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Executive Summary

1. Introduction

Petroleum exploration activities have been going on in Assam and other states of the northeastern region for a long time. In fact, oil exploration in India commenced with the discovery of Digboi oilfield more than 100 years ago when an oil well was drilled on oil seepage in the exposed anticline associated with the Naga thrust. Many national and international oil companies are presently engaged in oil exploration in Upper Assam and Arunachal Pradesh area.

Oil India Limited (OIL), a Govt. of India Enterprise, is engaged in exploration, production and transportation of hydrocarbons in the northeastern part of the country for last several decades. OIL is now planning to carry out exploratory drilling at the locations, MSC and MSD, in Jonai subdivision, on the north bank of the Brahmaputra River.

Jonai is the easternmost sub-division of Dhemaji District of Assam, about 554 km away from the state capital, Guwahati. Covering a total Geographical area of 1111.81 sq km, it is bound by Arunachal Pradesh in the north, Lali and Brahmaputra River in the south, Sipiya River and Sadiya Subdivision of Tinsukia district in the east and Simen River in the west. The Head Quarter is located at 95.160 E and 27.770 N. The Sub-division comprises of just one Development Block, Murkong Selek Tribal Development Block, one Revenue Circle, Jonai Revenue Circle and 15 Gaon Panchayats. The whole subdivision is classified as rural and as such, agriculture occupies the principal position in the whole of the sub-division. Jonai is home to various indigenous tribes like Mising, Sonowal Kachari, Bodo Kachari, Deori and Laloong. Other tribes e.g. Ahom, Rabha, Tai-Khamti, Konch, Keot, Koiborta, Brahman, Kayastha, Kalita, etc., also inhabit the study area.

The Dhemaji district is in a strategic location where steep slope of Eastern Himalayas abruptly drop forming a narrow valley, which widens towards the western side. Numerous drainage systems originating from the hills of Arunachal Pradesh flow through this narrow valley ending at the mighty river Brahmaputra. Three mighty rivers i.e.

Dihing, Dibang and Lohit, flowing from their hilly course to the valley, make their confluence to form the mighty Brahmaputra and exert tremendous impact of peak runoff at the eastern most corner of Dhemaji district, making the district vulnerable to annual flooding.

This Report documents the results of a Rapid Environmental Impact Assessment (REIA) study in the designated area and its immediate surroundings. The study was conducted during October-December 2007 by a multidisciplinary team from Gauhati University, Assam.

The EIA study covers the environmental components such as Land use pattern, Ambient Air Quality and Meteorological situation, Water quality, (surface and ground water), Soil quality, Ambient sound level, Terrestrial ecology, Demography, socio-economic and health scenario existing in the area in order to evaluate the impacts of the proposed seismic survey: The major objectives of the study are (i) to determine the baseline situation relating to different aspects of the environment, human beings and local communities, the flora and fauna, the aquatic life, etc., (ii) to establish the likely consequences of seismic data acquisition including the likely environmental damages and hazards associated with the proposed drilling activities, (iii) to suggest measures and alternatives for mitigating and minimizing the environmental damages and the hazards, and (iv) to prepare a detailed Environmental Management Plan (EMP) including an Environmental Monitoring Plan.

2. The Proposed Drilling Programme

This chapter gives the details of the proposed drilling programme including the methodology to be adopted. Oil has proposed to carry out drilling at two locations of MSC (X-3251236, Y-1119720) and MSD (X-3259037, Y-1121300) in Jonai sub-division from October 2008 and March 2009 respectively. The expected well depth is about 4600 m with an estimated drilling period of 90 days for each well, to be followed by a well testing period of 15 days. Water-based drilling mud only will be used in the process and the anticipated cuttings volume is 1500 cu. m. The exploration well is proposed to be drilled using a Conventional Land Rig (Electric) equipped with a Top Drive System.

On completion of activities, the well is proposed to be diverted to the Oil Collecting Station for production (if the well evaluations indicate commercial quantities of hydrocarbons) or will be killed and permanently abandoned. In the event of a decision to suspend the well, it will be filled with a brine solution containing very small quantities of inhibitors to protect the well. The well will be sealed with cement plugs and some of the wellhead equipment will be left on the surface. If the well is abandoned it will be sealed with a series of cement plugs, all the wellhead equipment will be removed, leaving the surface clear of any debris and the site will be restored to its natural state to the extent possible.

3. Existing Environment

The baseline data collection for the existing environment was carried out after the rainy season was over, i.e. in the months of October, November, and December 2007.

The study area is part of the Brahmaputra floodplain with a very gentle gradient from north to south. Average elevation is within 120 m of the mean sea level (msl). A number of south flowing rivers viz., Leko, Jonai Korong, Raiang, Rajakona and Barnesuti from east to west drain the area before deboucing into the Brahmaputra which marks the southern boundary of the area. Because of its proximity to the Brahmaputra and a number of active channel belts, the project area is characterized by typical floodplain geomorphology.

Satellite images viz., IRS LISS 3 and Landsat ETM+ together with Survey of India topomaps in the scale of 1:50000 were used as the primary data source for geospatial study. A total of nine landuse/landcover classes have been demarcated in the study area following Level III classification. Large sandy wastelands (~18% of the total area) have developed mainly in the area adjacent to the Brahmaputra. The exposed part of side bars and channel bars and dried up channel beds constitute this category of land cover. The rivers bring heavy loads of sediment from Arunachal Himalayas catchment during flash flood and normal over the bank floods which is left behind after the flood thus forming large sand sheets in adjacent areas. In the Dhemaji district the rivers like the ‘Gai’ are having very shallow channel and thus reduced carrying capacity. This induces frequent overtopping and sand dispersal. Outside the sandy wasteland, the fertile alluvial soil is

extensively used for agriculture, mostly to grow one crop (paddy) during the kharif season. Many floodplain areas and areas under kharif crop are further used for growing rabi crop viz., mustard, sunflower and seasonal vegetables. The agricultural land including both kharif and rabi, constitute the dominant category of land use covering as much as ~37 % of the total area. Active river channels forming the perennial water body together with the numerous wetlands (‘beels’ and ponds) form a major landcover category. Active channels of the Brahmaputra and its tributaries flowing into it cover about 5 % of the total project area. The consistently shifting nature of the Brahmaputra River and consequent bank migration has resulted in large wetlands along the active floodplain towards south. These areas (~16%) are perennially waterlogged and not much in use except for fishing. Forest cover, both dense and open/degraded type together, forms just above 4 % mainly found in the eastern sector which includes part of the ‘Pobha’ reserve forest. The land use for settlement is mostly confined to the ‘rural settlement’ (built up-rural) category constituting about 19 % of the total area and scattered along the road networks.

The climate of the study area is humid and tropical. A hot and humid pre-monsoon from March to mid May, a prolonged southwest monsoon or rainy season from mid May to September, a pleasant post-monsoon or retreating monsoon from October to November and a cold pleasant winter from December to February are the characteristics of the general climate. December and January are the coldest months in the study area, but the minimum temperature rarely goes down to single digit. These were also the driest months along with November.

The ambient air quality data with respect to TSPM, RSPM, SO2, NOx, CO and HC show that the results conform to the National Ambient Air Quality standards and therefore, they reflect the stress-free conditions of the ambient air in all the locations.

Surface water and groundwater samples from 15 and 8 sources respectively do not show any significant chemical contamination. However, the surface water is biologically contaminated and the groundwater is having higher content of fluoride at several sites. The surface water is also rich in nutrients (phosphate and nitrate), indicating inflow of animal wastes and other nutrient-rich wastes. The groundwater is also characterized by high dissolved solid load.

Soil at 12 sites in the study area was analyzed for 28 physical and chemical properties. The soil pH was mostly alkaline (> 7.0) except in one or two locations. The soil is sandy in texture with considerable amount of clay but very little silt. The soil generally possesses good water-holding capacity and all the samples are rich in NPK nutrients. The soil has large chloride content and all the sites show soil with high metal content, particularly iron and manganese. The soil contains some amount of oil and grease content. Among the heavy metals, the soil contains large amounts of Pb and Cd.

Floral Survey was carried out in selected areas of Jonai District at 8 different sites. All the different types of plant species are enlisted. The plants showed healthy growth during the survey. Productivity of the different types of crops including has been affected by regularly visiting floods. Diseases of plants, including crop plants are rarely noticed. Mixed evergreen forests characterize the natural vegetation of the area and are typical of the low-lying floodplains along the River Brahmaputra. Most of these forests have been converted into human uses. The remnant patches—mostly in small-protected areas indicate that these forests are characterized by Syzygium, Cinnamomum, Artocarpus, Terminalia spp. Tetrameles spp. and Stereospermum spp. These forests also contain several Deccan elements, indicative of the geological origin of the region. The alluvial grasslands along the Himalayan foothill valleys are among the tallest in the world. Characteristic species in these highly productive grasslands include Saccharum spontaneum, Phragmites karka, Arundo donax, Imperata cylindrica, Erianthus ravaneae, Andropogon spp., and Aristida ascensionis. Annual silt deposition during monsoon floods rejuvenates these grasslands and promotes rapid regeneration. As the floodwaters recede, grasses such as Saccharum spontaneum and pioneer trees such as Trewia nudiflora and Ehretia laevis colonize the area. The grasslands transition into the Sal forests that flank the hillsides along the lower reaches of the river valleys, below 1,000 m. The lower hill slopes above 1,000 meters are cooler and less drought-stressed during the spring pre-monsoon season. Here, the subtropical evergreen broadleaf forests are dominated by tree taxa such as Castanopsis and Schima from subtropical East Asia. The administrative control of the forests within the study area lies with the Jonai Range of the Dhemaji Forest Division. The Pabha RF lying to the north east of the area demarcated for this study represents the largest tract of natural forest within the Jonai Range. Apart from

the Pabha RF, the Jonai Range also looks after the Leku, Jelem, Rigbi, Bahir Sillai, Bijoypur and Gali Borbali JFMCs under the Assam Joint Forestry Management initiative.

Overall, more than 175 species of mammals and in excess of 500 species of birds are known from the region. The mammalian fauna in the lowlands are typically Indo-Malayan, but with altitude there is a transition into Palearctic fauna. The recent origin of the Himalayas contributes to a low endemicity of the Eastern Himalaya Region, especially among the better-known higher taxonomic groups. The region however harbors several species that are represented by globally significant populations. These include important populations of the largest carnivore and herbivores in Asia, notably the tiger (Panthera tigris), Asian elephant, and wild water buffalo. The elephant population in the remaining habitat patches along the north bank of the Brahmaputra River in Assam is one of India's largest and most important. The Brahmaputra that flows along the Himalayas foothills also supports globally important populations of the Gangetic dolphin (Platanista gangetica). The region is also home to some of Asia's largest birds. The populations of vultures, greater and lesser adjutants in the foothill grasslands and broadleaf forests are globally significant, as are the populations of several of the hornbill species and pheasants and the white-winged duck (Cairina scutulata).

