000	
4	Excess quantity procured from OMCs at Higher rate due to downtime of Tanker	72810	
5	Differential rate ₹22448 per KL [OMC rate (-) MRPL rate i.e ₹ 50340 (-)₹ 31581]		22448
6	Extra expenditure incurred on HFHSD =Excess qty. procured from OMCs *differential rate in ₹		<b>163,44,38,880</b>
	<b>Barge Standby Charges</b>		
7	Downtime days of Tanker		57 days
8	Hiring charges of Barge per day+ Service Tax 15 per cent + cost of water supplied + HFHSD Supplied to Barge		2,71,189
9	Standing cost of Barge for 57 days		<b>1,54,57,773</b>

**Annexure-III (referred to in Para 5.1)**  
**Excess trips made by PSVs**

Name of rigs	No of times vessels visited rigs	Rig availability 2016-17	No of weeks rig available	Expected vessel trips considering 2.5 visits/ week in consultant report	Excess trips
(A)	(B)	(C)	(D)	(E)	(B-E)
VAL DRILLER	209	365	52	130	79
PARAMESHWARA	192	365	52	130	62
MC TOCK	185	365	52	130	55
VIRTUE-1	179	365	52	130	49
D VISION	176	365	52	130	46
H WARD	162	365	52	130	32
J STAR	157	365	52	130	27
S/JYOTI	151	365	52	130	21
ED HOLT	150	365	52	130	20
S/KIRAN	150	365	52	130	20
ABAN-3	149	365	52	130	19
CHITRA	147	365	52	130	17
S/SHAKTI	145	365	52	130	15
DS FOSSIL	144	305	44	109	35
S/GAURAV	144	365	52	130	14
CHAARU	142	365	52	130	12
				<b>Total excess trips</b>	<b>523</b>

**Annexure-IV (referred to in Para 5.1)  
Cost of excess trips to the Company**

<b>Cost of vessel</b>		
Excess trips	523	Trips
TAT at offshore per trip	8.23	Days
TAT at offshore for all excess trips	4304.29	Days
Avg. day rate of PSV in 2016-17	7592	US\$ per day
Total vessel cost during the excess trips	32678169.68	US\$
Average exchange rate US\$/INR 2016-17- US\$=` 67.09	67.09	
Total vessel cost in ₹	2192378404	₹
	<b>219.24</b>	<b>₹ crore</b>
<b>Cost of Fuel (HFHSD supplied to vessels)</b>		
Average fuel consumption per trip (source: Annual Report of NSB 2016-17)	7.25	KL per day
Average number of days per trip	8.23	Days
Rate of fuel during 2016-17	50267	₹ per KL
No. of excess trips	523	Trips
<b>Fuel cost for excess trips</b>	1568637154	₹
	<b>156.86</b>	<b>₹ crore</b>
<b>Total cost (Vessel cost+Fuel cost)</b>	<b>376.10</b>	<b>₹ crore</b>

**Annexure-V (referred to in Para 5.1)**  
**Statement indicating the number of times vessels visited rigs to deliver fuel**  
**against holding capacity of rigs**

Name of rig	Average quantity that can be stored at time considering per day requirement, operational constraints .(in days)	No. of trips required in a year considering storage capacity of rig	No of times vessels visited rigs to deliver fuel and other cargo
VAL DRILLER	30	12	209
VIRTUE-1	31	12	179
M-1161	24	15	170
H WARD	31	12	162
J STAR	20	19	157
S/JYOTI	25	15	151
ED HOLT	25	15	150
S/KIRAN	25	15	150
CHITRA	40	10	147
S/SHAKTI	75	5	145
DS FOSSIL	26	15	144
CHAARU	26	14	142
TR-2	25	15	139
-ABAN-4	30	12	114
S/UDAY	58	6	104
ACTINIA	24	15	94
JT ANGEL	24	15	94
DS FORTUNE	30	12	92
CHAAYA	36	11	86
ABAN ICE	145	3	68
PARAMESHWARA	22	17	78
VIVEK-1	16.66	22	57
VIVEKA-2	28	14	43
<b>TOTAL</b>		<b>301</b>	<b>2875</b>

