

F. No. J-11011/591/2012- IA II (I)
Government of India
Ministry of Environment, Forest and Climate Change
(I.A. Division)

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Dated 12th November, 2015

To,

Shri Sukhu Oraon,
(General Manager)- Vashishta & S-1,
Eastern Offshore Asset
M/s Oil & Natural Gas Corporation Ltd. (ONGCL)
Subhadra Arcade, Bhanugudi Junction,
Kakinada – 533 003, Andhra Pradesh.

E-mail: Sharma js@ongc.co.in/sharmajswarup@hotmail.com ;Fax No.:011-22406681/ 0884-2374104

Subject : Development of Vashishta and S-1 fields of K.G. offshore, Eastern Offshore Asset at Kakinada, Andhra Pradesh and expansion of Odalarevu Onshore Terminal, A.P. by M/s Oil & Natural Gas Corporation Ltd. (ONGCL) - Consolidated Environmental Clearance and CRZ Clearance reg.

Ref. : Your letter no. ONGC/CHSE/EC/2013-14 dated 03.01.2014.

Sir,

Kindly refer your letter dated 03.01.2014 alongwith project documents including Form I, Terms of References, Pre-feasibility Report, EIA/EMP Report and subsequent communications vide your letter dated 30th January, 2014 regarding above mentioned project. MoEF&CC, Regional Office, Chennai vide letter no. 4-APB010/2015-CHN/1141 dated 21st August, 2015 has issued stage-1 forest clearance for diversion of 0.49 ha. protected forest land in Odalarevu.

2.0 The Ministry of Environment, Forest and Climate Change. It is noted that the proposal is for development of Vashishta and S-1 fields of K.G. offshore, Eastern Offshore Asset at Kakinada, Andhra Pradesh and expansion of Odalarevu Onshore Terminal, A.P. by M/s Oil & Natural Gas Corporation Ltd. (ONGCL). Proposed development scheme includes following activities:

- i. Expansion of onshore terminal at Odalarevu to handle VA and S-1 well fluids.
- ii. Drilling of 4 wells in Vashishta and S-1 fields.
- iii. Sub-sea tie back of these four wells to onshore terminal with 14 inch dual pipeline through a daisy chain architecture.

The under-construction onshore terminal for G-1/GS-15 development project (2.75 MMSCMD of gas & 1500 m3/day of crude oil) is proposed to be expanded for a total gas processing capacity of 7.25 MMSCMD (i.e. additional compression trains for 4.5 MMSCMD of gas, dehydration & Dew point control for 7 MMSCMD of gas). The proposed Odalarevu terminal will be set up as an expansion to the existing terminal and shall be used for processing of gas from Vashishta and S-1 fields. It will mainly comprise of separation, compression, dehydration and HC dew point depression facilities for natural gas in addition to effluent treatment plant and utilities. It will be interconnected to the existing facilities for utilization of spare processing facilities. The processed gas will be dispatched to GAIL through pipeline. Number of existing wells are Five wells (G1-9, G1-10, G1-11, G1-DA, G1-DB). Total number of proposed Production Wells are 4 wells - VA-DA, VA-DB, SI-A and S1-B. Type of hydrocarbon expected is gas. Average daily gas rate of 5.75 MMSCMD (for a period of five years) has been envisaged from Vashishta and S-1 Field. The cumulative gas production at the end of nine years is expected to be close to 15.775 BCM. Target depth of drilling wells is 2200 m True Vertical Depth Subsea. Total project cost is Rs.