The faunal survey focused on eliciting information on the fauna of the study area to help assess the possible impact that the proposed drilling of exploratory wells could have on this important component of the biota. In selecting sites for acquiring the data relevant to the proposed seismic survey, an attempt was made to reflect the spatial variability of the survey area. Based on map inspection, field reconnaissance and information derived from the LU/LC classification of the survey area, 11 sites were selected for conducting the faunal survey. Five taxonomic groups were chosen for assessment in the present faunal survey, namely, Mammals, Birds, Reptiles, Amphibia and Fish. These vertebrate groups, dispersed across a range of terrestrial and aquatic habitats, can be expected to provide an indication of the health of wildlife habitats within the study area. Surveys were undertaken in the areas around the identified well locations to assess the faunal diversity of the study area in terms of the targeted taxa. Care was exercised to ensure that all major habitats within the study area were included in the survey. The results of the survey have been enlisted in the Report.

The demographic profile of the study area has been constructed using village level data from 2001 Census of India for the Jonai circle, within which the reference area is broadly contained. In 2001, the Jonai circle was inhabited by about 23,000 households constituting a population of 1.43 lakh. The sex ratio of 932 females per 1000 males is just equal to the ratio for the entire state of Assam. The overall literacy rate for the population in the age group above 6 was 57.41 percent. Gender disparity in literacy rate is considerable. The female literacy rate was only 45.79% as against the male rate of 68.13%. Including marginal workers, the work force participation rate comes to 44.74 percent, which imply a dependency ratio of 55.26 percent. The participation rate is somewhat higher for males than for females. Moreover the proportion of marginal workers is strikingly high in the female work force. High incidence of marginal workers implies prevalence of extensive underemployment in the female work force. There is overwhelming dominance of the agricultural sector as the employer. Cultivators and agricultural labourers together account for about 79.74% percent of the main workers, while household industries etc. category accounts for less than 2% of the same. The smaller percentage of agricultural labourers along with a high percentage of cultivators signifies that incidence of landlessness is not extensive. For the female workers, the percentage engaged as cultivators, household industries etc. workers are significantly higher than the same for male workers.

A striking feature is the much higher cropping intensity in the area. As high flood – proneness makes the output of the kharif crop uncertain, farmers here apparently cultivate the land in the Rabi season more extensively than in the rest of the state. However the cultivation of summer rice has not picked up as much in this area as at the all Assam level. Inadequate irrigation facility appears to be the obvious explanation for it.

The socio-economic features of the population have also been inferred from the primary data collected through a household sample survey conducted for the purpose. The sample has been selected through a two-stage sampling design. In the first stage nine villages were selected and in the second stage 10% of households from each of these villages were selected at random as the ultimate sampling units. The villages selected for survey were taken from the human habitations in the vicinity of the proposed drilling sites. All the results of the survey have been carefully enlisted.

4. Environmental Impact Assessment

The EIA of the drilling operations are evaluated with the Matrix method. The method essentially consists of a list of different activities during the project implementation and their likely impacts on the environmental indices, presented in a matrix format. The matrix allows the identification of cause-effect relationships between specific activities and their impacts. The mitigation measures that are in operation presently or are likely to be taken up, are also taken into consideration.

The environmental concerns usually associated with the drilling activities emanate from the physical disturbance caused by the location and operation of the project facilities and the pollution caused by the waste that is generated. Drilling will employ water-based mud with various chemical additives to deal with particular drilling situations. The drilling waste generated at the well site contains not only drilling mud but also drill cuttings of the subsurface material and contaminants like hydrocarbons, lubricants and chemicals used to liquefy the cuttings. On the surface, the mud and cuttings are separated by mechanical means and the mud returned to the mud pits for recirculation. The drill cuttings, consisting of drilling mud, hydrocarbons, water, chemical additives and subsurface material containing minerals, and also the spent drill mud are to be disposed off as per standard scientific procedure. It is suggested that only PLONOR Grade Chemicals, which are considered as having little or no risk to the environment will be used.

The mitigation measures to minimize the impact of the proposed exploratory drilling activities include (i) ensuring minimum removal of natural vegetation and initiation of reforestation over the project area, (ii) restricting the movement of vehicles and personnel to the minimum necessary for implementing the project as this will reduce disturbance caused to wildlife, road kills and, also noise and emissions, (iii) implementation of a facility-wide waste management plan with pollution prevention as an integral part of the plan with focus on reduction of the impact associated with stormwater runoff by ensuring that materials such as drilling fluids and chemicals stored onsite are not exposed to rain, using containment dikes to prevent storm water runoff to waste storage areas, operation procedures to prevent spills and to ensure swift containment and clean up of accidental spills, (iv) exploring the possibility of implementing a Closed Loop Drilling Fluid System

as this will help dispense with the construction of a reserve pit that can leak toxic liquids into surface or groundwater and also release substantial quantities of VOCs to the air, (v) implementation of a V- shaped reserve pit instead of the conventional rectangular pit, (vi) substitution of toxic drilling fluid additives with low toxicity compounds to reduce the risk associated with drilling fluid disposal, (vii) careful removal of drill cuttings and other contaminating solids from the drilling fluid, thereby reducing the need to dilute or replace the fluid, by adding desanders and desilters to shale shakers in the mud treatment system and by employing mud cleaners to break oil-water emulsions and remove dissolved components, (viii) recycling the drilling fluid, (ix) preventive maintenance and leak containment of engines, tanks, pumps and all other equipment, (x) inventory control to ensure efficient use of materials and reduce waste generation, (xi) proper disposal of all domestic and sanitary wastes generated on-site.

All the likely events are classified into routine and non-routine events to assist in identifying the greatest risks to the environment from unplanned events. Those hazards resulting in negligible or minor consequence to the environment, with a negligible to low expected frequency of occurrence are generally acceptable, whereas those resulting in severe consequences which have a high likelihood of occurrence are not. Medium risks need to be reduced as far as reasonably practicable and procedures should be set in place to minimize impacts should an incident occur. All the likely hazards have been tabulated and their mitigatory measures have been outlined.

Necessary steps and precautions are to be taken for minimizing the amount of waste generated and controlling its eventual disposal. Where possible, all waste materials are to be segregated by type, garbage is to be processed in a compactor and stored in a designated area or burnt in a special burn pit. Other wastes are to be stored in suitable containers and will be recycled or disposed off in a controlled manner through authorized waste contractors. Materials like scrap metals, waste oil and surplus chemicals are to be sent for recycling or reuse as far as practicable.

In the event of a kick, the influx will be circulated out of the mud and pressure control established using standard pressure control methods. Great care has to be taken to minimize the probability of a kick occurring whilst drilling. Specific procedures and training are to be carried out to ensure that the correct action would be taken on the rig in

the event of a kick occurring. The operating personnel should be well trained for such an eventuality and the rig should be equipped with Blow Out Preventers of suitable ratings while drilling different sections to ensure safety of equipment and personnel in case of a blow out. Detailed measures have also been suggested for preventing oil spills and also measures to be taken in the event of spills.

Cumulative impacts resulting from the emissions to atmosphere during drilling are highly unlikely – combustion for power generation and during well testing gives rise to minor emissions of carbon dioxide (CO2), oxides of nitrogen (NOx), oxides of sulphur (SOx) and unburnt hydrocarbons. Dispersion of these types of low volume emissions is generally rapid and cumulative effects with the nearest existing sources will be below levels of detection. Thus, although such emissions will contribute in a small way to the overall pool of greenhouse and acidic gases in the atmosphere, local environmental and trans-boundary effects will be negligible.

5. Environmental Management Plan

The Environmental Management Plan (EMP) is developed to lay down procedures to ensure that all mitigation measures and monitoring requirements specified are actually carried out in subsequent stages of project development to ensure compliance with environmental laws and regulations and to reduce or eliminate adverse impacts.

The main mechanism for implementation of the EMP is the establishment of an Environmental Management Office (EMO). OIL has a well established Safety & Environment department which in consultation and co-ordination with the Project office will ensure that adequate measures as outlined in the EMP are actually followed and executed during the course of the drilling operation.

The EMP outlines the minimum HSE (Health, Safety and Environment) training requirements for the Contractors and all the personnel, skilled, semi-skilled and unskilled to be engaged for the work. The EMP also spells out a detailed Environmental Monitoring Programme which will provide feedback about the actual environmental impacts of the project. Monitoring results will help judge the success of mitigation measures in protecting the environment. This will ensure compliance with environmental standards. By tracking a project's actual impacts, monitoring will reduce the

environmental risks associated with that project, and will allow for project modifications to be made when and where required. In order to achieve these objectives, it is suggested for development of an Environmental Monitoring Programme, including observations of the potential sources of impact and environmental components that may be affected, introduction and management of a monitoring system for project emissions, discharges and waste, regular observations of the current state of ambient air, water and biota, soils and terrestrial biota in areas potentially affected by activities, and comparison of the state of environmental components in the areas potentially affected by facilities in comparison with background parameters. It is suggested that the project proponent will regularly monitor a number of environmental performance indicators during the entire duration of the drilling operations. For this purpose, the minimum monitoring requirements are based around the 35 Global Reporting Initiative (GRI) Indicators that aim to develop globally applicable Sustainability Reporting Guidelines for reporting on the economic, environmental and social dimensions of the proposed activities.

6. Conclusion

Although the proposed area for exploration drilling is located in an almost virgin, previously unexplored area, the drilling operations are unlikely to have any major adverse impact. The land is to be reinstated to its existing conditions as far as possible after the drilling. The drill site and its immediate impact zone do not have any historical monument, archaeological site, big water body/dam/reservoir, declared national park/wildlife sanctuary/tiger reserve/elephant reserve, declared biosphere reserve, and declared habitat of migratory birds. The proposed exploration activity is not likely to have any significant adverse effect nor will it affect inland fishing activities. The drilling of the exploration well will result in a range of controlled releases to the environment with remote possibility for non-routine or accidental releases. The environmental impact assessment process has systematically identified and assessed all potential environmental impacts associated with the drilling operations.

