

F. No. J-11011/81/2013- IA II (I)
Government of India
Ministry of Environment, Forests and Climate Change
(I.A. Division)

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Dated: 23rd February 2015

To,
✓ Shri Jacob Mathew (Asset Manager)
M/s Cairn India Ltd.
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Haryana- 122 002
E-mail: Jacob.Mathew@cairnindia.com

Subject: Oil and Gas Development in Existing Ravva Offshore Field, PKGM-1 Block, located off Surasniyanam (S.Yanam) in the Bay of Bengal, East Godavari District, Andhra Pradesh by M/s Cairn India Ltd -Environmental Clearance reg.

Ref : Your letter no. nil dated 31st January, 2014.

Sir,

This has reference to your letter 31st January, 2014 alongwith project documents including Form I, Terms of References, Pre-feasibility Report, EIA/EMP Report and subsequent communications vide your letter dated 21st May, 2014 regarding above mentioned project.

2.0 The Ministry of Environment, Forests and Climate Change has examined your application. It is noted that the proposal is for Oil and Gas Development program in the existing Ravva Offshore Field, PKGM-1 Block, located off Surasniyanam (S.Yanam) in the Bay of Bengal, East Godavari District, Andhra Pradesh. Ravva field in PKGM-1 offshore block spread over in 331.26 km² of area is located in Krishna-Godavari basin, Bay of Bengal off the coast of Andhra Pradesh. The Ravva field has been operation since 1994. Ravva joint venture comprises of ONGC (40 %), Videocone (25%), Cairn India Ltd. (22.5 %) and Ravva Oil Singapore Pty. Ltd. (12.5%). Within the offshore block, in Ravva field, there are 8 oil and gas platforms. No national park or wildlife sanctuary is located within 10 Km radius from Ravva Terminal and PKGM-1 block. Nearest Coringa wildlife sanctuary is located at more than 30 Km from the block. Estuary of Vrudha Gautami River is flowing at distance of 17 Km. Kandikuppa RF (mangrove forest) is located at a distance of 4.5 Km from the proposed New RI platform. Vodalrevvu RF (mainly consist of Casurina equisitem) is located at distance of 9.5 Km from Ravva Terminal. Cost of the proposed oil and gas development is Rs. 3240 Crore. MOEF vide letter no J-11011/6/91-IA dated 19th December 1991 issued environmental clearance for phase-I. So far 48 wells have been drilled. Out of which, 8 wells are self flowing producing, another 8 are gas lift wells and 7 are injectors spread over on 8 unmanned well head platforms. Oil and Gas from offshore wells are routed through subsea interconnecting pipelines to onshore Ravva Terminal provided with oil and gas processing and water injection facilities. It was noted that Andhra Pradesh Coastal Zone Management Authority has considered the said project proposal in its meeting held on 15.03.2014 and recommended the project proposal for environmental clearance. Environmental clearances were obtained in July, 1990, December 1991, July 1996, 30 January 2001, September, 2001 and August, 2005. Over the years due to aging of the filed, production of oil and gas has

declined. CIL presently producing 22,000 BOPD of crude and 1.44 MMSCMD of natural gas. In order to further reduce the decline of hydrocarbon production, following facilities will be created:

- (i) Installation of 1 new platform (RI) to develop & produce contingent hydrocarbon resource in the field.
- (ii) Drilling of 20 development wells, 6 from new RI platform and 14 from existing platforms (4 nos. from RF, 3 nos. from RC, 3 nos. RG and 4 nos. from RE platforms).
- (iii) Laying of 3 new interconnecting pipelines (of total 14 Km length) in the offshore region from new RI platform to existing RB and RG platforms as per the following arrangement:
- (iv) 4 Km, 8" subsea oil pipeline from new RI platform to existing RB platform for oil production.
- (v) 4 Km, 4" subsea gas lift pipeline existing RB platform to new platform (RI).
- (vi) 6 Km, 8" subsea gas pipeline from RI platform will be brought to existing RB & RG platforms for excavation through existing pipelines from RB platform to Ravva Terminal.
- (vii) Drilling of 6 exploratory /appraisal wells to assess presence of hydrocarbons in pools.

