

F. No. J-11011/37/2016-IA.II (I)
Government of India
Ministry of Environment, Forest and Climate Change
(Impact Assessment Division)

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Dated: 15th June, 2017

To,

The DGM (Chemistry), CHSE
(Shri Rajeeva Kumar)
M/s Oil Natural Gas Corporation Limited
Corporate HSE, 8th Floor Core IV,
SCOPE Minar, Delhi - 110 092

Sub: Exploratory drilling of 5 wells for shale oil/shale gas in KG Basin Andhra Pradesh by M/s Oil Natural Gas Corporation Limited - Environment Clearance - reg.

Ref: Online Proposal No. IA/AP/IND2/42009/2016 dated 02nd April, 2017.

Sir,

This has reference to your online proposal no. IA/AP/IND2/42009/2016 dated 02nd April, 2017, along with project documents including Form I, Terms of References, Pre-feasibility Report, EIA/EMP Report along with Public Hearing Report regarding the above mentioned project.

2. The Ministry of Environment, Forest and Climate Change has examined the application. It is noted that the proposal is for Exploratory drilling of 5 wells for shale oil/shale gas in KG Basin Andhra Pradesh by M/s Oil Natural Gas Corporation Limited. As informed and as per the documents submitted by the Project Proponent (PP), land required for the project is 5-6 Acres per well. PP proposes to drill 5 wells. The cost of the project is ₹ 217 Crore. Duration of the drilling is 90-120 days per well. It is reported that no sensitive/forest areas are located within 10 km distance of the project site.

3. All the projects related to Offshore and Onshore Oil and Gas exploration, Development and Production are listed in S. No. 1(b) of Schedule of Environmental Impact Assessment (EIA) Notification, 2006 under Category 'A' and are appraised at Central Level by Expert Appraisal Committee (EAC).

4. The project proposal was considered by the Expert Appraisal Committee (Industry-2) in its 5th meeting held during 25th - 26th February, 2016 and recommended Terms of References (TORs) for the Project. The TOR has been issued by Ministry vide letter dated 19th April, 2016.

5. The EAC (Industry-2) in its 22nd meeting held during 17th - 18th April, 2017 has considered the proposal for Environmental Clearance (EC). The Project Proponent and their consultant M/s ONGC, gave a detailed presentation on the salient features of the project and proposed environmental protection measures to be undertaken, as per Terms of References (TORs).

6. It is reported that, as per the Government of India's shale gas/oil policy guidelines announced on 14th, October, 2013, ONGC, KG Basin, has proposed to drill five



exploratory wells in the on-land PML blocks in West Godavari, Bantumilli extension, Suryaraopeta, Mahadevapatnam and Mandapeta in Krishna, West Godavari and East Godavari districts of Andhra Pradesh to assess the hydrocarbon potential of the shale.

7. The proposed drilling locations are:

S. No.	Name of the PML Block	Proposed location	Location coordinates	TD (m)	Estimated Cost (Rs. Cr)
1	West Godavari	WG-SG-A	81 06 54.36 16 28 18.89	3300	35
2	Bantumilli Extn.	BT-SG-A	81 22 24.63 16 24 25.47	4200	45
3	Suryaraopeta	SU-SG-A	81 24 10.29 16 32 40.34	4400	47
4	Mahadevapatnam	MA-SG-A	81 36 34.12 16 36 58.86	4300	46
5	Mandapeta	MD-SG-A	81 53 46.01 16 47 55.02	4000	44

8. It is reported that, in the proposed project, the cores of the potential shale will be collected after drilling a vertical well to study the properties of the shale like mineralogy, porosity, permeability, maturity etc. and record some advanced log suites for proper evaluation of various properties (geochemical, geological, petro physical, mineralogical and geo-mechanical etc.). After these studies, if found prospective, a pilot hydro-fracturing job will be carried out to assess the shale gas potential.

9. All these wells will be drilled with water base mud only. The water based mud system (WBM) drill cuttings are non-toxic, non-hazardous and will be collected in HDPE impervious lined pit at the site. After completion of drilling, these pits will be covered with native top soil. The waste water generated during the operations is collected in the lined waste pit and recycled/reused after treatment with mobile ETP. Water based fracturing fluids are proposed to be used in wells. The composition of fracturing fluid consists of more than 98% water and sand and < 2% of 3-10 chemical additives which are non-toxic and biodegradable. Approximately 400-600 M³ of water will be used for carrying out one hydro-fracturing job in the proposed wells. There is no discharge of any waste water outside from the drill site. Approximately 0.5 MT of spent oil is generated during the drilling of each well is collected in drums. The spent oil & used batteries will be sent to base stores for further disposal through authorized re-cyclers.