The main source of liquid effluents generated during the drilling operations will be from the spent drilling fluid resulting from the cleaning of the cuttings from the drilling fluid circulation system. The drilling fluid may contain trace amounts of heavy metals.

However the drilling fluid to be used for the drilling will be water based mud, comprising of PLONOR chemicals and the effluents generated during the drilling are unlikely to contain any appreciable heavy metal concentration, and would conform to the CPCB norms prescribed for effluents.

The solid wastes generated will be separated from the circulation system and adequately dried and stored at site temporarily in separate cuttings pit. As a result of the control measures and management processes that will be in place, it is anticipated that there should be no significant impacts resulting from the proposed operations. To ensure this, OIL would take up periodic check on wastewater discharge quality, water quality of natural water bodies around the drilling site, performance of comprehensive waste management plan, and evaluation of the protective measures.

Executive Summary

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Introduction

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%a] %ç»ó =wü» Y[ïç_» %XîçXî »çLa]c:Tü åY®ü'×_^ç] FXX Eõç^î [ï§×VX» Y»ç Jü_ç+ UEõç éc:äK:* V»çJü_ãTü \ïç»Tü[ïbTü éTü_FXX Eõç^î 100 [ïK:»ã»ç %çGãTü åc:ç¾ç ×QüGê[ï» éTü_ãIüy» %ç×¾ç»» Y»ç+ =dY×wü éc:×K:_; XGç Yçc:ç»» åc:Jüç» Zü_Tü =àüTü Yçc:ç»» A®ü_Ý^ç %e`Tü ×XL×»-×XL×» Cã_ç¾ç åTü_» Ye A0üçãTü YÜ][ïç»» [ïçã[ï éTü_FçV FXX Eõç^î a¶üYç×VTü éc:×K:_* [ïTü]çãX =L×X %a] %ç»ó %»óSçJü_ YãV`» ×[ï×\ü~ åIüyTü [ï§ãTüç »çrüÝ^ %ç»ó %çÜf»çrüÝ^ åEõç¶üYçXÝEõ éTü_ %XaµüçX %ç»ó FXX Eõç^îTü ×X^Nþ Eõ»ç éc:äK:*

×[ïGTü [ï§V`Eõ Wü×» åV`» =wü»çe`Tü cç+V'Eõç[ïX» aµüçX %ç»ó FXX, =dYçVX %ç»ó a»[ï»çc: Eõç^îTü ""%+_ +×ç^ç ×_×]äüQü (OIL),A G\üõ %¾ +×ç^ç A³0üç»Yç+L''Eõ ×Xã^çG Eõ»ç éc:äK:* [ï¡üYy XVÝ» =wü» Yç»Tü %¾×ØTü åLçXç+]c:Eõ]ç» MSC %ç»ó MSD åIüyTü [ïTü]çX %+ã_ åTü_ FçV FXX Eõç^î» Y×»Eõ×Xç çTüTü é_äK:* »çLWüçXÝ m¾çc:ç0üÝ]c:çXG»» Y»ç Yç^ 554 ×EõfÙ]f V»±üTü %¾×ØTü åLçXç+]c:Eõ]ç+ c:'_ åWü]ç×L ×L_ç» %ç0üç+TüêEõ Y[ï YçÜ»» Püç+* a[ï]Pü 1111,81 [ïG ×EõfÙ]f å\üäGç×_Eõ åIüyã» L×» UEõç A+ %ç_ä0üç» =wü» aÝ]çTü %çäK: %»óSçJü_ YãV`, V×IüãS _ç_Ý %ç»ó [ï¡üYy XVÝ, Yã[ï ×JüYç^ç XVÝ %ç»ó ×Tü×XJüEõÝ^ç ×L_ç» `×V^ç]c:Eõ]ç %ç»ó Y×¸Jü] aÝ]çTü %çäK: Jüç+ã]X XVÝ* aV» Eõç^îç_^ 95,160 E, 27.770 N. Tü %¾×ØTü*]çy A0üç åQüã\ü_'Yã]³0ü [ïEõ,]ç»Eõe ×Jüã_Eõ ®üç+ã[ï_ åQüã\ü_'Yã]³0ü [ïEõ, A0üç »çLc: Jüyó, åLçXç+ »çLc: Jüyó %ç»ó 15 FX GçC Yç^Eõç^TüEõ é_ A+ åLçXç+]c:Eõ]çä0üç G×PüTü éc:äK:* åGçä0ü+]c:Eõ]çä0üçã¾+ Gç]î ×c:JüçãY ×Jü×c:óTü éc:äK: %ç»ó AãXãIüyTü Eõ×b Eõç^î+]Fî ØçX VF_ Eõ×»äK:* ×]×Jüe, åaçãSç¾ç_, EõK:ç»Ý, [ïäQüç-EõK:ç»Ý, åV=»Ý %ç»ó _ç_e %ç×V U_¾ç LXãGçÝ» %ç¾ça\ü×] A+ åLçXç+]c:Eõ]ç* %çã_çJüî %ç_ä0üçTü %XîçXî Lç×Tü å^ãX %çãc:ç], »ç\üç, 0üç+-Fç]×0ü, åEõçJü, åEõC0üü, éEõ¾Tü, [ïç¡üS, Eõç^Ø, Eõ×_Tüç %ç×V å_çãEõC [ïa[ïça Eõ×» %ç×c:äK:*

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EIA (Environmental Impact Assessment) (Yçx»Yçx`E Y\ç¾ xXçx»S) å^ \x]» [Yî¾c:ç»» JçãXxE, [ç^] _T UEç [ç^» mSçmS %ç»Û [T» x[pûçX a¶YE^ Yx»xØxT, YçXY» mSçmS (W]»çY %ç»Û ]çxÛ» %\îÜ»T åYç¾ YçXY), [ç^] _Y^ শব্দ» Yç¾_î» åLçF, \J» LY¾ LGT, åQ]'GçZY, ae`r %«_T Y¾xTT aç]çxLE-%çxUE YxT-Kx[(^çãT YØçx¾T Yx»å[` L»YY Eç^î» Y\ç¾ a]c:»]_î xXçx»S Ex»[Y»ç c:^) +Tîçx[b^ a]c:E aç]x» _^*

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The Proposed Drilling Programme

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A+ %Wìîç^Tì YØìçx¾Tì FXX Eìç^î x[ì³¾»Sý» _GãTì Gc:S Eìx»[ì _Gç Eìç^î YSç_ý» x[ìØTì [ìîçFîç xV^ç éc:äK:* %+ã_ åLçXç+]c:Eì]çTì UEìç MSC (X-3251236, Y-1119720) %ç»ó MSD (X-3259037, Y-1121300) Pìç+ VFXTì ^Uçyóã] 2008 JìX» %ãkìç[ì» %ç»ó 2009 JìX»]çJì]çc:» Y»ç FXX Eìç^î» ayYçTì Eì»ç» [ìçã[ì YØìç¾ Gc:S Eìx»äK:* YxTìäÖìç FçV Yç^ 4600 x]f G\ìý» c:'[ì [ìx_ %ç`ç Eì»ç éc:äK: %ç»ó YxTìäÖìç» [ìçã[ì 90 xVXý^ç FXX x]^çV %ç»ó 15 xVXêEì FçV Y»ýÌìS Eìç_ xXÿìç»S Eì»ç éc:äK:* YÿìxTìäÖìçTì åEì¾_ YçXý» CY»Tì x\ìxwì EìTì (water-based) FXX å[ìçEìç [ìî¾c:ç» Eì»ç c:'[ì %ç»ó Y[ìçX]çX %Xax» æK:VX %ç^TìX (cuttings volume) c:'[ì 1500 HX x]Öìç»* AÖìç `ýb Jì_X YÿìxTì^Nþ (A Top drive system) EìXã\ìXJìãX_ å_ø x»G (é[ìVîxTìEì) [ìî¾c:ç» Eìx» xX[ìçxJìTì FçV VÖìçTì FXX Eìç^î Jì_ç[ìê_ YØìç¾ å_ç¾ç éc:äK:* FXX Eìç^î a¶ìYçVX» %ÜìTì FçV åEì+Öìç éTì_ aeGc:Eìç»ý åEì³V (Oil Collecting Station, in brief O.C.S) é_ =dYçVX» [ìçã[ì cØìçÜì» Eì»ç c:'[ì (^xVãc: FçV»]_î xXÿìç»S» TìUî+ [ìî¾aç^Eì]çyçTì c:ç+V'Eìç[ìX Yçø åc:ç¾çäÖìç aJìç^) Xc:'ã_[ìç +^çEì [ìµì Eìx» xV Øìç^ý\ìçã¾ Y»TìîNþ Eì»ç c:'[ì* FçV ØìxGTìEì»S» xaÿìçÜì _'[ì _Gç %¾ØìçTì FçVäÖìç a»xÌìTì Eìx»[ì» %x\ìYçã^ã» aç]çXî Yx»]çS» [ìçWìç YVçXEìç»ý »çaç^xXEì (Inhibitors) » éaãTì FçVäÖìçTì [ìç+X Jìã_çJìX \ìxwì Eì»ç c:'[ì* FçVäÖìç xJìã]³Öì YçG _Gç+ [ìµì Eì»ç c:'[ì %ç»ó FçV» `ýbTì Y^Nþ %çxc:_ç (well head equipment) xEìK:]çX ]xL^çTì A»ç c:'[ì* ^xV FçVäÖìç Øìç^ý\ìçã¾ Y»TìîNþ Eìx»[ì _Gç c:^ åTìäÜì A_çX xJìã]³Öì YçG» ¥ç»ç +^çEì [ìµì Eì»ç c:'[ì %ç»ó aEìã_ç Wì»S» well head equipment %çTì»ç+, W[ìeaç¾ã`b xX]_ Eìx» Pìç+ãQìçF» x^]çX V» a]\ì¾ ÿìç\ìçx¾Eì %¾Øìçê_ Yx»STì Eìx» »Fç» xVc:ç Eì»ç c:'[ì*

Existing Environment

3* Y¾xTìTì Yçx»Yçx`ÈEìTìç

2007 JìX» %ãkìç[ì», Xã¾¶ìÌì» %ç»ó xQìäJì¶ìÌì»]çc:Tì %Uçd [ìbçEìç_ %xTìyó] åc:ç¾ç» xYJìTì %çã_çJìî %¾ØìçX» Y¾xTìTì ([ìTì]çãX UEìç) Yçx»Yçx`ÈEìTìç a¶ìYEìþ^ x\ìxwìã^çGî TìUî aeGc: Eì»ç éc:xK:_* %Wìî^X Jìã_ç¾ç åÌìyFX [ì¡ìYy» Yç¾X\ìx]» AÖìç %e`; =wì»» Y»ç VxÌìSê_ yó]`f CFêc: å^ç¾ç ARì_ý^ç Pìç+* GQì =xçX a]V» L_Yÿì»

