



Government of India

Ministry of Environment, Forests & Climate Change

F. No. J-11011/80/2013- IA II (I)

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Dated: 11th August 2014

To

Shri Hari Kumar,

Head-HSEQ

M/s Cairn Energy India Limited

4th Floor, Vipul Plaza

Suncity, Sector 54, Gurgaon-122002 (Haryana)

E-mail : Hari.Kumar@cairnindia.com Fax No.: 0124-4593231

Subject: Augmentation of Hydrocarbon Production (2 lakh bopd to 3 lakh bopd) in RJ-ON-90/01 Block of **M/s Cairn India Ltd.** located in districts Barmer and Jalore, Rajasthan – **Environmental Clearance -reg.**

Sir,

This is with reference to your letter no. CIL/GGN/MoEF/13/13/34 dated 23rd December, 2013 along with project documents including EIA-EMP report along with public hearing documents seeking environmental clearance on the above mentioned subject. TOR was granted to the project vide this Ministry's letter of even no. dated 26.06.2013 for preparation of EIA-EMP Report.

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.

2. The Ministry of Environment & Forests has examined your application. It is noted that the proposal is for augmentation of hydrocarbon Production (from 2,00,000 BOPD to 3,00,000 BOPD) and 165 mmscfd natural gas in RJ-ON-90/1 Block, Barmer and Jalore Districts, Rajasthan. The Rajasthan (RJ-ON-90/1) block is a joint venture between Cairn India Ltd. (CIL -70%) and ONGC (30 %) with CIL as operator. The block covers an area of 3111 km² located largely in Barmer District & partly in Jalore District of Western Rajasthan. Till date CIL has made 25 commercial discoveries out of which six have been developed/under development. The hydrocarbon resource potential is estimated at 7.3 billion barrels of oil equivalent. The estimated cost of project is Rs. 16000 crores.

3. Following facilities will be developed:

- i. Additional 205 well pads will be developed in the various field of the block for additional production/injection/EOR wells.
- ii. Truck off loading and loading facilities will be provided to transfer crude oil and produced water for marginal fields having smaller production rates.

- iii. For medium fields, separation facilities combined with pumping into spine corridor will be engaged.
- iv. For larger fields fluids will be pumped into spine corridor.
- v. Additional 150 km of spine pipeline corridor will be acquired and over 500 Km of intra /inter field pipeline corridor will be laid down.
- vi. Mother solution plants will be set up at each of the major fields.
- vii. Enhanced Oil Recovery (EOR) will be created.

4. Following are the status of drilling facilities:

S.N.	Particular	Existing		Additional Proposed		Total after Augmentation	
		Northern Fields	Southern Fields	Northern Fields	Southern Fields	Northern Fields	Southern Fields
1	Well Pads (Nos)	41	45	135	70	176	115
2	Fluid Handling Capacity (bfpd)	680000	0	340000	340000	1053,000 bfpd	340,000 bfpd
3	Oil Production Capacity (boPD)	200000	14200 (Satellite Filed)	100000	100000	300,000 bopd	14,200 bopd
						The total production including northern and southern fields will not exceed annual average production of 300,000 bopd at any time	
4	Gas Processing Capacity (mmscfd)	40	33	25	67	105 mmscfd	133 mmscfd
5	Low Marginal fields with early /quick production system	0	45	30	30	30	75

5. Land requirement for terminal expansion will be 344 ha. Per well pad requires 0.6 ha land. In field pipeline including spine corridor requires land area of (500 Km x 30 m approx. + 150 km x 60 m). A 150 km long spine pipeline corridor is proposed within the block. Intra- inter field pipeline of 500 km will also be developed to connect GGS, EOR, chemical processing facility spine construction and processing terminal. Land requirement for storage facilities is 45 ha.

