भारत पेट्रोरिसोर्सेस लिमिटेड
भारत सरकार का उपक्रम
भारत पेट्रोलियम कॉर्पोरेशन लि.की
संपूर्ण स्वामित्ववाली सहायक कंपनी

BHARAT PETRORESOURCES LIMITED
A Govt. of India Enterprise
A wholly owned subsidiary of
Bharat Petroleum Corporation Ltd.

Ref: BPRL/CB-ONN/2010/8/STAT/EC Development/10 08/08/2024

To

Ministry of Environment, Forest and Climate Change
Regional Office (Western Zone), E-5
Kendriya Paryavaran Bhavan
Arera Colony, Link Road-3
Ravishankar Nagar
Bhopal – 462016.

Sub: 10th EC Compliance report from 01st Feb 2024 to 31st July' 2024 for Onshore Development and Production of Oil & Gas by M/s Bharat Petro Resources Limited in the Block CB-ONN-2010/8, Cambay basin, Gujarat.

Ref: Environmental Clearance (EC) vide F.No.J-11011/324/2013-IA-II (I) dated 30.07.2019

Ministry of Environment, Forest & Climate Change has granted Environmental Clearance vide letter Ref: J-11011/324/2013-IA-II dated 30.07.2019 for Onshore Development and Production of Oil & Gas in the Block CB-ONN-2010/8, Cambay basin, Gujarat.

Compliance report for the period of 01st February' 2024 to 31st July' 2024 attached for your perusal. Also, the compliance Report is being uploaded on BPRL website.

Thanking You,

Your faithfully,
For **BHARAT PETRORESOURCES LIMITED**

Sam C. P
Sr. Manager (Assets)

भारत पेट्रोरिसोर्सेस लिमिटेड Bharat PetroResources Limited Mumbai मुंबई

Encl: As above.

Copy to:

I. *The Chairman, Central Pollution Control Board*
II. *The Chairman, Gujarat State Pollution Control Board*

1.0 SALIENT FEATURES OF THE PROJECT

1.1 General Information

Bharat Petroleum Corporation Ltd (BPCL) entered the upstream sector in 2003 with the aim of providing partial supply security of crude and hedging of price risks and to become a vertically integrated oil company adding company's bottom line.

Considering the need for a focused approach for E&P activities and implementation of investment plans of Bharat Petroleum Corporation Ltd. at a quicker pace, a wholly owned subsidiary company Bharat PetroResources Ltd. (BPRL) was incorporated in October 2006, with the objective of carrying out Exploration and Production activities.

Under NELP-IX bid round, BPRL led consortium has been awarded one on-land block CB-ONN-2010/8, in Cambay basin, Gujarat. Production Sharing Contract (PSC) with GoI was signed on 30.08.2012. BPRL is the Lead Operator with 25% Participating Interest (PI) and the other consortium partners are GAIL- 25% PI, EIL- 20% PI, BF Infrastructure Ltd - 20% PI and Monnet Ispat & Energy Ltd - 10% PI for exploration activities.

Field Development Plan (FDP) has been approved as exclusive operation by consenting partners consisting of BPRL (PI 50%), GAIL (27.78%) and EIL (22.22%) as per Joint Operating Agreement.

1.2 Location of the Block

Block CB-ONN -2010/8 is geographically located in common boundary of three districts Kheda, Ahmedabad and Gandhinagar in Gujarat and is divided in two parts – Part A and Part B. The area covered under part A is 14 km^2 and in Part B is 28 km^2.

Location details of the block are as follows:

Taluka: Dehgam, Daskroi, Mehmdavad

District: Gandhinagar, Ahmedabad and Kheda

State: Gujarat

The geographical Coordinates detail of the block are presented in Table A.

Longitude and Latitude of CB-ONN-2010/8 Block:

Points	Latitude			Longitude		
	Deg.	Min.	Sec.	Deg.	Min.	Sec.
Part A						
A	23	0	54	72	50	10
B	23	0	54	72	48	6
C	23	3	0	72	48	6
D	23	3	0	72	50	11
A	23	0	54	72	50	10
Part B						
A	23	0	0	72	46	38
B	23	0	0	72	50	10
C	22	57	26	72	50	8
D	22	57	26	72	46	38
E	23	0	0	72	46	38

1.3 Exploration Activities:

Ministry of Environment, Forest and Climate Change (MOEF&CC), Govt. of India granted Environmental Clearance (EC) vide F.No.J-11011/324/2013-IA-II (I) dated 22.06.2015 to carry out exploration activities in the block, including drilling of 8 exploratory wells. Necessary public hearing was conducted in the block area covering three districts of Ahmedabad, Gandhinagar and Kheda in the state of Gujarat. As Lead Operator of the block, BPRL conducted Petroleum Operations in the Contract Area in accordance with modern oil field and petroleum industry practices to discover commercial accumulations of Petroleum. In line with the Minimum Work Programme (MWP) commitment, consortium completed acquisition, processing, interpretation of 2D/3D seismic data, drilling of six wells and testing of five wells. There are two discoveries in the block i.e. in Pasunia#01 (PA#01) & Pasunia#02 (PA#02) wells. The Field Development Plan (FDP) was approved by DGH on 11.06.2018. As per the approved FDP of Pasunia discovery, oil is to be produced from 2 existing discovery wells (i.e. PA #01 & PA#02) and also from 3 new development wells (to be drilled), with the help of sucker rod pumps.

All the rest unsuccessful four exploratory wells – Chandiyal#01 (CH#01), Bhavda#01 (BH#01), Vadod#01 (VA#01) and Demaliya (DE #01) are restored to its original condition and land are

handed over to landowners. BPRL has sent an application letter to GPCB Ahmedabad/Gandhinagar office for surrendering of CTE for above mentioned wells. Pasunia#01 & Pasunia#02 are now temporarily plugged and abandoned.

1.4 Current status of the Block (Development and Production Activities):

In order to develop and monetize the Pasunia Field discovery, BPRL applied for Fresh Environment Clearance (EC) for development and production activities in the block. MOEF&CC granted Environment Clearance (EC) for the Onshore developmental and production activities in the Block CB-ONN-2010/8 vide letter **F. No. No.J-11011/324/2013-IA-II (I) dated 30.07.2019**. Also, Govt. of Gujarat granted petroleum Mining Lease (PML) for 15 years vide ref. PML-14-2018-2038 dated 26.02.2019 to carryout developmental activities. However, due to delay in implementation of FDP due to various reasons like non-availability of work over rig and further, lockdown conditions due to COVID-19 pandemic, project economics of the block was revised. Based on the same, BPRL management has approved the relinquishment of block. Accordingly, the process of surrendering the block to DGH is being initiated. No further development and production activities are planned in the Block CB-ONN-2010/8. Letter for Surrendering the Consent to Establish (CTE) for well site Demaliya#01, Bhavda#01, Chandial#01 and Vadod#01 has sent to GPCB.

Status Summary of all six wells are as follows:

SL. NO	WELL NAME	CURRENT STATUS	STATUS & FUTURE PLANS
1	**Bhavda#01 (BH#01)**	1. Well was permanently plugged and abandoned as per statutory norms dt 10.05.2017. 2. Site has been restored and handed over to landowners on 24.12.2019.	Future Plan– Nil.
2	**Chandiyal#01 (CH#01)**	1. Well was permanently plugged and abandoned as per statutory norms of OISD and DGMS dt 25.01.2018. 2. Site has been restored and handed over to landowners on 29.11.2021.	Future Plan – Nil.
3	**Vadod#01 (VA#01)**	1. Well was permanently plugged and abandoned as per statutory norms of OISD and DGMS dt 12.02.2018. 2. Site has been restored and handed over to landowners on 31.01.2022	Future Plan – Nil.

4	**Demaliya#01 (DE#01)**	1. Well was permanently plugged and abandoned as per statutory norms of OISD and DGMS at 04.03.2022 2. Site has been restored and handed over to landowners on 11.05.2022.	Future Plan – Nil.
5	**Pasunia#01 (PA#01)**	1. This well is Discovery well. 2. Currently well is **temporarily** plugged and abandoned as per statutory norms of OISD and DGMS dt 31.03.2016.	1. Permanent plugging & abandonment of the well. 2. Site restoration activities
6	**Pasunia#02 (PA#02)**	1. This well is Discovery well. 2. Currently well is **temporarily** plugged and abandoned as per statutory norms of OISD and DGMS dt 12.11.2016	1. Permanent plugging & abandonment of the well. 2. Site restoration activities

C2.0 COMPLIANCE TO CONDITIONS OF ENVIRONMENTAL CLEARANCE

The Ministry of Environment and Forests had issued Environment Clearance (EC) for Block CB-ONN-2010/8, Cambay, Gujarat, vide its letter J-11011-324/2013 IA II (I) dated 30th July 2019. Copy of EC is attached vide **Annexure-01.** Compliance to EC conditions are as under:

Compliance to Condition Mention in EC

<table>
<tr><th>Sr. No</th><th>Condition</th><th>Compliance</th></tr>
<tr><td colspan="3"></td></tr>
<tr><td>a.</td><td>Necessary permission is mandated under the Water (Prevention and control of pollution) Act, 1974 and the Air (Prevention and control of pollution) Act, 1981, as applicable from time to time, shall be obtained from the State Pollution Control Boards.</td><td>BPRL has obtained necessary consent to Establish for the wells Pasunia#01 and Pasunia#02 wells from Gujarat Pollution control Board (GPCB). Details of CTEs obtained are as given below:
<table>
<tr><td>Well name</td><td>CTE Ref. No.</td><td>Date of Issue</td><td>Valid till</td></tr>
<tr><td>Pasunia#01</td><td>GPCB-RO-GNR-1447/ID-48286</td><td>12.10.2020</td><td>11.10.2027</td></tr>
<tr><td>Pasunia#02</td><td>GPCB-PCB ID - 48281</td><td>24.11.2020</td><td>23.11.2027</td></tr>
</table></td></tr>
<tr><td>b.</td><td>Effluent shall be treated in mobile ETP, as proposed by the project proponent. Zero liquid Discharge shall be ensured and no waste/treated water shall be discharged to my surface water body, sea and/or on land.</td><td>Operational activities (Civil work, Development drilling, Production activities) has not been started in the Block. Hence, no effluent generated during the period of February 2024- July 2024.

Noted and would be compiled once operations starts in the Block.</td></tr>
<tr><td>c.</td><td>To control source and the fugitive emission, suitable pollution control devices shall be installed to meet the prescribed norms and /or the NAAQS. The gaseous emissions shall be dispersed through stack of adequate height as per CPCB/SPCB guidelines.</td><td>No Operational activities (Civil work, Development drilling, Production activities) carried out during the period of February 2024- July 2024. Hence, no emission generated during the period of February 2024- July 2024.

Noted and would be compiled once operations starts in the Block.</td></tr>
<tr><td>d.</td><td>Necessary authorization required under the Hazardous and Other Wastes (Management and Trans-boundary Movement) Rules, 2016, Solid Waste Management Rules, 2016 shall be obtained and the provisions contained in the Rules shall be strictly adhered to.</td><td>Noted and necessary authorization would be obtained under Hazardous waste Rule 2016, Solid waste Rules 2016, if necessary.</td></tr>
</table>

e.	Ambient air quality shall be monitored at the nearest human settlements to ensure conformity with the national Ambient Air Quality Emission Standards issued by the Ministry vide GSRNo.826(E) dated 16th November, 2009 for PM_{10}, $PM_{2.5}$, SO_2, NO_x, CO, CH_4, HC, Non-methane HC etc.	No Operational activities (Civil work, Development drilling, Production activities) carried out during the period of Feb 2024- July 2024. Hence, no emission generated during the period of February 2024- July 2024. Noted and would be compiled once operations starts in the Block.
f.	During exploration, production, storage and handling, the fugitive emission of methane, if any, shall be monitored using Infra-red camera/appropriate technology.	No Operational activities (Civil work, Development drilling, Production activities) carried out during the period of February 2024- July 2024. Hence, no emission generated during the period of February 2024- July 2024. Noted and would be compiled once operations starts in the Block.
g.	The project proponent also to ensure trapping/storing of the CO_2 generated, if any, during the process and handling.	No Operational activities (Civil work, Development drilling, Production activities) carried out during the period of February 2024- July 2024. Hence, no emission generated during the period of February 2024- July 2024. Noted and would be compiled once operations starts in the Block.
h.	Approach road shall be made pucca to minimize generation of suspended dust.	WBM based Approach road will be prepared during civil work and construction of facility at the well site. Noted and would be compiled once civil work and construction of facility started at the well site.
i.	The company shall make all arrangements for control of noise from the drilling activity. Acoustic enclosure shall be provided for the DG sets along with adequate stack height as per CPCB guidelines.	Development drilling and production activities are not yet started in the block. Hence no DG sets are provided at the well sites at present. This would be compiled once operations starts in the Block.
j.	Total fresh water requirement shall not exceed 35 cum/day to be met through tankers.	No water consumption during the period of February 2024- July 2024 as No drilling and production operations are carried out during this period. Noted and would be compiled once operations starts in the Block.
k.	The company shall construct the garland drain all around the drilling site to prevent runoff of any oil containing waste into the nearby water bodies. Separate drainage system shall be created for oil contaminated and non-oil contaminated. Effluent shall be properly treated and treated wastewater shall conform to CPCB standards.	Noted and would be compiled once operations starts in the Block.

l.	Drill cuttings separated from drilling fluid shall be adequately washed and disposed in HDPE lined pit. Waste mud shall be tested for hazardous contaminants and disposed according to HWMH Rules, 2016. No effluent/drilling mud/drill cutting shall be discharged/disposed off into nearby surface water bodies. The company shall comply with the guidelines for disposal of solid waste, drill cutting and drilling fluids for onshore drilling operation notified vide GSR. 546(E) dated 30th August, 2005.	Noted and would be compiled once operations starts in the Block.
m.	Oil spillage prevention and mitigation 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.	Oil spillage prevention and mitigation scheme is part of Emergency response plan and attached as **Annexure – 02**
n.	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. At the place of ground flaring stack with knockout drums shall be installed to minimize gaseous emission during operation.	Noted and would be compiled once operations starts in the Block.
o.	The company shall develop a contingency plan for H_2S release including all necessary aspects from evacuation to resumption of normal operations. The workers shall be provided with personal H_2S detectors in locations of high risk of exposure along with self-containing breathing apparatus.	Emergency Response Plan prepared for drill site covers contingency plan for H2S release attached as Annexure 02. Contingency plan for H2S includes Properties of H2S, Health effects of H2S, Protection against H2S, Training, Detection and monitoring, PPE's, Emergency response, Action taken, Roles and responsibility, Control Operations etc. Workers will be provided H2S detectors and Breathing apparatus in the location of high risk exposure of H2S during drilling operations. However, during actual exploration drilling operation, no H2S was observed.
p.	The company shall carry out long term subsidence study by collecting base line data before initiating drilling operation till the project lasts. The data so collected shall be submitted six monthly to the Ministry and Regional Office.	Noted and collection of baseline date will be initiated before drilling operation starts in the Block.

q.	Blow out Preventer system shall be installed to prevent well blowouts during drilling operations. BOP measures during drilling shall focus on maintaining well bore hydrostatic pressure by proper pre-well planning and drilling fluid logging etc.	Noted and would be compiled once operations starts in the Block.
r.	Emergency Response plan shall be based on the guidelines prepared by OISD, DGMS and Govt. of India.	Emergency Response plan has been prepared and attached in **Annexure 02**.
s.	After completion of drilling process, suitable measures shall be taken for well plugging and secured enclosures, and drilling site shall be restored to original condition. In case of hydrocarbon not found economically viable, a full abandonment plan shall be implemented for the drilling site in accordance with the applicable Indian petroleum Regulations.	Noted and would be compiled for the unsuccessful/dry wells after completion of drilling operation.
t.	All commitments made to the public during public consultation/hearing shall be satisfactorily implemented.	Based on Public Hearing commitment, activities are planned for next 5 years, same shall be implemented once development activities starts in the Block.
u.	At least 2% of the total project cost shall be allocated for Corporate Environment Responsibility (CER) and item-wise details along with time bound action plan shall be prepared and submitted to the Ministry's Regional Office.	Proposed allocation of Budget for next 5 **years** are attached as **Annexure 03.** These activities will be taken up while implementing the development & production activities.
v.	Occupational health surveillance of the workers shall be carried out as per the prevailing Acts and Rules.	Noted and would be compiled once operations starts in the Block.
w.	Oil content in the drill cuttings shall be monitored by some Authorized agency and report shall be sent to Ministry's Regional Office.	Noted and would be compiled once drilling starts in the Block.
x.	An audit shall be done to ensure that the Environment Management Plan is implemented in totality and report shall be submitted to the Ministry's Regional Office.	Noted and would be compiled once operations starts in the Block.
y.	Company shall prepare operating manual in respect of all activities, which would cover all safety & environment related issues and measures to be taken for protection. One set of environmental manual shall be made available at the drilling site/ project site. Awareness shall be created at each level of the management. All the schedules and	Noted and would be compiled once operations starts in the Block.

	results of environmental monitoring shall be available at the project site office. Remote monitoring of site should be done.	
z.	Process safety and risk assessment studies shall be further carried out using advanced models, and the mitigating measured shall be undertaken accordingly.	Process safety and risk assessment studies has been carried out using advance model and attached as **Annexure 04.**
9.1	The grant of Environmental Clearance is further subject to compliance of other generic conditions as under :-	
i.	The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board, State Government and/ or any other statutory authority.	Noted and would be compiled once operations starts in the Block.
ii.	No further expansion or modifications in the plant 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 fresh reference shall be made to the Ministry to access the adequacy of conditions imposed and to add additional environmental protection measured required, if any.	Noted and strict compliance shall be followed.
iii.	The locations of ambient air quality monitoring stations shall be decided in consultation with the State Pollution Control Board and it shall be ensured that at least one stations each is installed in the upwind and downwind direction as well as where maximum ground level concentrations are anticipated.	Noted and would be compiled once operations starts in the Block.
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 complied with.	Noted and would be compiled once operations starts in the Block.
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 standards prescribed under the Environment (Protection) Act, 1986 and the Rules made there under.	Noted and would be compiled once operations starts in the Block.
vi.	Training shall be imparted to all employees on safety and health aspects of chemicals	Noted and would be compiled once operations starts in the Block.

	handling. Pre-employment and routine periodical medical examinations for all employees shall be undertaken on regular basis.	
vii.	The company shall comply with all the environmental protection measures and safeguards proposed in documents submitted to the ministry. All the recommendations made in the EIA/EMP in respect of environmental management, risk mitigation measures shall be implemented.	Noted and would be compiled once operations starts in the Block.
viii.	The company shall undertake all measures for improving socio-economic conditions of the surrounding area. CSR activities shall be undertaken by involving local villagers, administration and other stake holders. Also eco-developmental measures shall be undertaken for overall improvement of the environment.	Noted and would be compiled once operations starts in the Block.
ix.	A separate Environmental Management Cell equipped with full fledged laboratory facilities shall be set up to carry out the Environmental Management and Monitoring functions.	Environmental Monitoring at well site will be carried out through NABET accredited Consulting Organizations and NABL accredited laboratories with full-fledged lab facilities as per site requirement. BPRL has formed its own Environment Management cell, which is headed by Director (Ops & BD) and attached as **Annexure 05**. However, NABL accredited laboratory will be outsourced to carry out environment management and monitoring.
x.	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.	Noted and would be compiled once operations starts in the Block.
xi.	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.	A copy of Environment Clearance letter has been sent to concern Panchayat on 16.03.2020 and also Information regarding EC accorded for the project was published in newspapers in English as well as Vernacular languages on 08.08.2019 (Enclosed in **Annexure 6**). Environment Clearance letter has also been posted on company website

<table>
<tr><td></td><td></td><td>http://bharatpetroresources.com/sustainability/sustainability.aspx#EnvironmentalClearance</td></tr>
<tr><td>xii.</td><td>The project proponent shall submit six monthly reports on the status of compliance of the Environmental Clearance conditions to the respective Regional office of MOEF&CC, the respective zone office of CPCB and SPCB. A copy of Environment Clearance and six monthly compliance status report shall be posted on website of the company.</td><td>A copy of Environment Clearance and six monthly EC compliance report for the following period has been submitted to MOEF&CC regional office Bhopal and have been posted on company's website.
Dates of submission of Environment clearance compliance report are given below:
<table>
<tr><th>EC compliance Report</th><th>Period</th><th>Date of Submission</th></tr>
<tr><td>1st Compliance report</td><td>30th July 19 – 31st January 20</td><td>18.03.2020</td></tr>
<tr><td>2nd Compliance Report</td><td>1stFeb 20 –31st July 20</td><td>17.08.2020</td></tr>
<tr><td>3rd Compliance Report</td><td>1ST August 2020 – 31st January 2021</td><td>19.03.2021</td></tr>
<tr><td>4th Compliance Report</td><td>1st Feb 21 – 31st July 2021</td><td>29.09.2021</td></tr>
<tr><td>5th Compliance Report</td><td>1st Aug 21- 31st Jan 22</td><td>01.06.2022</td></tr>
<tr><td>6th Compliance Report</td><td>1st Feb 22 – 31st July 22</td><td>20.09.2022</td></tr>
<tr><td>7th Compliance Report</td><td>1st Aug 22 – 31st Jan 23</td><td>08.02.2023</td></tr>
<tr><td>8th Compliance Report</td><td>1st Feb 23 – 31st July 23</td><td>01.08.2023</td></tr>
<tr><td>9th Compliance Report</td><td>1st Aug 24 – 31st Jan 24</td><td>08.02.2024</td></tr>
</table>
http://bharatpetroresources.com/sustainability/sustainability.aspx#EnvironmentalClearance</td></tr>
<tr><td>xiii.</td><td>The environmental statement for each financial year ending 31st March in Form-V as is mandated to 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 the MOEF by e-mail.</td><td>Environmental Statement in Form V for Exploration related activities in the Block had been submitted to Gujarat Pollution control Board (GPCB) vide BPRL/CB-ONN-2010/8 dated 13.05.2020. BPRL has not yet started any operational activities related to development and production activities in the Block.
Form-V has been posted on company website.
http://bharatpetroresources.com/sustainability/sustainability.aspx#EnvironmentalClearance
Form-V has also been sent through E-mail to Regional offices of MOEF&CC on 10.08.2020.</td></tr>
</table>

xiv.	The Project proponent shall inform the public about receipt of the environmental clearance, available with the SPCB/Committee and may also be seen at website of the Ministry at http://parivesh.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.	Information regarding EC accorded for the project was published in newspapers in English as well as Gujarati languages on 08.08.2019. Copy for the same is attached as **Annexure-06**.