Y»ç 120 ˣ]f» ˣ\ïTï»Tï* VˣIïSçˣ\ï]FÝ XVÝ å^ãX å_Eï', åLçXç+, Eï»e, é»^çe, »LEïSç, [ÿçãSJïîTïÝ %çˣV [ÿ¡ïYyTï %çˣc _G _Gç» %çGãTï åIïyFX Y[ÿ» Y»ç Yˣ¸Jï]ê_ Yçˣ¾Tï Eïˣ»äK, ˣ^ã^ åIïyFX» VˣIïS aÝ]ç ˣJïˣcïTï Eïˣ»äK* [ÿ¡ïYy %ç»ï ˣEïK aeFîEï aˣyï^ Y¾çcÝ %çã¾rïXÝ» a]ÝYTï UEïç» [ÿçã[ÿ Eï]ãIïyFX (project area) AEï %çV` \ïTïçˣ±Eï Yç¾X =YTïîEïç ˣcJïçãY Yˣ»GˣSTï écäK* \ïTïçˣ±Eï %Wÿî^X» [ÿçã[ÿ [ÿˣX^çVÝ TïUî aeGc =da ˣcJïçãY æJïäOï_ç+Oï +ã]L å^ãX IRS LISS C %ç»ï å_ঊäJïOï ETM+ \ïç»Tï[ÿb» ]çXˣJïy» 1:50000 åLçF» L»ÝYac [ÿî¾cç» Eï»ç écˣK_* TïTïÝ^ Øï»» æ`SÝˣ[ÿ\ïçLX %Xa»S Eïˣ» %Wÿî^XEïTï Aã_EïçäOïçTï]Pï 9 Oïç æ`SÝ» Yã^çG \ïˣ] / \ïˣ] %ç¾»S UEïçäOïç aˣPïEï ˣXক্কাç»S Eï»ç écäK* Y`Øï [ÿçˣ_]^ %[ÿî¾cïTï \ïˣ] (~18%,]Pï åIïyZï_») (ˣ[ÿã`bêEï [ÿ¡ïYy» Eïçb»Ý^ç %ঙ্কû_ê_) =~ÝTïEï»S écäK* =Ve éc UEïç Eïçb»Ý^ç \ïˣ]Fঞ, Y[ÿçcÝ L_çWÿç»» Vã^çYç»» \ïˣ] %ç»ï £Eïç+ å^ç¾ç L_Yষ্ঠ» ]ˣL^ç» \ïˣ] _G_çˣG A+ Y^ç^» \ïˣ] %ç¾»SÝäOïç» =àï¾ écäK* [ÿbçEïçˣ_ åcç¾ç [ÿçX» a]^Tï XVÝˣ[ÿ_çãEï ˣc]ç_^ Y[ÿTï]ç_ç» %»ïSçJï_ %e`» Y»ç EïˣRï^ç+ %Xç GWÿ» [ÿçˣ_-ˣ`_çFঞ %çˣV Eïçb»Ý^ç %ঙ্কû_ê_ æPïˣ_ %çˣX [ÿçXYçXÝ £Eïç+ å^ç¾ç» Y»Tï åa+ã[ÿç» Aˣ» éU ^ç^ %ç»ï AãXêEïã^ XVÝ» Eïçb»Ý^ç অঙ্কû_Tï Y`Øï [ÿçˣ_» Tï»Y aˣrï c^* åWÿ]çˣL ˣL_çTï Gç+ XVÝ» Vã» %G\ïÝ» XVÝˣ[ÿ_çEï» [ÿcX Iï]Tïç A+Vã»+ Eïˣ] ^ç^* +ã^ aHX Yç¾X %ç»ï [ÿçˣ_ ˣ[ÿØïç» Eïç^Tï %ˣ»cSç å^çGç^* %[ÿî¾cïTï [ÿçˣ_]^ \ïˣ]» [ÿçˣc»Tï UEïç aç»ï¾ç Y_a¾ç \ïˣ]Tï Eïˣb Eïç^ Eï»ç c^* ˣ[ÿã`bêEï Fç»ÝZï `aî» a]^Tï Aˣ[ÿWÿ `aî+ (WÿçX) =dYçVX Eï»ç c^* [ÿ§ Yç¾X \ïˣ] %ç»ï Fç»ÝZï `aî =dYçVX åIïyTï »ˣ[ÿ `aî å^ãX aˣ»^c, a^]FÝ Zï_, %ç»ï [ÿTï»» `çEï-YçJïˣ_ %çˣV» åFˣTï Eï»ç c^* %ঙ্কû_äOïç»]Pï]çˣOï Eïçˣ_» Yç^ ~37% + Fç»ÝZï %ç»ï »ˣ[ÿ Vã^çˣ[ÿWÿ» `aî =dYçVX åIïy ˣcJïçãY Eïˣb Eïç^Tï %YˣTïã»çWÿî ˣcJïçãY [ÿî¾cïTï éc %çˣcäK* aˣyï^ XVÝˣ[ÿ_çãEï %aeFî %çV\ïˣ] (ˣ[ÿ_, Fç_ %çˣV)Eï _GTï é_ %ঙ্কû_äOïç» %ˣWÿEïçe`]çˣOï Eïçˣ_ åGçäOï+ [ÿK» Lˣ» %ç¾ˣ» »çãF* %ঙ্কû_äOïçê_ é[ÿ %cç [ÿ¡ïYy XVÝ %ç»ï Tïç» =YêX a]ãc YãLkï Aˣ»^çäOïç» Yç^ 5%]çˣOï %ç¾ˣ» %çäK* [ÿ¡ïYy XVÝ» %Yˣ»¾TïXÝ^ aˣTï ØïçXçÜï» Eï»ç Jïˣ»y %ç»ï aHX Yç» Y[ÿLX ˣyï^ç+ %ঙ্কû_äOïç» VˣIïS» Zïç_ê_ UEïç aˣyï^ Yç¾X =YTïîEïçTï %çV\ïˣ]» Yˣ»]çS [ÿRïç+ãK* A+ åIïyFX (~16%) [ÿK»äOïç» [ÿç»]çãc+ YçXÝã» =YˣJï UçãEï %ç»ï]daî Yç_X» [ÿçˣcã» %Xî åEïçãXç Wÿ»S» [ÿî¾cç»ã^çGî Xc^* HX %ç»ï]Nb/%ãWÿçGˣTï Yçপ্র cçˣ[ÿ-[ÿXˣXã^ åEï¾_ 4% %»Sîçঙ্কû_ GPïX Eïˣ»äK ; ˣ[ÿã`bêEï "Y[ÿç' ae»ˣIïTï [ÿXçঙ্কû_ãTï Wÿˣ» Y[ÿ YçÜï»ê_

%çäK A+ %»SîçX* å I iyFX» Yç^ 19%]çx0iTi Gç]î [içaØçXa]c GxPiTi écäK
%ç»0 å[ixJi\içG %ç¾ça Gc+ »çØiç» Vã^çYçã» åUçYçUxYêEi açxL å_ç¾ç écäK*

%Wiî^XEiTi %» ä_äOiç» L_[iç^ åaã]Eiç %ç»0 GÝYWiçX* AEi G»] %ç»0 åaã]Eiç %çGTiÝ^ç-å]iJi]Ý [i_ç L_[iç^]çJi» Y»ç å]'»]çL\içGê_, AEi ÝH_Ý^ç Vx I iS-Yx¸Ji] å]iJi]Ý [iTiçc [i_ç L_[iç^ å]'»]çL \içG» Y»ç æJiã»ê_, %ãkiç[i»» Y»ç Xã¾¶i»ê_ %ç»ç]Vç^Ei YçK TiÝ^ç å]iJi]Ý [iTiçc [i_ç [iç YXf aeØçYEi å]iJi]Ý L_[iç^ %ç»0 xQiäJi¶i»» Y»ç åZi[i0¾ç»Ýê_ãEi Ji_ç %ç»ç]Vç^Ei `ÝTiEiç_ A+ãEi+0iç+ %» ä_äOiç» L_[iç^»]_ Y[ixwi* xQiäJi¶i» %ç»0 LçX¾ç»Ý]çc V0iç+ %Wiî^XEiTi %» ä_äOiçTi %ç0iç+TiêEi Piç ç xVX, xEiÙi åaã^ c'ã_C XîXTi] TiçY]çyç EiçxJidãc AEiEi %eEi» H»ê_ Xçã]* Xã¾¶i»ãEi é_ A+]çc V0iç+ %ç0iç+TiêEi £]çc*

TSPM, RSPM, SO_2, Nox, CO %ç»0 HC %çxV» Yx»äYx I iTiTi %» ä_äOiç» [iç^]_» [iç^[iÝ^ mSçmS »çriÝ^ [iç^]_Ý^ mSçmS» a]Ti_î %ç»0 åaã^ å I iyFX» aEiã_ç Piç+ãTi åcJiç-]Nþ [iç^]_Ý^ %ç[içcç¾ç» YxTiZi_X åVFç ^ç^* Wi»çY Ti åYç¾ç %ç»0]çx0i» Ti_Ti åYç¾ç ^UçyÛã] 15 %ç»0 8 0iç =da» Y»ç aeGcÝTi YçXÝ» X]Xç» Y»Ý I iç» Zi_çZiã_ åEiçãXç x[iã`bWi»S» »çaç^xXEi %£ Tiç åXãVF¾ç^* åaã^ c'ã_C [i§ Piç+Ti Wi»çY Ti åYç¾ç YçXÝTi éLx¾Ei %£x %ç»0]çx0i» Ti_Ti åYç¾ç YçXÝTi xEiK å[ixJi Yx»]çS» ni'»ç+Qi åYç¾ç éGäK* Wi»çY Ti åYç¾ç YçXÝTi ^ãU åYçbEiV[iî (ZiJiãZi0i %ç»0 Xç+ä®i0i) %çäK x^ã^ Y£» Yx»TiîNþ %ç»0 %XîçXî åYçbEi V[iî^Nþ Yx»TiîNþ YçXÝê_ %cçä0içãEi aJiç^*]çx0i» Ti_Ti åYç¾ç YçXÝTi ^ãU Yx»]çãS åGç0iç YVçU V¾Ý\iTi éc UEiç» _ I iS Yx»_x I iTi écäK*