**Annexure VI (referred to in Para 5.2)  
Extra logistic operation cost due to deployment of PSVs for standby duty**

Sr. No	Particulars	2012-13	2013-14	2014-15	2015-16	2016-17
1	PSV Day rate in US\$ including Service Tax	11582	14416	15416	11685	7626
2	Exchange rate	54.45	60.5	61.15	65.46	67.09
3	PSV Day rate in INR (1) x (2)	630639.9	872168	942688.4	764900.1	511628.34
4	OSV Day rate in US\$ including Service Tax	7925	7925	7925	9101	5527
5	Exchange rate	54.45	60.5	61.15	65.46	67.09
6	OSV Day rate in INR (4) x (5)	431516.25	479462.5	484613.75	595751.46	370806.43
7	Difference in Day rate of PSV and OSV (3)-(6)	199123.65	392705.5	458074.65	169148.64	140821.91
8	No. of days PSV available	344	351	339	349	310
9	Extra payment due to hiring of PSV instead of OSV (7) x (8)	68498535.6	137839630.5	155287306.4	59032875.36	43654792.1
10	No. of PSVs doing standby duties	3.33	1.69	3.52	7.99	7.74
	Total in ₹ (9) x (10)	228100123.5	232948975.5	546611318.4	471672674.1	337888090.9
	<b>Grand total in `</b>					<b>181,72,21,182</b>

**Annexure VII A (referred to in Para 6.1.1)**  
Extra operational cost due to excess TAT at NSB

Year	2012-13	2013-14	2014-15	2015-16	2016-17
Global benchmark (in hrs)	6	6	6	6	6
TAT at NSB excluding pilot (hrs)	11.51	12.45	12.94	13.67	15.58
Extra time over the global benchmark	5.51	6.45	6.94	7.67	9.58
No. of voyages	1372	1264	1327	1422	1360
Extra time in hours for all voyages	7560	8153	9209	10907	13029
Extra days	315	340	384	454	543
PSV rate in US\$	13955	13955	13955	13955	7625
Extra cost in US\$	4395662	4740514	5354871	6341815	4139358
Exchange rate US\$ to INR <sup>1</sup>	54.45	60.49	61.14	65.46	67.08
Extra cost in INR	239343806	286753662	327396797	415135201	277668157
<b>Total extra cost in `</b>	<b>154.63 crore</b>				

**Annexure VII B (referred to in Para 6.1.2)**  
Extra operational cost due to excess TAT at KSB

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17
TAT at KSB excluding Pilotage (Hrs.)	19.81	16.81	17.78	16.26	16.11
Extra time over the global benchmark	13.81	10.81	11.78	10.26	10.11
No. of voyages	203	228	234	174	193
Extra time in hours for all voyages	2803.43	2464.68	2756.52	1785.24	1951.23
Extra days	117	103	115	74	81
Least Vessel hire rate during the year (US\$)	8202	8202	10416	10568	8050
Extra cost in US\$	958072	842304	1196330	786101	654475
Exchange rate of US \$ to `	<b>54.45</b>	<b>60.49</b>	<b>61.14</b>	<b>65.46</b>	<b>67.08</b>
Extra cost in INR	<b>52167031</b>	<b>50950993</b>	<b>73143597</b>	<b>51458150</b>	<b>43902187</b>
<b>Total Extra Cost in `</b>	<b>27.16 crore</b>				

**Annexure VIII (referred to in Para 6.3.1)**  
**Statement indicating supply of Potable Water/Drill Water for offshore operations**

Year	Potable Water (PW) Delivered	Drill Water (DW) Delivered	Total Delivered offshore	Vessel consumption	Total offshore requirement	PW supplied to owned rigs	PW supplied to platforms	%of PW supplied to own rigs/ platforms to total PW supplied
2012-13	109883	259421	369304	102679	471983	36571	48691	77.59
2013-14	76293	217701	293994	95587	389581	27238	25515	69.15
2014-15	62831	234390	297221	101297	398518	34708	6075	64.91
2015-16	48071	215599	263670	122403	386073	30287	3697	70.70
2016-17	68368	242702	311070.2	102198	413268	33916	9540.7	63.56

**Annexure IX (referred to in Chapter 8)**

Para wise financial impact of Audit findings in the report (₹. in crore)

Para No.	Title	Monetary impact
<b>Excess Expenditure/Cost of operations</b>		
3.2	Decision to reduce requirement of OSVs in place of PSVs lead to increase in cost of operations	25.99
4.2.2	Sub-optimal performance of vessels hired on nomination basis leading to purchase of costlier High Flash High Speed Diesel (HF-HSD)	164.98
4.2.3	Non-deployment of two barges for supply of HFHSD	307.58
5.1	Non-implementation of recommendation of the Consultant on scheduling of vessels led to increase in the cost of logistic operation by `376.10 crore	376.10
5.2	Deployment of Platform Supply Vessels (PSVs) for standby duty (181.72 crore (+) 395.28 crore (Rig idle cost))	577.00
5.7	Higher downtime of new vessels operated on nomination basis through M/s Shipping Corporation of India	7.36
5.9	Idling of rigs due to lack of Offshore Logistics Support	30.84
6.1	Turnaround Time of vessels at Base a) Extra expenditure of ` 154.63 crore on excess Turnaround Time of vessels at NSB	154.63
	b) Turnaround Time at Kakinada Supply Base	27.15
6.3.2	Sourcing of drill and potable water at base	7.99
6.3.3.	Availability of storage of water in tanks on land and in rigs/ drill ships	22.34
6.3.4.	Impact of shortage of water on operations of the Company	10.83
6.3.5.	Consumption of potable water by rigs and platforms owned by ONGC	2.28
6.4.1	Discrepancy in quantity of fuel delivered and acknowledged	1.5
	<b>Total</b>	<b>1716.57</b>
<b>Revenue foregone/loss of interest</b>		
6.2	Delay in Upgradation of NSB (saving in manpower cost)	262.87
6.2	Delay in setting up alternate supply base (Savings foregone)	41.75
	<b>Total</b>	<b>304.62</b>
	<b>Grand Total impact –₹ in crore</b>	<b>2021.19</b>