**********End of the Report**********

O/C Copy

Annexure

F.No.J-11011/324/2013-IA-II (I)
Government of India
Ministry of Environment, Forest and Climate Change
IA Division

Indira Paryavaran Bhawan
Jor bagh Road, New Delhi - 3
Dated: 30th July, 2019

To,

M/s Bharat PetroResources Ltd (BPRL)
Bharat Bhawan, 4&6 Currimbhoy Road,
Ballard Estate, P.O. Box 688,
Mumbai - 400001 (Maharashtra)

Sub: Onshore development and production of oil & gas by M/s Bharat PetroResources Ltd in the Block CB-ONN-2010/8 in Pasunia field in Cambay Basin covering Districts Gandhinagar, Ahmedabad and Kheda (Gujarat) - Environmental Clearance - reg.

Sir,

This has reference to your online proposal No.IA/GJ/IND2/75954/2018 dated 4th March, 2019 along with the EIA/EMP report for the above mentioned project.

2. The Ministry of Environment, Forest and Climate Change has examined the proposal for environmental clearance to the project for onshore development and production of oil & gas from ten wells (Two existing and 8 new development wells) by M/s Bharat PetroResources Ltd (BPRL) in an area of 42 sq km in Block CB-ONN-2010/8 in Pasunia Field in Cambay Basin, covering Districts Gandhinagar, Ahmedabad and Kheda (Gujarat).

3. Existing Block area is 42 sq km. Greenbelt is proposed to be developed in an area of 33% of total area of the QPF Facility. The estimated project cost is Rs.43 Crore. Total capital cost earmarked towards environmental pollution control measures is Rs.43 lakhs and the Recurring cost (operation and maintenance) will be about Rs.25 lakhs per annum.

4. There are no National Parks, Wildlife Sanctuaries, Biosphere Reserves, Tiger/Elephant Reserves and Wild life Corridors etc within 10 km from the project site.

5. Total fresh water requirement is 35 m3/day proposed to be met from tanker supply. Effluent of 5 m3/day quantity will be treated through mobile ETP system. The plant will be based on Zero Liquid discharge system.

6. The project/activity is covered under category A of item 1(b) "Offshore and onshore oil and gas exploration, development & production" of the schedule to the EIA Notification, 2006, and requires appraisal/approval at central level in the Ministry.

7. The standard ToR for the project was granted on 2nd September, 2018. Public hearing for the project was conducted by SPCB on 29th January 2019 at District Gandhinagar and 2nd February, 2019 at District Ahmedabad.

8. The proposal was considered by the Expert Appraisal Committee (Industry-2) in its meeting held on 6-8 May, 2019, wherein the project proponent and their accredited consultant presented the EIA/EMP report. The Committee found the EIA/EMP report complying with the ToR and recommended the project for grant of environmental clearance.

9. Based on the proposal submitted by the project proponent and recommendations of EAC (Industry-2), Ministry of Environment, Forest and Climate change hereby accords environmental clearance to the project for **onshore development and production of oil & gas from ten wells (Two existing and 8 new development wells) by M/s Bharat PetroResources Ltd (BPRL) in the Block CB-ONN-2010/8 in Pasunia Field in Cambay Basin, covering Districts Gandhinagar, Ahmedabad and Kheda (Gujarat), under the provisions of the EIA Notification, 2006, subject to the compliance of terms and conditions as below:-**

(a) Necessary permission as mandated under the Water (Prevention and Control of Pollution) Act, 1974 and the Air (Prevention and Control of Pollution) Act, 1981, as applicable from time to time, shall be obtained from the State Pollution Control Board.

(b) Effluent shall be treated in mobile ETP, as proposed by the project proponent. Zero Liquid Discharge shall be ensured and no waste/treated water shall be discharged to any surface water body, sea and/or on land.

(c) To control source and the fugitive emissions, suitable pollution control devices shall be installed to meet the prescribed norms and/or the NAAQS. The gaseous emissions shall be dispersed through stack of adequate height as per CPCB/SPCB guidelines.

(d) Necessary authorization required under the Hazardous and Other Wastes (Management and Trans-Boundary Movement) Rules, 2016, Solid Waste Management Rules, 2016 shall be obtained and the provisions contained in the Rules shall be strictly adhered to.

(e) Ambient air quality shall be monitored at the nearest human settlements to ensure conformity with the National Ambient Air Quality Emission Standards issued by the Ministry vide GSRNo.826(E) dated 16th November, 2009 for PM_{10}, $PM_{2.5}$, SO_2, NO_x, CO, CH_4, HC, Non-methane HC etc.

(f) During exploration, production, storage and handling, the fugitive emissions of methane, if any, shall be monitored using Infra-red camera/ appropriate technology.

(g) The project proponent also to ensure trapping/storing of the CO_2 genetated, if any, during the process and handling.

(h) Approach road shall be made pucca to minimize generation of suspended dust.

(i) The company shall make all arrangements for control of noise from the drilling activity. Acoustic enclosure shall be provided for the DG sets along with adequate stack height as per CPCB guidelines.

(j) Total fresh water requirement shall not exceed 35 cum/day to be met through tankers.

(k) The company shall construct the garland drain all around the drilling site to prevent runoff of any oil containing waste into the nearby water bodies. Separate drainage system shall be created for oil contaminated and non-oil contaminated. Effluent shall be properly treated and treated wastewater shall conform to CPCB standards.

(l) Drill cuttings separated from drilling fluid shall be adequately washed and disposed in HDPE lined pit. Waste mud shall be tested for hazardous contaminants and disposed according to HWMH Rules, 2016. No effluent/drilling mud/drill cutting shall be discharged/disposed off into nearby surface water bodies. The company shall comply with the guidelines for disposal of solid waste, drill cutting and drilling fluids for onshore drilling operation notified vide GSR.546(E) dated 30th August, 2005.

(m) Oil spillage prevention and mitigation 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.

(n) 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. At the place of ground flaring, the overhead flaring stack with knockout drums shall be installed to minimize gaseous emissions during operation.

(o) The company shall develop a contingency plan for H_2S release including all necessary aspects from evacuation to resumption of normal operations. The workers shall be provided with personal H_2S detectors in locations of high risk of exposure along with self containing breathing apparatus.

(p) The Company shall carry out long term subsidence study by collecting base line data before initiating drilling operation till the project lasts. The data so collected shall be submitted six monthly to the Ministry and Regional Office.

(q) Blow Out Preventer system shall be installed to prevent well blowouts during drilling operations. BOP measures during drilling shall focus on maintaining well bore hydrostatic pressure by proper pre-well planning and drilling fluid logging etc.

(r) Emergency Response Plan shall be based on the guidelines prepared by OISD, DGMS and Govt. of India.

(s) After completion of drilling process, suitable measures shall be taken for well plugging and secured enclosures, and drilling site shall be restored to the original condition. In case of the hydrocarbon not found economically viable, a full abandonment plan shall be implemented for the drilling site in accordance with the applicable Indian Petroleum Regulations.

(t) All the commitments made to the public during public consultation/hearing shall be satisfactorily implemented.

(u) At least 2% of the total project cost shall be allocated for Corporate Environment Responsibility (CER) and item-wise details along with time bound action plan shall be prepared and submitted to the Ministry's Regional Office.

(v) Occupational health surveillance of the workers shall be carried out as per the prevailing Acts and Rules.

(w) Oil content in the drill cuttings shall be monitored by some Authorized agency and report shall be sent to the Ministry's Regional Office.

(x) An audit shall be done to ensure that the Environment Management Plan is implemented in totality and report shall be submitted to the Ministry's Regional Office.

(y) Company shall prepare operating manual in respect of all activities, which would cover all safety & environment related issues and measures to be taken for protection. One set of environmental manual shall be made available at the drilling site/ project site. Awareness shall be created at each level of the management. All the schedules and results of environmental monitoring shall be available at the project site office. Remote monitoring of site should be done.

(z) Process safety and risk assessment studies shall be further carried out using advance models, and the mitigating measures shall be undertaken accordingly.

9.1 The grant of Environmental Clearance is further subject to compliance of other generic conditions as under:-

(i) The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board, State Government and/ or 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, 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 and it shall be ensured that at least one stations each 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 complied with.

(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 the Environment (Protection) Act, 1986 and the Rules made there under.

(vi) 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.

(vii) The company shall 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 shall be implemented.

(viii) The company shall undertake all measures for improving socio-economic conditions of the surrounding area. CSR activities shall be undertaken by involving local villagers, administration and other stake holders. Also eco-developmental measures shall be undertaken for overall improvement of the environment.

(ix) A separate Environmental Management Cell equipped with full-fledged laboratory facilities shall be set up to carry out the Environmental Management and Monitoring functions.

(x) 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.

Offc Copy

(xi) A copy of the clearance letter shall be sent by the project proponent to concerne Panchayat, Zila Parishad/ Municipal Corporation, Urban local Body and the local NGO, if an from whom suggestions/ representations, if any, were received while processing the proposal

(xii) The project proponent shall submit six monthly reports on the status of compliance of th Environmental Clearance conditions to the respective Regional Office of MoEF&CC, th respective Zonal office of CPCB and SPCB. A copy of Environmental Clearance and si monthly compliance status report shall be posted on website of the company.

(xiii) 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.

(xiv) The project proponent shall inform the public about receipt of the environmental clearance, 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.

10. The Ministry reserves the right to stipulate additional conditions, if found necessary at subsequent stages and the project proponent shall implement all the said conditions in a time bound manner. The Ministry may revoke or suspend the environmental clearance, if implementation of any of the above conditions is not found satisfactory.

11. 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 Water Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Hazardous Waste (Management, Handling and Trans-boundary Movement) Rules, 2016 and the Public Liability Insurance Act, 1991, read with subsequent amendments therein.

30/7/2019

(S. K. Srivastava)
Scientist E

Copy to:

1. The Principal Secretary, Forests & Environment Department, Government of Gujarat, Sachivalaya, 8th Floor, Gandhi Nagar - 382 010 (Gujarat)
2. The Chief Conservator of Forests (Western Zone), Ministry of Environment & Forests, Regional Office, E-5, Arera Colony, Link Road -3, Bhopal - 462 016 (M.P.)
3. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi -32
4. The Member Secretary, Gujarat State Pollution Control Board, Paryavaran Bhawan, Sector 10 A, Gandhi Nagar-382 043 (Gujarat)
5. Monitoring Cell, MoEF&CC, Indira Paryavaran Bhawan, Jor bagh road, New Delhi
6. Guard File/Monitoring File/Record File

30/7/2019

(S. K. Srivastava)
Scientist E

Annexure-I

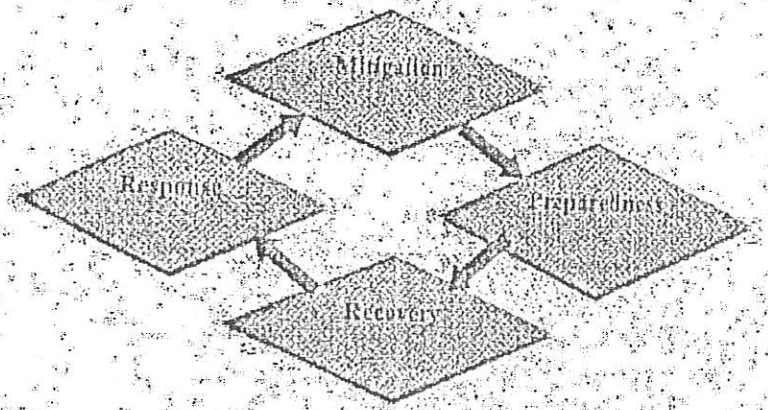
EMERGENCY RESPONSE PLAN

FOR

Bharat PetroResources Limited (BPRL)

BLOCK: BPRL-CB-ONN-2010/8

GUJARAT, INDIA



Att Copy

1. OBJECTIVE OF EMERGENCY RESPONSE PLAN

The objective of an EMERGENCY RESPONSE PLAN is to ensure a quick, effective and appropriate response to emergencies in order to protect the public, company and contract personnel from fatalities and irreversible health effects and the environment from damage. The specific objectives are:

- Actions to be taken in the event of an emergency including when and how the said action is to be taken.
- Actions to be taken by those in and outside BPRL to mobilize their resources in an orderly way and react in time and effectively to handle emergency.
- Alarm and communication system including the system of notifying the concerned authorities.
- Duties and responsibility of each key personnel including measures to be adopted to avert or minimize the consequences of the emergency.
- Plan for competence of personnel and for mock drills.

The plan addresses worst case emergency situations, potential hazards to the public, personnel working at site, environment and the systems required for adequate response.

2. SCOPE

The plan has been developed taking into consideration the emergency in and around BPRL operations for drilling of exploratory wells in block BPRL-CB-ONN-2010/8 in Gujarat, India.

The plan covers the emergencies arising out of acts such as:

- Well kick
- Blowout
- Fire
- Evacuation
- Medical evacuation
- Accidents
- Natural Disasters
- Pollution
- H2S release.

The plan covers in detail the actions to be initiated while responding to emergency situations. It is mandatory for all key personnel to familiarize themselves with the

procedures so that the reaction time is reduced and the response actions are carried out in a professional manner.

3. RESPONSIBILITIES

The responsibility of each person may vary depending on the group or department he/ she belongs. However it is the responsibility of each member of BPRL team and contractor to follow and comply with the Emergency Response Plan in performance of their activities.

The Project/Asset Manager of the Block CB-ONN-2010/8has ultimate responsibility for ensuring that effective measures are in place to fulfill the spirit and intent of EMERGENCY RESPONSE PLAN AND BPRL HSE POLICY.

HSE manager will ensure effectiveness of Emergency Response Plan through regular mock drills and update any changes in the ERP and shall also assist Company man along with BPRL's representative in HSE related matters.

Organization, role and responsibilities have been included in clause 5.

4. STRATEGIC PLAN

4.1. GENERAL INFORMATION ABOUT BLOCK CB-ONN-2010/8

BPRL intends to conduct an exploration drilling campaign with an estimated start date of Q3 2015 - 2016. BPRL intends to drill and test upto 6 wells (4 firm wells and 2 optional wells) in the block. The wells are planned as vertical exploration wells, and to be drilled to total depths of approximately 1800 to 2100 m. The wells are planned to be tested in case of identification of prospective hydrocarbon bearing zones. All works to be conducted as per the international practices and standards. The specifications provided in this scope of work are general in nature, based on available information and the company at its discretion may make variations.

The Block CB-ONN-2010/8 lies in the Ahmedabad-Mehsana Tectonic block of the Cambay Basin and covers an area of 42 Sq. Km. Index map of Block CB-ONN-2010/8 is given below.

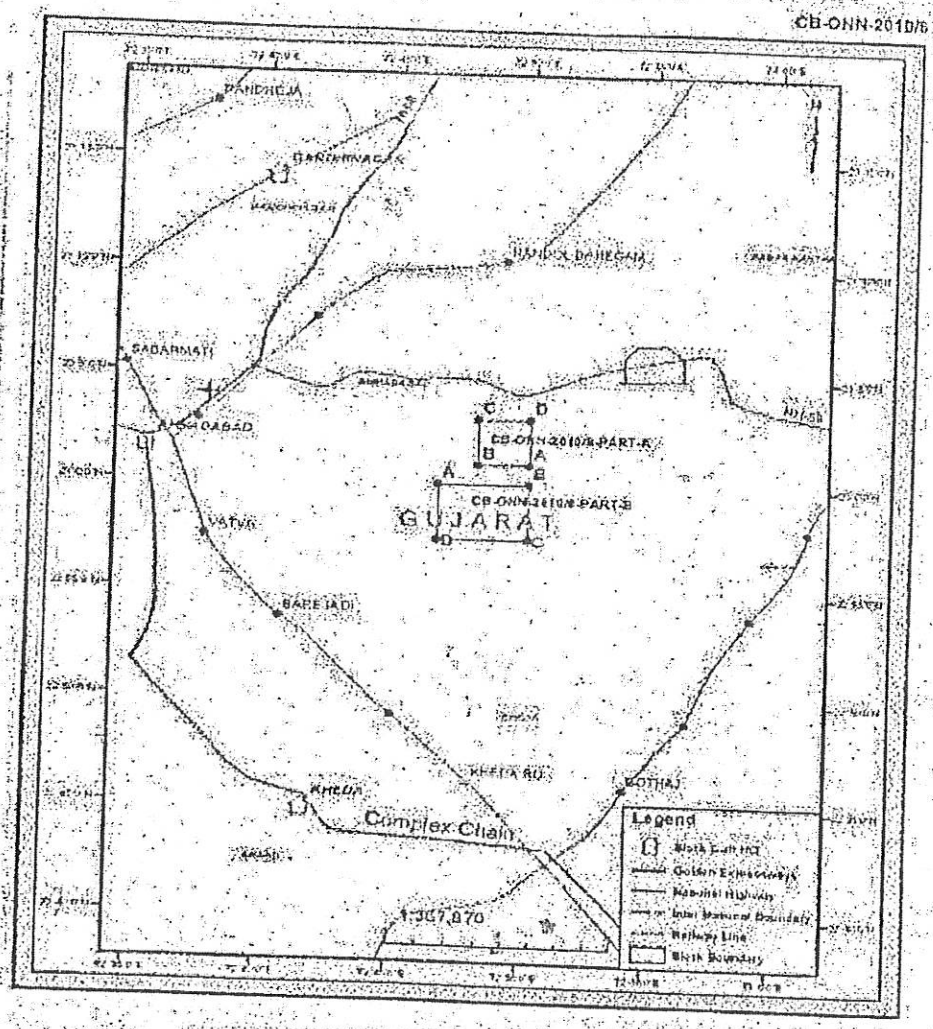


Fig-1: Index Map of Block CB-ONN-2010/8

The area is well connected by all- weather roads. The block is located to the South-South East of Gandhinagar city. The Ahmedabad-Delhi National Highway No. 8 passes near Gandhinagar city. The National Highway No. 8 and 59 passes in the vicinity of the block. The nearest international and domestic airports are located at Ahmedabad situated in the proximity of the block. The towns Ahmedabad, Sabarmati, Gandhigram, Vatva and Nandol Dahegam lie in the vicinity of the block and are interconnected by railways.

4.2. EMERGENCIES

In the event that emergency escalates and cannot be contained by the location team, the Emergency Response Plan will be activated. The ERP is designed to minimize the impact of the incident.

There are different types of emergencies:

4.2.1. Operational Accidents

- Fire/ Explosion
- Blowout
- Injury/Fatality

4.2.2. Environmental incidents

- Oil spill
- Chemical spill

4.2.3. Transportation emergencies

- Shift vehicle accident
- Heavy vehicle accident

4.2.4. Medical emergencies

- Medical evacuation
- Epidemic

4.2.5. Security threats

- Social conflict
- Terrorist attack

5. EMERGENCY LEVEL

All incidents are classified as Emergency Level 1, 2 or 3. Incidents that can be handled on site through normal operating procedures are typically defined as Level 1 emergency, while those with a more complex resolution are usually defined as Level 2 and 3 emergencies.

5.1. LEVEL-1 POTENTIAL EMERGENCY

- There is no immediate danger to public or environment
- Released hazard substance is contained to the working area
- Creates little or no media interest
- Low potential for it to escalate
- Handled by site personnel
- No immediate threat to workers

Action Plan:

- Notify Company man along with BPRL's representative/ Tool Pusher.
- All well site personnel evaluate problem and initiate appropriate remedial measures.
- Unnecessary personnel to evacuate the site.
- Alert mobile emergency equipment to be in readiness.
- In case it is a thickly populated area, alert the nearby residents so that they are ready for evacuation in case the alert situation escalates.

5.2. LEVEL-2 EMERGENCIES

In the event that emergency escalates and cannot be contained by the location team, the Emergency Response Plan will be activated. The ERP is designed to minimize the impact of the incident.