10. All the inherent risks associated with the drilling activity have been assessed in detail in the present report by using risk assessment criteria. Existing risk control measures have been studied and additional measures have been proposed in the report for all the activities having high risk. All the environmental parameters of air, noise, waste water, drill cuttings will be monitored during the drilling at the project site. Surface and ground waters quality will also be monitored at the nearby villages to assess any adverse impacts of the activity. These wells will provide data for assessing the shale gas potential of the area.

11. The Ambient Air Quality data was collected during March- May, 2016. The EAC noted that the resultant concentrations are within National Ambient Air Quality Standards.

12. The public hearing for the project has been conducted on 05.11.2016 (Krishna District), 06.12.2016 (West Godavari district) and 04.02.2017 (East Godavari) by the State Pollution Control Board. The EAC noted that the PP has addressed the issues raised in the public hearings in the final EIA/EMP report.

13. The EAC, in its 22nd meeting held during 17th - 18th April, 2017 has found that the final EIA/EMP report submitted by the PP is adequate. The EAC after detailed deliberations, on the basis of the information and presentation made by the PP, has recommended the project for environmental clearance with certain conditions.

14. Based on the proposal and information submitted by the Project Proponent, and considering the recommendation of the Expert Appraisal Committee (Industry-2), the Ministry of Environment, Forest and Climate Change hereby accords Environmental Clearance to the above project under the provisions of EIA Notification dated 14th September 2006, subject to the compliance of the following Specific and General Conditions:

A. Specific Conditions:

- i. The project proponent shall take due care and adopt the best practices to ensure that there is no oil spill. However, to meet with any unforeseen situation and combat the oil spill, the PP shall prepare the Oil Spill Disaster Contingency Plan in line with the provisions of the National Oil Spill Disaster Contingency Plan. Regular Mock Drills shall also be conducted.
- ii. The company shall make the arrangement for control of noise from the drilling activity. Acoustic enclosure shall be provided to DG sets and proper stack height shall be provided as per CPCB guidelines.
- iii. Oil spillage prevention scheme shall be prepared. In case of oil spillage/contamination, action plan shall be prepared to clean the site by adopting proven technology. The recyclable waste (oily sludge) and spent oil shall be disposed of to the authorized recyclers.
- iv. The Company shall take necessary measures to prevent fire hazards, containing oil spill and soil remediation as needed. Possibility of using ground flare shall be explored.
- v. The company shall develop a contingency plan for H₂S release including all necessary aspects from evacuation to resumption of normal operations. The workers shall be provided with personal H₂S detectors in locations of high risk of exposure along with self containing breathing apparatus.
- vi. Emergency Response Plan (ERP) shall be based on the guidelines prepared by OISD, DGMS and Govt. of India.
- vii. The company shall take measures after completion of drilling process by well plugging and secured enclosures, decommissioning of rig upon abandonment of the well and drilling site shall be restored to the original condition. In the event that no economic quantity of hydrocarbon is found a full abandonment plan shall be implemented for the drilling site in accordance with the applicable Indian Petroleum Regulations.
- viii. Zero Liquid Discharge shall be ensured.
- ix. Atleast 2.5 % of the project cost shall be earmarked for Enterprise Social Commitment (ESC) activities.

B. General Conditions:

- i. The project authorities must strictly adhere to the stipulations made by the Andhra Pradesh Pollution Control Board, State Government and any other statutory authority.
- ii. No further expansion or modifications in the drilling site shall be carried out without prior approval of the Ministry of Environment, Forest and Climate Change. 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 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.
- iv. 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.
- 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. ESC 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, Forest and Climate Change 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, Zilla 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&CC, the respective Zonal Office of CPCB and SPCB. 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&CC 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

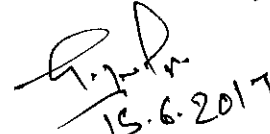
Ministry at <http://moef.nic.in>. This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall 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.

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


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

16. The above conditions will be enforced, *inter alia* under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Hazardous and Other Wastes (Management and Trans-boundary Movement) Rules, 2016 and the Public Liability Insurance Act, 1991 along with their amendments and rules.


15.6.2017
(Yogendra Pal Singh)
Scientist 'D'

Copy to:-

1. The Secretary, Department of Environment, Forests, Science and Technology, Government of Andhra Pradesh, Secretariat, Hyderabad.
2. The Additional Principal Chief Conservator of Forests (C), Ministry of Environment, Forest and Climate Change, Regional Office (SEZ), 1st and 2nd Floor, Handloom Export Promotion Council, 34, Cathedral Garden Road, Nungambakkam, Chennai - 600 034
3. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi - 110 032.
4. The Chairman, Andhra Pradesh Pollution Control Board, Paryavaran Bhawan, A-III, Industrial Estate, Sanath Nagar, Hyderabad.
5. Monitoring Cell, Ministry of Environment, Forest and Climate Change, Indira Paryavaran Bhavan, Jor Bagh, New Delhi - 110 003.
6. Guard File/Monitoring File/Website/Record File.


15.6.2017
(Yogendra Pal Singh)
Scientist 'D'