3407.17 crores. There is no eco-sensitive area within 10 km study area. It is reported that the aerial distance between Coringa Forest and Project Site is approximately 51 km. It was noted that Environment Forests Science & Technology Department, Govt. of Andhra Pradesh vide letter no. 6555/Env/CZMA/2013 has issued no objection certificate under the provisions of CRZ Notification, 2011 & EIA Notification, 2006 for laying of 14" dual subsea pipeline and expansion of Odalarevu Onshore Terminal under Vashishta and S1 field development project in Eastern Offshore of ONGC. It was noted that 0.49 ha forest land is involved in pipeline project. Pipeline and platforms details are as given below:

Existing Pipeline Facility	Dual 10 inch sub-sea pipeline to evacuate production fluid from G-1 and G-15 fields to existing onshore terminal. Length: 25 km approx.
Proposed Pipeline Facility	Dual 14 inch sub-sea pipeline to evacuate production fluid from Vashishta and S-1 Fields to Proposed Onshore Terminal. Length: 45 km approx. Onshore section of pipeline is approx. 4km
Existing Terminal Capacity (Under Construction)	2.75 MMSCMD of gas & 1500 m ³ /d of crude
Proposed Capacity of the Terminal after expansion	7.25 MMSCMD of gas

Proposed offshore well location coordinates and their distance from onshore facility as given below:

S. No.	Proposed Well Locations	Longitude			Latitude			Distance from facility (in km)	Water Depth (in m)
		Deg.	Min.	Sec.	Deg.	Min.	Sec.		
1	S1-A	82	11	49.48	16	16	27.56	28.40	243
2	S1-B	82	12	24.58	16	15	58.69	29.80	305
3	VA-DA	82	10	10.99	16	11	50.38	31.80	553
4	VA-DB	82	12	38.74	16	11	25.02	35.40	689

Onshore terminal at Odalarevu to handle VA & S-1 well fluids, would share the spare compression capacity of G1 terminal and some other utilities. The major facilities at the proposed onshore terminal would be as under:

- High-pressure Pig Receiver & Launcher
- Multipipe Slug Catcher
- Gas System (which includes Gas Compression, Gas Dehydration, DPD and Metering)
- MEG regeneration and Refrigeration system
- Produced Water handling facilities
- Utility Systems such as Cooling Water, Fuel Gas, Plant and Instrument Air System, Circulating hot oil system, Diesel engine and Gas turbine generator
- Flare & Closed Drain System
- Open Drain System (Oily water sewer, Storm water sewer and Contaminated rain water sewer)
- Chemical Injection System
- Fire Water system etc.

4.0 Waste Heat Recovery System (WHRS) will be installed at exhaust of Gas Turbine. Low NOx burner will be installed in gas turbine to reduce NOx emissions. Water requirement from Surface and Canal Water will be 120m³/day during the construction / operational activities of the terminal facilities. Produced water separated during gas processing at 65 m³/day, will be treated in Effluent Treatment

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Plant (ETP) of G-1 / GS-15 project and sent for injection into disposal wells below 1000 m depth as per CPCB guidelines. Condensate produced during gas production at 160 m³/day, shall be spiked to crude oil in G-1/GS-15 Odalarevu Oil Terminal from where it will be dispatched to S. Yanam Terminal. Sewage generated from onshore facility will be treated in the Effluent Treatment Plant (ETP). The treated effluent will be reused for the purpose of watering green belt in the plant area. During laying of pipeline the top soil recovered during land clearance will be stockpiled separately and will be used for backfilling the trench in order to restore the original soil condition. As regard to offshore drilling, sewage will be treated on-board of the rig. Residual chlorine of the treated sewage will not exceed 1mg/L before disposal. Drilling and wash water will be treated to conform to limits notified as per MARPOL Regulations, before disposal into sea. The treated effluent will be monitored regularly. WBM or SOBM (only used in special case) will be disposed off as per G.S.R. 546 (E); dated 30/08/05, according to which WBM/SOBM will be recycled to maximum extent. All fuels, lubricants and chemicals will be kept in a well-designed storage facility with regular inventory checking. Used and unused chemicals will be stored in a lined & bounded area. Waste oil/spent oil/waste batteries will be sold to registered recyclers/re-processors.

5.0 All the projects related to offshore and onshore Oil and Gas exploration, development and production are listed in para 1(b) of schedule of EIA Notification, 2006 covered under category 'A' and appraised at central level.