Action Plan

- Ensure all level 1 actions are taking place.
- Initiate evacuation of nearby residents. Restrict entry to the incident zone by roadblocks.
- Mobilize emergency control equipment.
- Establish communication links with Mumbai office about the incident and with local administration

5.3. LEVEL-3 EMERGENCIES

- There exists an immediate danger to the public or environment
- Control of situation has been lost
- Creates state or national media interest
- Emergency extends beyond drill site operations

Action Plan:

- Ensure all 1 and 2 level actions are taking place
- Mobile all emergency control equipment.
- Call for specialist team for control of the particular emergency.
- Inform local/state administration about the state of emergency.

5.4. GENERAL SAFETY

As part of BPRL Health, safety and Environment policy, BPRL is committed to the health and safety of its people and environment by providing a safe and healthy work place minimize impact on environment due to its activities.

BPRL is responsible for:

- Ensuring that operations are carried out in a safe working environment in accordance with good oil field practices as well as applicable regulations.
- Informing all personnel entering in operational area about the HSE requirements and the need for strict enforcement of these requirements.
- Improving competence and efficiency of people through training and emergency drills.

In general in the operational area appropriate Personal Protective Equipment (PPE) must be worn at all times including a minimum of hard hat, steel toed safety shoes and hand gloves. Observe all safety signs such as "NO SMOKING" and "NO UNAUTHORSED ENTRY". These are placed for the safety of all personnel. All visitors are to be made aware of safety regulations.

5.5. AUDIT AND UPDATING OF EMERGENCY RESPONSE PLAN (ERP)

Audit of this ERP shall be carried out during audit of rig at least once in 2 months. This plan will be revised and updated in the light of the following:

- Action points arising from audits and reviews
- Change of operations or organization of BPRL
- Experiences gained emergency exercises or operational experience
- Statutory requirements

5.6. INVESTIGATING AND REPORTING

In case of emergency involving fatality, serious injury or significant damage to property or environment, Project/Asset Manager or his authorized representative will visit the site and investigate the incident. Regulatory agencies representative may also carry out investigation into the extent and cause of the situation and they are to be offered full cooperation of their duties. It is important not to disturb the site till on the spot enquiry is conducted unless absolutely necessary for safety requirement reasons. Reports required by the regulatory agencies like DGMS/OISD shall be promptly prepared and submitted.

5.6.1. PRESS AND MEDIA MANAGEMENT

NO STATEMENT WILL BE ISSUED ON SITE UNLESS AUTHORISED BY PROJECT/ASSET MANAGER OR PERSON DESIGNATED BY HIM.DO NOT SPECULATE ON WHAT HAPPENED OR THE EXTENT OF DAMAGE.

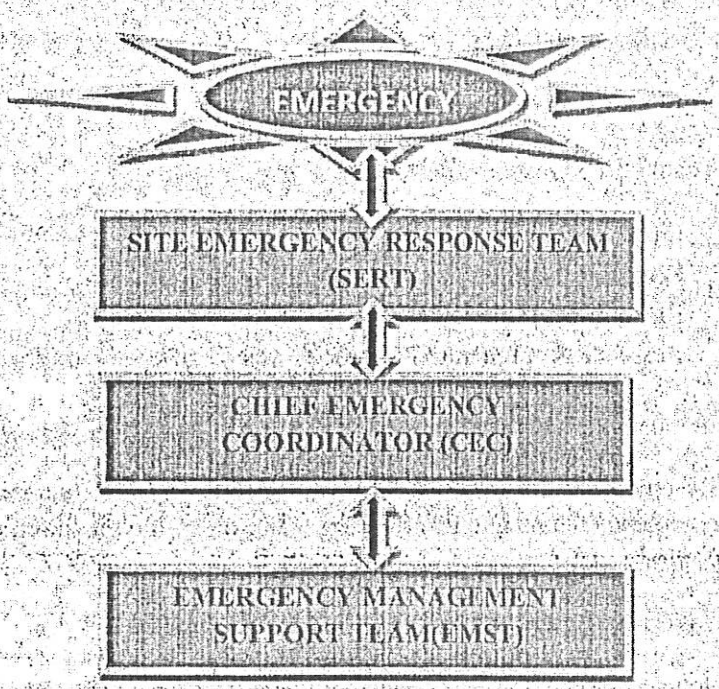
Redirect any queries from the media to the designated person. Answer press queries with "A statement will be issued by BPRL management as soon as we have determined the facts."

5.7. MOCK DRILLS AND TRAINING

The work force will be given training not only about their operational assignment but also about safety aspects and how to work in emergency situations .The best training of Emergency Response is practiced in the form of mock drills. In the field, mock drills shall be conducted at least once in 15 days for emergency scenario as per emergency plan. This drill should include participation of all outside agencies like fire stations, local administration, hospitals etc. once in two months. This will help in keeping the promptness and effectiveness tactics and in turn improve the system.

De-briefing and training should follow the mock drill. The report should be generated for each mock drill bringing out "lessons learnt." The response time for the mock drill need to be recorded in the report. The feedback of mock drills shall be used for the subsequent updating of Emergency Response Plan.

5.8. ORGANIZATION, ROLES AND RESPONSIBILITIES



5.9. EMERGENCY RESPONSE PROCESS

5.9.1. SITE EMERGENCY RESPONSE TEAM (SERT)

5.9.1.1. ROLES, RESPONSIBILITIES AND FUNCTIONS OF SERT

a) SERT is the first responder in case of any emergency at site

b) Team will be responsible for:

i. First aid and fire fighting.
ii. Search and rescue operations.
iii. Rig shut down if required.
iv. Respond as enumerated in procedures of different emergency scenarios.

c) Estimate requirement of material, equipment and services for emergency control.

d) Evacuation in case emergency is out of control. Coordinate with external emergency teams like fire fighting team, oil spill control team and blow out control team

e) Take active part in mock drills.

f) Suggest revision of ERP based on threat vs. vulnerability analysis hazards, mock drills, actual incidents and emergencies.

5.9.2. COMPOSITION OF SERT

Site Emergency Response Team (SERT) is composed of:

- **Company man**

The Company man on the rig will be **On Scene Coordinator & Head of SER.** He shall supervise and monitor on-site emergency response along with BPRL's representative and will also coordinate communications with BPRL's resources / teams. Site Emergency Response Team will assist him.

- **BPRL's HSE Manager/Engineer**

He shall be assisting company man along with BPRL's representative in on-site emergency response and assist in coordinating with contractor's supervisors as well as BPRL's base support resources /team.

- **Contractor's Tool Pusher**

  The Contractor's Tool Pusher will be nodal coordinator for coordination with company man on emergency response of the drilling unit including supervisors of the emergency teams made up of rig personnel. He will also be responsible for communications with drilling contractor's base office and other contractual agencies involved. He will be assisted by the drilling rig team including HSE and operational personnel to deal with the emergency.

- **Contractor's personnel**

  To complete formation of SERT, rig crew (including services) shall be selected based on position and competency and will be directly responsible for execution of emergency plan.

  List of SERT, shift-wise will be formulated and displayed.

5.9.3. TRAINING AND COMPETENCY OF MEMBERS

SERT team will be formed from experienced rig crew knowledgeable about hazard identification, risk analysis and emergency management. All SERT team members will have basic knowledge of first aid and fire fighting. At least two members of SERT in each shift shall be trained first aider.

5.10. CHIEF EMERGENCY COORDINATOR (CEC)

Project/Asset manager of BPRL will be the chief emergency coordinator.

5.10.1. ROLES AND RESPONSIBILITIES OF CEC:

- Overall command and control of the entire operations.
- Establishing control room in case of emergency.
- Activating Emergency Management Support Team (EMST).
- Communication with Top Management.
- Liaison and coordination with other oil companies, domain experts like loss control/oil spill control/Blow out control teams as the case may be.
- Constant communication with company man along with BPRL's representative at site through Emergency control room providing guidance, resource support and advice on emergency response.
- Liaison with statutory authorities for incidents requiring notification and / or external investigation.
- Liaison with appropriate local authorities and government agencies.

- Protecting the legal liability of the company.
- Arranging resources (material, equipment and services) to handle the emergency, including procurement and placing service contracts.
- Dealing with financial and insurance issues.
- Ensuring that the BPRL's other day to day activities continue.

6. EMERGENCY MANAGEMENT SUPPORT TEAM (EMST)

6.1. EMST

6.1.1. ROLES AND RESPONSIBILITIES OF EMST

- Prepare and Revise emergency plans and provide domain expertise in emergency management.
- Contact with crisis management team and arrange their visit to drill site.
- Establishing and manning Emergency Control Room.Constant communication with site control room to keep track of latest developments.
- Arrange necessary resource support including procurement.
- Assisting CEC in preparation of statements for press release.
- Liaison and coordination with external agencies as directed by CEC.

6.1.2. COMPOSITION OF EMST: TO BE PROVIDED BY BPRL

Location: Address of Project/Asset Manager BPRL

6.1.3. COMPETENCY OF EMST MEMBERS

EMST members are domain experts and head of their respective groups.

6.2. SITE CONTROL ROOM (SCR) AT RIG

In case of emergency at site, Tool Pusher of Drilling Rig will set up a Site Control Room (SCR) at a safe distance near the site. The site control room will be managed on round the clock basis by defined Rig team of Drilling Contractor.

Emergency vehicle, communication facilities, light arrangements and food shall be provided at site control room in the minimum possible time.

6.2.1. FUNCTIONS:

- Communicate requirements for mobilization of equipment, resources etc.
- To keep records of all material received at site during emergency.
- To communicate with Emergency Control Room (ECR) on the latest position.

- To keep records of all decisions and messages sent/received.

6.3. EMERGENCY CONTROL ROOM (ECR) AT MUMBAI

An Emergency Control Room (ECR) is the place, where the operations to be handled in emergency are directed and coordinated. The emergency control room should be equipped with good communication facilities like telephones, computers with internet, wall charts showing location of site, fire stations, copy of Emergency Response Plan (ERP) for the field, list of key personnel, their addresses and telephone/mobile numbers, note pads, telephone directories etc. Emergency control room will function from BPRL Mumbai office; Project/Asset Manager will depute suitable Duty Officers on round the clock basis in the emergency control room.

6.3.1. FUNCTIONS OF EMERGENCY CONTROL ROOM:

- Inform to all key personnel about incident and further happenings at site
- Maintain all records of events and actions taken.
- Round the clock monitoring and flow of information to and from emergency site.
- Coordinate with SCR on resource requirements.
- Coordinate with other oil companies and domain experts.
- Coordinate with key personnel for guidance and assistance required at drill site.
- Casualty list and information to next of kin.
- Preparation of management reports on the situation at every 12 hours interval.
- Coordination with local authorities such as police, civil administration, hospitals, fire department etc.
- Coordinate sanction & procurement of the items required during emergency.
- Arrangements for food, water, shelter medicines, logistics etc.

7. RESOURCES FOR EMERGENCY MANAGEMENT

TABLE 1-RESOURCES

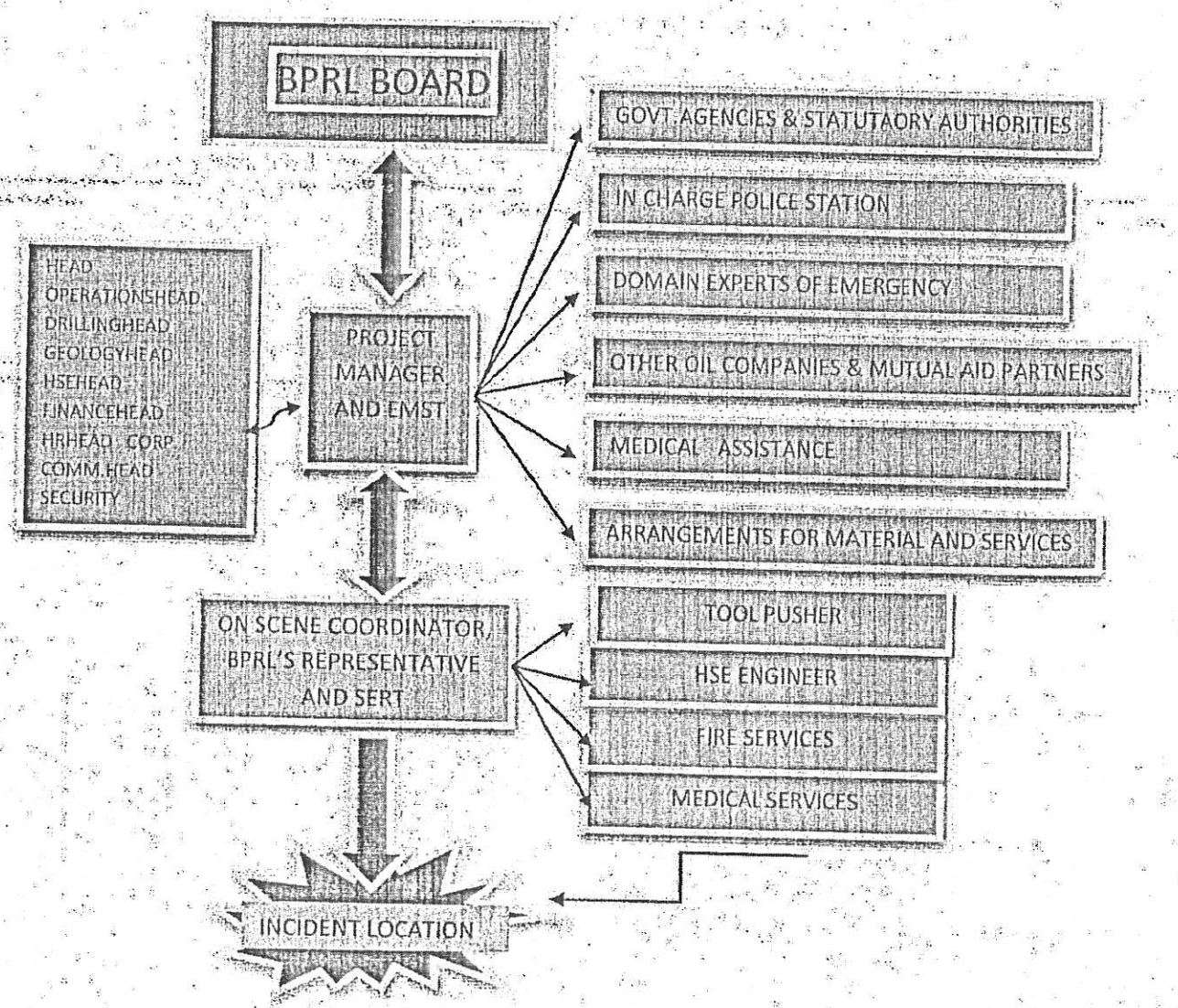
S.No	Name of Equipment	Nos.
1	Large size Dry powder type Fire Extinguisher	20
2	Small size Dry powder type Fire Extinguisher	10
3	Diesel Portable Fire Pump	1
4	Hi –Combat Mobile Foam Unit	1
5	Resuscitator	1
6	Portable Multi Gas Detection Kit	2
7	Breathing Apparatus Full Face Mask with 30 min Bottle	1
8	Ambulance with Driver 24 hours	1
9	Alarm System / Visual Alarm (visual & audible)	Full system

10	First aid Equipment	As per norm
11	Stretcher and First aid kit	As per norm

8. INFORMATION SYSTEM

Please refer to communication chart for information flow on next page. Information flow to BPRL BOARD Mumbai is for major emergency only. Other emergency cases are to be reported in daily/monthly reports. Reporting of incidence/emergency to regulatory authorities shall be immediately for major emergency and for others incidences, as per guidelines.

COMMUNICATION CHART



9. ACTION PLANS FOR DIFFERENT SCENARIOS

Following are procedures for certain specific situations. The main theme of running through is communication and reporting. As soon as possible, an emergency situation develops; contact the next person in the chain of command.

9.1. WELL KICK

Unexpected entry of formation fluids like oil, gas or water in the wellbore during drilling is called kick. If not controlled, it may turn into blowout, which is uncontrolled release of oil, gas or water from a gas/oil well after pressure control systems have failed.

Company man will be the On- scene coordinator.

9.1.1. In case of a kick in the well following are duties and responsibilities:

The Tool Pusher will:

- Take immediate action to control the kick
- Coordinates well killing operations following well control procedures.
- Take all possible action to minimize damage to the rig, equipment and environment.
- Take immediate action to ensure the safety of all personnel.
- Coordinate medical emergency actions for any injuries.
- Make initial report and periodic updates to Company man along with BPRL's representative.

9.2. BLOWOUT

In case of a Blowout, Duties and responsibilities are as follows;

Company man will be the ON scene coordinator.

9.2.1. In case of a Blowout in the well following are duties and responsibilities:

The Tool Pusher will:

- Carry out the same duties and responsibilities as enumerated in the well kick procedures.
- Coordinates well control activities with Operator and outside specialists. Ensure that local population is warned and actions taken to ensure their safety.

9.3. FIRE OR EXPLOSION

The scenario anticipated is:

9.1. WELL KICK

Unexpected entry of formation fluids like oil, gas or water in the wellbore during drilling is called kick. If not controlled, it may turn into blowout, which is uncontrolled release of oil, gas or water from a gas/oil well after pressure control systems have failed.

Company man will be the On- scene coordinator.

9.1.1. In case of a kick in the well following are duties and responsibilities:

The Tool Pusher will:

- Take immediate action to control the kick
- Coordinates well killing operations following well control procedures.
- Take all possible action to minimize damage to the rig, equipment and environment.
- Take immediate action to ensure the safety of all personnel.
- Coordinate medical emergency actions for any injuries.
- Make initial report and periodic updates to Company man along with BPRL's representative.

9.2. BLOWOUT

In case of a Blowout, Duties and responsibilities are as follows;

Company man will be the ON scene coordinator.

9.2.1. In case of a Blowout in the well following are duties and responsibilities:

The Tool Pusher will:

- Carry out the same duties and responsibilities as enumerated in the well kick procedures.
- Coordinates well control activities with Operator and outside specialists. Ensure that local population is warned and actions taken to ensure their safety.

9.3. FIRE OR EXPLOSION

The scenario anticipated is:

- Spillage/leak of oil/gas or presence of hydrocarbon vapors.
- Electrical short circuit.

- Fire in combustible material.

The events mentioned may lead to fire and explosion at the rig. With appropriate wind conditions, a fire within the site can spread and present a threat to the life and property not only at site, but also in the nearby areas. The key to containing an oil field fire is to isolate the problem area.

The Tool Pusher is to be informed immediately of any fire. Minor fire is to be dealt by using rig fire- fighting equipment, Any fire that threatens property/life must be notified to the nearest Fire Brigade Station.

TABLE 2: FIRE OR EXPLOSION AT WELL SITE

STEP NO	ACTIONS TO BE TAKEN	OFFICIAL/TEAM
1.	In case of fire, shout 'fire" "fire" "fire" and sound the alarm.	Person who notices the fire.
2.	Inform shift - in charge, Tool Pusher about fire/explosion.	Person who notices the fire.
3.	Determine the type, location and extent of fire and inform Fire Station and Company man along with BPRL's representative.	Tool Pusher.
4.	The personnel not involved in fire control operation to evacuate the site.	All personnel at rig except SERT.
5.	The Company man will assume charge of on scene coordinator. He along with BPRL's representative will carry out head count of the personnel to ensure that every one has been safely evacuated and record response time. He will set up Site Control Room (SCR).	Company man along with BPRL's representative and Drilling Contractor's designated person (having POB list)
6.	SERT under supervision of Company man along with BPRL's representative will identify the source of leakage, isolate and attempt to extinguish the fire with portable fire extinguisher ad fire pumps.	Site Emergency Response Team(SERT)
7.	Rescue any trapped personnel, provide First aid and sent them for the medical assistance if required.	SERT
8.	Well to be secured and nearby sources of ignition should be cut off immediately.	Driller and Tool Pusher
9.	If the emergency is out of control and could not be brought under control by in house resources, Emergency should be declared.	Company man along with BPRL's representative in consultation with

		Project/Asset Manager.
10.	Shutdown the rig under emergency condition. Keep concerned officials informed and seek help.	Tool Pusher and Company man along with BPRL's representative
11.	Cordon off the area, regulating the entry at entrance.	In charge security
12.	If safe to do: Shut off or remove source of fuel. De-pressurize/remove any gas containing equipment located close to fire. Shift records/documents to safe location. Shift useful material/chemicals to safe location.	SERT
13.	If spillage occurs, try to contain inside the boundary	SERT
14.	Fire crew in charge after arriving at site will report to Tool Pusher/Company man along with BPRL's representative, assess the situation and position the fire tender at appropriate place from where fire can be controlled effectively.	Fire crew in charge
15.	The quantum of spillage/gas leakage along with brief actions taken shall be informed to in charge fire fighting.	Company man along with BPRL's representative
16.	Mobilize the Fire tenders from other fire stations if required and meanwhile place fire tender and take water for fire fighting.	BPRL's representative, rig Tool Pusher, in charge fire crew
17.	Cooling and quenching nearby tanks and equipments etc.	Fire crew and SERT
18.	Assist the fire crew in fire fighting.	SERT
19.	Regular monitoring of gas concentration.	Contractor's HSE Supervisor
20.	Direct visitors, contractor sand service personnel to appropriate area.	In charge Security
21.	Determine need for additional services or further evacuation.	SERT
22.	Pass the information and progress to Emergency Control Room	Site Control Room (SCR)
23.	Coordinate and liaison with adjoining land owners/occupiers for emergency measures, assistance, evacuation compensation etc.	Company man along with BPRL's representative and rig Tool Pusher
24.	Liaison with local and appropriate govt. officials including notification, status reports and assistance.	Project/Asset Manager and EMST

25.	Liaison with BPRL resources.	Project/Asset Manager and EMST
26.	Draw the execution plan to combat emergency, ensuring stoppage of the spill/ leak and arranging to clear the emergency site.	Project/Asset Manager in consultation with SERT and EMST

9.4. FLOODING IN THE FIELD

Emergency Response in case of flooding is as follows:

TABLE 3: FLOODING

STEP NO	ACTIONS TO BE TAKEN	OFFICIAL/ TEAM
1.	Location to be constructed so as to prevent flooding of site.	Project/Asset Manager/ civil engineer
2.	On discovery of flood/likely flood situation that threatens the well site, raise alarm.	Person who notices
3.	Inform shift in charge, Tool Pusher and Company man and give location and extent of flood.	Person who notices
4.	Determine details of flood situation and inform Emergency Control Room and further as per communication chart.	Company man along with BPRL's representative
5.	Secure the well if situation demands.	Tool Pusher
6.	Company man will head count the personnel to ensure that every one has evacuated safely and set up Site Control Room.	Company man along with BPRL's representative and Drilling Contractor's designated person (having POB list)
7.	Shutdown the installation under emergency condition. Keep concerned officials informed/seek help.	Tool Pusher, in consultation with Company man along with BPRL's representative
8.	Rescue any trapped personnel, provide first aid and send them for further medical assistance if required.	SERT and site Doctor
9.	If safe to do; Shut off source of fuel. Shift records/documents to safe location.	SERT

	Shift useful material/ chemicals to safe location.	
10.	Liaise with local and appropriate govt. officials including notification, status report and assistance.	Project/Asset Manager and EMST
11.	Liaise with BPRL resources.	Project/Asset Manager and EMST
12.	Observe flood situation, if safe move inside of site and resume operations.	Project/Asset Manager in consultation with EMST & SERT

9.5. OIL OR CHEMICAL SPILL

Pollution as a result of an oil or chemical spill can have a significant impact on the environment. The BPRL oil/chemical spill contingency plan contains procedures to be followed for dealing with oil/ chemical spill.