%Wiî^X» [içã[i å_ç¾ç å I iyFX» 12 Piç+»]çx0i 28 0iç å\iîxTiEi %ç»0 »çaç^xXEi mSçmS» [içã[i x[iã`bS Eix» æJiç¾ç écäK* AFX [iç VFX Piç+» [içxcã» [içEiÝã[iç» Piç+» ]çx0i» pH x[iã`bêEi I iç»EiÝ^ (>7.5)]çx0i QiçPi [içx_» Øiã»ã» GxPiTi ^'Ti GcSã^çGî Yx»]çS» %ç_TiÝ^ç]çx0i %ç»0 aç]çXî Yx»]çS» Y_a Yç c^i*]çx0ixFxX ^ãU YçXÝ Wiç»S I i]Tiç %çäK %ç»0]çx0i» %ç0iç+ã[iç» X]Xç+ NPK åYçbEi V[iîTi JicEiÝ*]çx0ixFxXTi =Ji]çyç» Zi'»ç+Qi %çäK %ç»0 aEiã_ç Piç+»]çx0iãTi+ ^ãU WiçTi x[iã`bêEi å_ç %ç»0 å]eGçxXL åYç¾ç éGäK*]çx0iTi xEiKYx»]çS» åTi_ %ç»0 GÝL» %¾xØixTiC _ I iî Ei»ç écäK* GWi» WiçTix[i_çEi» x\iTi»Ti ^ãU Yx»]çS» Pb %ç»0 Cd A+]çx0iTi åYç¾ç écäK*

%ঝâ_ä0ïçTï a[ÿ]Pï 175 YLçxTï» ØïXîYç^ÿ YçSÿ, %ç»ó 500 YLçxTïTïêEï %xWÿEï YLçxTï» Jï»ç+ åVFç ^ç^* xX¶ï\ïx]Tï %çV`GTï\ïçã¾ +ã³Vç-]ç_ç^çX ØïXîYç^ÿ Zï'Xç åYç¾ç ^ç^ xEïÜï =-JïTïçX^ç^ÿ Palearctic fauna å^X _Iïî Eï»ç ^ç^* xc]ç_^ Y[ÿTï]ç_ç» aç¶ïYxTïEï %\ïîxçãX Y[ÿ xc]ç_^ Y[ÿTï]ç_ç» æ`Sÿx[ÿ\ïçLX» aÿ]ç¾ঝTïçTï %ïx»cSç å^çGç+äK ; x[ÿã`bêEï a-FîçTï higher Taxonomic groups å[ÿç»» ]çLTï* x^xEï XcCEï %ঝâ_ä0ïçã¾ \ïçã_]çX YLçxTïEï %ç¾ça ØïçX YVçX Eïx»äK x^ã[ÿç»Eï x[ÿ`ãLç»ç Yç]çSî LXaeFîç» ¥ç»ç YxTïxXxWï± Eï»ç écäK* A+ YLçxTïã[ÿç»» x\ïTï»Tï %çäK AxK^ç]cçãV`» %ç0ïç+TïêEï QïçIï» ]çeaçcç»ÿ %ç»ó `çEïçcç»ÿ YçSÿC ; =ä{FXÿ^\ïçã¾ [ÿçH (Punthera tigris), AJïÿ^ cçTïÿ, %ç»ó [ÿXî aç]xVEï]'c %çxV +^çTï åVFç ^ç^* %a]» [ÿ¡ïYy XVÿ» =wï» Yç»» %ç¾ça Øï_Tï \ïç»Tï[ÿb» x\ïTï»ãTï å[ÿxJï aeFîEï %ç0ïç+TïêEï QïçIï» %ç»ó m»ó±ïYS cçTïÿ åVxF[ÿê_ åYç¾ç ^ç^* xc]ç_^» YçVãV`» Y»ç é[ÿ %cç [ÿ¡ïYy» XVÿTï ^ãUঝ aeFîEï x[ÿ`ãLç»ç m»ó±ï UEïç LçeãGx0ïEï Qï_xZïX (Platanista gangetica) %çäK* AxK^ç]cçãV`» [ÿcd YIïÿEï_» %ãXEï YEïçঞ Jï»ç+ A+ %ঝâ_ä0ïçTï [ÿça Eïã»* Yçcç»» YçVãV`Tï UEïç %»SîTï QïçIï» YçTï^Nþ GKã» \ïç cçx[ÿTï `mS åVFç ^ç^ x^ä0ïç YLçxTï YxU¾ÿ» x\ïTï»ãTï x[ÿ»_* +^çã»çYx» +^çTï %çäK [ÿ§ YLçxTï» Y»H]ç Jï»ç+, Qïx»Eï %ç»ó [ÿGçYçxF» cçc*

%çã_çJïî Aã_EïçäOïçTï Eï»ç YçÜïÿ^ Y£Eï_ a¶ïµïÿ^ L»ÿY Eïç^+ x[ÿJïçx» =x_C¾ç éTï_ãIïyFXTï åTï_» FXX Eïç^ a¶ïYçVX Eïx»ã_ A+ éL¾LGTï» m»ó±ïYS %e`ä0ïç» CY»Tï a]\ïç¾î Y\ïç¾ a¶ïYãEï xXঝç»S Eï»çTï acç^Eï c'[ÿ [ÿx_ [ÿ§ TïUî V`ç+äK* YØïç¾Tï æJï+Jïx]Eï L»ÿY» _GTï ae_G TïUî _ç\ï» [ÿçã[ÿ Pïç+ xX[ÿçJïX Eï»çTï L»ÿY Jïã_ç¾ç åIïyFX» Yx»¾TïX`ÿ_Tïç» CY»Tï YxTïZï_X åcç¾çêEï A0ïç YVãIïY å_ç¾ç écäK_* ]çXxJïy Yx»V`X, Eï]åIïy ^mTïEï»S %ç»ó L»ÿY LU/LC åIïyTï æ`Sÿ x[ÿ\ïçLX» CY»Tï x\ïwï Eïx» 11 FX Pïç+ A+ Y£Eï_ L»ÿY Eïç^» [ÿçã[ÿ xX[ÿçJïX Eï»ç écxK_* [ÿTï]çX» A+ L»ÿY Eïç^Tï ØïXîYç^ÿ, YIïÿ, a»ÿaY, =\ïJï» %ç»ó]daî A+ 5 x[ÿWÿ YçSÿ» Taxonomic groups å_ç¾ç écxK_* A+ å]»óVঞÿ YçSÿ a]c» %ç¾ça Ø_]çx0ï %ç»ó YçXÿ, %çã_çJïî åIïyTï [ÿXîL¾» ØïçØî %ç»ó [ÿçaØçX a¶ïãµï Y^çঔ aJïXç +cãTï å^çGç[ÿ [ÿx_ %ç`ç Eïx»[ÿ Yçx»* xJïc0ïTï FçV» %¾ØçX» Jïçx»CZïçã_ A+ Faunul Survey Eï»ç écxK_ ^çãTï %ঝâ_ä0ïçTï Y£Eï_» é[ÿxJïyîTïç a¶ïYãEï LçxX[ÿ Y»ç c^* aTïEïTïç %¾_¶ïX Eï»ç écxK_ ^çãTï %Wÿî^XEïTï åIïy»

aEõã_çã[ýç»]Fî %ç¾çaØçãX+ A+ L»ÝY Eõç^» ×\õTõ»Tõ Yã»* ×»ãYçÕõäÕõçTõ L»ÝY Eõç^» Zõ_çZõ_ a×~×[ýrô Eõ»ç éc÷äK÷*

\õç»Tõ[ýb» 2001 JôX» åLçXç+ Jôyô» [ýçã[ý Eõ»ç æJôঝâçJô» Y»ç åYç¾ç Gç]ÝS Y^ç^» TõUî [ýî¾c÷ç» Eõ×» %Wýî^XEõTõ %ঝâ_» åQõ]'Gç×ZõEõ YZõç+_ YØõTõ Eõ»ç éc÷äK÷ ^'Tõ Yaঙ্গ å×ÞyFX ×[ýØõTõ\õçã¾ a×~×¾rô éc÷äK÷* 2001 JôXTõ åLçXç+ JôyôTõ Yç^ 23,000 H»-[ýç»Ý %ç×K÷_, LXaeFîç %ç×K÷_ 1.43 _×Þ* åGçäÕõ+ %a] YãV`FX» Vã»+ +^ç» স্ত্রীÝ-Y»ôb» %XYçTõäÕõç %ç×K÷_ Y×Tõ 1000 LX Y»ôb» ×[ýY»ÝãTõ 932 G»çEõÝ ]×c÷_ç* 6 [ýK÷»»» CY»» LXaçWýç»S» ×`×ÞõTõ» c÷ç» %ç×K÷_ 57.41% ×_ঙ্গ å\õãV ×`×ÞõTõ» c÷ç»»» Tõç»Tõ]î Gc÷Sã^çGî* ]×c÷_ç ×`×ÞõTõç» c÷ç» Y»ôb ×`×ÞõTõ» c÷ç» 68.13% » ×[ýY»ÝãTõ 45.79%* ×X¶õFçY» Eõ]þac÷ Eõ]`×Nþ» ac÷ã^ç×GTõç» ×X×»F 44.74% ×^ã^ 55.26% å_çEõ %ç±Á×X\õ»`Ý_ åXçãc÷ç¾çäÕõçãEõ aJôç^* ]×c÷_ç Eõ]þTõ éEõ Y»ôb Eõ]þ» Eõ]Tõ ac÷ã^ç×GTõç» ×X×»F ×EõK÷ =¬Jô* +^çã»çY×» ×X¶õ Eõ]`×Nþ» a]çXYç×TõEõTõç]×c÷_ç Eõ]þ»]çLTõ å[ý×Jô* Eõ]×[ý]×FTõç» ×X×»F]×c÷_ç» å×ÞyTõ å[ý×Jô åc÷ç¾çäÕõçã¾]×c÷_çaEõ_» Eõ]aeØçX c÷ÝXTõç» ×X×»F» %ç×WýEõîãEõ aJôç^* Eõ×bEõ]ã×Þy+ Eõ]aeØçXVçTõç ×c÷JôçãY Y\õç¾Ý \õ×]Eõç Gc÷S Eõ×»äK÷*]_ Eõ]þaEõ_» Yç^ 79.74% + EõbEõ [ýç Eõ×b Eõç^Tõ [ýî¾c÷ôTõ `×]Eõ* EõÕõÝ» ×`ক্স %ç×VTõ 2% TõêEõC Eõ] Eõ]þ ×X^Nþ éc÷äK÷* Eõ×b `×]Eõ» `Tõçe` EõbEõ» `Tõçe`TõêEõ Eõ] åc÷ç¾çäÕõçã¾ aJôç^ å^ \õ×]c÷ÝX EõbEõ» aeFîç Eõ]* Y»ôb Eõ]þTõêEõ ]×c÷_çEõ]þ å[ý×Jô ]çyçTõ Eõ×bEõç^+, H»ô¾ç Eõç]-[ýX %ç»ô EõÕõÝ» ×`ক্স %ç×VTõ ×X^Nþ éc÷äK÷*