4.0 Air emissions from D.G. sets will be controlled by providing adequate stack height. Water requirement will be 85 m³/day (45 m³/day fresh water + 40 m³/day seawater) for drilling a well and domestic use for proposed drilling. Water requirement at the Ravva Terminal is met through ground water resources. CIL is extracting ground water of 9,570 m³/day through old deep wells reportedly drilled prior to 1988. Out of the 9,570 m³/day water requirement, 9170 m³/day is used for injection into reservoir to maintain the reservoir pressure by filling the void created due to fluid extraction and remaining 400 m³/day is fed to Reverse Osmosis plant for domestic use and fire water make up needs. Sewage will be treated in Sewage Treatment Plant. Wash wastewater from shaleshaker will be recirculated within mud preparation system. Produced water generated during hydrocarbon fluid handling and its stabilization is treated in produced water re-injection system (PWRI). Currently, within Ravva field, a total of 13 injection wells are operating with the daily water injection capacity of 100,000 barrels of water per day and meet the standards of injection produced water into confined hydrocarbon reservoir structure at more than 1000 m with oil in water content of less than 10 ppm. An Effluent Treatment Plant of 3000 m³/day capacity consists of primary, secondary and tertiary treatment has been operating at Ravva Terminal. Treated effluent is discharged into sea complies with the marine water discharge standards as stipulated by APPCB. Waste oil from API separator, ETP sludge, STP sludge, tank bottom sludge, paint drum, oil filter are collected and stored in leak proof container for disposal. Waste oil is sent to authorized recycler, while oily waste is sent to CHWTSDF for incineration. Other hazardous waste is being sent to CHWTSDF for secured landfill. Power requirement will be 8000 KVA for offshore drilling and lighting the quarters at the rig through DG set (4 x 2000 kVA) typically installed onboard jack up rig. DG set (1500 KVA) will be used for emergency power supply.

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.

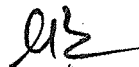
6.0 The proposal was considered by the Expert Appraisal Committee (Industry) in its meetings held during 16th-17th May, 2013, 18th-19th March, 2014, 28th – 30th April, 2014 and 23rd-24th June, 2014 respectively. Project Proponent and the EIA Consultant namely M/s ERM, New Delhi have presented EIA / EMP 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 Committee recommended the proposal for environmental clearance.

7.0 Public hearings/public consultation was held on 5th December, 2013.

8.0 Based on the information submitted by the project proponent, the Ministry of Environment, Forests and Climate Change hereby accords environmental clearance to 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. All the specific conditions and general conditions specified in the environmental clearance letter accorded vide Ministry's letter nos. J-11011/6/1991-IA dated 19th December, 1990 and J-11011/6/91-IA dated 19th December, 1991, J-11011/50/2001-IA dated 17th September, 2001 and J-11011/207/2004-IA II (I) dated 4th August, 2005 shall be implemented.
- ii. 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.
- iii. CRZ clearance shall be obtained.
- iv. Gas produced during testing shall be flared with appropriate flaring booms.
- v. 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.
- vi. Total water requirement shall not exceed 85 m³/day (45 m³/day fresh water + 40 m³/day seawater) and prior permission shall be obtained from the Competent Authority for the drawl of water. Only water based mud system shall be used.
- 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.

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- 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. All commitment made during public hearing /public consultation should be satisfactorily complied. As being done in existing facility, tripartite implementation programme between the PP, District Administration and Local Panchyat should be accomplished and adequate fund to fulfill public grievance should be kept in the budgetary provision of the company.
- xxxi. 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.
- 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. 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 stations 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 Parisad/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.

12. Environmental Clearance is issue to M/s Cairn India Ltd regarding Oil and Gas Development in Existing Ravva Offshore Field, PKGM-1 Block, located off Surasniyanam (S.Yanam) in the Bay of Bengal, East Godavari District, Andhra Pradesh.


(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 PariveshBhavan, CBD-cum-Office Complex, East Arjun Nagar, New Delhi - 110 032.
4. The Chairman, Andhra Pradesh Pollution Control Board, ParyavaranBhawan, A-III, Industrial Estate, Sanath Nagar, Hyderabad - A.P.
5. Monitoring Cell, Ministry of Environment, Forests and Climate Change , ParyavaranBhavan, CGO Complex, New Delhi.
6. Guard File/Monitoring File/Record File.


(Lalit Bokolia)
Additional Director