Spill prevention control and counter measures plan:

Design and Operational Information

- The rig will always be so positioned or located as to prevent spilled oil from reaching water in so far as it is possible and practicable, and in all other instances the company will do what is necessary to minimize the risk of any such spillage.
- The area around the substructure and tanks of the rig will be ditched and all said ditches and pits will be dug deep and large enough to accommodate the anticipated volumes of liquids encountered during drilling operations, as well as the capacity of the tanks, should a leak or rupture occur. In wet or marshy areas, dikes or levees will be constructed around the rig, tanks and pits to prevent any such oil from entering the water.The rig will normally operate continuously. All systems will be constantly monitored. Lighting is to be sufficient and adequate to conduct operations and to observe systems, which might prevent pollution.
- Trucks to a suitable disposal site will transport oil or oily effluent from secondary containment.

9.5.1. CONTIGENCY PLAN IN THE EVENT OF AN OIL/ CHEMICAL SPILL

Immediately extinguish any heater or fire that may ignite the spill.

- No smoking during spill control operations.
- Close valves if dealing with a fuel line rupture;

- Direct spillage to rig ditches or drains that will carry the oil to a safe holding sump or reserve pit.
- Distribute hulls, fibertex, gel, barite and any other absorptive material on hand as required to contain oil, which cannot be directed to ditch.
- Inspect area to ensure that all oil is contained in ditches, cellar, sumps, or reserve pit. Add ditches levees, dams, pits and sumps as required to contain spill.
- Start jets or sump pumps and transfer spilled oil from sumps to reserve pit or holding tank.
- After spill is stopped, collect all used hulls, fibered and similar materials for disposal as given prior inspection from the Tool Pusher. Ensure that no oil is left in ditches, cellar, pit, or sump, which might become a fire hazard.
- If the oil has escaped from rig site, use the chemicals and equipment provided to emulsify, blot up, and recover oil spilled.
- Notify Company man of the spill, which will in turn inform the Project/Asset Manager.
- After discussing with SERT, Company man along with BPRL's representative and Tool Pusher will set up Site control room at a safe place.
- Company man along with BPRL's representative will take guidance from Project/Asset Manager for hiring services of experts to control oil/ chemical spill.
- After the special team has controlled the oil spill necessary cleaning operations are to be followed.
- Tool Pusher will conduct an investigation of the spill and BPRL's representative to determine the cause of the spill.

9.6. CASUALTY EVACUATION

The site doctor in consultation with Tool Pusher, Company man and BPRL HSE Manager along with BPRL's representative will decide about casualty evacuation. For evacuation ambulance will be available round the clock at drill site.

After evacuation to local facilities as patience care and/or doctor and/or hospital personnel will make transfer. The respective service providers will be responsible to take care of the casualty after admission in hospital.

TABLE 4: CASUALTY EVACUATION

STEP NO	ACTIONS TO BE TAKEN	OFFICIAL/TEAM
1.	Inform shift supervisor Tool Pusher, In-charge of the service provider and give location and extent of incidence for evacuation	Person who notices
2.	Administer immediate first aid	Doctor/ First aider
3.	Determine need for medical assistance and/or evacuation	Doctor, Tool Pusher and Company man, BPRL's representative along with respective In-charge of service company
4.	Liaise with ambulance personnel and local Doctor	
5.	Prepare patient for medical evacuation	
6.	If required accompany patient to hospital	
7.	Ensure any necessary things to accompany patient like his personnel belongings, medicines and ID	
8.	Inform and seek assistance from Project/Asset Manager	Company man along with BPRL's representative
9.	If necessary arrange for next of kin to be notified.	Respective In-charge of service company and BPRL Representative
10.	Report incidence to appropriate authorities as necessary including management and statuary	Project/Asset Manager

9.7. SECURITY BREACH

The unauthorized presence of an individual on site is to be treated as Security Breach. Oil field operations, being hazardous, all field personnel are required to be very vigilant about unauthorized entry of persons in the field.

TABLE 5: SECURITY BREACH

STEP NO	ACTIONS TO BE TAKEN	OFFICIALS/TEAM
1.	On discovery of unauthorized personnel on site, question them on who they are and why they are at site.	All field personnel
2.	Inform shift supervisor, Tool Pusher and if necessary and safe to do so, escort individual away from site	All field personnel
3.	If any intruder is acting in a dangerous fashion, inform	In charge security, Tool

	local police requesting assistance and notify Project/Asset Manager	Pusher and Company man along with BPRL's representative
4.	If intruder is threatening in a manner that may lead to a process incident, secure the process to minimize the risk of injury to personnel and damage to equipment. Stay calm and ensure security of personnel.	In charge security, Tool Pusher and Company man along with BPRL's representative
5.	Inform and seek assistance from Project/Asset Manager as deemed necessary	BPRL's representative
6.	Seek advice , assistance and liaise with appropriate govt. authorities	Project/Asset Manager

9.8. ACCIDENTS

In case of accidental emergency it is duty and responsibility of each individual to report the accident including near misses to shift in charge. Shift in charge in turn must report the same to Tool Pusher.

TABLE 6: ACCIDENTS

STEP NO	ACTIONS TO BE TAKEN	OFFICIAL/TEAM
1.	On observing the accident/near miss inform shift in charge, Tool Pusher	The person who notices
2.	Administer first aid in case of injury	Doctor/First aider
3	Tool Pusher to report the incident to Company man along with BPRL's representative	Tool Pusher
4.	In case of major accident the injured person to be sent to hospital	Doctor, Tool Pusher, HSE Manager and Company man along with BPRL's representative
5.	Minor accidents and near misses to be dealt as described in safety manual to be informed to Company Man	Tool Pusher, HSE Manager along with BPRL's representative
6.	All accidents to be reported to Project/Asset Manager	BPRL's representative, HSE Manager and Tool Pusher in consultation with Company man

7.	Project/Asset Manager to immediately report accident to management and statuary authorities and constitute enquiry committee	Project/Asset Manager and EMST
8.	After the enquiry is completed the findings to be conveyed to site for implementation if any changes are required	Project/Asset Manager and EMST
9.	To implement the instructions received from Project/Asset Manager	Company man along with BPRL's representative, HSE Manager and Tool Pusher

9.9. HYDROGEN SULFIDE (H_2S)

Note:- Presence of H_2S is not expected in the Block CB-ONN-2010/8. However, details for the same have been provided in the ERP Manual for awareness of the crew working on site.

Hydrogen Sulfide also known as "sour gas" is a flammable and poisonous gas in nature. While drilling, this gas may be encountered. To handle the emergency due to this gas the special preparations are required in the form of special equipment and H_2S special training. Presence of H_2S gas has to be anticipated before drilling operations are resumed so as to plan for H_2S equipment and proper training of crew to work in the presence of H_2S.It is essential that all personnel are aware of its hazardous nature and are instructed to follow strictly proper safety procedures in order to avoid its effects.

9.9.1. HAZARDOUS PROPERTIES OF H_2S:

Hydrogen Sulfide is heavier than air and may travel along the ground. It collects in low lying and enclosed, poorly ventilated areas.

The primary route of exposure is inhalation and lungs rapidly absorb gas. Absorption through the skin is minimal. Personnel can smell the "rotten eggs" odor of hydrogen sulfide at low concentrations in air. However, with continuous low-level exposure, or at high concentration, a person loses his ability to smell the gas even though it is still present. This can happen very rapidly and at high concentrations, the ability to smell the gas can be lost instantaneously. Therefore "DO NOT" depend on sense of smell to indicate the continuous presence.

In addition H_2S is a highly flammable gas and gas/air mixture can be explosive. It may travel to the source of ignition and flash back.

9.9.2. HEALTH EFFECTS OF H_2S EXPOSURE:

Its health effects can vary depending on the levels and duration of exposure. H_2S is classified as a chemical asphyxiate, similar to carbon monoxide and cyanide gases. It inhibits cellular respiration and uptakes of oxygen, causing biochemical suffocation.

Typical exposure symptoms include:

	0-10 PPM	Irritation of the eyes, nose and throat
M O D	10-50 PPM	Headache Dizziness Nausea and vomiting Coughing and breathing difficulty
	50-200 PPM	Severe respiratory tract irritation Eyes irritation/ acute conjunctivitis Shock Convulsions Coma Death in severe cases

Prolonged exposure at lower levels can lead to bronchitis, Pneumonia migraine headaches, pulmonary edema, and loss of motor coordination.

9.9.3. PROTECTION AGAINST H_2S EXPOSURE:

Before entering area where H_2S may be present

- A qualified person must test air for presence and concentration of H2S. Using air monitoring equipment, such as Hydrogen Sulfide detector or a multi gas meter that detects gas. Testing should also determine if fire/explosion precautions are necessary.
- If the gas is present, the space/are must be ventilated to continuously remove the gas.
- The personnel entering the area/space must use appropriate respiratory protection and other necessary personnel protective equipment, rescue and communication equipment.

9.9.4. TRAINING

- Comprehensive training will be provided for workers in H2S operations in the topics:
- Identification of characteristics, sources, and hazards of H2S,
- Recognition off and proper response H2S warning at the work place.

- Proper use of H2S detection methods used in site.
- Symptoms of H2S exposure.
- Proper rescue techniques and first aid procedures to be used in a H2S exposure.
- Confined space and enclosed facility entry procedures.
- Location and use of safety equipment.
- Location of safe briefing areas.
- Proper use and maintenance of personal protective equipment.
- Demonstrate proficiency in using will be required.
- Workers awareness and understanding of workplace and maintenance

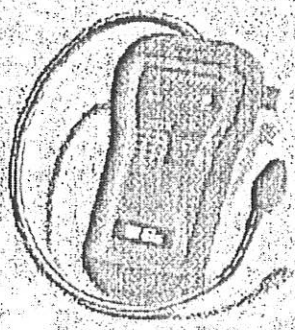
9.9.5. Procedures to protect personnel from exposure to H_2S

- Wind direction awareness and routes of egress.
- Emergency Response procedures, corrective actions, and shut down procedures.
- The importance of drilling fluid plans prior to encountering H2S.

9.9.6. Detecting and monitoring H_2S

Personal and portable H_2S Monitor/ alarm units are designed to provide workers with an additional measure of protection by warning of potentially hazardous level of H_2S gas within the immediate work area. These H_2S Monitor units should be set to alarm (both visible and audible) at 5ppm to alert and warn personnel to evacuate area or to use respiratory protection equipment (SCBA) if they are to remain in the area. A qualified person must do the monitoring.

PORTABLE GAS DETECTOR

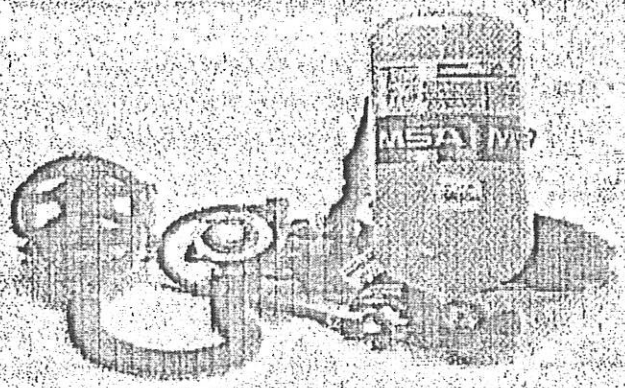


A sign reading "DANGER H_2S MAY BE PRESENT" shall be located at the points where the monitor gives alarm so that if personnel have to enter that area they are fully equipped for H_2S presence.

9.9.7. PERSONAL PROTECTIVE EQUIPMENT

For working in area where H_2S is present in concentration of 5ppm, appropriate protection equipment is used to protect workers from inhaling air borne contaminants. There are so many types of respirators available and it is important to select the correct level of respiratory protection depending on the type of work being done and airborne concentrations that may be encountered.

RESPIRATOR



Since H_2S is irritating to eyes, air light goggles or full face respirators masks should be worn. A full-face piece positive pressure supplied air respirator is needed for work areas where H_2S concentration exceeds 5ppm. Whatever type of respirator is used it must seal the skin of the face and must be fit-tested for the type of equipment being used.

Although the use of personal protective equipment may initially seem to be less costly, there will be ongoing maintenance and training costs. Workers must be trained on the protective equipment they are using. In some cases, personal protective equipment can create a hazard to workers e.g. heat stress, limited vision, allergic reaction to the equipment material. These issues must be evaluated when personal protection equipment is selected.

9.9.8. EMERGENCY RESPONSE TO EXPOSURE

9.9.8.1. EYE EXPOSURE

- Remove contact lenses,
- Wash the eyes with water for 15 minutes, lifting the eyelids.

- Seek immediate medical attention.

9.9.8.2. SKIN EXPOSURE

- Wash skin immediately.
- Soak contaminated clothes and shoes before removing them, wash skin below
- Seek immediate medical help.

9.9.8.3. FIRE RESPONSE

- Shut off H2S source if possible.
- Use water spray to extinguish flame.
- Use water spray to cool off structure and equipments exposed to fire.
- Dry chemical, foam and carbon dioxide are also appropriate extinguishing agents.

9.9.8.4. MILD INHALATION EXPOSURE

- Get fresh air.
- Get medical attention.

9.9.8.5. SEVERE INHALATION EXPOSURE CAUSING COLLAPSE

- Call emergency medical services.
- Before helping hurt person use appropriate protection equipment.
- Get person to fresh air.
- Transfer him to medical facilities. Mean while give him mouth to mouth respiration.

9.9.9. EMERGENCY RESPONSE PLAN FOR H_2S

The duties and responsibilities will be as follows:

TABLE 7: H_2S

STEP NO	ACTION TO BE TAKEN	OFFICIAL/TEAM
1	Monitoring of H_2S Levels at site	H_2S Engineer and HSE supervisor of contractor
2	When H_2S level more than 5ppm, inform shift in charge and Tool Pusher	H_2S Engineer and HSE supervisor
3	Tool Pusher to instruct crew to use protection	Tool Pusher

	equipment and inform Company man along with BPRL's representative and Tool Pusher	
4	Company man and SERT to look for any person affected by H_2S and taking him for first aid /medical attention	Company man along with BPRL's representative and SERT
5	If concentration of H_2S is decreasing or in control, monitor the site closely. If it is increasing inform Project/Asset Manager about the situation	Company man along with BPRL's representative and Tool Pusher
6	Project/Asset Manager and EMST to discuss among themselves and domain expert and instruct site whether to continue drilling operations or not	Project/Asset Manager and EMST
7	Mean while at site if the concentration of H_2S is increasing establish site emergency room and inform immediate neighbor about gas so as to ready for evacuation if required and local authorities	Company man along with BPRL's representative, SERT and Tool Pusher
8	Project/Asset Manager to start emergency control room and after discussing with EMST and domain experts advice site for further operations.	Project/Asset Manager and EMST
9	Inform and liaise with local and statuary authorities. Mobilize any experts or services required for site	Project/Asset Manager and EMST

10. CONTROL OPERATION

10.1. DAILY INCIDENT AND MANAGEMENT REPORT

In Emergency Control Room (ECR), a daily round the clock incident progress report will be maintained and Management reports will be prepared for the situation at every 12 hours interval.

10.2. PLANNING OPERATIONS

In Emergency Control Room (ECR), actions to be taken in next 24 hours and in next 3 to 4 days will be prepared on the basis of situation reports received from Site Control Room (SCR). Then as per plan the mobilization of equipment and services can be arranged to deal with emergency.

10.3. TERMINATION OF EMERGENCY OPERATIONS

When the emergency has been brought under control, Emergency Management Support Team (EMST) will make an assessment of the situation for safe operations and the measures needed for personnel and environment protection. Project/Asset Manager after having satisfied himself about the safety of the site, personnel and environment protection will issue instructions to the Head of SERT, Company man regarding termination of the emergency operations (All clear) and the precautions to be observed. On receipt of such instructions, the Company man will take the head counts and carry out the debriefing in consultation with HSE Manager and inform the personnel about the necessary actions to be to be taken for resumption of normal operations.

11. REPORT ON DISASTER MANAGEMENT

The Emergency Management Support Team at Mumbai will prepare a detailed report on the management of disaster and submit the same to Project/Asset Manager. After reviewing the report Project/Asset Manager will submit the report to BPRL Board.

12. LIST OF KEY PERSONS AND CONTACT DETAILS

This list is to be given by BPRL/other Contractors.