6.0 The proposal was considered by the Expert Appraisal Committee (Industry) in its meetings held during 16th-17th February, 2012, 29th-30th January, 2014, 28th-30th April, 2014 and 23rd-24th June, 2014 and by the Expert Appraisal Committee (Infrastructure and Coastal Regulation Zone) in its meeting held during 28th-30th January, 2015 respectively. Project Proponent and the EIA Consultant namely M/s Asian Consulting Engineers Private Ltd., New Delhi have presented EIA / EMP report as per the TOR. EAC has found the EIA / EMP Report and additional information to be satisfactory and in full consonance with the presented TORs. The Committees recommended the proposal for environmental clearance and CRZ clearance.

7.0 Public hearings/public consultation was held on 3rd December, 2013.

8.0 Based on the information submitted by the project proponent, the Ministry of Environment and Forests hereby accords environmental clearance and CRZ clearance to above project under the provisions of EIA Notification dated 14th September 2006 and CRZ notification, 2011, subject to the compliance of the following Specific and General Conditions:

A. SPECIFIC CONDITIONS :

- i. All the specific conditions and general conditions specified in the environmental clearance letter accorded vide Ministry's letter nos. J-11011/200/2005-IA dated 9th September, 2005 shall be implemented.
- ii. Gas produced during testing shall be flared with appropriate flaring booms. The flare system shall be designed as per good oil field practices and Oil Industry Safety Directorate (OISD) guidelines. The stack height shall be provided as per the regulatory requirements and emissions from stacks will meet the MOEF/CPCB guidelines.
- iii. Only high efficiency DG set with adequate stack height and modern emission control equipment and low sulphur clean diesel shall be used. Acoustic enclosure shall be provided to the DG sets to mitigate the noise pollution.
- iv. Gas produced during testing shall be flared with appropriate flaring booms.
- v. Total water requirement shall not exceed 85 m³/day (45 m³/day fresh water + 40 m³/day seawater) for offshore drilling and prior permission shall be obtained from the Competent Authority for the drawl of water. Only water based mud system shall be used.
- vi. Produced water (65 m³/day) shall be treated in ETP. Treated produced water shall be disposed off through injection well as per CPCB/MoEF guidelines.

- vii. Water based drilling mud shall be discharged to the sea after proper dilution as per E(P) Rules vide G.S.R 546(E) dated 30th August, 2005.
- viii. The Company shall ensure that there shall be no impact on flora fauna due to drilling of wells in the offshore sea. The company shall undertake conservation measures to protect the marine animals/biota in the region. The company shall monitor the petroleum hydrocarbons and heavy metals concentration in the marine fish species regularly and submit report to the Ministry.
- ix. Treated wastewater (produced water or formation water) shall comply with the marine disposal standards notified under the Environment (Protection) Act, 1986. Sewage treatment on board of the rig as per MARPOL regulation. Residual chlorine shall not exceed 1 mg/l before disposal. Standards for injection produced water into confined hydrocarbon reservoir structure at more than 1000 m with oil in water content of less than 10 ppm shall be complied.
- x. The drill cutting (DC) wash water shall be treated to conform to limits notified under the Environment (Protection) Act, 1986, before disposal into sea. The treated effluent shall be monitored regularly.
- xi. All the guidelines shall be followed for the disposal of solid waste, drill cutting and drilling fluids for onshore and offshore drilling operation notified vide GSR.546(E) dated 30th August, 2005. Different types of wastes shall be kept segregated.
- xii. High efficiency equipment shall be used to separate solids, hydrocarbons and water such as shale shakers with improved capacity to filter smaller solids, low shear pumps for use in produced water shall be employed.
- xiii. Good book keeping practices shall be put in place to manage wastes such as waste tracking program i.e. identify where and when the waste generated, the type of waste and its volume, the disposal method and its location, and the personnel responsible for the waste management.
- xiv. A waste minimisation plan shall be developed and followed through proper inventory management following best practices in drilling operations, good housekeeping practices and optimised equipment maintenance schedules.
- xv. Only essential rig personnel shall be on board the rig. Emergency Response Plan and health, safety and environment (HSE) system shall be installed. Geo- hazard and geotechnical studies shall be carried out to ensure safe drilling operations.
- xvi. All the hazardous waste generated at the rig/offshore facility shall be properly treated, transported to on shore and disposed of in accordance with the Hazardous Waste (Management, Handling and Transboundary Movement) Rules 2008. No waste oil shall be disposed off into sea. Waste/used oil shall be brought on-shore and sold to MOEF/CPCB authorized recyclers/re-processors only.
- xvii. Requisite infrastructure facilities shall be provided near the offshore installations so that booms and skimmers/chemical dispersants could be deployed immediately in case of oil leakage from the installations. Efforts shall be made to curtail the oil slick within 500 meters of the installation and accordingly, action plan and facilities to check the oil slick within 500 meters shall be provided.
- xviii. Approval from DG Shipping under the Merchant Shipping Act prior to commencement of the drilling operations shall be obtained. At least 30 days prior to the commencement of drilling, the exact location shall be intimated to the Director General of Shipping and the Company shall abide by any direction he may issue regarding ensuring the safety of navigation in the area.
- xix. The International 'Good Practices' adopted by the Petroleum Industry viz International norms to safeguard the coastal and marine biodiversity shall be implemented by the company.