6. Additional flare (1 No.) will be installed in Mangla processing terminal and Raageshwari Gas Terminal each. Stack of adequate height will be provided to gas fired boiler (3x115 TPH). Stack of adequate height will be provided to Gas Generator Set (3x 2500 kVA). Low NOx burner will be installed in the Captive Power Plant alongwith flue gas recirculation to reduce NOx emission. Vapour recovery units will be provided to recover low pressure gas/ vapour vented from various production equipments. Total saline ground water extraction from Thumbli aquifer, Fatehgarh aquifer and Quaternary will be 51500 m³/day, 15000 m³/day and 2175 m³/day respectively. Fresh water requirement from desalination plant will be 5470 m³/day for both processing hubs. Produced water will be treated in the produced water treatment plant. The rejects from the desalination process will be comingled with the treated produced water/injection water and injected back into the oil reservoir for pressure maintenance. Sewage will be treated in sewage treatment plant (STP). Wastewater generated during drilling operation will be treated in effluent treatment plant (ETP) comprising equalization, chemical coagulation, flocculation and clarification by settling and residual

unusable mud will be collected in lined pits and solar evaporated. Drill cutting (DC) will be separated from water based mud (WBM) and washed properly and unusable drilling fluids (DF) will be disposed off in well designed lined pit with impervious liner for solar drying. Incinerator will be designed as per CPCB guidelines. Incinerated ash and ETP sludge will be sent to treatment storage disposal facility (TSDF) for hazardous waste. Organic process waste and spent carbon will be incinerated. Waste oil/spent oil will be sold to registered recyclers/re-processors.

7. Public hearings/public consultations were held on 22nd October, 2013 for Barmer and 25th October, 2013 for Jalore Districts.

8. The proposal was considered by the Expert Appraisal Committee (Industry) in its 8th, 15th and 18th meetings held during 16th – 17th May, 2013, 29th – 30th January, 2014 and 28th–30th April, 2014 respectively. Based on the documents furnished and presentation made by the Project Proponent and the EIA Consultant namely M/s AECOM India Pvt. Ltd., the Committee recommended the proposal for environmental clearance.

9. The Ministry of Environment and Forests hereby accords environmental clearance to the above project under the provisions of EIA Notification dated 14th September, 2006 subject to strict compliance of the following specific and general conditions:

A. SPECIFIC CONDITIONS :

- i. Compliance to all the specific and general conditions mentioned in environmental clearance letters nos. J-11011/382/2005-IAII (I) dated 21st March, 2006, J-11011/174/2007-IAII(I) dated 12th March, 2008, J-11011/98/2019-IAII(I) dated 23rd November, 2010, 16th October, 2012 and J-11011/108/2012- IA II (I) dated 14th June, 2013 shall be ensured.
- ii. The stack emissions from various units shall conform to the standards prescribed under the Environment (Protection) Act. At no time, the emission levels shall go beyond the stipulated standards. In the event of failure of pollution control system(s) adopted by the unit, the unit shall be immediately put out of operation and shall not be restarted until the desired efficiency of the pollution control device has been achieved. Low NO_x burner shall be installed in the Captive Power Plant alongwith flue gas recirculation to reduce NO_x emission.
- iii. Leak Detection and Repair programme shall be prepared and implemented to control HC/VOC emissions. Focus shall be given to prevent fugitive emissions for which preventive maintenance of pumps, valves, pipelines are required. Proper maintenance of mechanical seals of pumps and valves shall be given. A preventive maintenance schedule for each unit shall be prepared and adhered to. Fugitive emissions of HC from product storage tank yards etc. must be regularly monitored. Sensors for detecting HC leakage shall be provided at strategic locations.
- iv. The company shall upload the status of compliance of the stipulated environmental clearance conditions, including results of monitored data on its website and shall update the same periodically. It shall simultaneously be sent to the Regional office of MOEF, the respective Zonal office of CPCB and the RSPCB. The levels of PM₁₀, SO₂, NO_x, CO and non-methane hydrocarbon in ambient air and emissions from the stacks shall be monitored and displayed at a convenient location near the main gate of the company and at important public places.