%ঝâ_äÕõçTõ ^ãUষ্ঠ å[ý×Jô Y×»]çãS `aî =dYçVX» Yç¾_îTõç UEõçäÕõç AEõ =ä{FXÝ^ ×[ýb^* aHX [ýçXYÝ×QõTõ %ঝâ_ åc÷ç¾ç [ýçã[ý ×^ãc÷TõãEõ Fç»ÝZõ `aî» ×X¸Jô^Tõç XçUçãEõ åaã^ »çLîFX» [ýçEõÝ %e`» Tõ_XçTõ +^çTõ »×[ý `aî» [ýTõ»Tõ %×WýEõ ×[ýØõTõ »ôYTõ EõbEõaEõã_ åF×Tõ Eõã»* AãTõãEõ åGçäÕõ+ %a] »çLîL×» Eõ»ç» Vã» %×WýEõ]çyçTõ GÝ1মEõç_ÝX `aî WýçX» åF×Tõ +^çTõ Eõ»ç Xc÷^* L_×aঝâX a×[ýWýç» aÝ]ç¾দ্বাTõç+ Eõç^Tõf +^ç» ]_ Eõç»S* aç]ç×LEõ %ç×UEõ å»c÷»ôY a¶õYãEõ LXç» _×Þîã» H»[ýç»Ý ×[ý_çEõTõ éG Jôã_ç¾ç L»ÝY Eõç^» YçU×]Eõ TõUî %Xa×» %ঝâ_äÕõç» aç]ç×LEõ-%ç×UEõ %¾ØçC å`çJôXÝ^ Y^ç^»* ×¥TõÝ^-Ø»Ý^ X]Xç YØõTõEõ»S %ç×c÷ã» A+ã×ÞyTõ X]Xç ×X[ýçJôX Eõ»ç éc÷×K÷_* YU] Y^ç^Tõ 9 FX GçC ×X[ýçJôX Eõ»ç éc÷×K÷_ %ç»ô ×¥TõÝ^ Y^ç^Tõ A+ YãTõîEõFX Gç¾» Y»ç 10% H» %çã_ãÞõ %çä_ãÞõ [ýç×K÷ê_ JôQõçÜõ X]Xç» åGçÕõäÕõç ×X[ýçJôX Eõ×» å_ç¾ç éc÷×K÷_* YØç×¾Tõ FXX å×ÞyTõ Xç×TõV»Tõ UEõç GçCã[ýç»»

Y»ç A+ H»ˣ[ý_çEǐ [ýçˣJǐ å_ç¾ç éc꞉ˣK꞉_* L»ÝY Eǐç^» aEǐã_ç Zǐ_çZǐ_ aç¾Wýç XTǐçã» Tǐçˣ_Eǐç\ǐNþ Eǐ»ç éc꞉ˣK꞉_*

Environmental Impact Assessment

4* Yçˣ»Yçˣ`Eǐ Y\ǐç¾ ˣXǐç»S

FXX Eǐç^Tǐ åc꞉ç¾ç Yçˣ»Yçˣ`Eǐ Y\ǐç¾ ˣXǐç»S» ]_ǐç^X å]ˣ®ǐEǐ YˣTǐ» ¥ç»ç Eǐ»ç éc꞉äK꞉* YãLkǐ» ayYçTǐ Eǐ»ç %ç»ǐ Yçˣ»Yçˣ`EǐTǐçTǐ YãLkǐ ˣ[ý_çEǐ» a]\ǐç¾î Y\ǐç¾ Y»ç %çˣV ˣ[ýb^ a]c꞉ YˣTǐäOǐçTǐ %ˣ[ýä-K꞉Vî\ǐçã¾ aeã^çˣLTǐ éc꞉äK꞉* å]ˣ®ǐ j Zǐã]ǐOǐTǐ =YØǐçYX Eǐ»ç éc꞉äK꞉* %çãYˣ I ǐEǐ ˣyǐ^ç¾_Ý %ç»ǐ ˣac꞉Tǐ» Y\ǐç¾»]çLTǐ Eǐç»S-Yˣ»Sç]» ˣJǐXçNþEǐ»S V`ç+ å]ˣ®ǐã j * Eǐç^Eǐ»S» a]^Tǐ TǐdEǐç_ÝX\ǐçã¾ åc꞉ç¾ç [ýç \ǐˣ¾bîãTǐ c꞉'[ý Y»ç W»S» Y\ǐçã¾ç Gc꞉Sã^çGî [ýˣ_ ˣ[ýä[ýJǐXç Eǐ»ç c꞉^ %ç»ǐ åa+ã[ýç» _çH¾Eǐ»S» åEǐǐ`_ =àǐç¾X Eǐ»ç c꞉^*

Yçˣ»Yçˣ`EǐTǐç+ A+ å I ǐyTǐ aJǐ»çJǐ» FXX Eǐç^» å I ǐy» ˣyǐ^ç¾_Ýã^ HäOǐç¾ç å\ǐˣTǐEǐ ˣ[ýJǐîˣTǐ %ç»ǐ FXX» Y»ç =àǐTǐ [ýLXÝ^ YVçU+ HäOǐç¾ç YVbS Eǐç^ãEǐ aJǐç^* FXX Eǐç^Tǐ YçXÝ^Nþ å[ýçEǐç %ç»ǐ ˣXˣVrǐ FXX Yˣ»ˣØǐˣTǐ Eǐç] Eǐˣ»[ýê_ Tǐç» _GTǐ ˣ[ýˣ\ǐ~ W»S» »çaç^ˣXEǐ aeˣ]`S Yã^çG Eǐ»ç c꞉'[ý* FçV» Pǐç+Tǐ FXX Eǐç^» a]^Tǐ aˣrǐ åc꞉ç¾ç [ýLXÝ^ YVçUTǐ åEǐǐ¾_ FXX å[ýçEǐç+ XçUçãEǐ +^çã»çYˣ» JǐçãZǐJǐ]çãOǐˣ»ã^_» ˣQǐ_ Eǐçˣ0ǐe, c꞉ç+V'Eǐç[ýX, å_çˣ[ýãEǐrǐ %ç»ǐ Eǐçˣ0ǐe Tǐ»_Ý\ǐTǐ Eǐˣ»[ýê_ [ýî¾c꞉ç» Eǐ»ç »çaç^ˣXEǐ V[ýîC _G_çˣG UçãEǐ* W»çYˣTǐ å[ýçEǐç %ç»ǐ Eǐçˣ0ǐeã[ýç» ^çˣUǐEǐ YˣTǐã» YUEǐ Eǐ»ç c꞉^ %ç»ǐ å[ýçEǐçˣFˣX ˣ»Jǐçã Eǐçã_JǐX» [ýçã[ý]çQǐ ˣYOǐê_ H»ç+ YäPǐç¾ç c꞉^* ˣQǐˣ_e]çQǐ, c꞉ç+V'Eǐç[ýX, YçXÝ, »çaç^ˣXEǐ aeã^çˣLTǐ V[ýî JǐçãZǐJǐ å]äOǐˣ»ã^_ UEǐç ˣ]Xçã»_ˣ[ý_çEǐ TǐVYˣ» å&°ǐ ˣQǐ_]çQǐ %çˣV ac꞉ ˣQǐ_ Eǐçˣ0ǐeˣ[ý_çEǐ Yç]çSî é[ýpûçˣXEǐ YˣTǐã» %çTǐ»ç+ åYã_ç¾ç c꞉^* Y»ç]` ˣV^ç å^, Yçˣ»Yçˣ`EǐTǐçê_ åEǐǐ¾_ aç]çXî ˣ[ýYV %ç`eEǐç UEǐç [ýç ˣ[ýYV %ç`eEǐç]Nþ Plonor æGQǐ» »çaç^ˣXEǐ V[ýîãc꞉ [ýî¾c꞉ç» Eǐ»ç c꞉'[ý*

YØǐçˣ¾Tǐ éTǐ_FXX Eǐç^Tǐ Yçˣ»Yçˣ`EǐTǐçê_ Y\ǐç¾ åY_ç[ Y»ç Y\ǐç¾a]c꞉ =Y`] %ç»ǐ _çH¾Eǐ»S» [ýçã[ý _'[ý _Gç =Yç^ a]c꞉ c꞉'_ --

(i) YãLkǐ å I ǐy» Y»ç YçEǐˣTǐEǐ GK꞉-GKˣX ˣX]_Eǐ»S Eǐç^ XîXTǐ] Eǐ»ç» %ç»ǐ YX» åa=L aeØǐçYX Eǐ»ç» ˣX¸Jǐ^Tǐç YVçX (ii) YãLkǐ å I ǐyTǐ ^çX-[ýçc꞉X %ç»ǐ [ýîˣNþ» %çc꞉-^çc꞉ XîXTǐ] Yã^çLXÝ^Tǐç»]çyçê_ aÝˣ]TǐEǐ»S ^çãTǐ [ýXî LÝ¾X, YU VHOǐXç, §_Øǐ_ %ç»ǐ åWç¾ç =»ç Eǐç^ã[ýç» âça c꞉^ (iii) AEǐ facility wide [ýLXÝ^