- xx. The Company shall take necessary measures to reduce noise levels such as proper casing at the drill site and meet DG set norms notified by the MOEF. Height of all the stacks/vents shall be provided as per the CPCB guidelines.
- xxi. The design, material of construction, assembly, inspection, testing and safety aspects of operation and maintenance of pipeline and transporting the natural gas/oil shall be governed by ASME/ANSI B 31.8/B31.4 and OISD standard 141.
- xxii. The project proponent shall also comply with the environmental protection measures and safeguards recommended in the EIA /EMP/RA/NIO report.
- xxiii. Full drawings and details of Blow Out Preventor to encounter well kick due to high formation presence, if encountered, shall be submitted to the Ministry's Regional Office within 3 months of the issue of environment clearance.
- xxiv. On completion of activities, the well shall be either plugged and suspended (if the well evaluation indicates commercial quantities of hydrocarbon) or killed and permanently abandoned with mechanical plugs and well cap. If well is suspended, it shall be filled with a brine solution containing small quantities of inhibitors to protect the well. The position at the end of the activities shall be communicated in detail to the Ministry indicating the steps taken i.e. whether all the wells are plugged or abandoned and necessary precautions taken.
- xxv. A brief report on environmental status & safety related information generated and measures taken as well as frequency of such reporting to the higher Authority shall be submitted to this Ministry and its respective Regional Office at Bangalore.
- xxvi. Petroleum and Natural Gas (Safety in Offshore Operations) Rules 2008 of OISD shall be strictly adhered to.
- xxvii. Recommendations mentioned in the Risk Assessment & Consequence Analysis and Disaster Management Plan shall be followed.
- xxviii. Adequate funds both recurring and non-recurring shall be earmarked to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided shall not be diverted for any other purposes.
- xxix. Petroleum and Natural Gas (safety in Offshore Operations) Rules 2008 of OISD shall be strictly adhered to.
- xxx. Concrete plan of action for Enterprise Social Responsibility consisting 5 % of project cost shall be prepared in consultation with the District Authority and the local people and a mechanism for it monitoring should be worked out. Action plan shall be submitted to MoEF's RO Office for monitoring.
- xxxi. All commitment made during Public Consultation held on 3rd December, 2013 should be complied with.
- xxxii. On completion of drilling, the company has to plug the drilled wells safely and obtain certificate from environment safety angle from the concerned authority.

B. SPECIFIC CONDITIONS IN RESPECT OF CRZ:

- i) Keeping in view the CRZ Notification, 2011 which prohibits foreshore facilities in high eroding sites, the project shall not have any foreshore activity except laying of pipeline.
- ii) The pipeline route shall be demarcated with floating buoys as indicators.

- iii) All the recommendations and conditions specified by Gujarat Coastal Zone Management Authority (GCZMA) vide letter no. 6555/ENV/CZMA/2013 dated 25.11.2013 shall be complied with.
- iv) Construction activity shall be carried out strictly according to the provisions of CRZ Notification, 2011. No construction work other than those permitted in Coastal Regulation Zone Notification shall be carried out in Coastal Regulation Zone area.