- BPRL Personnel involved in Project including at monitoring level, SERT and EMST
- RIG KEY Personnel
- All service operators KEY PERSONNEL

13. EMERGENCY SERVICES

- Fire department
- Hospitals and nursing homes
- Police stations
- Local administration

14. SUPPLY BASE BPRL (INDIA) LIMITED

Central Warehouse Karachia,
Central Warehousing Corporation, Near Flyover Bridge, IPCL Road,
Karachia P.O., Ranoli District,
Vadodara-391350

15. APPENDIX

APPENDIX-I

BPRL EMERGENCY RESPONSE TEAM TELEPHONE NUMBERS

Name	Designation	Telephone/ Facsimile	Mobile phone	Email ID	Remarks
	BPRL Board and Management	Tel: Fax			After hour phone:
	Head-Oil & Gas	Tel: Fax			After hour phone:
	Exploration-Development Advisor	Tel: Fax			After hour phone:
	Project/Asset Leader	Tel: Fax			After hour phone:
	Drilling Manager	Tel: Fax			After hours phone:
	Drilling Superintendent	Tel: Fax:			After hour phone:
	Logistics Team Leader	Tel: Fax:			After hours phone:
	HSE Engineer	Tel: Fax:			After hours phone:
BPRL Mumbai OFFICE		Tel: Fax			After hour phone:
Gujarat Office		Tel:			After hours phone:
Rig Office		Tel: Fax			After hour phone:
Rig Manager		Tel: Fax			After hours phone:

Name	Address	Telephone/ Facsimile	Mobile phone	Remarks
Air Ambulance Services		Tel: Fax		After hours phone:
Rig Doctor		Tel: Fax		After hours phone:
Ahmadabad Doctor on Call		Tel: Fax		After hours phone:
Police Station		Tel: Fax		After hours phone:
Hospital		Tel:		After hours phone:

SUPPORT SERVICES EMERGENCY RESPONSE TELEPHONE NUMBERS

Ambulance	Provided by Rig available all the time at site	Tel: Fax:		After hours phone:
Fire Services		Tel: Fax:		After hours phone:

APPENDIX-2

INCIDENT REPORT

PART-I: INITIAL REPORT

(Tick box and indicate actual outcome & potential outcome)

Actual outcome			Potential outcome		
1. INCIDENT LEVEL					
LEVEL 1		LEVEL 2		LEVEL 3	
1) Minor injury		1)Major injury		1)Fatality	
2) Property damage (including fire)/ Production loss of <$ 5000		2)Property damage (including fire)/ Production loss from $5001 to $50000		2)Property damage (including fire)/ Production loss Above $50000	
3) Oil spill <1 ton		3)Oil spill 1 to 20 tons		3)Oil spill Above 20 tons	
4)Minimal environment damage		4)Significantenvironment damage		4)Major environment damage	
5) Near miss		5)Near miss		5)Near miss	

2.Type of incident(Tick more than if appropriate)

Near Miss	Minor Injury	Medical Treatment	Lost time Injury
Injury	Injury	Occupati	Pollution
Illness Event			
Fire	Property	d Accident	pill
Damage			

3.Name of the company(BPRL or contractor):	

4.Date/Time of Incident	5.Site Location		6.Date/Time of Reporting
7.Brief Description of Incident:			
8.Likely causes of Incident			
9.Name of Casualty:	10.Sex: M/F	11. Age	12.Years of Experience:
13.Occupation	14.Nationality		15.Employer
16.Details of Injury and Treatment Given:			
17.Medivac:Y/N	Local Hospital ☐	Major Hospital ☐	Specialist Hospital ☐
18.Location Status:			
19.Witness Available Yes/No (if available obtain statement and attach)			
20.Name of Reporter:		Signature:	
Designation		Date:	

COPY TO:

1) Installation Manager
2) Company man
3) Project/Asset Manager

INCIDENT REPORT

PART- 2: INVESTIGATION REPORT

21.Details of Investigation:

22.Operations:Indicate major operation in progress at the location of incident

DRILLING	☐	MATERIAL HANDLING	☐	PRODUCTION	☐
TRANSPORT	☐	SEISMIC OPERATIONS	☐	OTHERS(specify)	☐
CATERING	☐	MAINTENANCE	☐		

23.Activity Leading to Incident: Indicate actual activity leading to incident

Operating plant/machinery	☐	Driving	☐	Manual lifting	☐
Using portable tools	☐	Electrical work	☐	Other(specify)	☐

24.Nature of Illness:

NOT APPLICABLE

Amputation	☐	Burn(scaled)	☐	Cut/Abrasions	☐
Burn(chemical)	☐	Dislocation	☐	Fracture	☐
Burn(electrical)	☐	Shock(electric)	☐	Skin Infection	☐
Crush	☐	Sprain/Strain	☐	Others(specify)	☐
Infection	☐				
Splinter or Foreign body	☐				

25.Part of Body Injured:

NOT APPLICABLE

Abdomen	◯	Arm	◯	Back/spine	◯
Chest	◯	Digestive	◯	Ear	◯
Eye	◯	Finger	◯	Foot/Toe	◯
Hand/Wrist	◯	Head	◯	Hip	◯
Leg	◯	Multiple	◯	Neck	◯
Respiratory	◯	Shoulder	◯	Other(specify)	◯

26. a) Type of Contact		b) Contact With	
Caught Between	☐	Caustics	☐
Caught By	☐	Cold	☐
Caught In	☐	Electricity	☐
Caught On	☐	Heat	☐
Fall On Same Level	☐	Noise	☐
Fall To Below	☐	Radiation	☐
Over Exertion	☐	Toxic or Noxious Substance	☐
Slip	☐	Others (specific)	☐
Stuck By	☐	_____	
Struck Against	☐		
Others(specific)	☐		
_____			

27. Immediate Cause			
a)Substandard Actions		b)Substandard Conditions	
Failing to use PPE properly	☐	Adverse Weather Conditions	☐
Failure to Secure	☐	Congestion Or Restricted Action	☐
Failure to Warn	☐	Defective Tools, Equipment Or Material	☐
Horseplay	☐	Fire And Explosion hazards	☐
Improper Lifting	☐	Hazardous Environmental Conditions, Gases ,Dust, Smokes, Fumes, Vapors	☐
Improper Loading	☐	High Or Low Temp. Exposures	☐
Improper Placement	☐	Inadequate Or Excess Illumination	☐
Improper Position for Task	☐	Inadequate Or Improper PPE	☐
Make Safety Devices	☐	Inadequate Guards Or Barriers	☐
Operating at Improper Speed	☐	Inadequate Ventilation	☐
Operating Equipment Without Authority	☐	Inadequate Warning System	☐
Removing Safety Devices	☐	Noise Exposures	☐
Servicing Equipment In Operation	☐	Poor Housekeeping: Disorder	☐
Under Influence of Drugs/Alcohol	☐	Others (specific)	☐
Using Defective Equipment	☐	_____	
Using Equipment Improperly	☐		
Others(specific)	☐		
_____			

29.Recommended Actions To Prevent Recurrence:

30. Witnesses: Please Attach Statements If Applicable

NAME	POSITION	COMPANY

31.Investigation Team: Name and Designation of all Persons directly involved in Investigation

32.COSTS:
Estimated | Actual

33. Evaluation Of Actual Loss Potential

Loss Severity:

LEVEL 1 ☐ LEVEL 2 ☐ LEVEL 3 ☐

b) Probability Of Occurrence:

A/Frequently ☐ B/ Likely ☐ C/ Unlikely ☐ D/ Highly Unlikely ☐

34. Risk Evaluation:
Using the matrix below assess the actual and potential risk factor
Injury/Damage:
Actual Outcome_____ Potential Outcome_____

Risk Matrix						
Injury/Damage			Probability of Occurrence			
LEVEL	PERSONNEL INJURY	PROPERTY/ENVIRONMENTAL DAMAGE	A	B	C	D
1	Minor Injury	i)Property Damage/ Production loss <$5000 ii)Oil Spill<1 ton iii)Negligible Environment Damage	A1	B1	C1	D1
2	Major Injury	i)Property Damage/ Production Loss of $5001 to $50000 ii)Oil Spill 1ton to 20 tons iii)Significant Environment Damage	A2	B2	C2	D2
3	Fatality	i)Property Damage/ Production Loss >$50000 ii)Oil Spill >20 tons requiring external help. iii)Major Environment Damage	A3	B3	C3	D3

A=FREQUENT(NUMBER OF TIMES IN A YEAR)
B=LIKELY(CAN HAPPEN BUT NOT FREQUENT)
C=UNLIKELY(CANNOT BE RULED OUT, IT MAY HAPPEN)
D=HIGHLY UNLIKELY(DOES NOT HAVE PAST RECORD)

35.Report Completed By:	Designation:	Date:

Copy to:

1. Installation Manager.

2.HSE Manager

3. Project/Asset Manager

INCIDENT REPORT

PART-3: ANALYSIS

(To be completed by HSE Manager)

36. Damage Loss	
Physical Operational ☐ Financial Material ☐	
37.LOSS	
Workdays ☐	Disability/Fatality ☐
Financial <$ 5000 ☐	
$ 5001 to $ 50001 ☐	
>$ 50001 ☐	
38. Process Type:	**39.Damage Type:**
Partial Shutdown ☐	Building/Platform ☐
Total Shutdown ☐	Fixed Equipment ☐
Liquid Spill ☐	Mobile Equipment ☐
Gas Emission ☐	Tools ☐
	Materials ☐
	Handling Equipment ☐
	Environment ☐
40.Analysed By:	**Designation:**
Signature:	**Date:**

INCIDENT REPORT

PART-4: REPORT EVALUATION

(To be completed by HSE Manager)

42.Report Evaluation: Rate 1-5		
(i)	Timeliness of record	
(ii)	Accuracy and competence	
(iii)	Evaluation severity	
(iv)	Quality of event description	
(v)	Analysis immediate/basic causes	
(vi)	Adequacy of corrective actions	
(vii)	Proper Signatures	
(viii)	Follow-up record	
Please rate in above table from1-5 1-Excellent 2-Good 3-Adequate 4-Poor 5-Very poor		
43. Additional Comments:		
44.Review and Evaluated by: Signature:		Designation: Date:

Annexure-03

Proposed Budget Allocation for CER Activities for Next 5 Years for the Block CB-ONN-2010/8

Sl.No	CER Activities	CER Budget (Lakhs)				
		1st Yr	2nd Yr	3rd Yr	4th Yr	5th Yr
1	Construction Of Road	13	-	-	-	-
2	Construction of Cross drains	2	-	-	-	-
3	Arranging mobile health camps including eye camps, School health program which includes free dental awareness examination camps and free checkups of the students; universal immunization program etc	1	1	2	2	2
4	Sanitation facility (Drinking water facility at school etc, Toilets etc)	-	1	3	-	-
5	Providing financial assistance to school towards purchasing of furniture and required amenities to school, libraries, auditoriums, teacher's common room etc.	-	2	2	2	2
6	Provision of Street lights	-	5	1	1	1
Total		16	9	8	5	5
Grand Total		43 Lakh				

Annexure-C

Project No.: 7084	PRODUCTION FACILITIES FOR WELLS PASUNIA#01 & #02 IN BLOCK CB-ONN-2010/8, CAMBAY BASIN, GUJARAT	PYRAMID ENGINEERING :: SOLUTIONS Doc No.:7084-R-RPT-003 Page No.: 1

QUANTITATIVE RISK ASSESSMENT REPORT

Rev.	Date	Revision Description	Prepared By	Checked By	Approved By
C	20.06.19	Revised as per comments	AM	SS	SW
B	13.06.19	Revised as per comments	AM	SS	SW
A	07.06.19	First Issue	AM	SS	SW

Classification: Restricted

REVISION LOG

Sr. No.	Rev No.	Clause No.	Details
1	C	8.5	Risk matrix added
2	C	9.0	Revised conclusions

HOLD POINTS

Sr. No.	Clause No.	Particulars	Remarks

Table of Contents

1. INTRODUCTION

Bharat Petro Resources Limited (BPRL) is executing Field development project on two discovered wells PA#01 & PA#02 of onshore exploration block CB-ONN-2010/8 to convert them into production wells. As described in Design basis document (Doc. No. 7084-R-DB-001 Rev. A), block will be developed in phased manner and upgraded in future as required. As per approved FDP, PA#02 well site will be developed as Quick Production Facility. This facility will have high pressure system flare system consisting of Flare header, Flare KOD drum, Flare stack having sonic flare tip.

This document provides description of Quantitative risk assessment study conducted for the above facility. The methodology followed in this study is in line with the best industry practices and aims to provide management with a tool to help evaluate overall process safety. Risk Assessment provides a method to evaluate risk and to identify areas for cost-effective risk reduction. This study aims to identify incident scenarios and evaluate the risk by defining the frequencies of those scenarios and the potential impact of the associated consequences. The risk is defined as a function of the frequency and consequence of a particular accident scenario.

2. REFERENCES

- Process Design Basis (7084-R-DB-001)
- Environmental Impact Assessment Report of proposed Onshore Oil and Gas development and production activities in the block CB-ONN-2010/8, Cambay , Gujarat submitted by BPRL to Government of India.
- Equipment layout (7084-P-LAY-002_ Rev 0)
- P&ID (7084-R-PID_ Rev 0)
- PFD (7084-R-PFD & 7084-R-UFD_ Rev 0)
- HMB
- API 521, Sixth edition, Section 5.7.2.3

Section-I

FLARE RADIATION ASSESSMENT

3. AIM

The aim of flare radiation assessment is to identify the heat radiation levels generated from flare around plant and nearby areas and dispersion of harmful/corrosive substances.

4. BASIS OF DESIGN

4.1 CRITERIA

For designing flare system in PA#02, maximum relieving flow rate expected from system was used. For flaring evaluation, following two emergency cases were envisaged:

Scenario No.	Nature of Flaring	Relieving flow rate	Remarks
1	Blocked Outlet at Gas Outlet	390.8 kg/hr	
2	Fire in 3-Phase separator	903 kg/hr	Based on 0.20% initial mole vaporization

Based on this, fire case in 3-phase separator is governing. Calculations for same are attached in Annexure-I. For non-emergency, continuous flaring (having the calculated relieving flow rate of 10 kg/hr), the radiation contours of 1 kW/m^2 and more were not reached in calculations. Relieving flow rate for non-emergency condition was calculated from simulation.

4.2 EXPOSURE LIMITS

Based on HSE criteria and other industry sources, effects of thermal radiation at different levels are as follows:

Thermal Radiation (kW/m^2)	Effect
12.5	Significant chance of fatality for medium duration exposure. Thin steel with insulation on the side away from the fire may reach thermal stress level high enough to cause structural failure.
25	Likely fatality for extended exposure and significant chance of fatality for instantaneous exposure. Spontaneous ignition of wood after long exposure. Unprotected steel will reach thermal stress temperatures that can cause failure.
37.5	Intensity at which damage is caused to process equipment. Significant chance of fatality for people exposed instantaneously.

As per US DOT, time for given effect at different radiation intensities are as follows:

Radiation Intensity (kW/m^2)	Time for Severe Pain (seconds)	Time for second degree burns (seconds)
1	115	663
2	45	187
3	27	92
4	18	57
5	13	40
6	11	30
8	7	20
10	5	14
12	4	11

As per Table 12 of API 521, permissible maximum radiant heat intensity at any location where personnel with appropriate clothing can be continuously exposed is 1.58 kW/m^2. At limit of 9.46 kW/m^2, immediate movement to lower levels of radiation by personnel is recommended. Refer Annexure-III for relevant pages from API-521.

4.3 ENVIRONMENTAL DATA

Following conditions were taken as average prevailing conditions of environment.

- Air temperature (max): 45 ° C
- Solar Radiation: 1 kw/m^2
- Relative air humidity: 55%
- Wind speed: 3.3 m/sec
- Wind direction: 225° from North (Coming from South-West)
- Atmospheric stability: PasquilD
- Terrain class: Rural

4.4 TIPS AND STACK DATA USED FOR STUDY

- Type of tip: Pipe
- Tip length: 1 m
- Seal type: Fluidic
- Tip diameter: 4"
- Flare stack inclination: 90 ° to horizontal
- Stack height: 30 mts

4.5 FLUID DATA

Following fluid properties and composition were taken for calculations.

Property	Value	Unit
Temperature	146.3	°C
Pressure	8.27	bar
Mol. Wt.	20.67	
LHV	44018	kJ/kg
Cp/Cv	1.293	

The composition of fluid in mole fraction:

Nitrogen: 0.002	Carbon dioxide: 0.004	Methane: 0.8
Ethane: 0.015	Propane: 0.015	I-Butane: 0.016
n-Butane: 0.012	I-Pentane: 0.012	n-Pentane: 0.011
n-Hexane: 0.017	Water: 0.096	

4.6 CALCULATION METHOD

Radiation calculations have been performed using inhouse calculation excel sheet. Method of calculation is as described in API 521.

Stack height was first sized and then verified based on criteria of sterile radius so that it falls within boundary of facility at distance of 9 mts. from flare stack. The allowable radiation limit of sterile area was fixed at 1.577 kW/m² including solar radiation as per recommendations mentioned in Section 4.2 . Note that results can vary based on composition of fluid entering the flare and below results pertain to composition of fluid used in calculations.

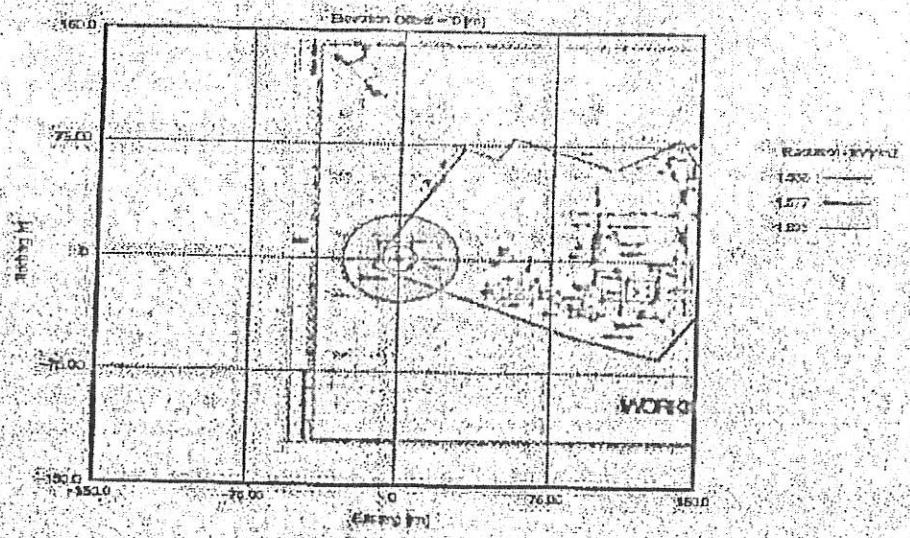
5. RESULTS

5.1 STERILE RADIUS

For radiation level of 1.577 kW/m² on grade level and stack length of 30 mts at given conditions, sterile radius was calculated as 8.779 m.

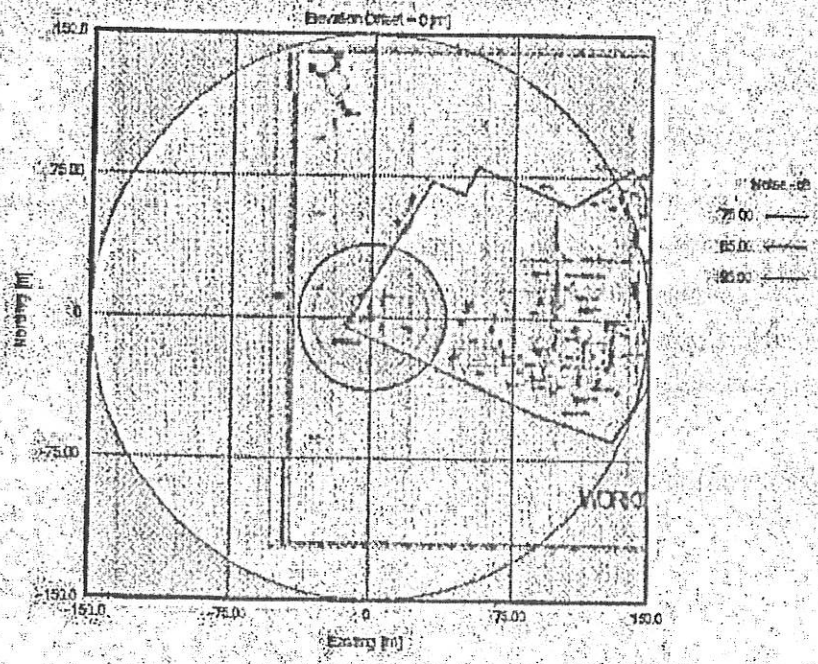
Therefore, the maximum radiation that would be expected post plot boundaries at distance of 9 mts. wouldn't cause any harm to the surroundings. It will satisfy process requirements and should also eliminate requirement of increasing plot size.

5.2 RADIATION ISOPLETH



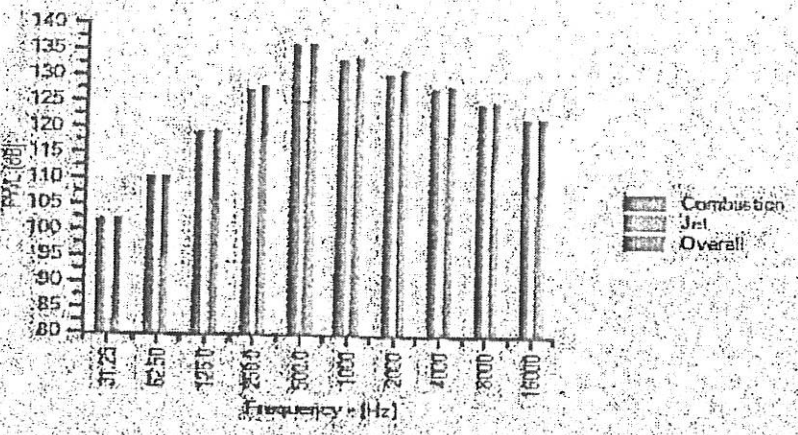
The above radiation isopleth at grade level (Elevation = 0 mts) was obtained by superimposing the radiation contours on equipment layout plan for facility. This shows the maximum radiation that will reach the plot boundaries at grade level shall be 1.577 kW/m² which is within acceptable limits.

5.3 NOISE RESULTS



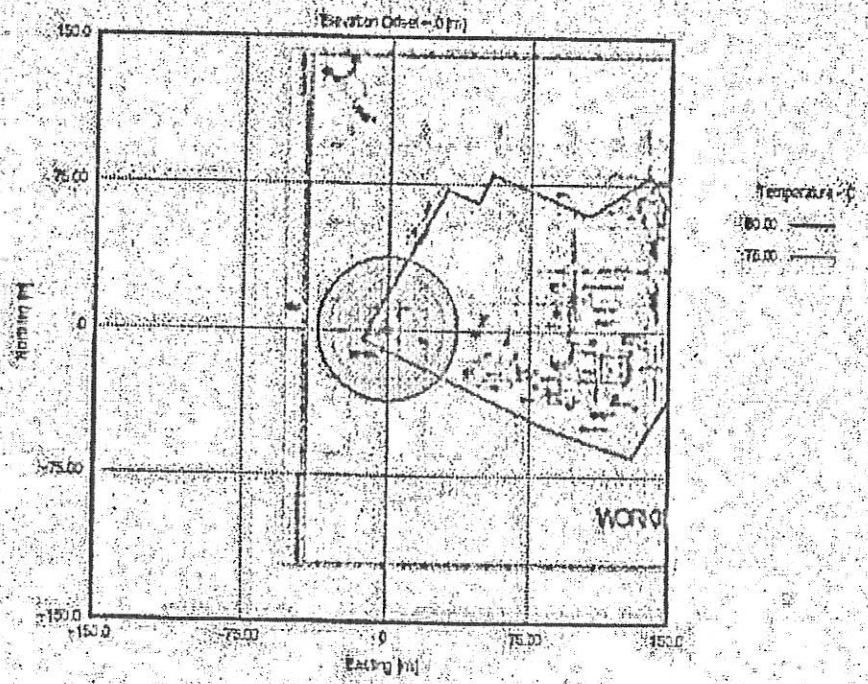
The above noise isopleth at grade level (Elevation = 0 mts) was obtained by superimposing the noise contours on equipment layout plan for facility. Some of the areas in plant may face

higher decibel noise from flare where recommendation would have to be made for appropriate safety equipment in case of emergency flaring. Below is the noise spectrum obtained.