YVçU Y׻Jïç_X Y׻EïজXç »Fç c¦'[ï* +^ç» _GãTï YVbS [ïçWïç YVçX A+ Y׻EïজXç» %×[ïä-K¦Vî %eG c¦'[ï ×^äÕïçã¾ Wï]c¦ç [ï»bS» Y[ïçc¦Ý YçXÝ %ç×Vã^ ×Qï×_e nï+V %ç»Ó åEï×]ãEï_ ×[ï_çEï Eï]ãIïyTï ^çãTï ×[ïäRïìTï Eïx»[ï åXç¾çã» Tïç» ×X¸Jï^Tïç YVçX Eïx»[ï* [ï^-[ïØï L]ç Eïx» åUç¾ç %¾Øïç» Y»ç ^çãTï YçXÝã^ =Õïç+ ×X[ï åXç¾çã», %çEïxØïEï ×YK¦_ åFç¾ç %ç×V ^çãTï [ïçWïç ×V[ï Y»ç c¦^ Tïç» [ïçã[ï Eï]ãIïy» Y׻ষïç»- Y׻-K¦~Tïç %ç×V» ×Vc¦ç Eï»ç* (iv) zï'LQï _Y ×Qï×_e nï+Qï ×Jïärï] Yã^çG éc¦äK¦ åX×Eï? TïçEï Tï~-Tï~êEï ×[ïJïç» Eïx» æJïç¾çãÕïç a×X×¸JïTïEï»S, ×^äc¦TïãEï + %×Tï \ï^ç[ïc¦ ×»Lç\ï ×YÕï GPï×X Eïx»[ï Yçã», ^'» Y»ç c¦ç×XEïç»Eï Tï»_ åIïy» YষïØï_ê_ [ïç]ç×ÕïTï UEïç YçXÝê_ a»×Eï ^ç[ï Yçã»* Tïçã»çY×» + [ïç^]ঙ_ê_ ^ãUষ Y×»]çS» VOCs A×» ×V[ï Yçã»* (V) aJï»çJï» Jï×_Tï %ç^TïçEïç» ×YÕï» a_×X AÕïç V %çEï×Tï» ×»Lç\ï ×YÕï aeØïçYX Eïx»[ï _çãG* (vi) ×Qï×_e nï+Qï ×VJïY'ãL_» a]^Tï c¦'[ï Y»ç ×[ïYV» %ç`eEïç â¦çaEï»S» [ïçã[ï å[ï×Jï c¦ç×XEïç»Eï ×Qï×_e nï+Qï» a_×X Eï]c¦ç×XEïç»Eï å^ìG» [ïî¾c¦ç» Eïx»[ï _çãG* (vii) ×Qï×_e nï+Qï» Y»ç aç¾Wïç×XTïçã» ×Qï_ Eïç×ÕïeJï %ç»Ó %XîçXî %£×ষEïç»Ý åGçÕïç YVçUa]c¦ %çTï»ç[ï _çãG* +^ç» ¥ç»ç Tï»_ÝEï»S» Yã^çLXÝ^Tïç Eï]ç[ï [ïç nï+Qï a_×XEï»S Eï]ç[ï Yç×»* å[ïçEïç Y׻ã`çWï×X Yষ×TïTï shale shakers é_ desanders %ç»Ó desilters å^çGçX Wï×»[ï _çãG %ç»Ó åTï_-YçXÝ» ae×]`S \ïç×Iï[ïé_ ]çQï ×zïXç» [ïî¾c¦ç» c¦'[ï _çãG %ç»Ó V[ïÝ\ïTï =Yçe`×[ï_çEï %çTï»ç[ï _çãG* (viii) ×Qï×_e nï+Qï YXf [ïî¾c¦ç» Eï»ç [ïî¾ØïçEï»S (ix) +×tX, æÕïeEï, Yç¶ïY %ç»Ó aEïã_ç aL×_» [ïç Y×Tï»Iïç]_Eï %çYVçc¦ Wï»ç %ç»Ó ×_Eï (ZïÕïç) åXçãc¦ç¾ç %¾ØïçTï »Fç» [ïî¾ØïçEï»S, (x) Yã^çLXÝ^ Y×»]çS å]äÕï×»ã^_ãc¦ ^çãTï [ïî¾c¦ç» Eï»ç c¦^ %ç»Ó [ïLXÝ^ V[ïî a×rï â¦ça c¦^ åa+äÕïç ×X×¸JïTï c¦'[ï _çãG* (ix) Eï]ãIïyTï a×rï åc¦ç¾ç aEïã_ç H»Õ¾ç %ç»Ó æJï×XäÕï×» ×Jïärï]» [ïLXÝ^ YVçU a×PïEï\ïçã¾ %çTï»Eï»S +TïîçV* %Y׻EïজTï Eïç^î» ¥ç»ç ^çãTï Yç×»Yç×`EïTïçê_ \ï^ç[ïc¦ ×[ïYV aeEï_Tïç» a×rï c¦'[ï åXç¾çã» Tïç» [ïçã[ï aEïã_ç ×X^]Ý^ç %ç»Ó %×X^]Ý^ç Eïç^îãEï+ æ`SÝ×[ï\ïçLX Eïx»[ï _çãG* åa+ =YaGã[ïç» ×^ã[ïçã» Yç×»Yç×`EïTïçê_ %×Tï XGSîTï] [ïç aç]çXî Y׻×ØïTïäc¦ %ç×X[ï Yçã» åa+ã[ïç» Gc¦Sã^çGî c¦^ açWïç»S %¾ØïçTï* %Xîc¦çãTï×V åa+ã[ïç» =YaG ×^ã^ =-Jï ]çyç» Y\ïç¾ åY_ç[ï Yçã» åa+ã[ïç» Gc¦SÝ^ Xc¦^* ]L_Ý^ç Wï»S» ×[ïYV» %ç`eEïçEï â¦ça Eïx»[ï _çãG ×^]ç×V» a]\ï¾ ^×Nþ\ïçã¾* AãX %ç`eEïç+ ^çãTï Y׻ã[ï`Eï Y\ïç¾ç×XTï Eïx»[ï åXç¾çã» [ïç H×ÕïXç aeH×ÕïTï Eïx»[ï åXç¾çã»

åa^ç _Iüî »çxF[ý _çãG* a]\iç¾î aEöã_ç AãX =YaGãEö Tiçx_Eöç\iNþ Eö»ç écäKö %ç»ó åa+ã[ýç»» Y»ç =Y`]» =Yç^ x_xY¾ Eö»ç écäKö*

[ýLXý^ YVçU axrö åcç¾çäOöç Eö]ç[ýê_ Yã^çLXý^ YVãIüY GcS Eö»ç écäKö %ç»ó A+ã[ýç»» axPiEö\içã¾ xX]_Eö»S» xVcç Eö»ç écäKö* ^'Tö a]\i¾ c^ [ýLXý^ YVçUx[ý_çEö YUEö Eö»ç c^, åG_ç-YJiç [ýØã[ýç» EöãYkö»Tö QiçPi Eöx» xXxVrö éEö »Fç Piç+Tö L]ç Eö»ç c^ Xc'ã_[ýç AOöç [ýçSxYOöTö é_ Yx» åYã_ç¾ç c^* %Xî %ç¾LXçã[ýç» GcSã^çGî YçyTö L]ç »Fç c^ %ç»ó +^çEö x»Jiç+Eö'_ Eö»ç c^ [ýç ýEöxTöYç xPiEöçVç»» å^çãGxV Eö³®ö_aý]ç» x\iTö»Tö »çxF %çTö»ç+ åYã_ç¾ç c^* Y å]äOö_, åY_Xý^ç åTö_ %ç»ó %xTöx»Nþ åcç¾ç »çaç^xXEö V[ýî %çxV x»Jiç+xzöIiö» [ýçã[ý YäPiç¾ç c^ [ýç a]\i¾ c'ã_ YX» [ýî¾cç» Eö»ç c^*

Jöx_ UEöç YxTö AOöç+ KKK]»ç HOöXç HxOöã_ Y[ýçcý Tö»_xFxX [ýçxc»ê_ a_X Eöx» =x_^ç+ %Xç c^ %ç»ó JiçY xX^ÜS [ýî¾ØçäOöç Yç]çSî JiçY xX^ÜS YxTö» ¥ç»ç YxTö Eö»ç c^* xQöx_Iö» a]^Tö Kick]»ç xX¸Jö^TçEö âçaEö»S» [ýçã[ý ^ãU aTöEöTiç %¾_¶X Eö»ç c^* xEöEö]»çäOöç =ài¾ åcç¾ç x»GTö xXxVrö YxTö %ç»ó Yx`IiS Yx»Jiç_Xç Eö»ç c^ %ç»ó A+äOöç axXx¸JöTöEö»S Eö»ç c^ ^çãTö ^Uçã^çGî Eöç^îYÜiç å_ç¾ç écäKö* AãX Yx»xØxTöTö Eö] Yx»Jiç_X Eö»ç Eö]þ aYx`IiSYç c'[ý _çãG %ç»ó =Y^Nþ å»xOöIö» Blow out Preventers x»GTö ae^Nþ Eöx»[ý _çãG; [ý %ç=Tö» a]^Tö æJiZöxOö +EöYã]³Oö [ýî¾cç» Eö»çäOöç xXx¸JöTö c'[ý _çãG* åTö_ C_ç+ Yx» å^ç¾ç %¾ØçEö [ýçWç YVçX» [ýçã[ý ax[ýØç»Tö =Yç^» xVcç xV^ç %çäKö %ç»ó åTö_ C_ç+ Yx» G'ã_ _[ý _Gç =Yç^» EöUç =ä{F Eö»ç %çäKö* xQöx_Iö» a]^Tö [ýç^]_ê_ åcç¾ç xXG]X» Y\iç¾ %xTö %XçEöçxIIüTö* `xNþ =dYçVX» [ýçã[ý [ýç FçV Y»ýIüS» a]^Tö aeã^çG Eö»ç Lã^ Co$_2$, Nox, Sox %ç»ó XãYç»çêEö å»ç¾ç cç+V'Eöç[ýX xXG]X HOöç^* AãX Wý»S» xX¶ö %ç^TöX» xXG]ãX açWç»ãS %xTö IýY %ç»ó [ý§]çxyEö Y\iç¾ åY_ç^ Eöçb»ý^ç Y¾xTöTö =da a]cTö* A+ xXG]X» Yx»]çS Wý»ç åY_ç[ý Y»ç]çyç» Tö_Tö c^* A+Vã» AãXWý»S» XGSî xXG]ãX ^xVC[ýç aEöã_çã[ýç» GýSc=Jö Y_Tö aç]çXî Y\iç¾ åY_ç^ %ç»ó [ýç^]_Tö AxJöxQöEö åGJö [ýçäRö, ØçXý^ Yçx»Yçx¸EöTiç» CY»Tö A+ Y\iç¾ %xTö XGSî*