- v. Total saline ground water requirement from Thumbli aquifer, Fatehgarh aquifer shall not exceed 51500m³/day, 15000m³/day and 2175m³/day respectively. Clearance from CGWA shall be obtained and submitted to the Regional Office, Lucknow.
- vi. Treated wastewater (produced water/desalination rejects/CPP blow down/ formation water/sanitary sewage) shall comply with the standards notified under the Environment (Protection) Act, 1986. As proposed, the produced water generated shall be treated in the produce water treatment plant to separate solids and oil traces through induced gas floatation process. No water shall be discharged outside the facility boundary. Produced water shall be treated in inject wastewater treatment plant and treated water will be injected in ground as per CPCB/MoEF guidelines.
- vii. Domestic wastewater shall be treated in Sewage Treatment Plant (STP) and recycle/reuse entire treated wastewater for green belt development and various activities at the site.
- viii. Process effluent/any wastewater shall not be allowed to mix with storm water. Storm water drain shall be passed through guard pond.
- ix. Adequate numbers of ground water quality monitoring stations by providing piezometers around the captive landfill site and project area shall be set up. Sampling and trend analysis monitoring must be made on monthly a basis and report submitted to Rajasthan Pollution Control Board and this Ministry.
- x. The drill cutting (DC) wash water shall be treated to conform to limits notified vide GSR.546(E) dated 30th August, 2005 under the Environment (Protection) Act, 1986 before disposal of solid waste, drill cutting and drilling fluids for onshore drilling operation. The treated effluent shall be monitored regularly.
- xi. The company shall obtain Authorization for collection, storage and disposal of hazardous waste under the Hazardous Waste (Management, Handling and Trans-Boundary Movement) Rules, 2008 and amended as on date for management of Hazardous wastes and prior permission from RSPCB shall be obtained for disposal of solid / hazardous waste in the TSDF.
- xii. Additional Incinerator comprising primary and secondary chamber shall be designed as per CPCB guidelines. SO₂, NO_x, HCl and CO emissions shall be monitored in the stack regularly.
- xiii. Green belt shall be developed at least in 33 % of the plant area in and around the plant premises to mitigate the effects of fugitive emissions all around the plant as per the CPCB guidelines in consultation with DFO. Thick greenbelt with suitable plant species shall be developed around unit. Selection of plant species shall be as per the CPCB guidelines.
- xiv. All the recommendations mentioned in the rapid risk assessment report, disaster management plan and safety guidelines shall be implemented.
- xv. As proposed, an amount of Rs. 300 crores has been earmarked towards the Enterprise Social Commitment based on locals need, issues raised during the earlier public hearing meeting and item-wise details along with time bound action plan. A mechanism shall be developed to follow up the monitoring of implementation and copy of compliance report shall be submitted to the Ministry's Regional Office at Lucknow. Implementation of such program should be ensured accordingly in a time bound manner.

- xvi. The Company shall submit within three months their policy towards Corporate Environment Responsibility which shall inter-alia address (i) Standard operating process/ procedure to being into focus any infringement/deviation/violation of environmental or forest norms/conditions, (ii) Hierarchical system or Administrative order of the Company to deal with environmental issues and ensuring compliance to the environmental clearance conditions and (iii) System of reporting of non compliance/violation environmental norms to the Board of Directors of the company and/or stakeholders or shareholders.

B. GENERAL CONDITIONS:

- i. The project authorities shall strictly adhere to the stipulations made by the Rajasthan State Pollution Control Board.
- 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 RSPCB. 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.
10. The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.
11. The Ministry reserves the right to stipulate additional conditions, if found necessary. The company in a time bound manner will implement these conditions.
12. 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.

(Dr. T. Chandini)
Scientist F

Copy to:-

1. Secretary, Department of Environment and Forests, Government of Rajasthan, Jaipur, Rajasthan.
2. Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD-cum-Office Complex, East Arjun Nagar, Delhi -110032.

3. Chairman, Rajasthan State Pollution Control Board, 4, Institutional area, Jhalana, Doongri, Jaipur, Rajasthan.
4. Chief Conservator of Forests (Central), Ministry of Environment and Forests, Region Office (Central), Kendriya Bhawan, 5th Floor, Sector-H, Aliganj, Lucknow – 226 024, U.P.
5. Monitoring Cell, Ministry of Environment and Forests, Paryavaran Bhavan, CGO Complex, New Delhi.
6. Guard File/Monitoring File/Record File/Notice Board.

(Dr. T. Chandini)
Director