C. GENERAL CONDITIONS:

- i. The project authorities must strictly adhere to the stipulations made by the Andhra Pradesh Pollution Control Board (APPCB), State Government and any other statutory authority.
- ii. No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference shall be made to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.
- iii. The National Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R. No. 826(E) dated 16th November, 2009 shall be followed.
- iv. The locations of ambient air quality monitoring stations shall be decided in consultation with the State Pollution Control Board (SPCB) and it shall be ensured that at least one station is installed in the upwind and downwind direction as well as where maximum ground level concentrations are anticipated.
- v. The overall noise levels in and around the plant area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under Environment (Protection) Act, 1986 Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).
- vi. The Company shall harvest rainwater from the roof tops of the buildings and storm water drains to recharge the ground water and use the same water for the process activities of the project to conserve fresh water.
- vii. Training shall be imparted to all employees on safety and health aspects of chemicals handling. Pre-employment and routine periodical medical examinations for all employees shall be undertaken on regular basis. Training to all employees on handling of chemicals shall be imparted.
- viii. The company shall also comply with all the environmental protection measures and safeguards proposed in the documents submitted to the Ministry. All the recommendations made in the EIA/EMP in respect of environmental management, risk mitigation measures and public hearing relating to the project shall be implemented.
- ix. The company shall undertake all relevant measures for improving the socio-economic conditions of the surrounding area. CSR activities shall be undertaken by involving local villages and administration.
- x. The company shall undertake eco-developmental measures including community welfare measures in the project area for the overall improvement of the environment.
- xi. A separate Environmental Management Cell equipped with full fledged laboratory facilities shall be set up to carry out the Environmental Management and Monitoring functions.
- xii. The company shall earmark sufficient funds towards capital cost and recurring cost per annum to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so earmarked for environment management/ pollution control measures shall not be diverted for any other purpose.
- xiii. A copy of the clearance letter shall be sent by the project proponent to concerned Panchayat, Zila Parishad/Municipal Corporation, Urban local Body and the local NGO, if any,

from whom suggestions/ representations, if any, were received while processing the proposal.

- xiv. The project proponent shall also submit six monthly reports on the status of compliance of the stipulated Environmental Clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF, the respective Zonal Office of CPCB and APPCB. A copy of Environmental Clearance and six monthly compliance status report shall be posted on the website of the company.
- xv. The environmental statement for each financial year ending 31st March in Form-V as is mandated shall be submitted to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Offices of MoEF by e-mail.
- xvi. The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB/Committee and may also be seen at Website of the Ministry at www.moef.nic.in. This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the concerned Regional Office of the Ministry.
- xvii. The project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of the project.

9.0 The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.

10.0 The Ministry reserves the right to stipulate additional conditions, if found necessary. The company in a time bound manner will implement these conditions.

11.0 The above conditions will be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, Air (Prevention & Control of Water Pollution) Act, 1981, the Environment (Protection) Act, 1986 Hazardous Waste (Management, Handling and Trans-boundary Movement) Rules, 2008 and the Public Liability Insurance Act, 1991 along with their amendments and rules.



(Lalit Bokolia)
Additional Director

Copy to:-

1. The Principal Secretary, Department of Environment, Forest, Science & Technology, Government of Andhra Pradesh, Hyderabad, A.P.
2. The Chief Conservator of Forests, Regional Office (Southern Zone, Bangalore) Kendriya Sadan, 4th Floor, E&F Wing, II Block Koramangala, Bangalore-560034.
3. The Chairman, Central Pollution Control Board Parivesh Bhavan, CBD-cum-Office Complex, East Arjun Nagar, New Delhi - 110 032.
4. The Chairman, Andhra Pradesh Pollution Control Board, Paryavaran Bhawan, A-III, Industrial Estate, Sanath Nagar, Hyderabad - A.P.
5. Monitoring Cell, Ministry of Environment, Forest and Climate Change, Indira Paryavaran Bhavan, Jorbagh Road, New Delhi.
6. Guard File/Monitoring File/Record File.



(Lalit Bokolia)
Additional Director