Note that the above noise spectrum is applicable for emergency relief case only. During normal operations there will be minimal/no noise.

5.4 TEMPERATURE PROFILE



Based on above plot, maximum temperature that can reach in areas outside of plot will be around 50° C which is within acceptable limits for public exposure. Also, this will happen only during an emergency relief to the stack.

Section-II

FIRE RISK ASSESSMENT

6. AIM

The aim of fire risk assessment is to identify the potential risk from fire in process equipment to nearby areas of plot and to check if there is need to extend the plot boundaries. It will identify the heat hazard in plant and nearby areas and dispersion of harmful/corrosive substances if any.

7. BASIS OF DESIGN

7.1 INPUTS

The environmental data for fire risk used are same as in Section 4.3.

Calculations were done using in-house calculation modules.

7.2 EXPOSURE LIMITS

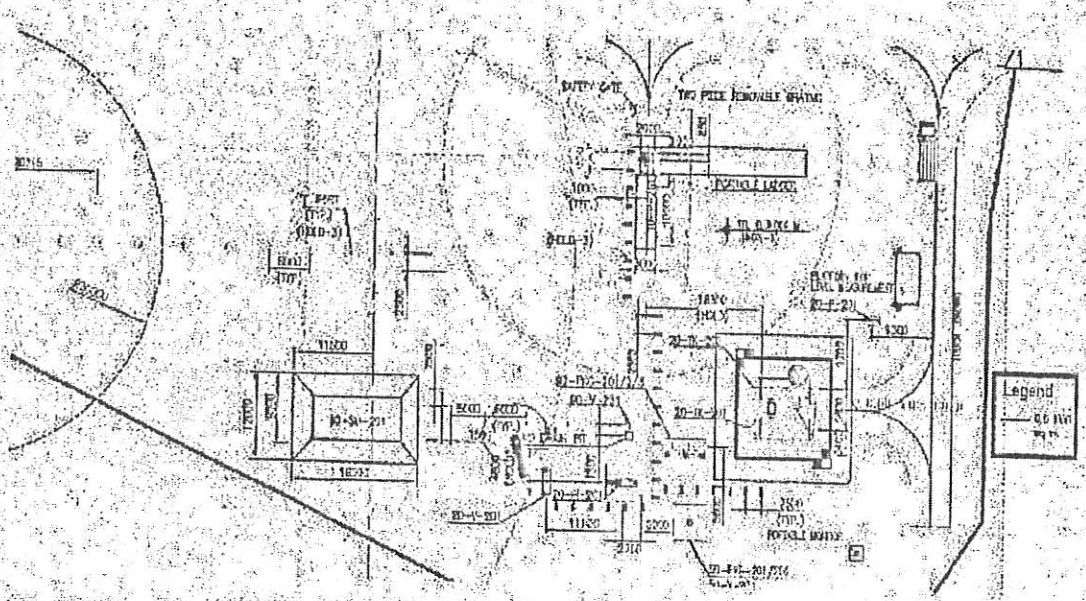
The exposure limits for fire risk radiation are similar to flare radiation limits mentioned in Section 4.2.

8. RESULTS

8.2 Equipment Fire plots

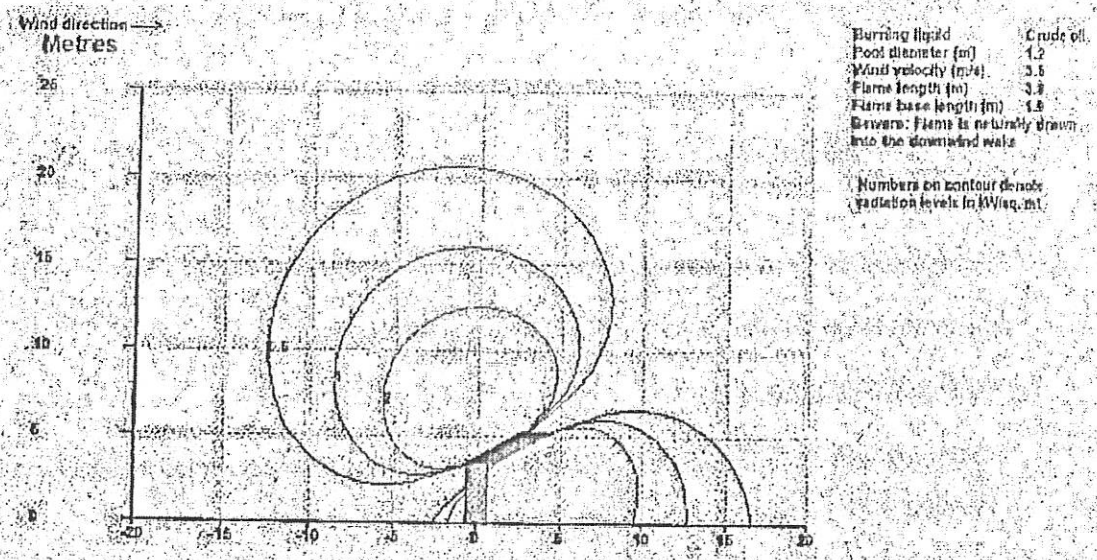
8.2.1 Three-phase Separator fire

Following radiation plots were obtained based on calculations using in-house calculation modules.



The above plot depicts radiation level contours in case of fire in 3-phase separator (20-V-201) in PA#02 facility under most prevalent wind conditions. Radiation of 0.5-1 kW/m² will be

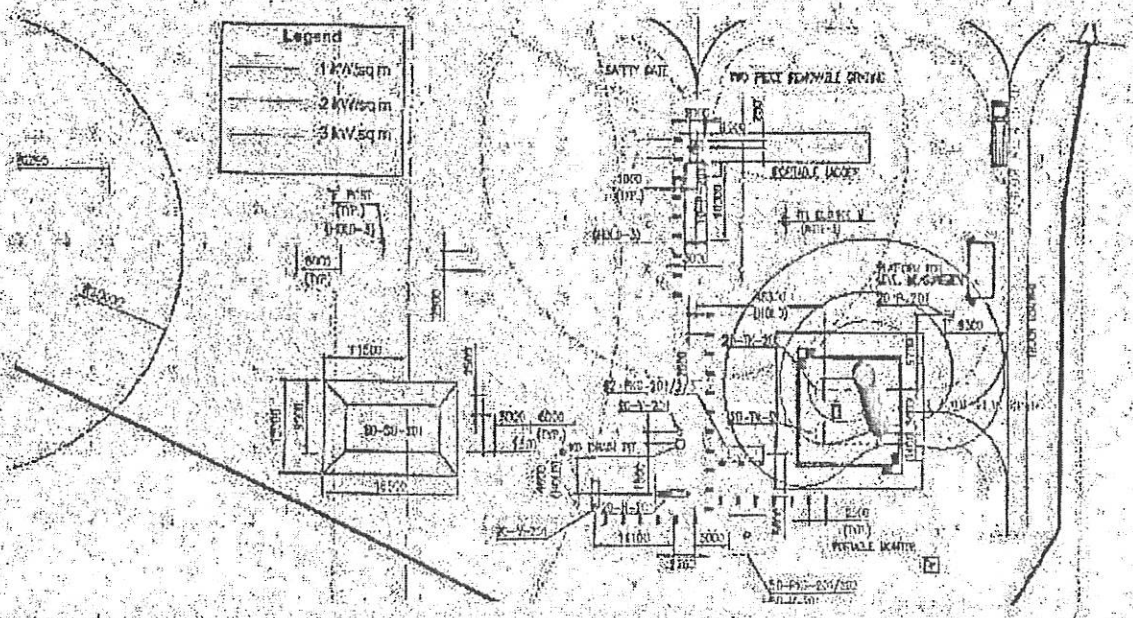
maximum present around process area and will not affect the areas outside the plot boundaries. Below plot below shows the radiation levels in side view of separator.



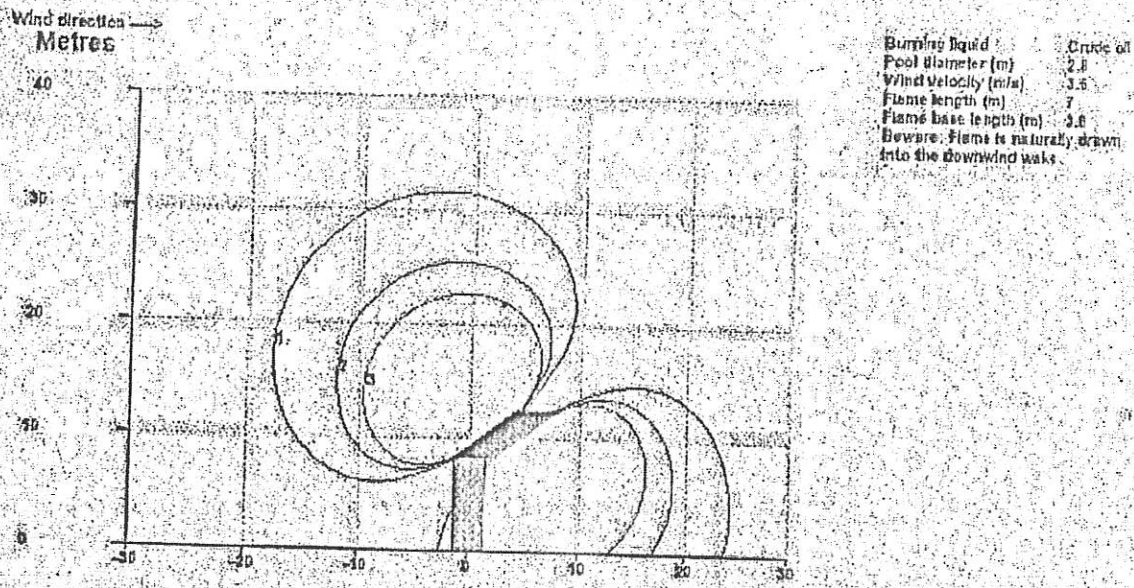
The flames may reach up to 5 meters in downward direction. Since there are no equipment within radius of 5 m around separator, it shouldn't cause chain reaction events.

8.2.2 Storage tank fire

Following radiation plots were obtained based on calculations using in-house calculation modules:

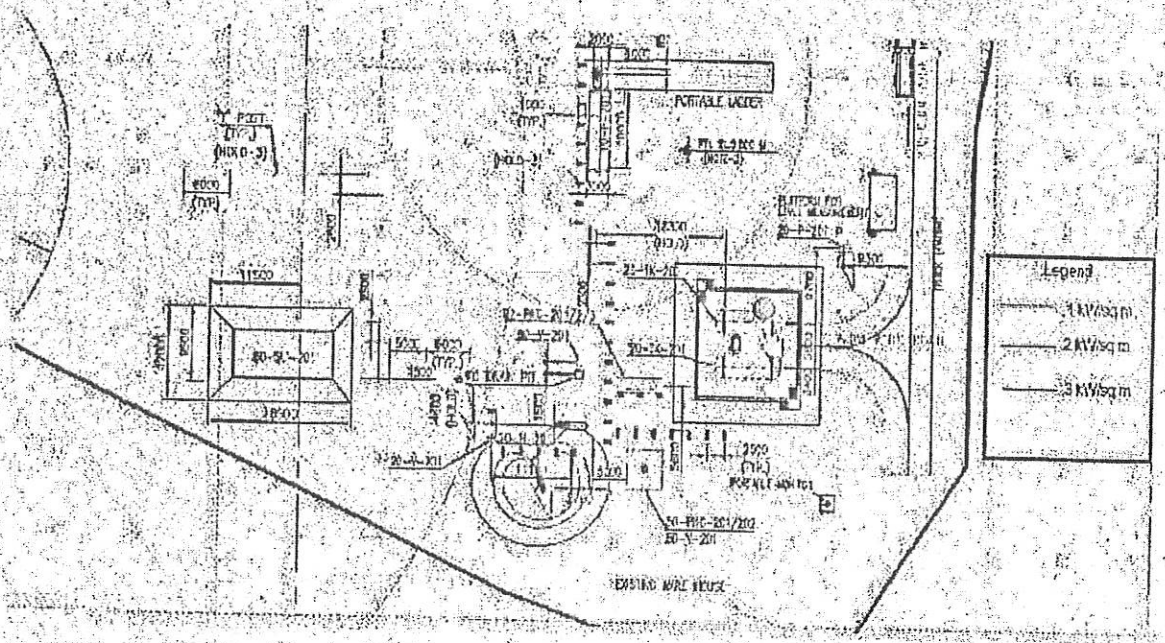


The above plot depicts radiation level contours in case of fire in Storage tank (20-TK-201/202) in PA#02 facility. Radiation of 1-3 kW/m^2 will be maximum present around process area and will not affect the areas outside the plot boundaries. The plot below shows the radiation levels in side view of tank, the maximum flame extent is up to 9 meters. There is 15 m separation distance in all directions around tanks.

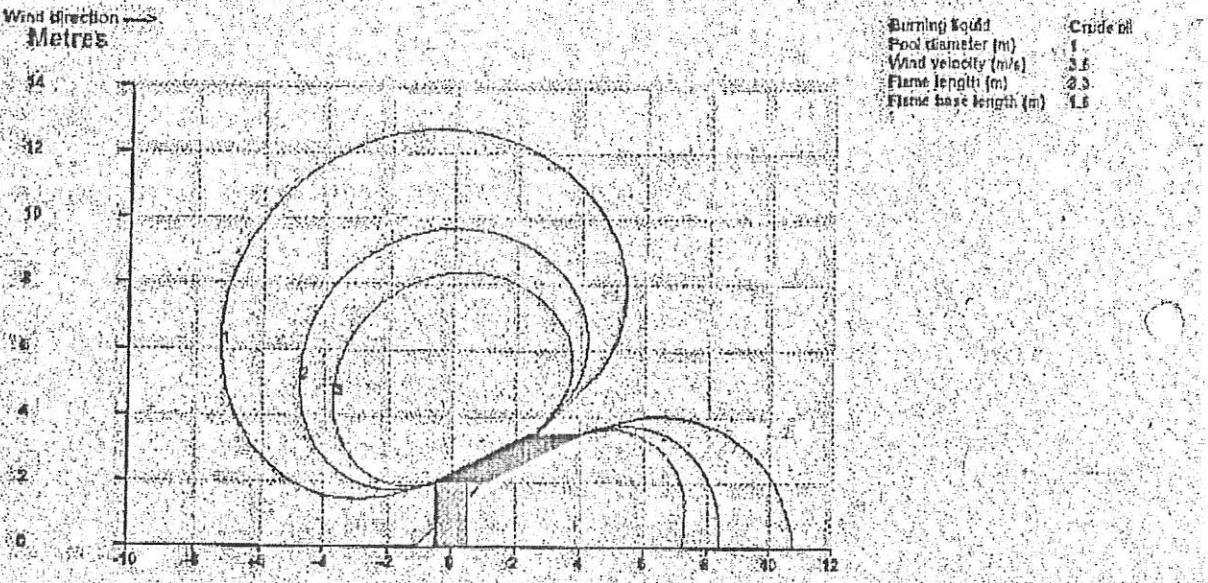


8.2.3 Crude heater fire

Following radiation plots were obtained based on calculations using in-house calculation modules:

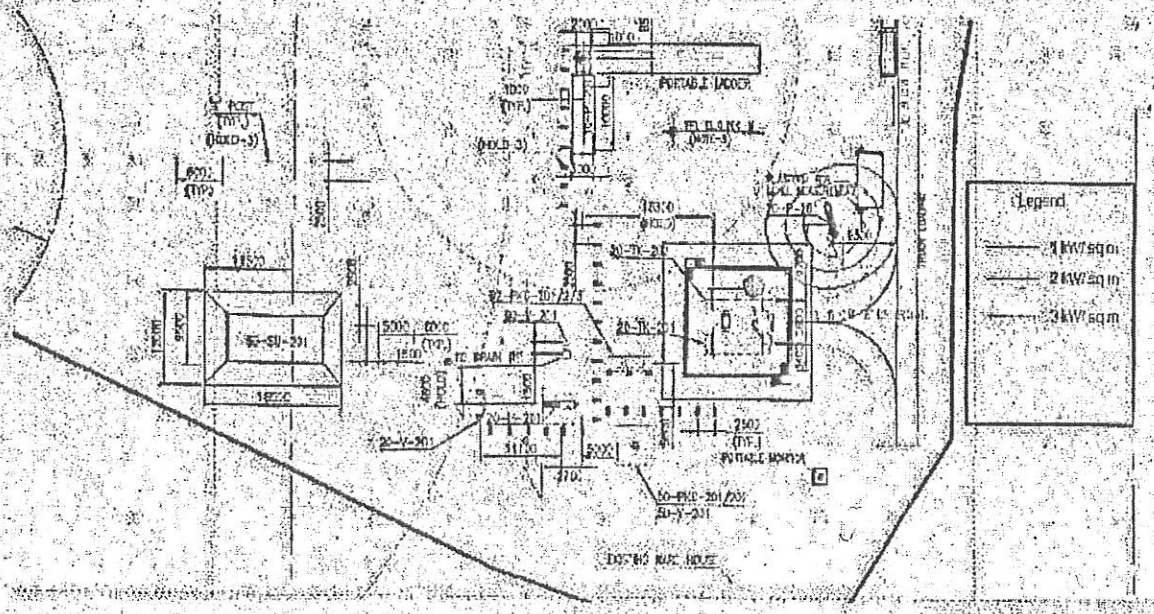


The above plot depicts radiation level contours in case of fire in Crude Heater (20-H-201) in PA#02 facility. Radiation of 1-3 kW/m^2 will be maximum present around process area and will not affect the areas outside the plot boundaries. The plot below shows the radiation levels in side view of crude heater. The minimum separation distances around electrical heater is more than the flame can reach (~ 4 m) in downward direction.

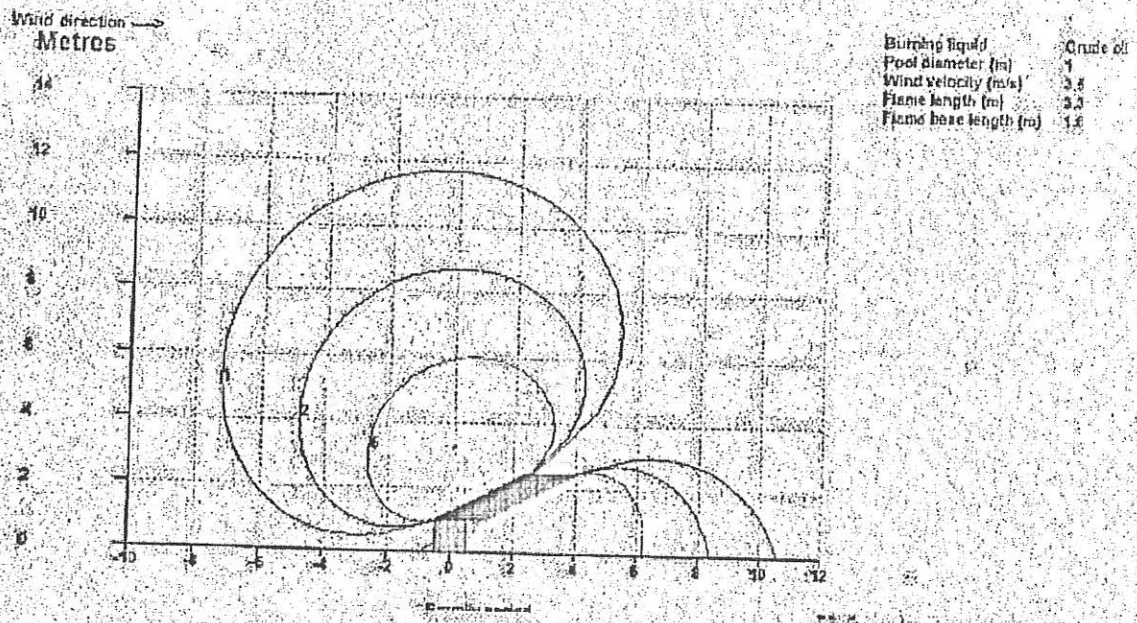


8.2.4 Loading Pump fire

Following radiation plots were obtained based on calculations using in-house calculation modules:



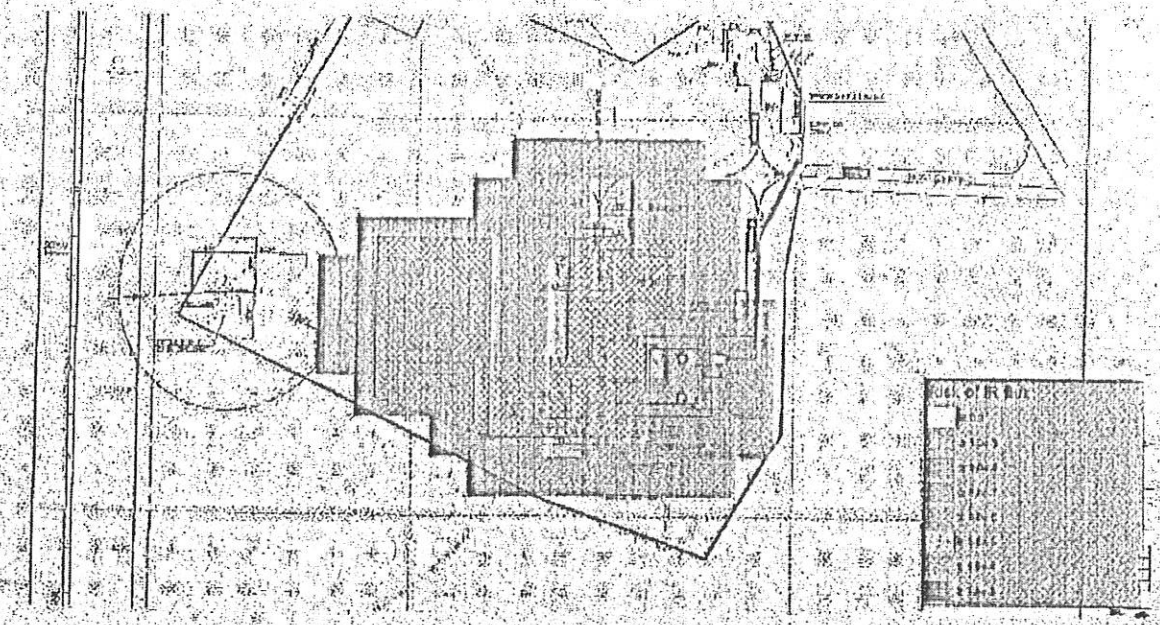
The above plot depicts radiation level contours in case of fire in Loading Pump (20-P-201) in PA#02 facility. Radiation of 1-5 kW/sq m^2 will be maximum present around process area and will not affect the areas outside the plot boundaries. The plot below shows the radiation levels in side view of loading pump. The minimum separation distances around loading pump is more than the flame can reach (~ 1 m) in downward 0direction.