# Glossary



### Glossary of Terms

Term	Meaning
Anchor Handling Tug cum Supply (AHTS) Vessels	AHTS vessels tow rigs from one location to another and are equipped with winches which are used to lift and position the rig's anchors.
Asset	It refers to an entity that is involved in production of oil & natural gas from the existing wells and transportation of oil and gas for processing and supply to consumer.
Basin	A Depression in the earth's crust where sedimentary materials are accumulated over the years.
Bid Evaluation Criteria	Bid Evaluation criteria are a standard or test used in the evaluation of Bids/Proposals to select the most advantageous Bid/Proposal which best meets the requirements and offers the best value for more.
Dead Weight Tonnage(DWT)	Deadweight tonnage is a measure of a vessel's weight carrying capacity, and does not include the weight of the ship itself.
Definitive Agreement	A definitive purchase agreement is a legal document which records the conditions for a purchase/sale of a business. It is a mutually binding contract between the buyer and seller.
Development	Following discovery, drilling and related activities necessary to begin production of oil or natural gas.
Dynamic positioning	Dynamic positioning (DP) is a computer-controlled system to automatically maintain a vessel's position and heading by using its own propellers and thrusters.
Emergency Response and Rescue vessel association (ERRV)	A purpose-built <b>rescue vessel</b> attending offshore installations. An ERRV should combine good manoeuvrability, enhanced survivor reception and medical after-care facilities, state of art navigational/communications equipment and <b>rescue</b> craft capable of operating in severe weather.
Executive Committee	The Executive Committee consists of Chairman and Managing Director and Directors in the whole time employment of the Corporation and is authorized to sub- delegate the powers vested in them to the Executives below Board level in the interest of the work of the Corporation. They have the full powers in strategic issues.
Exploration	Searching for oil and/or natural gas, including topographical surveys, geologic studies, geophysical surveys, seismic surveys and drilling wells.

Term	Meaning
Hazardous waste	Hazardous waste means any waste which by reason of any its physical, chemical reactive, toxic, flammable, explosive or corrosive characteristics causes danger or is likely to cause danger to health or environment.
Key Performance Indicator (KPI)	KPI is a quantifiable measure used to evaluate the success of an organization, employee, etc. in meeting objectives for performance.
Oil Industry Safety Directorate (OISD) Guidelines	The Oil Industry Safety Directorate (OISD) is a regulatory and technical directorate in India. It was established in 1986 by Ministry of Petroleum and Natural Gas to formulate and implements safety standards for the oil industry.
Out of cycle	Out of cycle period for vessels means the vessels are not in regular operation. It is generally referred to as idle time.
Petroleum Conservation Research Association (PCRA)	The Petroleum Conservation Research Association (PCRA) is an organization established in India in 1978, under the aegis of the Indian Ministry of Petroleum and Natural Gas that is engaged in promoting energy efficiency in various sectors of the economy.
Rig	An equipment that is used for drilling a well bore. There are various types of rigs like jack-up rigs, floaters, Modular rigs, etc.
Rig tow duty	Vessel is used for towing rig from one location to another location.
Service Level Agreement	Service Level Agreement is a contract between a service provider and Assets. It defines the performance standards for the service provider.
Synthetic oil based mud	Non-aqueous, water-internal (invert) emulsion muds in which the external phase is a synthetic fluid rather than oil. This and other more minor changes in formulations have made synthetic fluids in muds more environmentally acceptable for offshore use.
Turn Around Time at Base	The time it takes between the arrival of a vessel and its departure from port; frequently used as a measure of port efficiency.
Thrusters	Manoeuvring thrusters (bow thrusters or stern thrusters) is a transversal propulsion device built into, or mounted to, either the bow or stern, of a ship or boat, to make it more manoeuvrable.

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