Environmental Management Plan

5* Yçx»Yçx`ÈÊÔTìç Yx»Jìç_X Yx»ÈÔÞXç

The Environmental Management Plan (EMP) GxRì åTìç_ç écäK: Yçx»Yçx`ÈÔTìçÈì x[ÝXrì Èìx»[Ý Y»ç Y\ìç¾ a]c:» ^çãTì =Y`] HÖìç[Ý Y»ç c:^* xXÞìçx»Tì Yx»ã[Ý` a¶ìµìÝ^ aJìXçÈìç»Ý %çxc:_çYçxTì [Ýî¾c:ç» éc:äK: åX Xç+ åa+äÖìç xXx¸JìTìÈì»S (EMP) » Vç^¾ÞìTìç* Yçx»Yçx`ÈÔTìç Laws and regulations x[Ý_çÈì axPìÈì\ìçã¾ Yç_X Èì»ç éc:äK: åX Xç+ åa+äÖìç æJìç¾çxJìTìç Èì»ç %ç»Ö Yçx»Yçx`Èì Yx»Jìç_X Yx»ÈìÞXç (EMP) Yã^çG» ]_ åÈìì`_äÖìçã¾+ c:'_ AÖìç Environmental Management Office YxTìÞìç Èì»çãÖìç* OIL » AÖìç aYxTìxÞTì Safety & Environment Deptt. %çäK: x^ã^ YãLkì %xZìJì» éaãTì %çã_çJìXç-x[Ýã_çJìXç %ç»Ö acã^çxGTìç Èìx» FXX Èìç^î åIìyTì EMP » XÝxTì-xXãV`Xç YÈÔTìYãIìì ]çxX Jì_ç écäK: åX Xç+ åa+äÖìç axXx¸JìTì Èìã»* EMP å^ FXX Èìç^îTì xX^xNþ xV^ç aÈìã_ç xPìÈìçVç», Èì]þ, YçGTì Èì]þ, %ÞìYçGTì Èì]þ %ç»Ö %êYSTì Èì]þÈì XîXTì] ØìçØì, a»Iìç %ç»Ö Yçx»Yçx`ÈÔTìç» Yx`IìS YVçX Èìã»* EMP å^ AÈì x[ØìçxTì Environmental Monitoring Programme C Yx»Jìç_Xç Èìã» x^ã^ YãLkì» CY»Tì åc:ç¾ç YÈÔTì Yçx»Yçx`Èì Y\ìç¾» x[bã^ TìUî LXç^*]xSÖìx»Iì» Zì_çZìã_ Yçx»Yçx`ÈÔTìç a»IìTì Èìx» »Fç» x[bã^ »ç^ YVçX Èìã»* Èìç»S YãLkì» xyÖ^ç¾_Ýã^ Yçx»Yçx`ÈÔTìçTì åY_ç[Ý Y»ç Y\ìç¾ a]c: _çH¾Èì»S» TìUî]xSÖìx»ãIì V`ç^* +ã^ Yçx»Yçx`ÈÔTìç»]çXVÈì axXx¸JìTì Èìã»* AÖìç YãLkì» YÈÔTì Y\ìç¾» x[bã^ TìUî å^çGç+]xSÖìx»ãIì Yçx»Yçx`ÈÔTìçê_ %c:ç x[ÝYV aeÈì_Tìç» aJìç xJìy VçxIì Wã»* Yã^çLX açãYãIìì Y\ìç¾ _çH¾Èì»S» [Ýçã[Ý YãLkì ]xQìxZìãÈìJìX %çxV» xVc:çC xV[Ý* A+ _Iìîa]c: açWxX» [Ýçã[Ý+ AÈì Environmental Monitoring Programme =~ÝTìÈì»S» Y»ç]` xV^ç éc:äK:* Y\ìç¾ x[Øìç» Èìx»[Ý Y»ç =da %ç»Ö Yçx»Yçx`Èì =Yçe`x[Ý_çÈì» Y^ã[ÝIìS» _GãTì]xSÖìx»e YÞìxTì» xJìXçxÈì YVçX %ç»Ö Yx»Jìç_XÈìç»Ý»]xSÖìx»e YÞìxTìã^ åVFC¾ç YãLkì» xXG]X, Yx»TìîçG, Yx»TìîNþ, [ÝTì]çX» [Ýç^]ç_» [Ýç^[ÝÝ^ xØìxTì, YçXÝ %ç»Ö LÝ¾,]çxÖì %ç»Ö YçXÝ» éL¾ LGTì» CY»Tì Y»ç Y\ìç¾ %ç»Ö Yçx»Yçx`Èì =Yçe`x[Ý_çÈì» CY»Tì Y^ã[ÝIìS +TìîçxV +TìîçxV x[b^ã[Ýç»]xSÖìx»Iì» %ÜGTì xQìx_e Èìç^ Jìx_ UÈìç a]^Tì Yçx»Yçx`Èì =Yçe`ã[Ýç»» CY»Tì +^ç» Y\ìç¾ a¶ìYãÈì xX^]Ý^ç Y^ã[ÝIìS» Y»ç]` xV^ç éc:äK:* A+ _Iìîã» XîXTì]]xSÖìx»e Yã^çLXÝ^Tìç Yç^ 35 Gã[Ý_ x»YxÖìe Initiative (GRI)

(Indicator) aJiEi [ji¾c:ç»» ×Vc:ç ×V^ç éc:äK: ^çãTi %ç×UEi, Yç×»Yç×`Ei %ç»ô aç]ç×LEi]çyç»]×SÒi×»e [ji¾Øç YØiç×¾Ti ×yô^ç¾_ÝTi Yã^çG c:^*

Conclusion

×aঝiçÜi

^×VC[iç YØiç×¾Ti éTi_ %XaµiçX %ç»ô FXX åIiyFX Yç^ ×XäJi+ Ei]ç»Ý %¾Øç» (XTiX), %çGãTi éTi_ %XaµiçX» [içã[i YØTi åIiy Xc:^ V\içGî[i`Tif Y×TiEi_ Y\iç¾ UEiç AFX åIiy* FXX Eiç^î» ×YJiTi]ç×Òi [iTi]çX» (FXX» %çG») %¾Øçê_ YX» aeØçYX Ei»[i _ç×G[i* FXX åIiyFX %ç»ô +^ç» ×PiEi Eiçb»Ý^ç Y\iç¾ Y×»[i _Gç %ঝ_äÒiçTi åEiçãXç B×Tic:ç×aEi EiÝ×Ti ×Jic:ô Xç+, ØçYTiî Ei_ç» Piç+, ÒiçIi» L_çWiç» / [içµi/ aeGçc:Ei, åHç×bTi »çriÝ^ YçEi / C¾ç+_Òi _ç+Zi æJiঝ» / [içHî YEi / c:ØiÝ UEiç ×[iã`b Piç+, åHç×bTi éL¾ åGç_EiÝ^ ae»IiS %ঝ_ %ç»ô åHç×bTi Y[iLXEiç»Ý YIiÝ» %ç¾çaØ_ +TiîçV AãEiçã¾+ Xç+* YØiç×¾Ti éTi_ %XaµiçX ×yô^ç¾_Ýã^ åEiçãXç ×[iã`b Y×TiEi_ Y\iç¾ Xç+[iç]daî Yç_X Eiç^îãTiç åEiçãXç Wi»S» Y\iç¾ XY×»[i* YØTiEiTi FçV×[i_çEi» FXX Eiç^î ×X^ÜiS» aÝ]ç» ×\iTi»» ×Xfa»Sãc: HÒiç[i* Yç×»Yç×`EiTiçê_ åaã^ Yç×»Yç×`EiTiçTi %×Ti aç]çXî Y\iç¾ãc: Y×»_×IiTi c:'[i* FXX Eiç^î» _GTi L×ÒiTi Yç×»Yç×`Ei Y\iç¾ YSç_Ý¾\içã¾ aaÝ] c:'[i %ç»ô Yç×»Yç×`Ei Y\iç¾ ×X»S Gc:Sã^çGî Øi»» c:'[i* FXX Eiç^î» a]^äKç¾çTi a×ri åc:ç¾ç Ti»_ [iLXÝ^ YVçUã[iç»]_ =da c:'[i ×Òi×_e ni+Òi JiçãEiçã_JiX Y×Ti» Y»ç åYç¾ç Eiç×ÒieJi ×zi×Xe ni+Òi* ×Òi×_e ni+ÒiTi ^ãUri Y×»]çS» GWi» WiçTi¾ =Y×ØiTi Y×»_×IiTi c:'[i Yçã»* ×^ ×Ei Xc:CEi ×Òi×_Ii» [içã[i [ji¾c:ç» Ei»ç ni+Òi ¾çÒiç»-å[i+Ji å[içEiç c:'[i ×^äÒiç PLONOR »çaç^×XEi æ`SÝ\iNþ %ç»ô FXX» a]^Ti a×ri åc:ç¾ç [iLXÝ^ YVçUTi %[iç×sÚTi\içã¾ GWi» WiçTi GçRiTiç Yçঙi c:'[i %ç»ô A^ç CPCB X»]Ji» YVçXã^çGî [iLXÝ^ YVçU c:'[i* JiçãEiçã_JiX Y×Ti» Y»ç Ei×PiX [iLXÝ^ YVçUa]c: YUEi Ei»ç c:'[i %ç»ô ^ãUঝ]çyçTi A+ã[iç» £Ei¾ç+ aç]×^Ei\içã¾ aEiÝ^ç Eiç×Òie ×YÒiTi L]ç »Fç c:'[i* U×_ãTi %¾_¶iX Ei»ç ×X^ÜiS» =Yç^ %ç»ô Y×»Jiç_X Y×Tiã» Y×»Yri c:'[i* YØiç×¾Ti FXX Eiç^î» Y»ç ×[iã`b åEiçãXç Ei-Y\iç¾ XY×»[i Yç×»Yç×`EiTiçTi* A+äÒiç ×X×¸JiTiEi»S» [içã[i OIL A ×X×Vri a]^» %Üi»ç_Ti Y×»TiîNþ YçXÝTi Y»ÝIiç Eiç^î a¶iYçVX Ei×»[i, Ji[i»Ý^ç YçEi×TiEi L_çWiç» a]c:ãTiç A+ Y»ÝIiS Eiç^î Jiã_ç¾ç c:'[i* [iLXÝ^ YVçU Y×»Jiç_Xç» a[ji¾ØçEi»S c:'[i %ç»ô a»Iiç» =Yç^ a]c:» a-]_îç^X Ei»ç c:'[i*