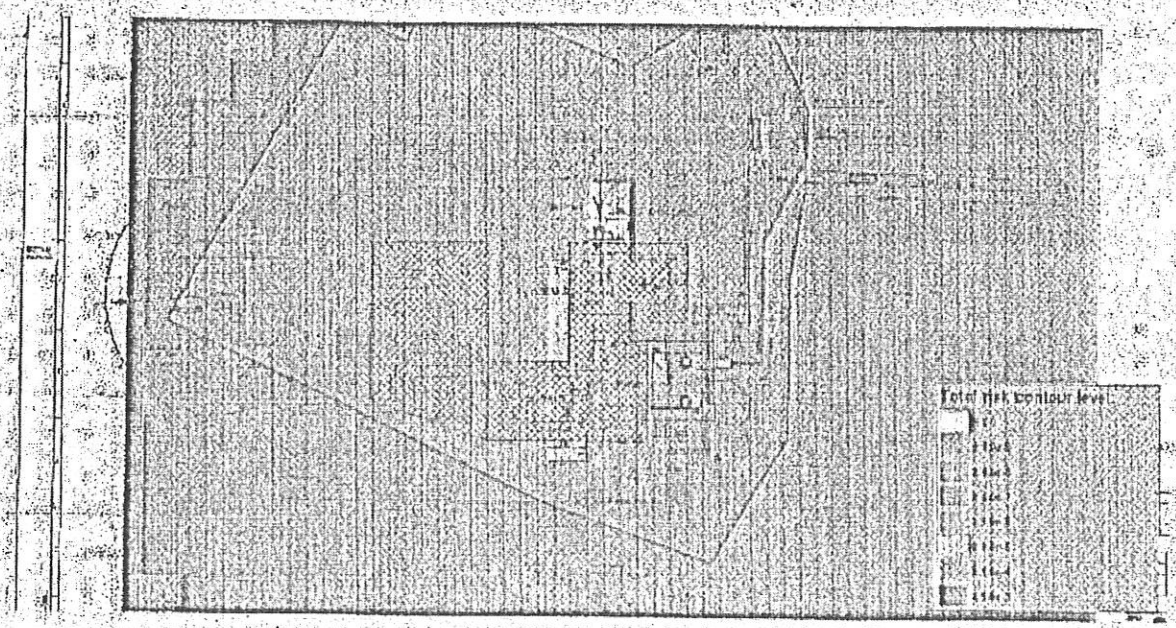
8.3 Risk layouts

Following layouts were obtained using in-house calculation modules:

8.3.1 IR Flux Risk



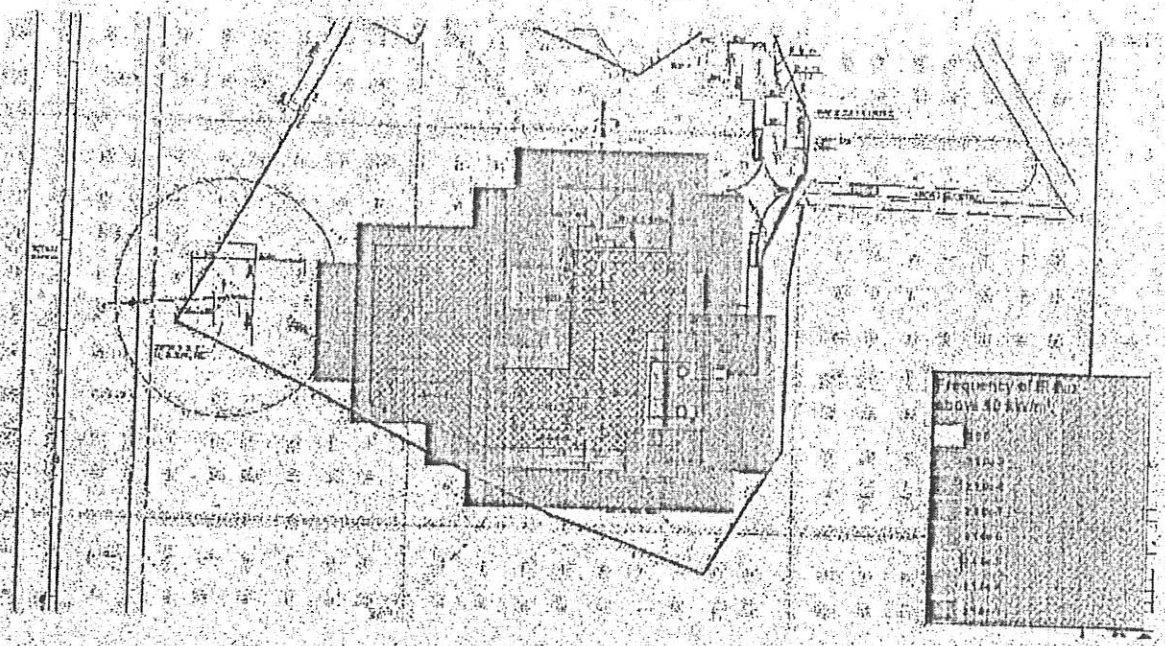
8.3.2 Total Risk



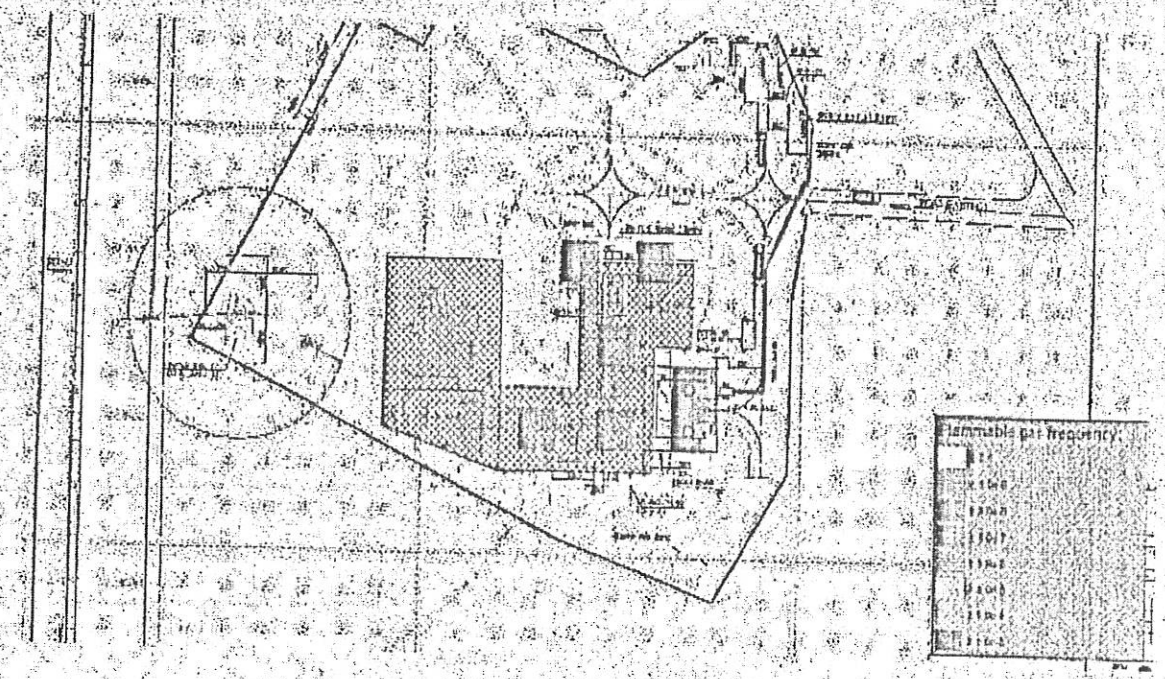
Note that total risk was calculated summing up risks from all threats like Fire (IR flux), BLEVE (Boiling liquid expanding vapour explosion), Cloud risk, Toxic risk, Explosion etc. But prime focus was risk from fire (IR flux) than that posed by other causes. Matrix for same is attached in Annexure -II

8.4 Frequency plots

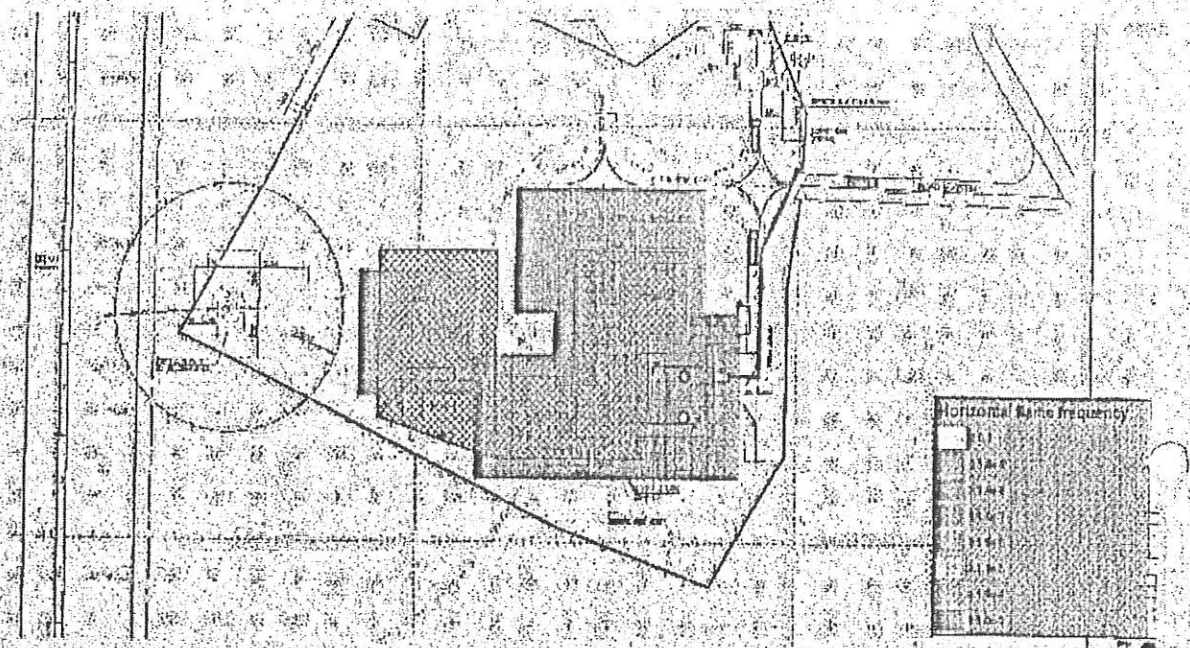
8.4.1 Frequency of IR Flux above 10 kW/m²



8.4.2 Flammable gas frequency



8.4.3 Horizontal Flame frequency



8.5 RISK MATRIX

Consequence ranking and risk significance calculation

Sr. No.	Event	Main Equipment Present	Causes	Frequency of each event	Likelihood Ranking (A)	Consequence Ranking (B)	Risk Significance (A X B)
1	Process block 1	Separator, Crude heater, Chemical injection package	General leak, Seal leak, Flange leak, Pipe leak	1.00E-06	4	3	12
2	Process block 2	Evaporation pond	General leak, Pipe leak	1.00E-06	4	2	8
3	Storage area	Storage tanks	General leak, Seal leak, Flange leak, Pipe leak	1.00E-06	4	2	8
4	Loading area	Loading pumps	General leak, Seal leak, Flange leak, Pipe leak	1.00E-07	3	2	6
5	Tanker Route	Tanker	General leak, Accident	1.00E-08	2	1	2

6	Other areas of plot and area outside	Control room, Warehouse etc.	General leak	1.00E-09	1	1	1

Legend

Risk Contour on Plot plan		Likelihood Ranking	
	> 1e-3	5	High probability
	>1e-4		
	>1e-5		
	>1e-6	4	Probable
	>1e-7	3	Occasional/Rare
	>1e-8	2	Not likely
	>1e-9	1	Improbable
	>0		

Consequence Ranking	
Catastrophic	5
Major	4
Moderate	3
Minor	2
Insignificant	1

Risk Significance	Criteria Definition & Action Requirements
High (16-25)	"Risk requires attention" - Project HSE management needs to ensure that necessary mitigation are adopted to ensure that possible risk remains within acceptable limits.
Medium (10-15)	"Risk is tolerable"- Project HSE management needs to adopt necessary measure to prevent any change/modification of existing risk controls and ensure implementation of all practicable controls.
Low (5-9)	"Risk is acceptable"- Project related risks are managed by well-established control and routine processes/procedures. Implementation of additional controls can be considered.
Very Low (1-4)	"Risk is acceptable"- All risks are managed by well-established controls and routine processes/procedures. Additional risk controls need not be considered.

9. CONCLUSION

The risk matrix indicates that IRPAs are predominantly not within the high ALARP region i.e. well below the intolerable risk region. In this case, major risk reduction measure is not required unless it is not costly and technically feasible. Overall 10^{-4} and above outdoor Location Specific Individual Risk contours are not encroaching any public place, which is acceptable.

C

Radiation Isopleths and risk assessment plots show minimal levels of radiation (<1.5 kW/m2) will reach the plot boundaries with very low frequency of occurrence.

Thus, on basis of this study the distances maintained between the processing facility and the boundary are enough and does not cause any hazard to human health and life outside the facility. Within the facility, sufficient precautions are taken in design to deal with all types of contingencies and fire hazards.

Section-III

ANNEXURES

ANNEXURE- I PSV RELIEF LOAD CALCULATION FOR FIRE CASE IN SEPARATOR

PRD Calculation Report - Fire Load Case

General Data

Item	100 PSV 002	
Scenario Description		Is adequate drainage and fire fighting equipment provided ?
Calculation Method	Wetted (API)	
Fluid Latent Heat	1155.31 kJ/kg	Yes

	Vessel N°1	Vessel N°2	Vessel N°3
Vessel Active ?	True	False	False
Dimensions specified ?	True		
Vessel Type	Horizontal		
Diameter	1.20 m		
Vessel Tan / Tan	3.50 m		
Level above Tan	0.60 m		
Btm Tan from Grade	3.00 m		
Flame Height	7.62 m		
Piping Contribution	25.0 (%)		
Environ. Factor (F)	1.0000		
Ins. Therm. Conduct.	0.0000 Kcal/m/h/°C		
Insulation Thickness	0.00 mm		
Exposed Area	10.20 m²		
Calc'd Heat Input	1043969.96 kJ/h		
Calc'd Fire Load	903.62 kg/h		

Totals

Wetted Case Data (Active Vessels Only)		Unwetted Case Data	
Total Exposed Area	10.20 m²	Operating Pressure	1.50 barG
Total Heat Input	1043969.96 kJ/h	Operating Temperature	63.90 °C
Total Fire Load	903.62 kg/h	Wall Temperature	593.30 °C

PSV Calculation Report - Gas / Vapor Relief Sizing Case

PSV General Data

Item	100 PSV 002	Design Code	ASME VIII
Service		Design Temperature	100.00 °C

Fluid	10 @ Main	Relief Phase	Vapor	Fire Case	True
Valve Type	Conventional	Sizing Method	Vapor	Emergency	Fire
Body Matl	Carbon Steel	Rupt. Disk	False	Discharge To	Flare

Fluid Properties @ Relieving

Spec Heat Ratio (K)	1.1617	Molecular Weight	27.18
Gas Compressibility (Z)	0.9695	Viscosity	0.0132 cP

PSV Coefficients

C	331.19	Kb	1.0000
Kd	0.9750	Kc	1.0000

Process Data @ Relieving

Atm. Pressure	1.01 barA	Superimposed Back Press.	Const. 1.01 barA
Relieving Flow	903.62 kg/h		Var. 0.00 barA
Relieving Temp	146.44 °C	Builtup Back Press	0.50 barG
Set Pressure	5.00 barG	Total Back Press	0.50 barG
Over Pressure	21.0 %	Max. Allowable Back Press:	0.60 barG

Valve Sizing Results

Type of Flow	Critical	Selected Orifice	1.98 cm²	% Used	81.6 %
Calculated Orifice	1.62 cm²				
Noise	115.97 dBA @ 1.00 m	Orifice Designation	1.5 " # 150	F	2 " # 150
		Reaction Forces	141.15 N		

Inlet / Outlet Lines Sizing Results

	N.D. (in)	Sch	I.D. (in)	Rough. mm	Eq. Length m	Calc. Flow kg/h	Calc. DP bar	Max. DP bar	Avg. Vel. m/s	Avg. Rho v2 kg/m/s²	Exit Vel. m/s	Crit. Vel. m/s	Crit. Press. barG
IN	3	40	3.07	0.0457	3.00	3249.00	0.02	0.18	32.03	6231.40	-	-	-
OUT	4	40	4.03	0.0457	100.00	3249.00	0.92	0.60	386.13	174391.83	386.13	386.13	1.07

Calculation Notes

There are many possible causes for a smoking flare such as liquid carryover, flare gas flow rate change, change in flare gas composition, or incorrect flow of smoke suppression fluid. Smoking is a visual signal to check operation (e.g. adjust the flow of smoke suppression fluid). See API 537 [6] for troubleshooting recommendations on smoke suppression or other problems. Although smoking is related to combustion efficiency, it is not directly related to destruction efficiency. The destruction efficiency of the highly branched hydrocarbons can exceed 99 %, while simultaneously the residual carbon soot emitted could cause a very opaque plume [60].

5.7.2.3 Thermal Radiation

5.7.2.3.1 Effect on Human Skin

Many investigations have been undertaken to determine the effect of thermal radiation on human skin. Using human subjects, Stoll and Greene [146] found that with an intensity of 6.3 kW/m² (2000 Btu/h·ft²), the pain threshold is reached in 8 s and blistering occurs in 20 s. On the bare skin of white rats, an intensity of 6.3 kW/m² (2000 Btu/h·ft²) produces burns in less than 20 s. The same report indicates that an intensity of 23.7 kW/m² (7500 Btu/h·ft²) causes burns on the bare skin of white rats in approximately 6 s. Table 11 gives Buettner's [36] exposure times necessary to reach the pain threshold as a function of radiation intensity. These experimental data were derived from tests given to people who were radiated on the forearm at room temperature. The data indicate that burns follow the pain threshold fairly quickly. Buettner's data agree well with those of Stoll and Greene. Tissue damage starts with a burn that resembles a mild sunburn. As exposure time and/or radiation intensity increases, the burn progresses to a severe sunburn and with further exposure into more serious tissue damage.

Table 11—Exposure Times Necessary to Reach the Pain Threshold

Radiation Intensity kW/m² (Btu/h·ft²)	Time-to-pain Threshold s
1.74 (550)	60
2.33 (740)	40
2.90 (920)	30
4.73 (1500)	16
6.94 (2200)	9
9.46 (3000)	6
11.67 (3700)	4
19.87 (6300)	2

Since the allowable radiation level is a function of the length of exposure, factors involving reaction time and human mobility should be considered. In emergency releases, a reaction time of 3 s to 5 s may be assumed. Perhaps 5 s more can elapse before the average individual seeks cover or departs from the area, which would result in a total exposure period ranging from 8 s to 10 s. In evaluating the emergency procedures, consideration may also be given to an exposed individual becoming incapacitated during an attempt to exit the area.

As a basis of comparison, the intensity of solar radiation is in the range of generally 0.79 kW/m² to 1.04 kW/m² (250 Btu/h·ft² to 330 Btu/h·ft²) depending on geographical location and time of year. Solar radiation can be a factor for some locations, but its effect added to flare radiation has only a minor impact on the acceptable exposure time.

The flare owner/operator shall determine the need for a solar-radiation-contribution adjustment to the values given in Table 12 on a case-by-case basis. While an adjustment of 0.79 kW/m² to 1.04 kW/m² (250 Btu/h·ft² to 330 Btu/h·ft²) to a 6.31 kW/m² (2000 Btu/h·ft²) level has a relatively small impact on flare cost, the same adjustment to a 1.58 kW/m² (500 Btu/h·ft²) level results in a significant increase in cost. This determination can include, among other things, an analysis of the frequency of maximum radiation flaring, the probability of personnel or the public being near the flare during a maximum flaring incident, the probability of the sun and flame being aligned in such a manner as to have additive intensities, and the ability of the personnel or the public to avoid or move away from the exposure.

Table 12—Recommended Design Thermal Radiation for Personnel

Permissible Design Level K kW/m² (Btu/h·ft²)	Conditions
9.46 (3000)	Maximum radiant heat intensity at any location where urgent emergency action by personnel is required. When personnel enter or work in an area with the potential for radiant heat intensity greater than 6.31 kW/m² (2000 Btu/h·ft²), radiation shielding and/or special protective apparel (e.g. a fire approach suit) should be considered. **Safety Precaution—It is important to recognize that personnel with appropriate clothing [a] cannot tolerate thermal radiation at 9.46 kW/m² (3000 Btu/h·ft²) for more than a few seconds.**
6.31 (2000)	Maximum radiant heat intensity in areas where emergency actions lasting up to 30 s can be required by personnel without shielding but with appropriate clothing. [a]
4.73 (1500)	Maximum radiant heat intensity in areas where emergency actions lasting 2 min to 3 min can be required by personnel without shielding but with appropriate clothing. [a]
1.58 (500)	Maximum radiant heat intensity at any location where personnel with appropriate clothing [a] can be continuously exposed.

[a] Appropriate clothing consists of hard hat, long-sleeved shirts with cuffs buttoned, work gloves, long-legged pants, and work shoes. Appropriate clothing minimizes direct skin exposure to thermal radiation.

Flare system design and plant equipment layout should minimize the need for operator attendance and equipment installed in locations of high radiant heat intensity. The impact of multiple flares in proximity operating simultaneously needs to be considered when evaluating thermal radiation.

The design of towers or other elevated structures exposed to flare radiation should consider radiation effects on the ability to safely egress. If personnel exposure to radiant heat exceeds the guidelines provided above, then shielding or other protection should be considered. It is often most effective to accomplish this by locating ladders and platforms on a side away from the flare.

Personnel are commonly protected from high thermal radiation intensity by restricting access to any area where the thermal radiation can exceed 6.31 kW/m² (2000 Btu/h·ft²). The boundary of a restricted access area can be marked with signage warning of the potential thermal radiation exposure hazard. Personnel admittance to, and work within, the restricted access area should be controlled administratively. It is essential that personnel within the restricted area have immediate access to thermal radiation shielding or protective apparel suitable for escape to a safe location.

Another factor to be considered regarding thermal radiation levels is that clothing provides shielding, allowing only a small part of the body to be exposed to full intensity. In the case of radiation emanating from an elevated point, standard personnel protective measures, such as wearing of a hard hat, can reduce thermal exposure.

There are practical differences between laboratory tests and full-scale field exposure [37] [81]. Heat radiation is frequently the controlling factor in the spacing of equipment such as elevated and ground flares. Table 12 presents recommended design total radiation levels for personnel at grade or on adjacent platforms. The extent and use of personal protective equipment can be considered as a practical way of extending the times of exposure beyond those listed.

The effects of thermal radiation on the general public, who can be exposed at or beyond the plant boundaries, should be considered.

Each company may select the radiation level to which personnel can be exposed, either for a short duration or continuously. Table 12 is provided to guide companies in making this decision. However, many factors can influence the radiation levels to which personnel may be continuously exposed. The following are some of these factors.

a *Environmental*—Wind and ambient temperature can influence the amount of radiation a person can withstand.

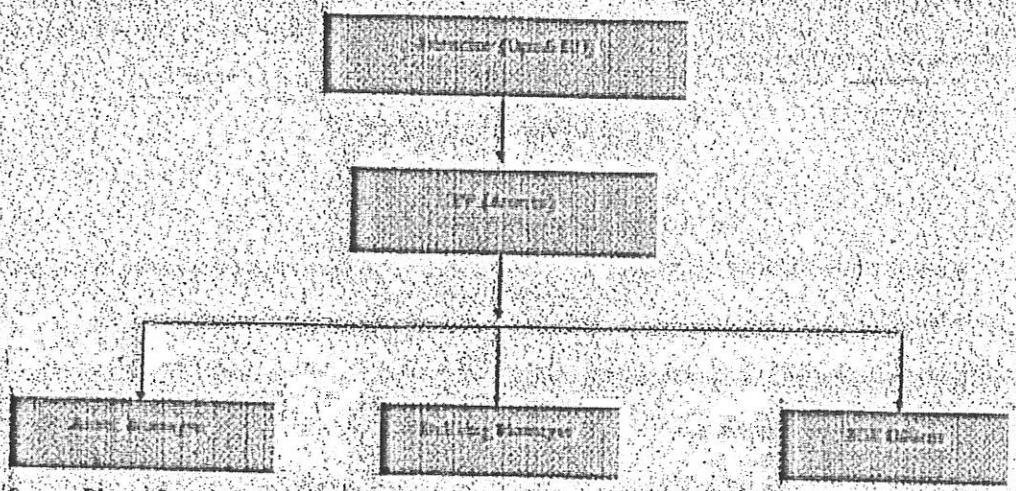
ANNEXURE- 5

ENVIRONMENTAL MANAGEMENT CELL

BPRL has formed its own Environment Management cell, which is headed by Director (Ops&BD).

In order to implement the environmental management program efficiently within the organization, periodical monitoring as per statutory guidelines and mid course corrections/actions, if required based on the environmental monitoring results, management intends to establish environmental cell for successful implementation. The roles & responsibilities are clearly defined among the personnel within the environmental cell.

A well-equipped NABET/NABL accredited laboratory with consumable items shall be outsourced for monitoring of environmental management and monitoring of parameters in the site.



Source: Bharat PetroResources Limited

Figure 6.1: Environment Management Cell

Basically, this department will undertake monitoring of the environmental pollution levels by measuring fugitive emissions, ambient air quality, water and effluent quality, noise level etc., either departmentally or by appointing external agencies wherever necessary. In case, the monitored results of environmental pollution are found to exceeding the allowable values, the EMC suggests remedial action and gets these suggestions implemented through the concerned head of activities. EMC shall also co-ordinate all the related activities such as collection of statistics with respect to health of

workers, restoration of site, losses to crops and ecology and compensation. BPRL's environmental officer for investigation shall have the following responsibilities in general;

- Shall modify proposed EMP as described in chapter 9 of EIA report and monitoring plan as mentioned in Table 6.1 in EIA report in line with the conditions stipulated by MoEF&CC and GPCB.
- Thoroughly familiarize himself with the existing information about habitat, sensitivities and baseline environment scenario etc present in the study area, making use of the EIA report;
- If applicable, liaise with the contractor in order to develop a common understanding of the goals of the EMP during execution of various activities for completion of the proposed development drilling;
- In the event presence of 'sensitive area' but not described in the EIA report, then a brief account of the nature of the sensitivity, its physical dimensions and the area of the developmental drilling that would be affected by avoidance of sensitive area would be prepared. It would also be discussed with the contractor's site manager as to how access to the site would be achieved without impacting on the sensitive area; etc.

****

'Owner must act against squatter within 12 years'

Encroachers On Public Land Won't Get Benefits: SC

Amit Anand Choudhary
@timesgroup.com

New Delhi: If a rightful owner of an immovable property fails to take action to get back possession within the limitation period then his rights are lost and person in possession acquires an absolute title, the Supreme Court ruled on Wednesday, but held that no benefit of adverse possession should be given to people who encroach upon public land.

According to the Limitation Act 1963, the statutory period of limitation that is allowed for possession of immovable property or any interest is 12 years in the case of private property and 30 years for public property, from the date the trespasser occupies the property.

Enumerating the provisions of the Act, a bench of Arun Mishra, S Abdul Nazeer and M R Shah said the law provided shield to a person who is in possession of the property beyond 12 years and that person can take action by filing a suit for restoration of possession in case of dispossession.

"We hold that, a person in possession cannot be ousted by another person except by due procedure of law and once 12 years' period of adverse possession is over, even owner's right to eject him is lost and the possessory owner acquires right, title and interest possessed by the outgoing person/owner as the case may be against whom he has prescribed. In our opinion, consequence is that once the right, title or interest is acquired, it can be used as a sword by the plaintiff as well as a shield by the defendant within ken of Article 65 of the Act and any person who has perfected title by way of adverse possession, can file a suit for restoration of possession in case of dispossession," the bench said.

It said a person who has perfected his title by way of adverse possession can file a suit for obtaining an injunction protecting possession and for recovery of possession in case his dispossession. "In case a person in adverse possession has perfected his title, after the extinguishment of the title of the true owner, he can't be dispossessed by a true owner as the owner has lost his right, title and interest," it said.

Full report on www.toi.in

Army can't p

Exonerates Colonel Facing Charges Under J&K's RPC

Dhananjay Mahapatra
@timesgroup.com

New Delhi: Ending a provision allowing army personnel to be prosecuted for adultery, the Supreme Court quashed general court martial (GCM) proceedings against a serving Colonel in the light of its September 2018 judgment that extinguished adultery as an offence under the Indian Penal Code.

On September 27 last year in Joseph Shine case, a five-judge SC bench had struck down as unconstitu-

tional the 158 year old ... vision in Section 497 of ... that punished a man ... man for offence of adult ... — for having sexual r... tions with a married ... man without consent ... connivance of her husb... However, it had ruled ... adultery could remain ground for divorce.

On the case in hand ... bench of Justices R F N... man and Surya Kant d... red Section 497 of Ran... Penal Code, applicabl... Jammu and Kashmir, as ... constitutional as its c... tent was similar to Sec... 497 of IPC.

The bench said RPC ... ditionally making the ... an abettor of adu... y ... of no consequen... tion 497 of IPC, categ... sing adultery as a cri... has been held uncons... tional. "The entire Sec...

Nun who protested accused Bishop Fra

Kochi: A nun who took part in a protest against former bishop of Jalandhar diocese Bishop Franco Mulakkal in connection with a rape case has been expelled by the Franciscan Clarist Congregation for "failing to give a satisfactory explanation" for her lifestyle "in violation of the proper law of the FCC".

The congregation, under the Roman Catholic Church, said Sister Lucy Kalappura was issued "proper canonical warnings", but did not show the needed remorse. In ... gust 5 letter to her, head o... congregation, Ann Josep... "you are hereby dism... from the Franciscan Cl... Congregation as you fai... give a satisfactory explan... for your lifestyle..."

The "unanimous deci... to dismiss the nun was tak... the congregation's ... council on May 1... This was sent to the Co... tion for the Oriental Chu... in the Vatican. The letter b... Vatican said the Congrep... for the Oriental Church. ... virtue of the faculty giver... by Pope Francis, had ...

Two NRC claimants die, 14 injured as bus hits tree

Pranjal Baruah | TNN

Guwahati: Two women were killed and 14 other people injured in an accident near Bamuniguon, in Assam's Kamrup district, on Wednesday while returning home from a National Register of Citizens re-verification hearing in Golaghat district.

The accident occurred when their bus rammed into a tree by the roadside.

It is the fourth such mishap involving NRC claimants from Kamrup since Sunday when around 54 people from Suntoli area in Kamrup met with an accident while going to Golaghat to appear before NRC authorities for a re-verification hearing. On Monday, at least 33 people from Kamrup summoned for re-verification of documents suffered injuries in two separate road accidents. "A passenger bus carrying 40 people, which was returning from the NRC hearing centre in Golaghat, hit a roadside tree, injuring 14.

[illegible]

સરનામું :- ચેરમેનશ્રી, સર્વ વિદ્યાલય કેળવણી મંડળ સંચાલિત
ઉમા આર્ટ્સ એન્ડ નાથીબા કોમર્સ મહિલા કોલેજ, ગાંધીનગર
સર્વ વિદ્યાલય કેમ્પસ, સેક્ટર-૨૩, ગાંધીનગર-૩૮૨૦૨૩

પશ્ચિમ રેલવે

ઇ-ટેન્ડર નોટિસ

અનુ. નં.	[illegible]	ઇ-ટેન્ડર નોટિસ નં. અને તારીખ	કામ અને સ્થળ	પ્રશ્ન વર્ષ અંદાજીત કિંમત (રૂ.)	બયાના રકમ (રૂ.)	અ.કિ. (રૂ.)
1.	[illegible]	[illegible] તા. [illegible]-૨૦૧૯	[illegible]	[illegible]	[illegible]	[illegible]
2.	[illegible]	[illegible] તા. [illegible]-૨૦૧૯	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

ઓલ ઇન્ડીયા કાઉન્સીલ ફોર ટેકનીકલ એજ્યુકેશન

[illegible]

www.aicte-india.org

જાહેર નોટીસ

એઆઇસીટીઇ માન્ય ટેકનિકલ સંસ્થાઓમાં રેગીંગના જોખમને અંકુશમાં લેવું

અત્રે નોટીસ દ્વારા ધ્યાન દોરવાનું કે તમામ એઆઈસીટીઈ માન્ય સંસ્થાઓ, વિદ્યાર્થીઓ અને અન્ય જુદા જુદા હિત ધરાવતાને જણાવવાનું કે રેગીંગ ફોજદારી ગુનો છે અને એઆઈસીટીઈએ તેનાં વિસ્તૃત નિયમ એફ.નં. ૩૭-૩/લીગલ/ એઆઈસીટીઈ/ ૨૦૦૯ તારીખ જુલાઈ ૧, ૨૦૦૯ જે પ્રસિધ્ધ થઈ ચૂક્યું છે અને તેના સંબંધિત સુધારાઓ વિસ્તૃત એફ.નં. ૩૭-૩/લીગલ/ એઆઈસીટીઈ/૨૦૦૯ અને એફ નં. ૩૪- એઆઈસીટીઈ/ એઆર/ એન્ટીરેગીંગ/ ૨૦૧૬ તારીખ જુલાઈ ૧૭, ૨૦૧૪ અને ફેબ્રુઆરી ૨૨, ૨૦૧૭ સંબંધિત (એઆઈસીટીઈ વેબ પોર્ટલ www.aicte-india.org ઉપર ઉપલબ્ધ) માન્ય એઆઈસીટીઈ માન્ય ટેકનીકલ ઈન્સ્ટીટ્યુટમાં રેગીંગના જોખમ પર નિયંત્રણ માટે પ્રસિદ્ધ થયેલ છે. જે માન્ય એઆઈસીટીઈ ટેકનીકલ ઈન્સ્ટીટ્યુટમાં રેગીંગના દૂષણને પ્રતિબંધિત, અટકાવવા અને દૂર કરવા હુકમ કરેલ છે.

ઉપરના નિયમો તમામ એઆઈસીટીઈ માન્ય સંસ્થાઓ માટે ફરજીયાત અને લાગુ પડે છે. તેથી તમામ સંસ્થાએ તેના અમલીકરણ માટે નીચે મુજબના યોગ્ય પગલા લેવા.

* એન્ટી રેગીંગ કમિટી અને એન્ટી રેગીંગ સ્કવોડની રચના કરવી.
* એડમિશન અને હોસ્ટેલની ફાળવણી વખતે બાંયેધરી લેવી.
* વોર્ડનની કાર્યદક્ષ કેડર અને નિયમિત હોસ્ટેલની મુલાકાત
* વિદ્યાર્થીઓ સાથે નિયમિત મીટીંગ મારફતે જાગ્રતતા પેદા કરવી.
* નવા વિદ્યાર્થીઓ માટે નિષ્ણાંત કાઉન્સીલરોની નિમણુંક કરવી.
* કાયદાની જોગવાઈ સજા વગેરે દર્શાવતા પોસ્ટર / બેનરો લગાડવા.

ઉપર દર્શાવેલ એઆઈસીટીઈ નિયમોનું માન્ય એઆઈસીટીઈ સંસ્થાઓમાં ભંગ થશે અથવા રેગીંગ વિરુધ્ધ યોગ્ય પગલા લેવામાં નિષ્ફળ જશે તો અથવા નિયમો મુજબ પગલા લેવામાં નિષ્ફળ જશે અથવા રેગીંગની ઘટના માટે જવાબદારો વિરુધ્ધ યોગ્ય શિક્ષાત્મક પગલા નહીં લે તો માન્ય પ્રોસેસ હેન્ડબુક અનુસાર તે સંસ્થા વિરુધ્ધ પગલા લેવામાં આવશે.

રેગીંગ સંબંધિત માનસિક પીડા ભોગવતા વિદ્યાર્થીઓ ઘટના વિશે સંપર્ક કરી શકે છે : ટોલ ફ્રી હેલ્પ લાઈન નં. ૧૮૦૦-૧૮૦-૫૫૨૨ અથવા લખો : સભ્ય સચિવ, એઆઈસીટીઈ, જેએનયુ કેમ્પસ, નેલ્સન મંડેલા માર્ગ, વસંતકુંજ, નવી દિલ્હી- ૧૧૦ ૦૭૦.

જાહેરાત નં. પીજીઆરસી/૦૮ (૦૧)/૨૦૧૯ — સભ્ય સચિવ, એઆઈસીટીઈ

ગોબાર્ડમાં [illegible] કરવા [illegible] | [illegible] હતા.

કલમ ૩૭૦ મુદ્દે

(પહેલા પાનાનું ચાલુ)

છે કે કલમ ૩૭૦ અંગે કોંગ્રેસમાં જ મતભેદ જોવા મળી રહ્યાં છે. કોંગ્રેસના અનેક નેતા કલમ ૩૭૦ને દૂર કરવાનો વિરોધ કરી રહ્યાં છે તો બીજી તરફ કેટલાક નેતાઓ તેના સમર્થનમાં પણ બોલી રહ્યાં છે.

કલમ ૩૭૦ને દૂર કરવા અને જમ્મુ કાશ્મીરના વિભાજનના મુદ્દે કોંગ્રેસના નેતાઓ વિભાજિત દેખાઈ રહ્યાં છે. પક્ષના વરિષ્ઠ નેતા અને રાજ્યસભામાં વિપક્ષના નેતા ગુલામનબી આઝાદ કલમ ૩૭૦ દૂર કરવાના નિર્ણયનું સમર્થન કરી રહી રહેલા પોતાના જ પક્ષના નેતાઓની ટીકા કરતા જણાવ્યું છે કે જે લોકો જમ્મુ કાશ્મીર અને કોંગ્રેસના ઈતિહાસને જાણતા નથી તેમણે પક્ષમાં ન રહેવું જોઈએ. આવા નેતાઓએ જમ્મુ કાશ્મીર અને કોંગ્રેસના ઈતિહાસને વાંચવાની જરૂર છે.

ઈતિહાસ વાંચ્યા પછી જ પક્ષમાં રહેવું જોઈએ.

કોંગ્રેસના વરિષ્ઠ નેતા જનાર્દન દ્વિવેદી, દીપેન્દ્ર સિંહ હુડ્ડા, અદિતિ અને અભિષેક મનુ સિંઘવી જેવા નેતા કલમ ૩૭૦ રદ કરવા અને રાજ્યને કેન્દ્ર શાસિત પ્રદેશોમાં વહેંચવાના નિર્ણયને સમર્થન આપ્યું છે.

Oushadhi
The Pharmaceutical Corporation (I.M.) Kerala Ltd.
(A Govt. of Kerala Undertaking)
Kuttanellur, Thrissur-14, Kerala
Ph: 0487-2459807, 2459841, 2459842
E-mail: purchase@oushadhi.org

P1/105/19-20 — 6.8.2019

E-TENDER NOTICE

E-tenders are invited for the supply of 'Raw materials' for the period 1st October 2019 to 31st March 2020. Tenders can be downloaded from the website www.etenders.kerala.gov.in. For more details, please visit our website www.oushadhi.org or contact our Purchase Division at Kuttanellur.

Thrissur — (Sd/-) Managing Director

જાહેર નોટિસ

મેસર્સ ભારત પેટ્રોરિસોર્સીસ લિમિટેડ (ગાંધીનગર, અમદાવાદ અને ખેડા જિલ્લાની એકસમાન સીમા) અત્રે જનતાને માહિતગાર કરે છે કે બ્લોક CB-ONN-2010/8માં પ્રસ્તાવિત ઓનશોર ઓઈલ અને ગેસ વિકાસ અને નિર્માણને એમઓઈએફ અને સીસી, નવી દિલ્હી દ્વારા પર્યાવરણીય મંજૂરી આપવામાં આવે છે અને પત્રની નકલ ગુજરાત પોલ્યુશન કંટ્રોલ બોર્ડ (જીપીસીબી) પાસે ઉપલબ્ધ છે અને પર્યાવરણ અને વન તથા હવામાન પરિવર્તન મંત્રાલયની વેબસાઈટ પર પણ જોવા મળશે: http://moef.nic.in

Guj. Samachar - Ahmd - 8/8/19